

Jan. 13, 1953

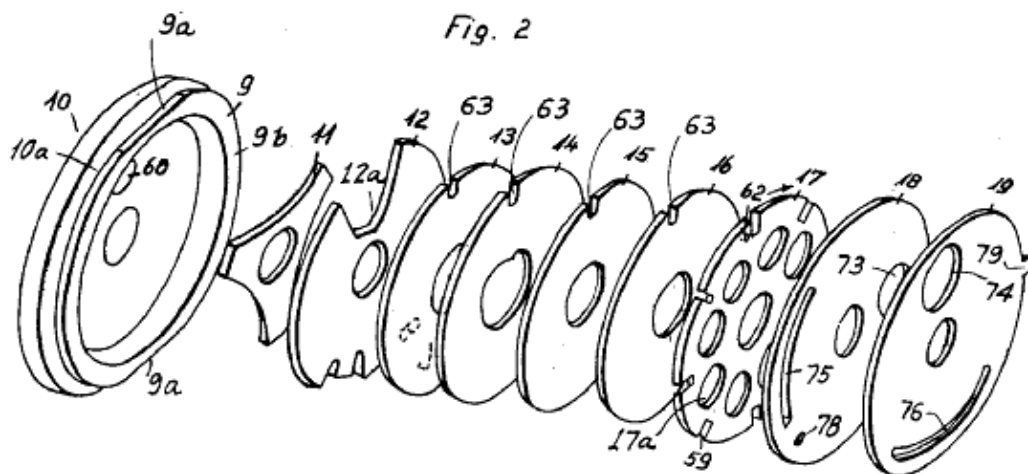
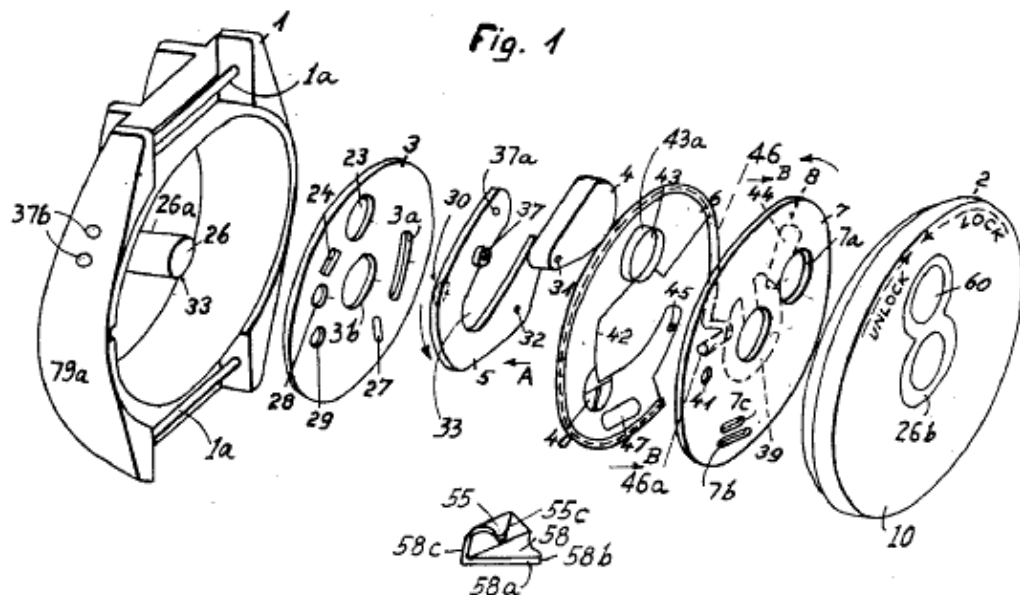
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2,625,087

CONSTRUCTION FOR CAMERAS

Filed May 12, 1949

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UNITED STATES PATENT OFFICE

2,625,087

CONSTRUCTION FOR CAMERAS

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Application May 12, 1949, Serial No. 92,846

22 Claims. (Cl. 95—38)

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This invention relates to new and useful improvements in novel construction for cameras.

One object of the invention comprises among others a novel camera construction and preferably of the magazine type in which a single operation will effect the cocking of the shutter and release thereof.

A further object of the invention comprises a camera construction and preferably of the magazine type in which such single operation as, for instance, the depression and release of a shutter release button will actuate all essential operations of such camera including shutter cocking and release and the transport of the photo-sensitive surface into the next "exposure" position.

A still further object of the invention comprises a novel shutter release construction.

Still another object of the invention comprises a magazine type camera in which the magazine is automatically placed in light shield "open" position when loading the camera, and is automatically placed in light shield closed position when unloading the camera.

The foregoing and still further objects of the invention will be apparent from the following description read in conjunction with the drawings in which:

Fig. 1 is a perspective exploded view of a diagrammatic representation of some of the principal elements of a camera in accordance with the invention;

Fig. 2 is a perspective exploded view of a diagrammatic representation of some of the principal elements of a camera magazine in accordance with the invention;

Fig. 3 represents a front view of a preferred embodiment of a camera in accordance with the invention;

Fig. 4 illustrates a diagrammatic end view (in the direction of arrow A of Fig. 1) showing shutter transmission arm arranged within the camera housing with the shutter release button in the "non-depressed" position;

Fig. 5 shows the construction illustrated in Fig. 4 except that the parts are arranged with the shutter release button just prior to completely "depressed" position;

Fig. 6 is a diagrammatic plan view (in the direction of arrow B of Fig. 1) representing housing closure disk and shutter arrangement with the shutter release button in the "non-depressed" position corresponding to Fig. 4;

Fig. 7 is a diagrammatic cross-sectional representation of the construction shown in Fig. 6;

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Fig. 8 illustrates the same diagrammatic plan view of the construction of Fig. 6 except that the parts are shown in the position assumed with the shutter release button just prior to completely "depressed" position corresponding to Fig. 5;

Fig. 9 is a diagrammatic cross-sectional representation of the construction shown in Fig. 8;

Figs. 10, 11 and 13-18 are plan views of various parts diagrammatically shown in Fig. 2;

Fig. 12 shows in plan view a spring ring and magazine bayonet lock;

Figs. 16a and 19 represent diagrammatic cross-sectional views of part of the construction shown in Fig. 20 and

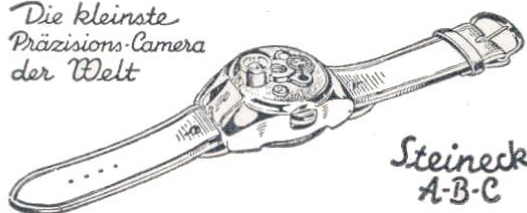
Fig. 20 is a cross-sectional side view of a preferred embodiment of the invention illustrated in Fig. 3.

Referring to Fig. 1 the housing 1 is provided with a central tubular member defining the bore 26. An aperture disc fits inside housing 1 and carries the different sized light apertures 23 and 24, as well as registry apertures 28 and 29 for observation of the "end of film" mark 30 on transmission arm 5. Aperture disc 3 further carries the guide slot 27 for the setting post 20 (Fig. 3). Transmission arm 5 carries shutter release button 4 pivotally secured by way of the pivot post 31. Transmission arm 5 carries aperture 32. Cut-out 33 of transmission arm 5 is so dimensioned that with the camera assembled it rests rotatably on an outer cylindrical surface portion of the tubular member defining the bore 26 with the axis of pivot through the aperture 32. Transmission arm 5 carries at one end thereof a roller 37 and above roller 37 an electrical contact 37a.

A light screening and positioning member 6 is provided in front of the transmission arm 5 and carries the exposure aperture 43, the cut-out 42, the pin-supporting aperture 45 and the rotatable locking slotted half disc 40. For improved precision of spacing and positioning of the elements 5 and 6, a pin (not shown) rests with one end in the aperture 45 of the platen member 6, passes through the pivot and guide aperture 32 of transmission arm 5 and through slot 3a in aperture disc 3.

A housing closure disc 7 is provided carrying the shutter member 8 (see Figs. 6 and 7). Closure disc 7 is provided with the window 7a and carries secured thereto the tubular transmission member 39 extending towards the front of the housing 1 and defining the slot 38. When the camera is assembled the tubular transmission member 39 extends through aperture 42 to just in

Die kleinste
Präzisions-Camera
der Welt



Steineck
A-B-C

An das

Steineck Camera-Werk

Absender :

Name :

Wohnort :

Straße :

Land :

Rappenheim i.B.
Tutzing am See

Germany · Bavaria

Jan. 13, 1953

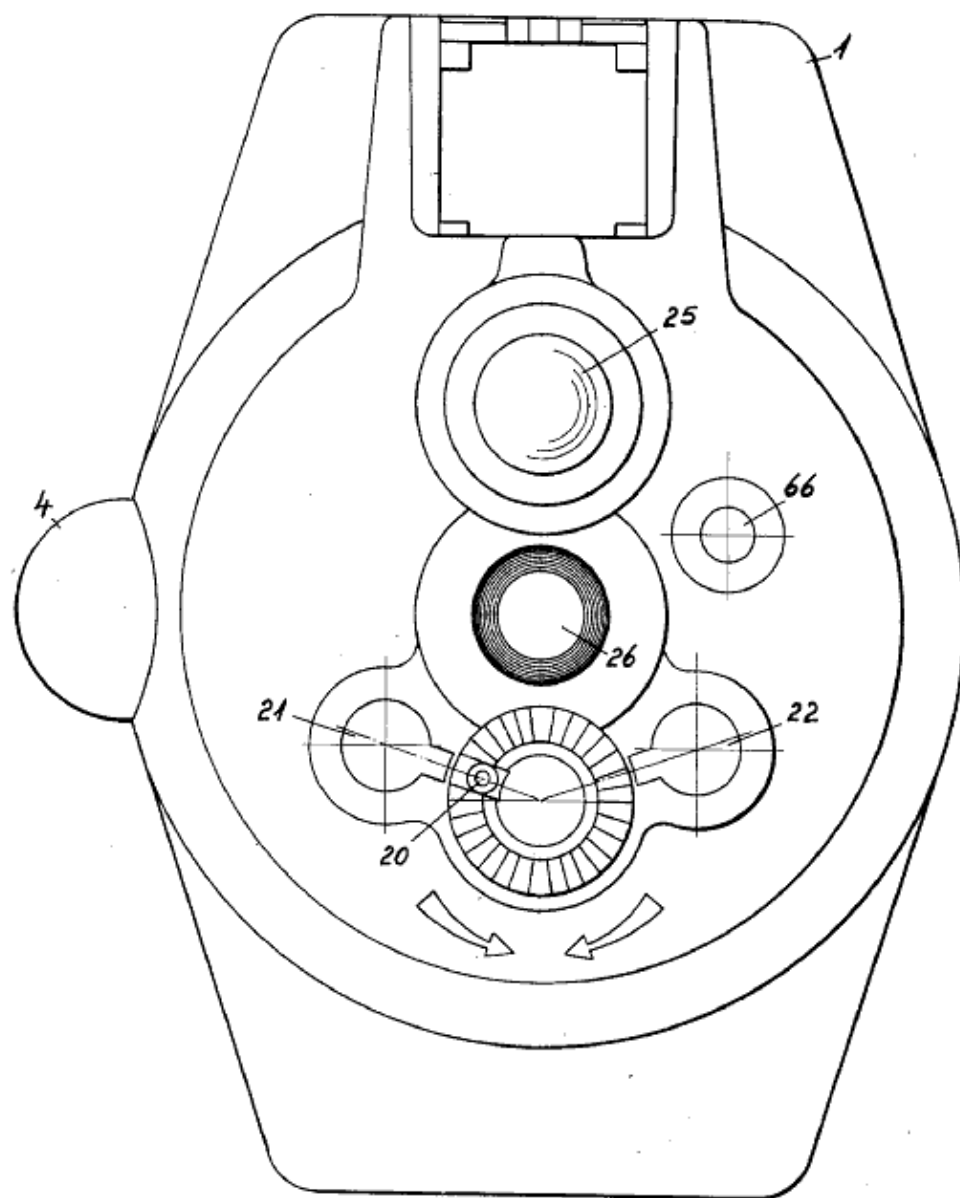
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Fig. 3



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Fig. 4

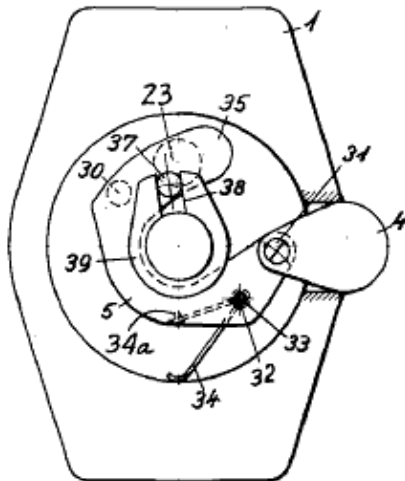


Fig. 5

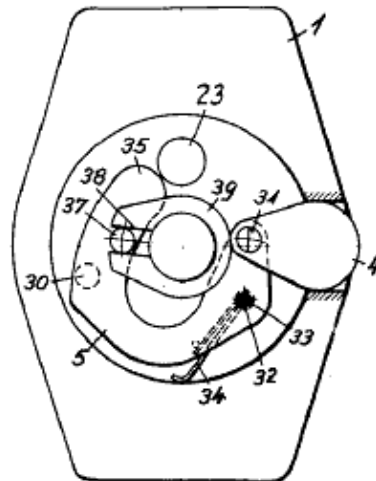


Fig. 7

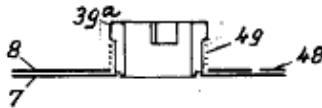


Fig. 9

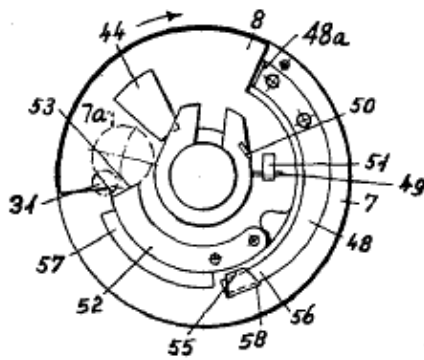
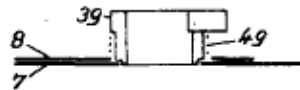


Fig. 6

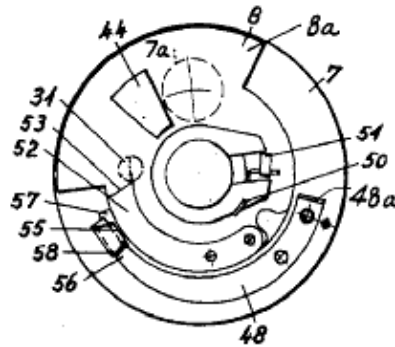


Fig. 8

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Fig. 10

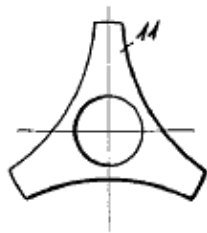


Fig. 11

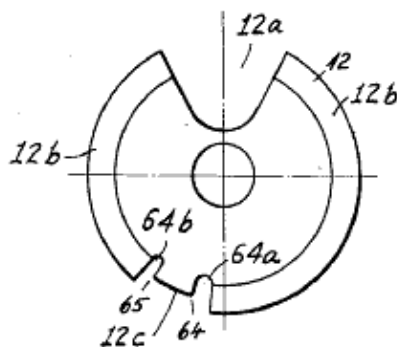


Fig. 12

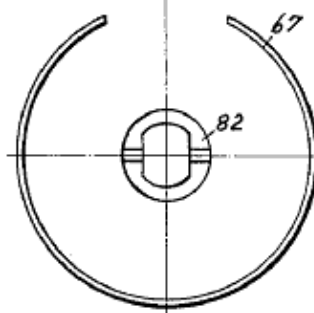


Fig. 13

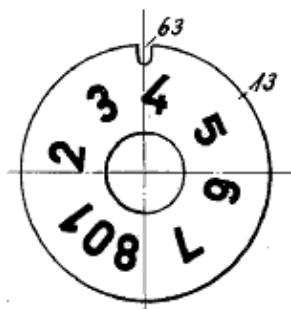


Fig. 14

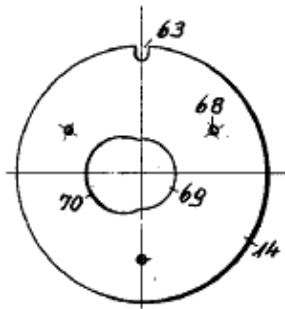


Fig. 15

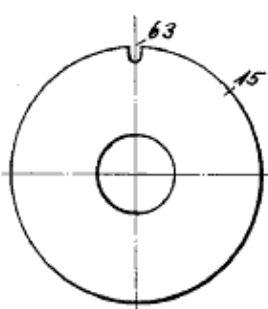


Fig. 16a

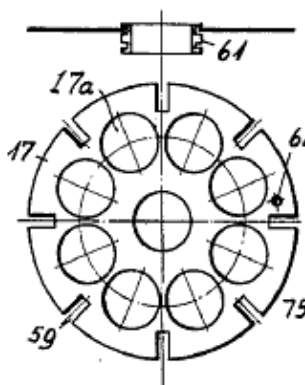


Fig. 17

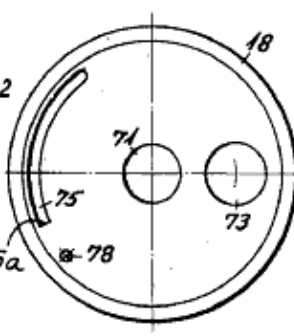


Fig. 18

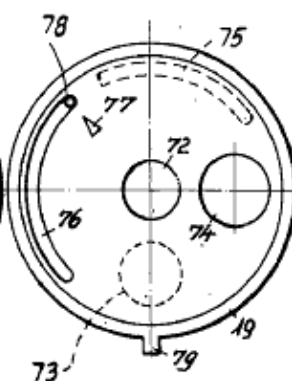


Fig. 19

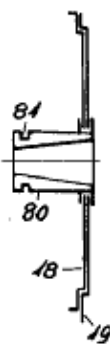


Fig. 16

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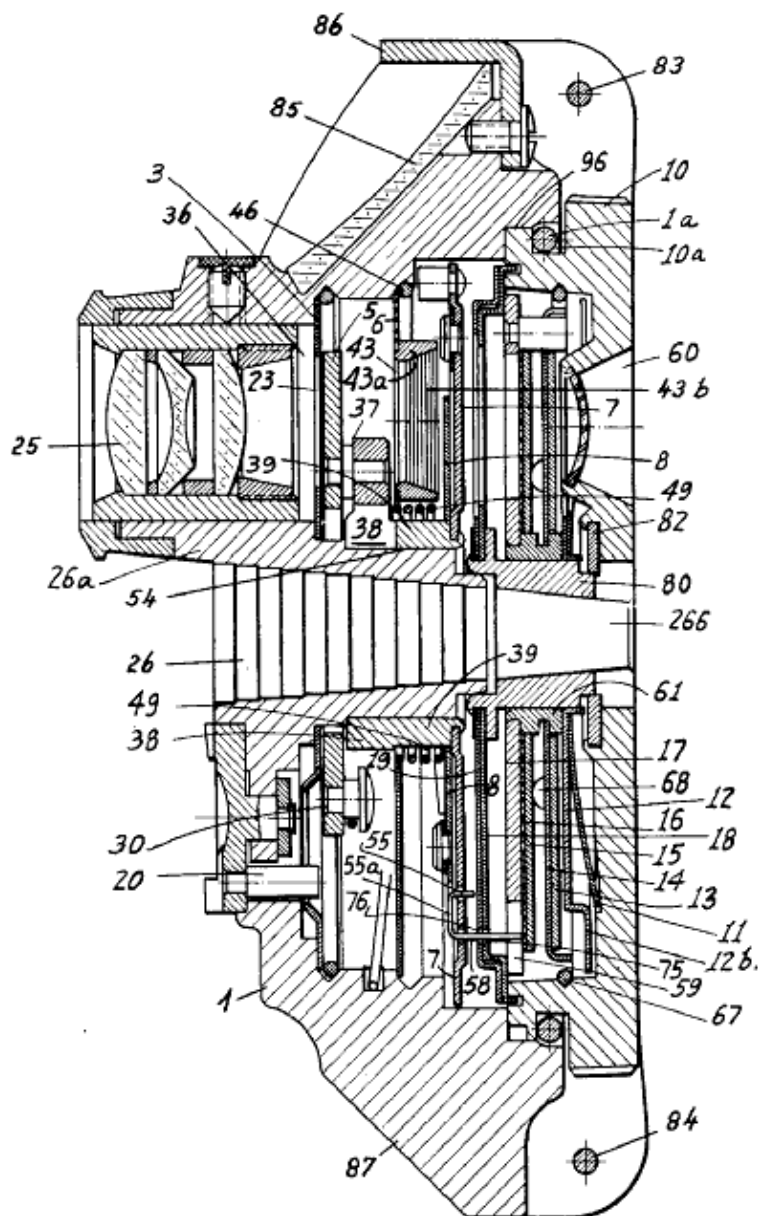
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Fig. 20



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front of the transmission arm 5 engaging with the slot 38 the roller 37 (Fig. 4). A key hole 41 is carried by the closure disc 7 and can be brought to registry with a locking half disc 40 when assembling the camera, so as to insert a suitable key or other tool in order to turn the half disc 40 into the cut-out 42 of the platen member 6. The half disc locking member 40 can be brought to catch under the collar 39a (Fig. 7) of the tubular member 39 so as to lock the closure disc 7 and with it the thereto secured shutter disc 8 in position, avoiding the possibility of an axial displacement thereof. Closure disc 7 further carries the cut-out slots 7b and 7c, serving to accommodate double fingered member 58b. The latter carries the shorter lifting finger 55 (to pass through slot 7c) having the cammed or slanted surface 55b, and the longer film transport finger 58 (to pass through slot 7b) having the cammed or slanted surface 58a.

The magazine 2 carries on its back wall 10 the counter window 60 and a central aperture. The various parts of the magazine are more fully described below.

As is more fully apparent from Fig. 20, the tubular member 26a, defining the bore 26, passes through the housing to a point of registry with the bore 26b defined by the tubular member 30 within the magazine. The outer portion of the tubular member 26a is machined to provide various bearing surfaces for parts 3 and 5 as well as for parts 6, 7 and 8 by way of tubular transmission member 39. Bore 26 is preferably conically shaped and bore 26b, within magazine 2, is preferably also conically shaped, with the wider portion of conical bore 26b overlapping the narrower portion of bore 26 at their point of registry. Further within the preferred construction the conical bore 26 is prepared by multiple individual cylindrical bores of decreasing diameter, thus giving a terracing effect. Bores 26 and 26b are used as a view-finder and the terracing of bore 26 aids in the elimination of undesirable light diffusion within the viewer. Bores 26 and 26b are further so arranged that parallax exists with the optical axis of the camera defined by the lens system 25. If desired bore 26 may also serve the insertion of a post or other member for securing the camera to a tripod or similar support.

Referring to Fig. 2 the magazine comprises a magazine housing 9 having a back wall portion 10 provided with central aperture 26b and counter window 60. There are further provided a spider spring 11, a spring disc 12, a counter disc 13, a tension disc 14, a film positioning disc 15, the multiple exposure photo-sensitive material disc 16, the film transport and exposure disc 17, the magazine cover disc 18 and the light screen disc 19.

The spring disc 12 has a cut-out portion 12a for registry with the counter window 60 of the back wall 10 of magazine housing 9. Spring disc 12 is further provided with a dropped or bent rim 12b, leaving the portion 12c in the principal plane of the disc 12. There are further provided on disc 12 cut-outs 64a and 64b at either side of the disc portion 12c and establishing with the latter the stop shoulders 64 and 65 respectively. Spring disc 12 is mounted within magazine housing 9 in substantially stationary position on the tubular member 30 by way of the bushing member 61 (Figs. 16a, 19 and 20). It is spring cushioned in that position by the spider spring 11.

Counter disc 13 sits against disc 12 carrying the spaced numerals 1 to 8 and a numeral 0 be-

tween 8 and 1 on the side facing spring disc 12. Counter disc 13 further carries a transport notch 63 and is mounted rotatably on the bushing 61 positioned on the tubular member 30 (within the magazine housing 9).

The tension disc 14 is provided in front of the counter disc 13 and carries the transport notch 63 and spacers 68 (Fig. 14) which maintain the film positioning disc 15 in substantially spaced and aligned relation. Tension disc 14 which is preferably slightly dished is further provided with the double cut-outs 69 and 70 serving to properly secure the same. Film positioning disc 15 is provided with a transport notch 63 and will support the disc of photo-sensitive material such as the film disc 16 which carries a similar transport notch.

Film transport disc 17 carries the multiple peripheral exposure openings 17a and in between any two adjacent exposure openings 17a the transmission transport notches 59 (Fig. 16). Film transport disc 17 further carries pin 62 for registry with the transport notches 63 of discs 13, 14, 15 and 16, which are thus locked together with film transport disc 17, being positioned as a unit on bushing 61 (Figs. 16a and 20) which is rotatably mounted on the outer bearing surface of the tubular member 30 within magazine housing 9.

Magazine cover disc 18 and light screen disc 19 are mounted on the tubular member 30 with the cover disc 18 in substantially stationary position and the disc 19 in thereto limitedly rotatable position. Magazine cover disc 18 is provided with slot 75, a stop-post 78 and magazine exposure window 73. Light screen disc 19 has the slotted aperture 75 for registry with aperture 75 though sufficiently long for stop-post 78 to pass through aperture 75 to establish the limits of movement to either side of light screen disc 19 relative disc 18. Disc 19 is also provided with a magazine exposure window 74 which may be brought into registry or out of registry relative exposure window 73. A magazine closure indicator 77 is provided on disc 19, the registry of which, with the stop-post 78 within slot 75, indicates closure of the magazine screen, i. e., "out of registry" position of exposure window 74 with exposure window 73. There is further provided a lug 79 at the periphery of disc 19 for fitting into the cut-out 79a of housing interior 1 (Fig. 1).

The shutter release and film transport mechanism is described in detail in Figs. 4-9. As illustrated in Fig. 4, transmission arm 5 carries at one end release button 4 pivotably secured to the arm by way of the pivot-post 31. The tubular transmission member 39 secured to closure disc 7 engages with the slot 38 the roll 37. The other end of arm 5 serves as a light block 35 for the picture window or light aperture such as 23. The pivot pin or axle 33 carries spring 34 riding with one end against the stop 34a and riding with the beveled other end 34 on the interior of the housing 1. As is apparent from Figs. 6 and 7, the closure disc 7 carries in closely spaced relation thereto the shutter disc 8 having the shutter opening 44 and being held by the torsion spring 43 secured and stopped at one end in the slot 50 of the collar 39a of the tubular transmission member 39 and secured and stopped at its other end in the tension spring stop lug 51 carried by shutter disc 8. A spring leaf arm 52 having the butt end 53 is secured to the shutter disc 8. There is further provided on the latter a guide track or surface 57 (Fig. 6). Pivot-post 31 of

arm 5 extends sufficiently beyond the surface of the thereto pivotably secured release button 4 to project into abutting relation with the butt end 53 of the spring leaf arm 52. Closure disc 7 carries secured thereto a film transport arm 48 having the spring leaf end 56 and mounted thereon the film transport finger 53 and the cammed lifting finger 55. Shutter disc 8 is provided with a peripheral cut-out portion permitting relative movement of the arm 48 in the clockwise direction of Fig. 6, the cut-out being so arranged that it forms a stop for the end 40a of the arm 48 when in the position shown in Fig. 6. The lifting finger 55 is relatively short and has a camming surface slanting downwardly in the direction of the guide track or surface 57, and finger 55 and track 57 are so dimensioned and arranged that they cooperate in camming action to lift finger 55 and thus spring leaf end 56 when causing arm 48 to be moved in clockwise direction. The cammed lifting finger 55 will normally project through slot 7c of disc 7 while transmission finger 53 projects through slot 7b in disc 7 (Figs. 1 and 20). With the magazine in position, finger 53 will pass through slots 7c and 7b to engage one of the transport notches 53 of transport disc 17 (Figs. 2 and 20).

The practical operation of the shutter release and film transport mechanism of the camera in accordance with the invention is illustrated by reference to Figs. 5, 8 and 9. As there shown, the shutter release button 4 has been depressed almost completely. In that position, the shutter transmission arm 5 (Fig. 5) has been rotated about pivot pin or axle 33 within pivot aperture 32 loading spring 34 and removing the light block 35 from the light aperture 23. At the same time, the rotation of the arm 5 is transmitted to closure disc 7 by way of roll 37, tubular member 39 secured to disc 7 and engaging roll 37 in the slotted portion 38. This position is, for instance, illustrated in Figs. 8 and 9. By reason of the abutment of the butt end 53 of spring arm 52 against post 31, the shutter disc 8 has remained substantially stationary while the disc 7 has completed a rotation of almost 90°. In depressing release button 34, pivot 31 has moved inwardly and slightly upward with respect to the position it occupied with the release button in the non-depressed position, as illustrated by Fig. 6. As is shown in Fig. 8, the butt end 53 of spring arm 52 now rides with its inner corner about center of the pivot post, and just a slight additional movement will eliminate the stop action of the pivot-post 31. Up to this point, the rotation of disc 7 with shutter 8 remaining substantially stationary has resulted in a change of the torsion spring 49 so that shutter disc 8 is now under spring load. If pivot 31 is now moved out of stopping position for the butt end 53 of arm 52, the spring load of torsion spring 49 will now cause shutter disc 8 to follow the rotation of disc 7.

When rotating disc 7 by depressing the release button 4, the film transport arm 48 is moved with the disc, bringing the lifting finger 55 into camming engagement with the guide track or surface 57, thereby lifting also the transport finger 53. Transport finger 53 in the position of Figs. 6 and 20 passes through slot 7b of magazine light screen 19, slot 7c of magazine cover 18 ending in one of the slots 53 of the film transport disc 17. The camming action of the finger 55 resulting from the rotation of disc 7 to the position shown in Fig. 8 results in the lifting of the spring

leaf end 56 and thus of the film transport finger 53 out of registry with the transport slots or notches 53 in transport disc 17. The continued rotation of disc 7 at the same time moves the transport finger 53 within the slots 7b and 7c of discs 18 and 19 respectively to a position over the transport disc 17 removed from the original a distance equivalent to the distance of rotation of disc 17. The depression of release button 4 and thus the rotation of disc 7 further results in placing the exposure window 7a of disc 7 into exposure registry position with a light aperture 23, the exposure aperture 43, exposure windows 74 and 75, and one of the exposure apertures 17a.

Once a release button is in the fully "depressed" position, i. e., when pivot-post 31 (Fig. 8) has moved out of the way of the butt end 53 of the spring leaf arm 52, the loaded torsional spring 49 causes shutter disc 8 to be turned so that the relative position of shutter disc 8 and closure disc 7 are again the same as indicated in Fig. 6. As the shutter disc is released by the inward motion of pivot pin 31 and out of its "stop" position with the butt end 52, the shutter opening 44 moves across the exposure window 7a of disc 7. As in the position of parts of the camera including the magazine thereof the various light apertures and windows are in registry with the optical axis of the camera the movement of the shutter opening 44 across window 7a will cause exposure of the photo-sensitive surface portion of film disc 16 defined by one of the multiple openings 17a within transport disc 17. After the shutter release by the further inward movement of pivot-post 31, the shutter disc 8 will come to rest with the shoulder 8a against the end 48a of the transport arm 48. The lifting finger 55, having now been removed from guide track 57, permits the transport finger 53 to snap back and since the rotation of disc 7 was for more than an angle of 45°, the transport pin will come to rest on the transport disc 17 between the second and the first film transport notch following the notch from which finger 53 was lifted when first depressing the shutter release button 4.

After completely depressing shutter release button 4 and having obtained the release of disc 8, pivot-post 31 will now assume a position on the inside of the inner periphery of the spring leaf arm 52. Spring arm 52 is relatively thin and held at its secured end tightly against the shutter disc 8 so that it will normally clear the end of pivot-post 31 when the same moves again outwardly. The end portion of the spring leaf arm 52 carrying the butt end 53 is raised so that it may cooperate with the pivot-post 31 as a stop to permit charging of the torsion spring 49 as hereinabove discussed.

Upon releasing the actuating pressure such as finger or hand pressure from release butt 4 after the complete depression thereof and release of the cocked shutter 8, the loaded spring 34 slidably engaging the interior of housing 1 (Fig. 5) will cause transmission arm 5 to be pivoted around the pivot pin or axis 33 until it again assumes its original position as shown in Fig. 4 with the release button in the "non-depressed" position. As the arm 5 turns to the starting position, it will also turn closure disc 7 together with shutter disc 8 into their original position shown in Fig. 6, the rotating motion being transmitted again through the tubular member 39 carried by disc 7 and engaging with the slot 38 the roll 37 carried by the arm 5. Pivot-post 31 again moves outwardly as disc 7 is turned back, moving over

the depressed portion of the spring leaf arm 52 adjacent its secured end and riding up on arm 52 depressing the raised end portion thereof until it snaps into its starting position forming a stop for the butt end 53. In the meantime, while disc 7 is being turned back by loaded spring 34, the film transport finger 56 rides on the periphery of the film transport disc 17 until it snaps into the next film transport notch 59. The parts are so positioned relative each other and the angle of rotation of disc 7 to the shutter release position is such that on the return rotation of disc 7 the transport finger 58 snaps into its next transport notch 59 at a point when the remaining rotation of disc 7 is about 45°, i. e., the angular distance between transport notches of the discs which is the same as angular distance between centers of adjacent exposure apertures on disc 17. Thus, as disc 7 turns back, finger 58 first slides over the peripheral surface of disc 17, then snaps into the next transport notch 59 and while the rotation of disc 7 to its starting position is completed, the transport disc 17 is rotated for an angular distance of 45° thereby also rotating the counter disc 13, tension disc 14, film positioning disc 15, and film disc 16, which are locked to disc 17 for unit rotation by way of the lock-pin 62 engaging the transport notches 63.

Within the preferred construction in accordance with the invention suitable means are provided to maintain a time lag in the snapping back of the film transport finger 58 after the cammed lifting finger 55 has run off the track and for the first part of the return movement of disc 7. This may be, for instance, desirable for the purpose of avoiding the possibility of the pin engaging, upon its release, the second transport notch on film disc 17 and thus moving the transport disc and thereto locked unit for an angular distance of 90° instead of the required 45°. One means of accomplishing this is, for instance, by way of the sprung ring 46 (Fig. 1 and Fig. 20). This ring may serve the purpose of holding the positioning and light screening platen member 6 within housing 1 by wedging the platen member by means of the sprung ring 46 against shoulder 46a inside housing 1. Such ring would then serve the additional purpose of holding the transport finger 58 suspended during part of the return rotation of disc 7. Ring 46 is only partly closed and is bent at one end thereof at an angle of 90° to the plane of the ring, the bent portion being again bent at an angle of 90° parallel to the ring plane. Thus, the end of the ring would be essentially L-shaped, with the free leg 46a of the L forming a hook against the direction of rotation of disc 7 when depressing the shutter release button and being positioned in the line of travel of the loop 55a. When the disc 7 is rotated by depressing release button 4, the loop portion 55a is pushed inwardly by the camming action of finger 55 and then engages the hook portion 46a of ring 46. After shutter release is effected and the cammed lifting finger 55 has been removed again from the guide track or surface 57, the transport finger 58 will not immediately snap back but will be held in lifted position by the hook 46a until a predetermined rotation of disc 7 has moved the loop portion 55a to the end of the hook 46a, whence it drops off, thus snapping the finger 58 onto the peripheral surface of transport disc 17, on which it rides with the further rotation of disc 7 until it snaps into the transport notch 45° removed from that of its original position. Inasmuch as in all cases

of rotation of the transport disc 17 for an angular distance of 45° there is an equivalent rotation of the counter-disc 13, the numerals on the back of that disc being equally spaced apart an angular distance of 45° will be turned to expose a new numeral visible through the counter-window 60 and cut-out 12a in spring disc 12. I prefer to apply the numerals in such sequence that they are rotated from the maximum to the minimum figure with the application of a zero between the two. In this manner there will be always indicated the number of exposures left in the magazine, with zero indicating complete exposure of the entire film disc.

When assembling the magazine for use in a camera of the type discussed in accordance with the invention, an inner tubular member 80 is provided comprising a hollow mount for bushing 61 (Figs. 19 and 20). The inner bore of tubular member 80 is conically shaped with the narrower end emerging at the back wall portion 10 of the magazine housing 9. A bayonet lock ring 82 (Figs. 12 and 20) is secured to the inside of the back wall portion 10 of magazine housing 9 to cooperate with the bayonet locking lugs 81 (Fig. 19). Thus in the assembly of the magazine the various disc members 13-17 are assembled on the bushing 61, which is rotatable around the tubular member 80. Spring 11 and disc 12 are held in position within the magazine housing 9 by a spring washer 67 (Figs. 12 and 20). The unit assembly comprising magazine cover discs 18 and light screen disc 19 secured to tubular member 80 and disc units 13-17 secured to bushing 61, rotatably mounted on tubular member 80, is then inserted into the magazine housing 9, whereby the end portion of tubular member 80 will pass through the central cut-outs of the spring 11 and disc 12 to be locked by a turning motion by engagement of the bayonet locking lug 81 and the locking ring 82.

Aside from the magazine, the normal position of parts in the camera is as indicated in Figs. 4, 6, 7 and 20. The aperture disc 3 is mounted within the housing 1 with its central aperture 3b rotatable on a bearing shoulder of the tubular member 26a. Aperture disc 3 is held in substantially stationary position by the setting post 20 on the front of the housing 1 (Fig. 3) which extends into the radial guide slot 27. Position of setting post 20 in relation to either one of the two aperture indicator marks 21 and 22 defines registry of either light aperture 23 or light aperture 24 with the optical axis of the lens system 25. Movement of the post from one to the other of the indicator marks will rotate aperture disc 3 thereby bringing into registry the light aperture corresponding to the changed setting of the post. Suitable color indication on marks 21 or 22 may be a visual aid in determining whether the larger aperture required for less available light or the smaller aperture for relatively bright light is to be used. The light block 35 is in front of the light aperture of disc 3, the button is in the released position, the aperture 43 of the platen member 6 is in registry with the optical axis of the camera lens system. The platen member 6 is mounted substantially stationary within housing 1, and is held in position by the sprung ring 46. The closure disc 7 is in the closed position, i. e., with its exposure window 7a out of registry with the optical axis of the lens system 25. Thus within the camera proper, parts 3 and 6 are mounted in substantially fixed position with respect to the shutter transmission, whereas parts 5 and 7 are

It is of advantage to provide a synchronized flashlight release mechanism. For this purpose, a suitable electric contact such as contact 37a indicated on transmission arm 5 (Fig. 1) may be used. The electrical plug apertures 37b on the outside of housing 1 are arranged, and are provided within the interior of the housing with conventional means (not shown) to be engaged by the contact 37a upon rotation of the arm 5 around its pivot pin or axle 33 to thereby close the "flash" circuit. Contact 37a is so arranged that the closing of the "flash" circuit is obtained just a fraction prior to the release of the cocked shutter 2 as herein described.

Though the structures in accordance with the invention may be used without limitation as to size of camera, I find that the embodiments in accordance with the invention lend themselves advantageously to a miniature type camera and the arrangement and interrelation of parts permits the construction of a miniature camera sufficiently small for instance to be worn in wrist-watch fashion. Construction permits a single shutter opening fixed focus camera. It is, of course, understood that variable focus or shutter arrangements may be used should this be desirable particularly for larger dimensioned constructions.

The miniature type camera within the preferred embodiment of the invention has the further advantage of a centrally located direct viewer sufficiently close to the off-center optical axis that substantially parallax exists therebetween. If desired, an additional mirror view finder may be provided as, for instance, illustrated in Figs. 3 and 20 in which the highly polished slanted mirror surface preferably provided with a center sight 86 provides a suitable mirror view finder arrangement. In the wrist type camera illustrated in Figs. 3 and 20, the general outline of the camera housing approximates that of a wrist-watch and the same may be conventionally strapped to the wrist by suitable wrist bands secured to the housing by conventional spring bars such as those indicated at 83 and 84 (Fig. 20).

Within the particular construction in accordance with the invention, a further advantage resides in the fact that it is possible either by way of a separate additional disc arranged within the camera housing or by way of the aperture disc 3 to provide for various built-in filters which may be brought into registry with the optical axis of the camera by way of a suitable setting post or lever such as that used in connection with the setting of light apertures 23 and 24 by way of the setting post 20 as herein described.

A magazine type camera in accordance with the instant invention is particularly advantageous in that it permits the ordinary loading and unloading of the camera to be effected in a single manipulation without danger of exposure and under automatic safeguards of the closing and opening of the light shield. It has the further advantage that it is possible to remove the magazine at will after any number of exposures have been made. In this manner, a number of magazines carrying photo-sensitive material of different characteristics such as with respect to color, grain size, speed, etc., may be used. It is then possible by the mere substitution of one magazine for another to make at will in any desired sequence any exposure using any desired photo-sensitive material. This involves the fur-

ther advantage that any number of exposures may be made using one magazine to thereafter replace the magazine with any other magazine and make any number of exposures on the latter. Any magazine with a partly exposed film may be reinserted at any time and any number of additional exposures made thereon.

Film discs useful in accordance with the invention may be obtained by cutting or punching from any suitable material either already having a photo-sensitized surface or being provided with such surface after the punching or cutting operation. Such film discs may be for instance of paper or other sheet material but are preferably made from conventional photographic film sheets or strips.

Within the preferred embodiment of the invention relating to a miniature type camera, I prefer to so construct the camera that the film discs are of a sufficiently small diameter so that they can be cut from the usual 35 mm. film strip. The miniature type camera in accordance with the invention is such that when using films coated with relatively small grained and low speed film emulsion it is possible to obtain without difficulty prints of about 20 magnification. The exposed film is such that the exposure may be even viewed directly without aid of magnification.

Within the preferred construction of the camera as herein exemplified, the danger of movement of the camera at the moment of shutter release as the result of coupled film transport is substantially eliminated by the arrangement provided for shutter release prior to effectuating transport of the film disc.

As is thus seen from the foregoing, a camera constructed in accordance with the invention essentially embraces the combination comprising a spring returnable shutter release, means for rotatably holding a photo-sensitive disc in off-center position to the optical axis of such camera and with its axis of rotation substantially parallel to such axis, means for rotating such disc around its said axis, shutter actuating spring means, and transmission means cooperatively connected to said shutter release, said disc rotating means and said spring means to load, and snap release said spring means and actuate said disc rotating means to transport such disc a predetermined angular distance upon actuation of said release.

Within the preferred construction of such camera combination the transmission means essentially include first means spring returnably rotatable and secured to said release for actuation thereby, second means rotatably mounted in cooperative relation to said spring means to load and snap release the same upon rotary motion of said second means, and third means mounted in cooperative relation to said first and second means to transmit rotary motion from said first to said second means, the disc rotating means being mounted in cooperative relation to one of said release and of said transmission means in disc transport position transmitting a predetermined rotary motion to such disc following snap release of said spring means.

A still further advantage residing in the camera construction in accordance with the invention is that of permitting an effective simplified successfully synchronized flash release arrangement. It has been necessary in the past to resort to cumbersome arrangements for flash release. These usually necessitate the use of an-

mounted for partial rotation. Aperture 43 is preferably provided with tubular light shield 43a defining the rearwardly widening conical light passage 43b, preferably terraced by multiple bores of increasing diameter.

In magazine 2 as assembled, spider spring 11, spring disc 17 and magazine cover disc 18 are positioned in substantially fixed non-rotatable relation. The disc unit composed of the elements 13, 14, 15, 16 and 17 is rotatably mounted, synchrony of rotation being effected by the pin 62 and the notches 63. The magazine light shield or light screen disc 19 is limitedly rotatable with respect to disc 18 by reason of the stop-post 78 within slot 76. The position of the various windows or apertures of parts in the magazine with respect to the optical axis of the camera when "loaded" is such that the windows 73 and 74 of discs 18 and 19 respectively are in registry with that axis, as well as with one of the apertures 17a of disc 17. However, when the camera is "unloaded," the magazine as such has the light shield 19 with its aperture 74 out of registry with the window of the cover disc 18.

Within the preferred embodiment in accordance with the invention, the construction is such that when loading the camera with the magazine, the light shield of the magazine is automatically brought into the "open" position, i. e., with its exposure window into registry with the optical axis of the camera. On the other hand, when unloading the camera, the construction will automatically cause the light shield to be again moved into the "closed" position, i. e., out of registry with the optical axis. This is, for instance, accomplished by the lug 79, fitting into the notch 79a of housing 1. The closed position of the light shield or light screen disc 19 is, for instance, illustrated in Fig. 18 in which the position of the stop-post 78 within slot 76 is in registry with the indicator mark 77 to show the shield to be "closed." The relative positions of the aperture window 73 and slot 76 of the underlying disc 18 are shown in broken outline. When the magazine is now inserted into the camera housing, it is placed with the lug 79 into the notch 79a, the parts being so arranged that in this position the flattened rim portions 9a of the housing 9 of the magazine fit under the bars or pins 1a of the camera housing 1. A groove 10a is provided between the rim 9b and magazine housing back wall portion 10. If now the magazine is placed with the flattened portions 9a under the bars 1a to registry of the bars 1a with the groove 10a, a turn of the magazine relative the housing will cause the bars 1a to engage the rim 9b within groove 10a locking the magazine into position bayonet fashion. At the same time, the turning motion of the magazine, in order to lock the same into position, has caused a commensurate turning of its component parts (except light shield 19) to bring the exposure window 73 of disc 18, one of the exposure apertures 17a of disc 17, a numeral on counter disc 13, the cut-out 12a, and counter window 60, into registry with the optical axis of the camera. The position of lug 79 and notch 79a (for "closed" position of 19) is such that the window 74 of the disc 19 is placed in fixed registry with the optical axis of the camera. Thus, when inserting the magazine and securing the same, all exposure apertures except that of closure disc 7 are in exposure registry. When the camera is unloaded, however, the sequence of operations is reversed, and the turning back of the magazine to unlock the same from the bars 1a causes the positioning

of its component parts and particularly that of window 73 of magazine cover disc 18 to be again moved out of registry with the window 74 of the light shield 19, the latter being thereby automatically placed into the "closed" position.

When loading the camera in the manner described above, the transport finger 58 is pressed against disc 18 through slot 76 in shield 19 (Fig. 18) being thereby lifted against the force of its spring arm 56 (Fig. 6). When the magazine is locked into position, the finger 58 rides on the turning disc surface 19 and over or out of the way of stop 78 to snap into one of the notches 59 as soon as registry with slot 75 is established. When unloading the camera, and disc 18 is again turned relative shield 19, the end 75a of slot 75 engages the camming surface 58a of finger 58 thereby again lifting the same out of the magazine and permitting the complete closure of slot 75 to the position shown in Fig. 18. The relatively sharp angled shoulder 58b of finger 58 serves as transport shoulder for rotating disc 17 when engaging a notch 59.

There is further provided within the preferred embodiment of my invention means for preventing double exposure of the first exposed portion of the film disc after the last available exposure has been made. Spring disc 12 (Figs. 11 and 12) is for this purpose provided with a dropped or bent down rim 12b and the cut-outs 64a and 64b. The portion 12c is in the general plane of the remainder of disc 12 and is thus raised with respect to the dropped or bent rim 12b. In this manner, shoulders 64 and 65 are provided. Shoulder 64 is used as the "first exposure" stop and shoulder 65 as the "last exposure" stop. Locking pin 62 on film transport disc 17 is sufficiently long to project slightly beyond the notch 63 of the counter disc 13 and the rotatable disc unit of parts 13-17 are so inserted in the magazine that the projecting end of the lock-pin 62 abuts the first exposure stop 64 and numeral 8 of counter disc 13 being visible in that position through the cut-out 12a in the counter window 60. As the exposures progress, the end of pin 62 will ride around the dropped or bent rim 12b until it finally hits the "last exposure" stop 65 being thus prevented from moving into the original exposure position corresponding to the stop 64. When the end of pin 62 rests against the "last exposure" stop 65, the counter disc 13 will show the numeral 0 through the cut-out 12a and the counter window 60. The distance between stops 64 and 65 is preferably so arranged that the angle of rotation of the film transport disc 17 from 64 over 12a to 65 is substantially equal 360° minus $\frac{1}{2}$ the angle of rotation of the transport disc 17 measured between centers of adjacent exposure apertures thereon. In this manner, a depression of the shutter release button will obtain an exposure in the "last exposure" position of the film disc but since the rotation cannot proceed further than $\frac{1}{2}$ the angular difference between adjacent exposure apertures, the release button is prevented from returning to its "non-depressed" position so that actually a locking effect is obtained and no further exposure is possible. At the same time, the transmission arm 5 remains locked in the position shown in Fig. 5 in which an indicator mark 30 carried by arm 5 is in registry with the aperture 66 at the front of the housing 1 (Fig. 3) thereby further indicating the "completed" exposure of the entire film disc within the magazine.

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tially coaxial with the axis of said view finder in off-center position to said optical axes.

RUDOLF STEINECK.

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18

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Country	Date
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GARANTIESCHEIN

Ihre Steineck-Camera Nr. 486 C wurde als ein hochwertiges Präzisionserzeugnis von Fachkräften hergestellt und kontrolliert.

Für die mechanische Kontrolle zeichnet:



Für die optische Kontrolle zeichnet:



Bitte senden Sie diesen Garantieschein sofort nach Erhalt der Camera als Drucksache ausgefüllt an das Steineck Camera-Werk ein. Sie erwerben sich dadurch für die höchstzulässige Garantiedauer von einem Jahr das Recht der kostenlosen Reparatur Ihrer Camera im Falle unverschuldeten Schadens. Ausgenommen von dieser Garantie sind Schäden, die durch unsachgemäße Behandlung entstanden sind. Ferner erlischt die Garantie, wenn durch andere als vom Lieferwerk beauftragte Stellen Reparaturen und Veränderungen an der Camera vorgenommen werden.

Steineck Camera-Werk, Tutzing/Obb.

**STEINECK
CAMERA
Werk
PAPPENHEIM**

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track upon rotation of said shutter to thereby release said transport finger.

10. The combination in accordance with claim 9 in which said transport finger forms with one side of its end, in the direction of return rotation of said disc member upon spring return of said release, a transport shoulder and forms with at least a portion of its opposite side a camming surface.

11. The combination in accordance with claim 10 in which said disc member substantially forms a closure disc for the housing of a magazine loading type camera, in which said transport finger extends through said closure disc and in which said disc defines an exposure window positioned thereon for substantial alignment with the optical axis of said camera upon rotation of said closure disc prior to shutter release.

12. In a camera, the combination which comprises a spring returnable substantially linearly movable shutter release carrying a stop, a rotatable shutter with a guide track provided thereon, a shoulder on said shutter, an arm secured to said release and mounted for rotation thereby, a rotatable spring loading member including a rotatable disc member carrying a film disc transport finger raisable from a film-engaging into a film-non-engaging position against spring force, means secured to said arm and cooperating with said loading member for rotating the same upon rotation of said arm, said stop being normally positioned in stop-engagement with said shoulder and for movement with said release first continuing such engagement and thereafter out of such engagement, a torsion spring secured at one end to said shutter for load release spring rotation thereof and at its other end to said loading member for spring loading, a camming finger secured to said transport finger and positioned to cam up on said track upon rotation of said disc member, thereby raising said transport finger into said non-engaging position and to cam off said track upon rotation of said shutter to thereby release said transport finger, said transport finger forming with one side of its end in the direction of return rotation of said disc member upon spring return of said release a transport shoulder and forms with at least a portion of its opposite side a camming surface.

13. The combination in accordance with claim 12 in which said disc member substantially forms a closure disc for the housing of a magazine loading type camera, in which said transport finger extends through said closure disc and in which said disc defines an exposure window positioned thereon for substantial alignment with the optical axis of said camera upon rotation of said closure disc prior to shutter release.

14. The combination in accordance with claim 13 in which said spring loading member includes in addition to said disc a tubular member at least partly within said torsion spring and substantially co-axial therewith, substantially parallel to the optical axis of such camera, in which said tubular member defines a radial slot, in which said arm-secured means comprise a roll carried at one end thereof and extending into said slot and in which means are provided defining a view finder passage through said tubular member from the front of such housing to the center of said closure disc in substantial parallel to such optical axis.

15. In a camera magazine for use in a camera and removably secured to the housing of such camera by a turning motion, the combination

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which comprises a magazine housing, means defining an optical axis for such magazine, means for rotatably holding a substantially circular piece of photo-sensitive material in said magazine housing in off-center position to said optical axis, a light shield defined by a disc co-axially rotatable with said holding means, an exposure window in said light shield, means for rotating said shield from a window-closed position to a window-open position, a substantially stationary disc defining an exposure window in registry with said optical axis, said shield and said closure disc each defining a peripheral slot therethrough, said slots being in registry with each other when said shield is in the open position to receive therethrough a film disc transport finger of such camera and said slots being out of registry when said shield is in the closed position.

16. The combination in accordance with claim 15 in which said holding means include a rotatable film positioning disc and a rotatable film transport disc defining multiple exposure openings therein and being mounted for registry of said openings with said optical axis upon rotation thereof, in which said transport disc defines multiple peripheral transport notches and in which means are provided for locking together, for unit rotation, said positioning disc, said transport disc and any film disc held therebetween.

17. The combination in accordance with claim 16 in which there are additionally provided stop means for said transport disc positioned for operation against rotation of said disc in which said disc openings are so arranged that one of said openings is in registry with said optical axis when said transport disc engages said stop and in which said multiple openings are substantially spaced apart equal angular distances on said transport disc.

18. The combination in accordance with claim 17 in which there are included additional stop means engageable by said transport disc upon rotation thereof subsequent to registry with the last of said multiple openings following the first said opening controlled by said first stop.

19. The combination in accordance with claim 18 in which there are additionally included counter means operatively connected to said transport disc for numerically evaluating each positioning of a transport disc opening with said optical axis.

20. The combination in accordance with claim 18 in which a view finder passage is collectively defined by all the elements of said camera magazine, positioned co-axial with said discs and extending through said magazine.

21. The combination in accordance with claim 20 in which there are further provided a counter disc co-axially rotatable with said transport disc, secured for co-axial rotation with said transport disc, and a window in said housing for viewing the registering numbers of said counter disc and in which said passage passes co-axially through said counter disc.

22. In a camera of the miniature type, the combination comprising a housing and a magazine removably securable therein, means defining an optical axis for such camera and means defining a view finder through said camera including said magazine in parallel axis to said optical axis, said view finder passing from the front of said camera to the back of the housing of said magazine, means in said magazine for rotatably positioning a centrally cut out film disc substan-

cillary equipment including spring means or the like involving a movement of parts for flash release and usually actuated by a spring which must be pre-loaded. Alternatively, it has been necessary to attempt to obtain synchrony of flash release by extraneous visual aids such as light bulbs to determine approximate coincidence of flash release and shutter opening. In all cases, however, maximum efficient synchronization has been difficult to obtain. In a camera constructed in accordance with an embodiment of the instant invention, however, it is possible to provide a flash actuating mechanism such as a contact or switch arm to one of the moving parts within the camera, be it the release, the rotatable arm, the spring loading member, the closure disc or the shutter itself so that, upon actuation of the release and in cooperation with a suitable flash circuit closing mechanism within the housing, the flash release will set off the flash just a fraction prior to the movement of the shutter window across the optical axis of the camera. The flash release such as a contact pin, for instance, as diagrammatically shown on the arm in Fig. 1, is then so positioned with respect to its action upon the circuit closing mechanism that the flash will have developed its maximum incidence at about the time the center of the shutter opening crosses the optical axis of the camera.

I claim:

1. In a camera the combination comprising a spring returnable shutter release, means for rotatably holding a photo-sensitive disc in off-center position to the optical axis of such camera and with its axis of rotation substantially parallel to such optical axis, means for rotating such disc around its said axis, shutter actuating spring means, and transmission means cooperatively connected to said shutter release, said disc rotating means and said spring means to load and snap release said spring means and actuate said disc rotating means to transport such disc a predetermined angular distance upon actuation of said release, said transmission including first means spring returnably rotatable and secured to said release for actuation thereby, second means rotatably mounted in cooperative relation to said spring means to load and snap release the same upon rotary motion of said second means, and third means mounted in cooperative relation to said first and second means to transmit rotary motion from said first to said second means, said disc rotating means being mounted in cooperative relation to one of said release and of said transmission means in disc transport position transmitting a predetermined rotary motion to such disc following snap release of said spring means.

2. The combination in accordance with claim 1 in which there are included a rotatable shutter, first stop means thereon and second stop means mounted in cooperative relation to one of said release and said transmission means for stop engagement with said first stop means during the first part of the rotation of said second means and for disengagement during the last part of such rotation, in which said spring means comprise a torsion spring secured at one end to said shutter for load release spring rotation thereof and with its other end to said second means for spring loading against said stop means upon rotation of said second means.

3. The combination in accordance with claim 2 in which said second stop means are secured to one of said release and said transmission means

for movement therewith to define, upon rotation of said second means, a path of travel for said second stop means first along said first stop means in stop engagement therewith and then away from said first stop means out of such engagement.

4. The combination in accordance with claim 3 in which there are additionally provided means mounted in cooperative relation to said disc rotating means and one of said release and said transmission means to remove said rotating means from its disc transport position and to return said rotating means to said position following the disengagement of said first and second stop means.

5. The combination in accordance with claim 4 in which said disc holding means are mounted in a removable magazine for such camera and in which said disc rotating means are disconnectably arranged to permit removal of said magazine.

6. The combination in accordance with claim 4 in which means are included defining a view finder through said camera substantially co-centric with said axis of rotation.

7. The combination in accordance with claim 4 in which said camera includes a housing and a therefrom removable magazine in which said disc holding means are mounted in said magazine, in which said disc rotating means are disconnectably arranged to permit removal of said magazine, in which means are included in said magazine defining a view finder passage therethrough substantially co-centric with said axis of rotation, and in which means are included in said housing defining a view finder passage therethrough in substantial parallax with the optical axis of such camera and in registry with said magazine passage when said magazine is in position relative said housing, said passages then collectively defining a view finder through said camera.

8. In a camera, the combination which comprises a spring returnable shutter release, a rotatable shutter, first stop means thereon, a torsion spring secured at one end to said shutter for load release spring rotation thereof, spring returnable rotatable transmission means including a rotatable disc member carrying rotatable therewith a film disc transport finger raisable from a film-engaging into a film-non-engaging position against spring force, second stop means secured to one of said release and said transmission means for movement therewith to define upon rotation of said transmission means a path of travel for said second stop means, first along said first stop means in stop engagement therewith, and then away from said first stop means out of such engagement, said transmission being secured to said release for actuation thereby and to the other end of the said spring for spring loading against said stop means upon rotation of said transmission means, and camming means positioned to raise said film disc transport finger into said non-engaging position and substantially maintain the same therein at least until said first stop means are passed out of engagement with said second stop means.

9. The combination in accordance with claim 8 in which said camming means include a guide track on said shutter and a camming finger secured to said transport finger and positioned to cam up on said track upon rotation of said disc member thereby raising said transport finger into said non-engaging position and to cam off said



STEINECK CAMERA WERK

(13a) Pappenheim / Bayern
TELEPHON 168

Die kleine Steineck - Camera - Fibel .

Nehmen Sie Ihre Steineck - Camera in die Hand und führen Sie alle Anweisungen, die Sie in der Fibel in Wort und Bild erhalten, auch sogleich praktisch durch. Sie werden dann viel schneller mit der Camera vertraut sein und gute Aufnahmen erzielen.

Wenn Sie die Steineck - A-B-C-Camera betrachten, dann drücken Sie nicht auf diese Nase. Das ist der Auslöser. Wenn Sie ihn hineindrücken, dann haben Sie die erste Aufnahme gemacht. Dazu sollten Sie aber das Objektiv auf den Gegenstand richten, den Sie photographieren möchten.

Objektiv

Nase

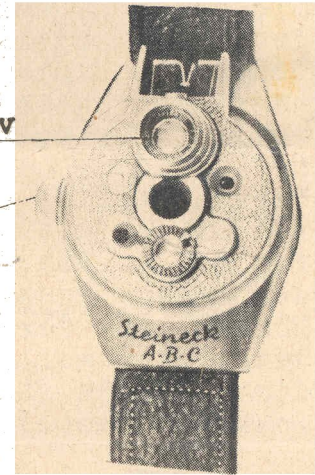


Abb. 1

Nehmen Sie die Camera in die Hände wie hier - Abbildung 2. Der Auslöser soll nach unten gekehrt sein.

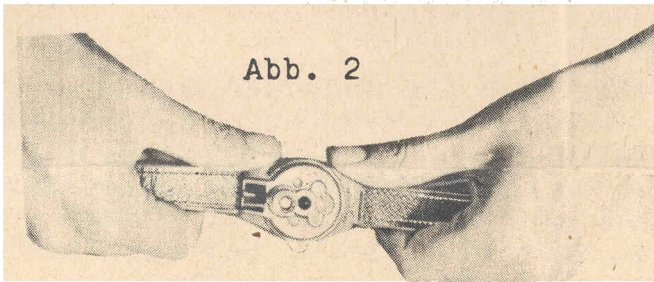


Abb. 2

Nun betrachten Sie die Rückseite der Camera. In der Mitte der Rückseite sehen Sie ein kleines

Loch (Abbildung 3).

Durch dieses Loch sehen Sie hindurch. Das ist der Durchsichtssucher.

Wenn Sie die Camera mit Daumen und Zeigefinger in die Zange nehmen und den Auslöser kräftig und ganz tief in die Camera hineindrücken, dann haben Sie eine Aufnahme gemacht. Natürlich sollten Sie in diesem Augenblick im Sucher nicht gerade eine dunkle Ecke Ihres Zimmers betrachten, sondern ein hellbeleuchtetes Objekt, das mindestens eineinhalb Meter von Ihnen entfernt ist.

Abb. 3

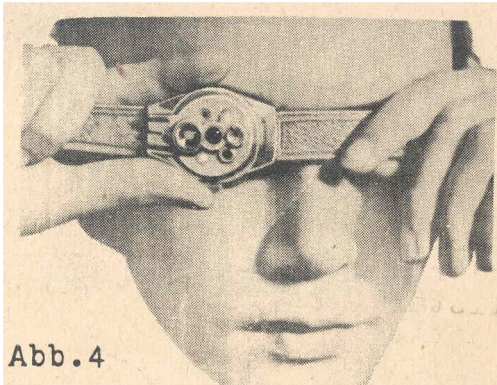


Abb. 4

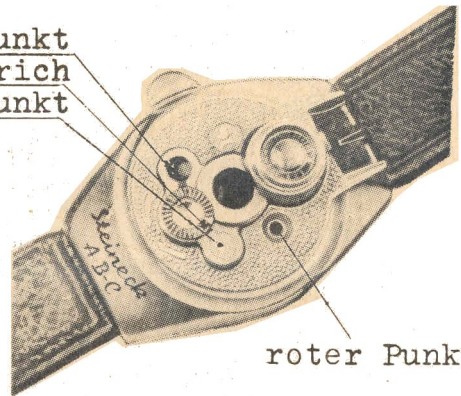
Nach der Aufnahme, die durch ein feines Klicken angezeigt wird, sollten Sie den Auslöser mit dem Finger langsam bis zum Anschlag zurückführen und keinesfalls zurückschnellen lassen. Auch sollten Sie den Auslöser nicht eher wieder hineindrücken, als bis er vollständig zum Anschlag zurückgeglitten ist. Andernfalls können Doppelbelichtungen vorkommen.

Einstellen der Belichtungszeit? - Ist nicht nötig. Die Camera belichtet alle Aufnahmen mit 1/125 Sekunde selbsttätig.

Einstellen der Entfernung ? - Ist nicht nötig. Die Camera bildet alle Gegenstände von 1.50 m an bis zum Horizont (∞) hinreichend scharf ab. (Wenn Sie noch näher an das Aufnahmeobjekt herangehen wollen, so können Sie Steineck-Vorsatzlinsen verwenden).

Einstellen der Blende ? - Ist nur notwendig, wenn Sie hell von der Sonne beleuchtete Objekte oder bei bedecktem Himmel und in Innenräumen photographieren wollen. Für Motive, die von heller Sonne beschienen werden, stellen Sie den roten Strich des Rändelknopfes (- s. Abb. 5 -) auf den gelben Punkt (lachende Sonne). Ist der Himmel bedeckt, oder wollen Sie in Innenräumen eine Aufnahme machen, dann stellen Sie den roten Strich auf den blauen Punkt (bedeckter Himmel).

blauer Punkt
roter Strich
gelber Punkt



roter Punkt

Abb. 5



Abb. 6

Film weitertransportieren ? -

Ist nicht nötig. Die Camera schaltet den Film automatisch weiter. So sind auch Doppelbelichtungen unmöglich gemacht.

Betrachten Sie nach der Aufnahme die Rückseite der A-B-C-Camera, so sehen Sie, daß sich die Zahl in dem kleinen runden Fenster geändert hat (- siehe Abbildung 6 -). Vor der Aufnahme sehen Sie z.B. eine 7. Das sagt Ihnen, daß Sie noch 7 Aufnahmen machen können.

Die Zahl im Fenster zeigt Ihnen also stets an, wieviel Aufnahmen Sie noch auf dem Film haben.

Wenn Sie alle 8 Aufnahmen gemacht haben, dann erscheint im runden Fenster eine 0. Zugleich sehen Sie auf der Vorderseite der Camera einen roten Punkt. (S. Abb. 5). So können Sie, auch wenn Sie die Camera am Arm tragen, er-

kennen, daß Sie alle Aufnahmen gemacht haben.

Nun müssen Sie die Filmkassette (Magazin) auswechseln.

Nehmen Sie die A-B-C-Camera so in die Hände - Bild 7. Sie sehen, daß sich die beiden roten Punkte gegenüberstehen. Nun drehen Sie mit Daumen und Zeigefinger vorsichtig und kräftig an dem gerändelten Rand. Das in die Rückseite der Camera eingesetzte Magazin bewegt sich.

Drehen Sie so lange vorsichtig weiter, bis sich die beiden grünen Punkte gegenüberstehen. Nun können Sie das Magazin leicht herausnehmen.



Abb. 7



Abb. 11

und wird so auf den Film in der Camera gebracht. Das Photographieren mit dem Spiegelsucher verlangt etwas Übung. Es kann Ihnen bei Ihren ersten Aufnahmen passieren, daß Sie das Motiv nicht genau in die Mitte des Negativs bringen. Es empfiehlt sich daher, bei der Spiegelsuchereinstellung besonders sorgfältig zu verfahren. Während Sie den Spiegelsucher einstellen, nehmen Sie die Camera und den Auslöser wieder genau so in die Zange, wie bei der Aufnahme am Auge. Sie verhindern dadurch Verschiebungen des Motivs und Verwackeln beim Auslösen.

Der Auslöser muß ziemlich weit durchgedrückt werden, bis das leise Klicken ertönt, das anzeigt, daß die Aufnahme gemacht ist. Drücken Sie den Auslöser nicht allzu langsam herunter, sondern kräftig. Aber lassen Sie ihn nach dem Auslösen nicht zurückschnellen, sondern führen Sie ihn. Sonst kann es vorkommen, daß ein Bild übersprungen wird.

Auch ist es nicht gut, wenn Sie den Auslöser nur halb in die Camera hineindrücken und dann, ohne die Aufnahme gemacht zu haben, wieder herausgleiten lassen. Vergessen Sie nie, daß die Steineck - Camera ein Präzisionsinstrument höchster Genauigkeit ist, in dem alle Einzelteile sorgfältig aufeinander abgestimmt wurden und daß diese Abstimmung nicht durch Spielen beeinträchtigt werden sollte.

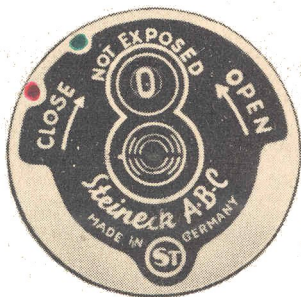


Abb. 12

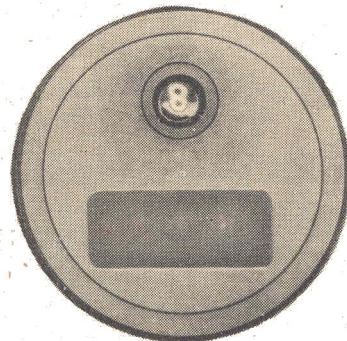


Abb. 13

Nehmen Sie das Magazin, wenn im Rückfenster die 0 erschienen ist, aus der Camera heraus und setzen Sie ein anderes, nie aber das gleiche auf 0 stehende Magazin nochmals in die Camera ein, sonst entstehen unkontrollierbare Doppelbelichtungen.

Magazine sollen Sie, wenn sie nicht in die Camera eingesetzt sind, stets in der Umbüchse aufbewahren. Sie können das Magazin so in die Umbüchse einlegen, daß Sie durch das Fenster erkennen können, ob Sie das Magazin bereits fertig belichtet haben oder nicht.

Die Magazine sollten Sie ohne und mit Umbüchsen niemals in der Sonne liegen lassen.

Es empfiehlt sich, zur sicheren Einarbeitung die ersten zwei Magazine möglichst nur mit Nahaufnahmen (Köpfe, Personen, keine Landschaften), die von heller Sonne beschienen werden, zu belichten.

Mit freundlichen Grüßen
Steineck Camera-Werk
Pappenheim/Bayern

So sieht die Innenseite des Magazins aus. Der runde Kreis ist das Bildfenster, das sich bei der Herausnahme des Magazins automatisch schließt und beim Einsetzen des Magazins in die Camera automatisch wieder öffnet.

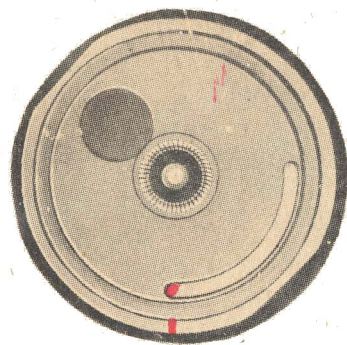


Abb. 8

Wollen Sie ein neues Magazin in die Camera einsetzen, dann legen Sie das Magazin vorsichtig so auf die Rückseite der Camera, daß sich die beiden grünen Punkte gegenüberstehen.

Dann drücken Sie das Magazin ein wenig an und drehen vorsichtig nach rechts herum, sodaß der grüne Punkt zum roten Punkt hinaufwandert.

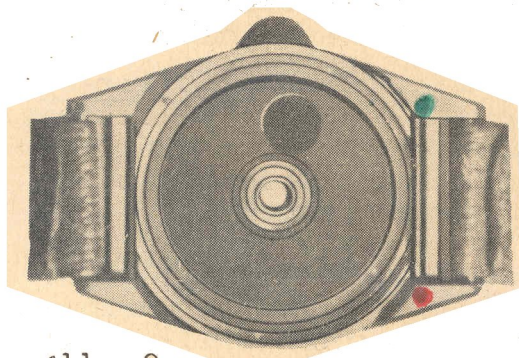


Abb. 9

Bei dieser Wanderung muß das Magazin überall gut anliegen.

Das Magazin muß sich dabei leicht und zügig drehen. Wenden Sie keine Gewalt an. Lässt sich das Magazin schwer drehen, dann nehmen Sie es nochmals heraus und blasen Sie die Camera kräftig aus, auch den Magazinrand. Überzeugen Sie sich davon, daß keine Schmutzteilchen

auf dem Magazinrand und in der Camera haften. Magazin und Camera sind auf ein Hundertstel Millimeter genau aufeinander gepasst.

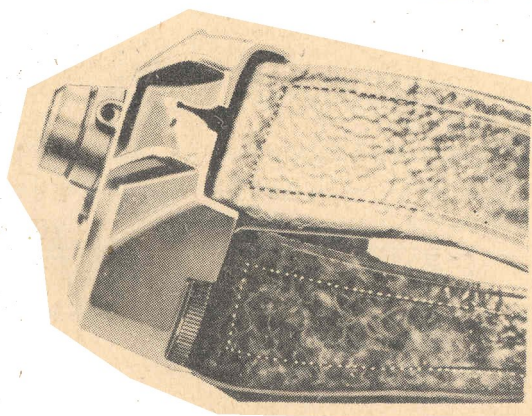
Versuchen Sie nun erneut, das Magazin in die Camera einzusetzen. Lässt sich das Magazin dabei immer noch sehr schwer oder garnicht drehen, dann ist das Magazin falsch gefüllt worden. In diesem Fall tauschen Sie das Magazin bei Ihrem Photohändler gegen ein neues um.

Sie können jedes Magazin, das in die Camera eingesetzt ist, auch dann auswechseln, wenn noch nicht alle 8 Aufnahmen gemacht sind. Zeigt sich im Magazinfenster z.B. die Nummer 4 und Sie wollen nun mit einem andern, etwa mit einem Farbfilm geladenen Magazin Aufnahmen machen, so können Sie die Magazine austauschen und später mit dem ersten Magazin, das noch vier unbelichtete Negative enthält, weiterphotographieren.

Nun befestigen Sie die Camera an Ihrem Arm. Sie brauchen dazu Ihre Armbanduhr nicht von dem gewohnten Platz zu entfernen, denn die S t e i n e c k A-B-C-Camera ist so konstruiert, daß sie am linken wie am rechten Handgelenk gleich leicht bedient werden kann.

Der kleine Spiegel, der über dem Objektiv der Camera eingelassen ist, soll am Handgelenk so nach oben schauen, daß Sie in ihn von oben hineinblicken können. (S. Abb. 10). In der Mitte des Spiegels sehen Sie einen schwarzen Punkt. Diesen Punkt bringen Sie mit der Spitze des über den Spiegel hineinragenden Stachels oder mit dem auf der Glasbrücke befindlichen Punkt in Deckung. Das Bild, das Sie in diesem Augenblick im Spiegel sehen, ist seitenrichtig

Abb. 10



CANADA

INTERVIEW: PIERRE
POINCARRE



218



HOW TO TAKE
SNAP-SHOTS
WITH THE
COMPASS CAMERA
I

Compass Cameras Ltd.

TRADE TERMS

FEBRUARY, 1955.



Compass

ROLL FILM BACK for the Compass CAMERA



Roll Film Back in position



Detached Roll Film Back

ALTHOUGH the simple method of loading plates into the Compass Camera is one of the most popular features of that instrument, a number of users prefer the convenience of roll film on certain occasions. The Compass Roll Film Back is extremely simple to fit on to the

Camera in place of the normal hinged back, and only increases the total thickness of the apparatus by 2 in.

The Roll Film Back takes special Compass spools (see Price List of Negative Materials), which are internally wrapped edge position when loading, and released when the whole spool has been exposed by an ingenious spring action. An automatic pressure plate ensures that the film is kept perfectly flat and in register during exposure, yet permits absolute freedom of movement and elimination of fear of scratching when winding.

A counting mechanism which is geared with the winding shows the number of exposures made, for an indicator on the top. Two safety devices are incorporated, one forming a lock so that the back cannot be opened inadvertently whilst a film is in position, and the other preventing accidental pressure on the spool release button while the camera is loaded.

In view of its extreme compactness and beautiful finish—it is made in the same material and with the same exquisite workmanship as the Camera—it is an accessory which every user of the Compass will desire to possess.

PRICE

£5.10.0

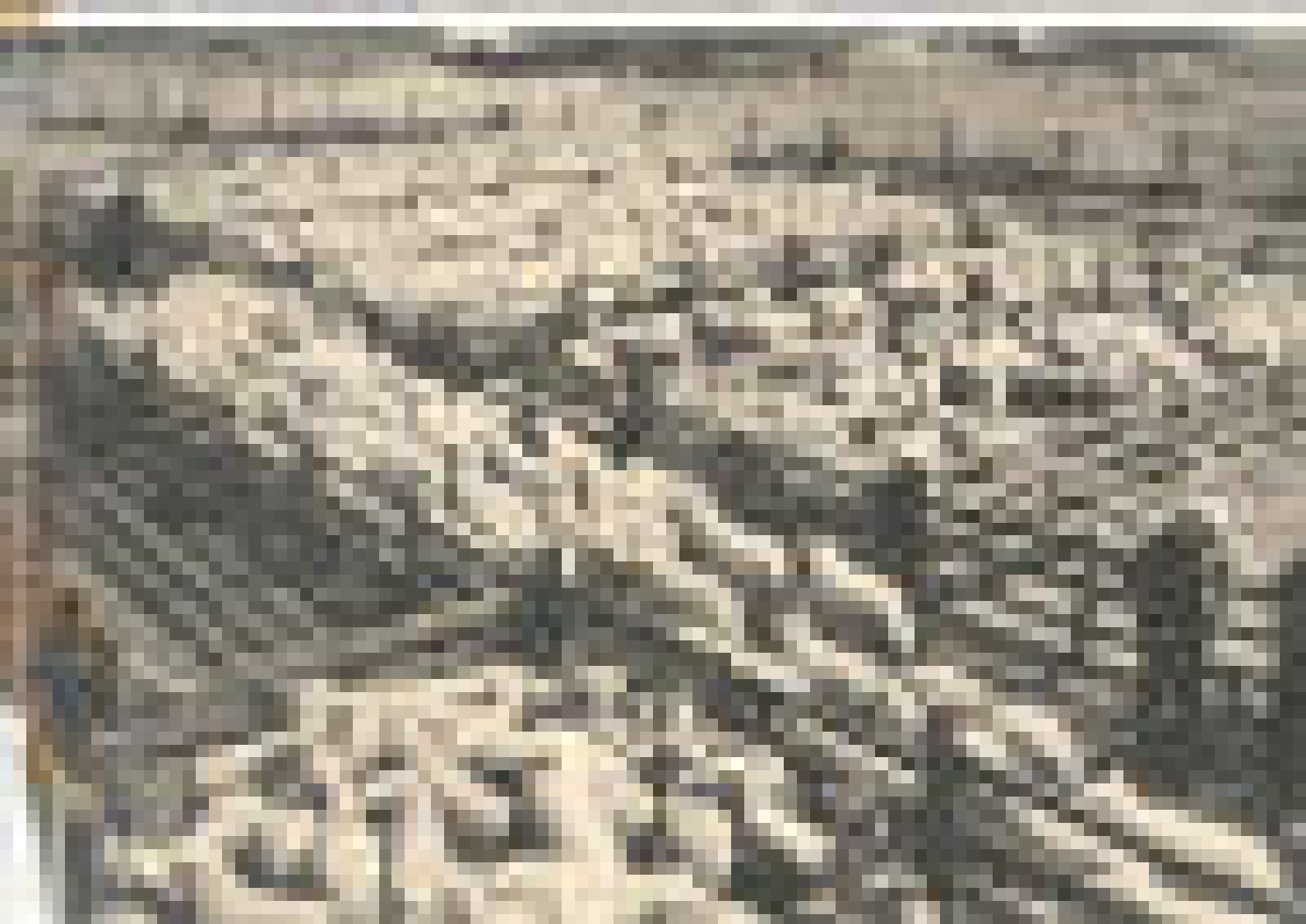
Compass
Camera
Accessories

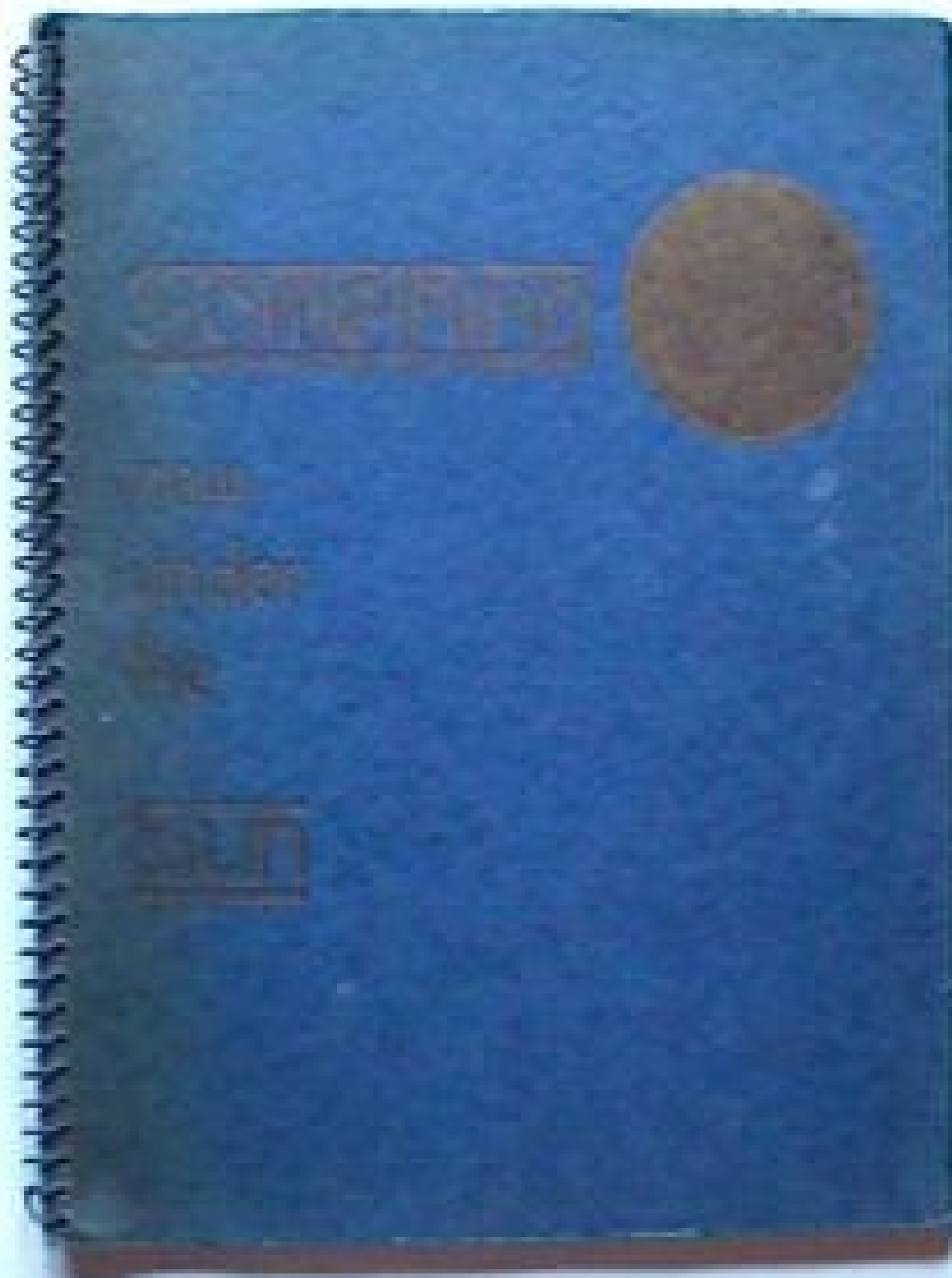
Compass



ALL PRICES SUBJECT TO ALTERATION WITHOUT NOTICE

COMPASS CAMERAS LTD 57 BERNERS ST LONDON W1





SOMETHING NEW UNDER THE SUN

Published by
Compass Cameras Ltd,
57 Berners Street
London W.1.

1. The camera
 2. The lens
 3. The shutter



The camera is a device that captures a permanent image of a scene by means of light. The light from the scene passes through the lens and is focused on the shutter. The shutter is a mechanism that allows light to enter the camera for a specific duration of time. The light then passes through the shutter and is captured on the film. The film is a light-sensitive material that records the image. The camera is a complex device that requires a lot of knowledge and skill to use properly.

THE TRIPOD



The tripod is a device that supports the camera and allows it to be positioned at a specific height and angle. It is made of three legs that are connected at the top and bottom. The tripod is a very important part of the camera system, as it allows the camera to be held steady and prevents it from shaking. This is especially important when taking long-exposure photographs. The tripod is also used to hold the camera at a specific height and angle, which is useful for taking photographs of objects that are far away or at a specific angle.

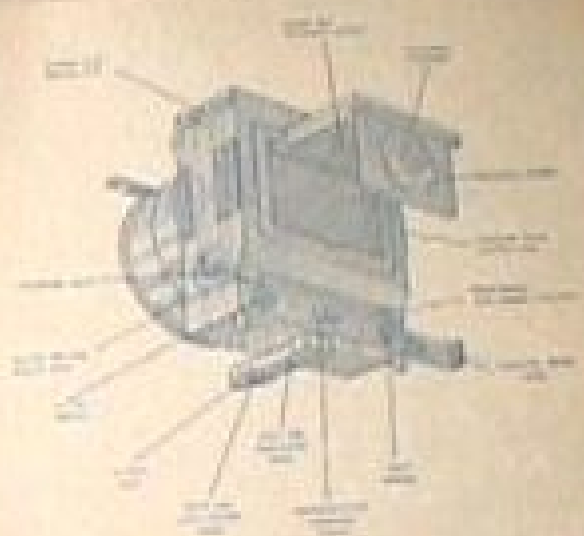
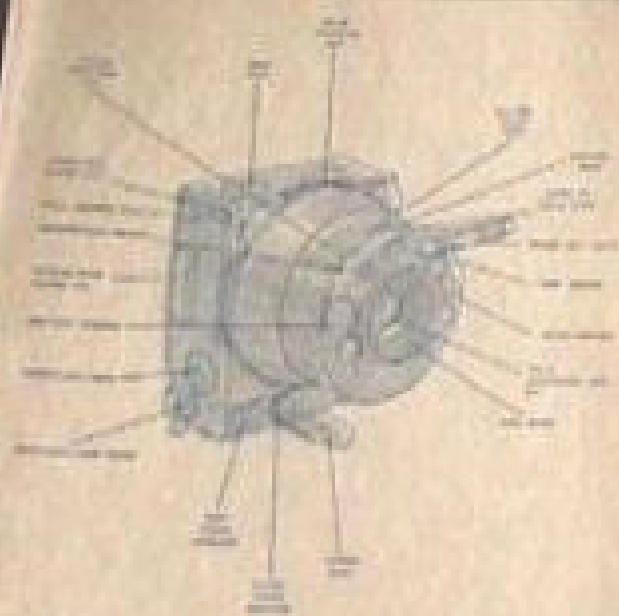
MODERN



PHOTOGRAPHY

10	THE NEW
12	THE NEW
14	THE NEW
16	THE NEW
18	THE NEW
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96	THE NEW
98	THE NEW
100	THE NEW





NINE ESSENTIALS

1. It must be small enough to be carried anywhere and everywhere with no more conscious effort than is involved in carrying a cigarette case.

2. It must be comprehensive in its range, available not only for ordinary snap-shots and time exposures, but for high speed subjects, the taking of colour pictures, panoramas, stereograms, etc.

3. It must be simple to use and swift in operation where speed and simplicity are desired.

4. It must be complete, with every essential accessory built in as an integral part of the camera.

5. It must include some simplifying system, which enables its full technical range to be exploited with complete ease and certainty even by the inexperienced.

6. It must be finished in a style comparable to that of a high-grade watch.

7. It must be made entirely of metal, to ensure strength and durability under all conditions.

8. It must be made to the highest standards of precision achievable by modern manufacturing technique.

9. It must, when complete, be a single scientifically designed unit, not an assembly of parts.

How infinitely successful has been the achievement



A single red lantern hangs from the ceiling of the room, casting a warm glow on the walls and floor. The room is empty, with only a few small objects scattered on the floor.

The lantern is the only source of light in the room, and it is the only thing that is not red. The walls are a deep red, and the floor is a dark brown.

When the lantern is lit, the room is filled with a warm, golden light. The walls and floor are bathed in the light, and the air is filled with a soft, sweet scent.

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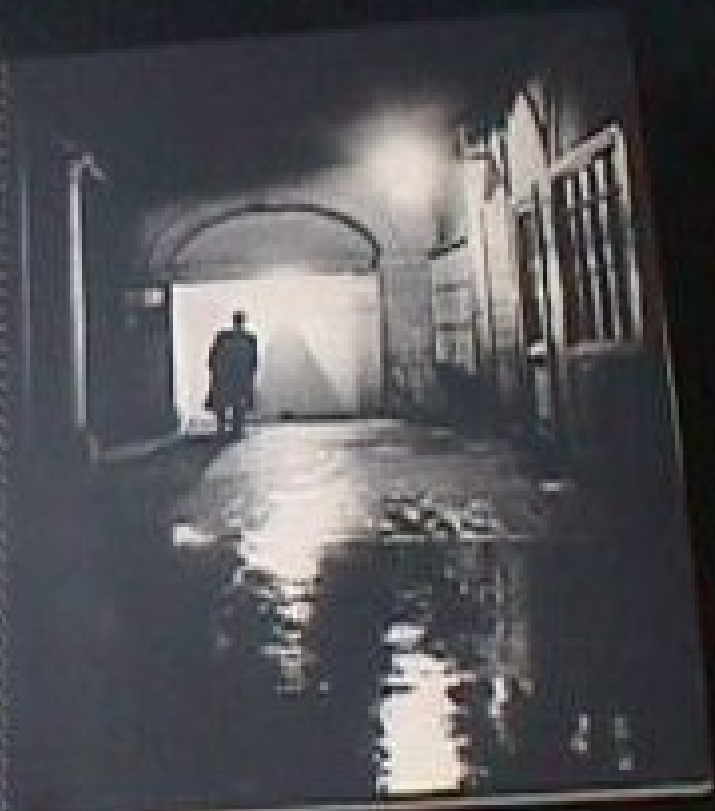
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Figure 1. A photograph of a person standing in a doorway, looking out into the light.



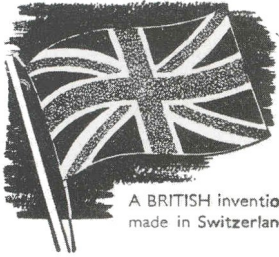
Compass

May 10, 1939

THE AMATEUR PHOTOGRAPHER
& CINEMATOGRAPHER

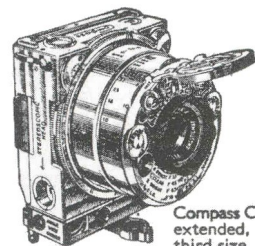
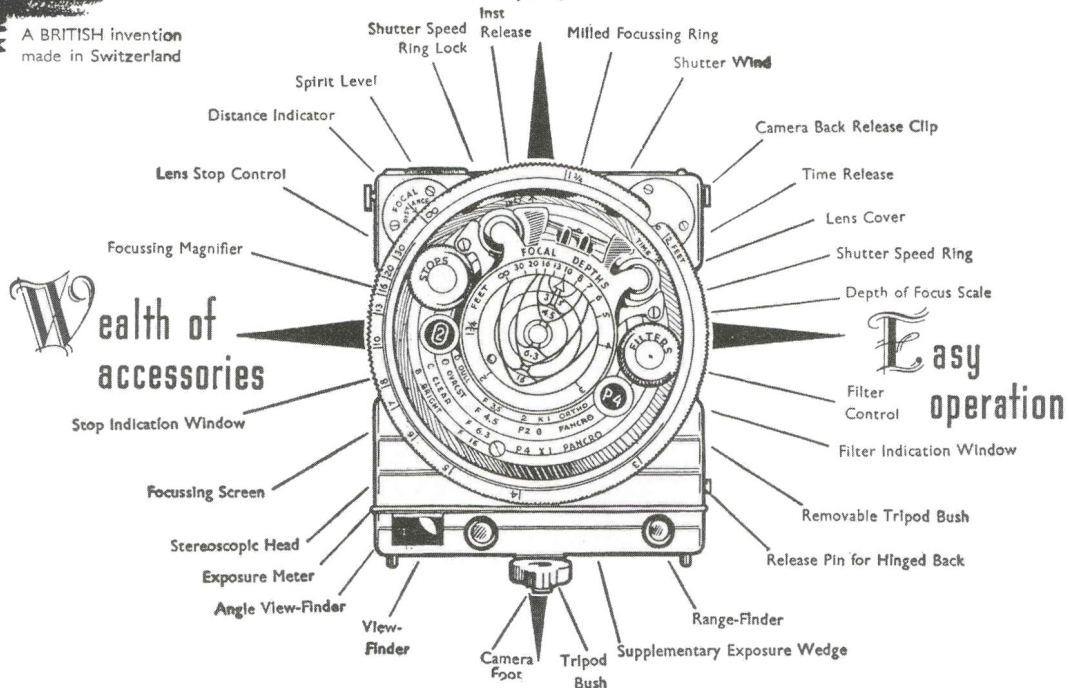
Advertisements 18a

YOU DON'T EXPECT THE POINTS OF THE COMPASS TO CHANGE
— and they won't!



A BRITISH invention
made in Switzerland

Neat arrangement



Compass Camera
extended, one-
third size.

Compass Specification

Kern f3.5 lens, 37 mm. focal length
Shutter 1/500th to $\frac{1}{4}$ seconds and Time
Built-in :—
Coupled range-finder
Ground-glass focussing-screen
Depth-of-focus scale
Direct and angle view-finders
Exposure meter
Set of three filters
Panoramic and stereoscopic fitments
Spirit level
Weight : $7\frac{1}{2}$ ounces
Size : $2\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{2}$ inches
Smaller than a packet of
20 cigarettes)

WRITE for illustrated booklet
"Photography Systematised
and Simplified."

Sound construction

Change is only justified when it brings improvement.

No modification has been made in the design of the Compass since its first few months on the market, and no further alteration is contemplated. You may buy your Compass Camera happy in the confidence that no "new model" will appear and make it out-of-date in a short time.

This is the fruit of logical planning at the outset. All the attributes of an ideal camera were listed on paper before a line of the Compass was planned; and not until **all** those features had been included, in their most handy and practical form, was even the first experimental camera constructed.

The result — an instrument that has, literally, **everything** . . . all the accessories you have wished to carry in the past, all the ingredients of successful picture-making. For full details, see the specification—then write to us for a copy of our latest Booklet.

Compass

A BRITISH INVENTION MANUFACTURED IN SWITZERLAND

Compass Cameras Ltd., 57, Berners Street, London, W.1

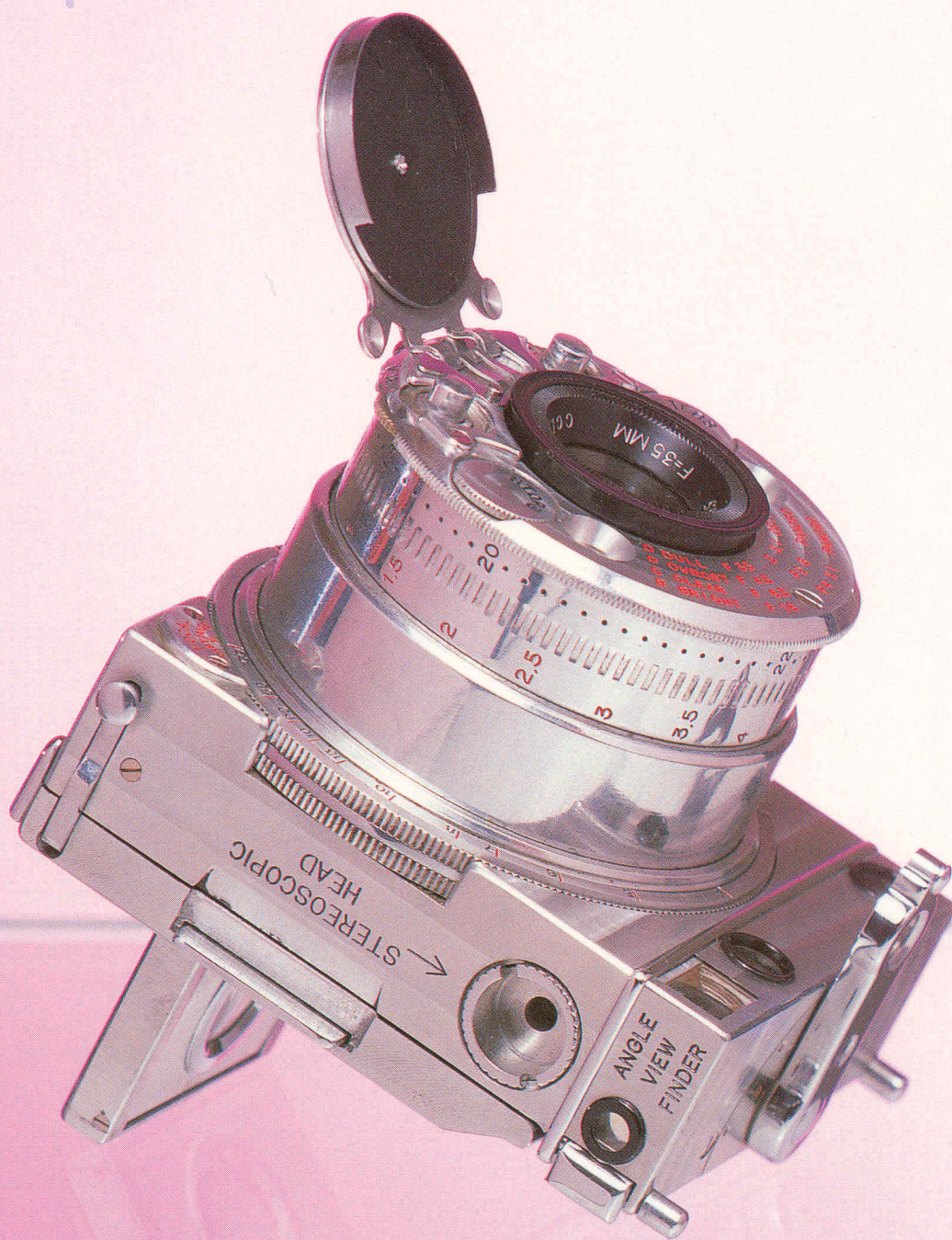
Telephone : MUSEum 5306

PLEASE MENTION "THE AMATEUR PHOTOGRAPHER" WHEN DEALING WITH ADVERTISERS.

KFW:jt

CYCLOPE

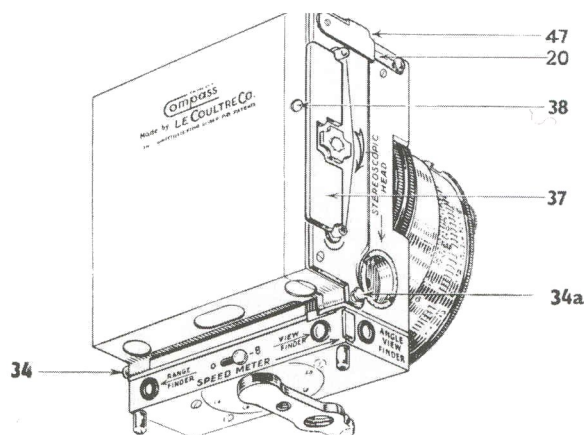
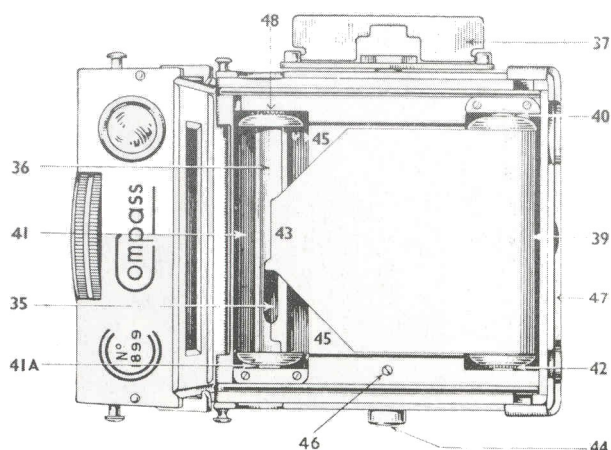
L'AMATEUR D'APPAREILS PHOTOGRAPHIQUES



Star des Miniatures, le COMPASS. Leica oublié: le DOCUFLEX 35, UCHENIK, PHOTAX, ONTOSCOPE 3D, CLUB CYCLOPE etc..

Le **COMPASS** qui pèse **240** grammes, dimensions 70 x 55 x 30 millimètres, est pourvu de nombreux perfectionnements inédits : 3 écrans (jaune, orange, vert) escamotables, parasoleil extensibles, bouchon d'objectif à charnière avec table de profondeur de champ variable, obturateur du 500^e à 4" 1/2 avec toutes les vitesses intermédiaires. Télémètre couplé, posemètre, viseur d'angle, niveau d'eau, dispositif stéréo et panoramique, verre dépoli avec loupe ajustable à la vue, plaques et pellicules, etc., etc.

Grâce à **phociné**, tout le monde peut posséder l'appareil et l'équipement complet de son choix.



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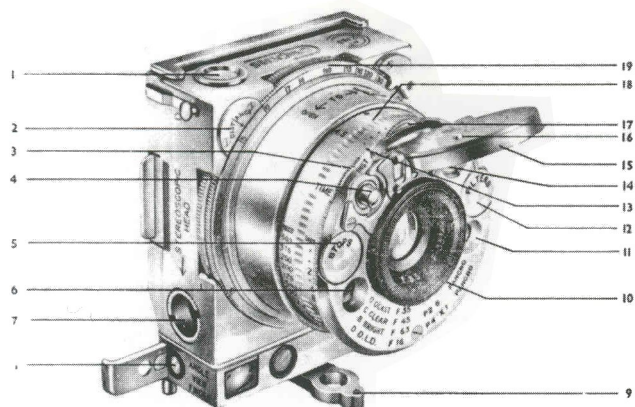
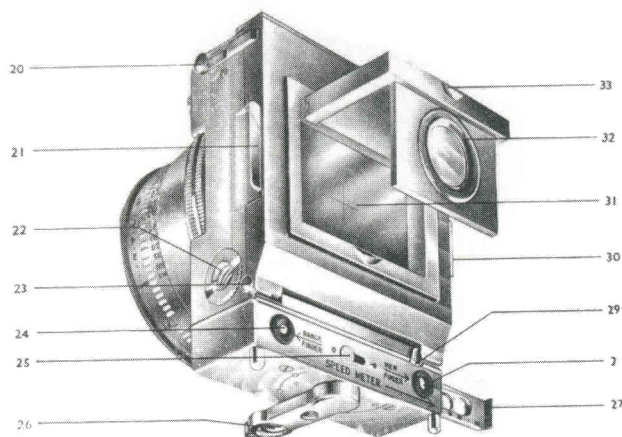
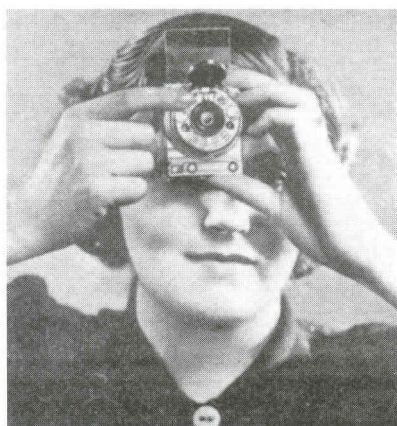


FIG. 1.



*Avec autant de possibilités photographiques dans un volume aussi réduit, le **COMPASS** est sans aucun doute le miniature le plus performant... sur le papier. Car la manipulation de ce bijou vous fait irrésistiblement penser à cette fameuse histoire du comble du vice: à savoir éplucher des petits pois avec des gants de boxe...*



Comment tenir le **COMPASS**
au moment de la **prise de vue**.
Blonde et brune viennent de différents
modes d'emploi

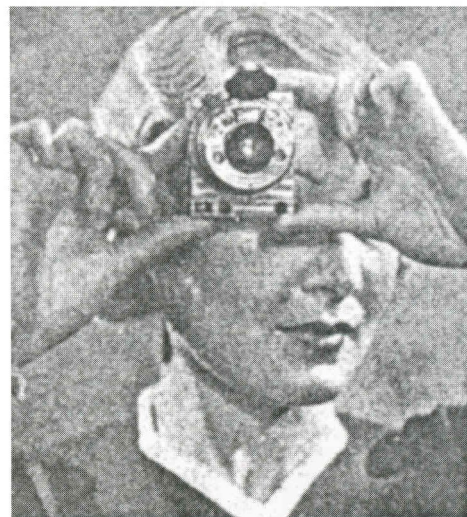
Compass

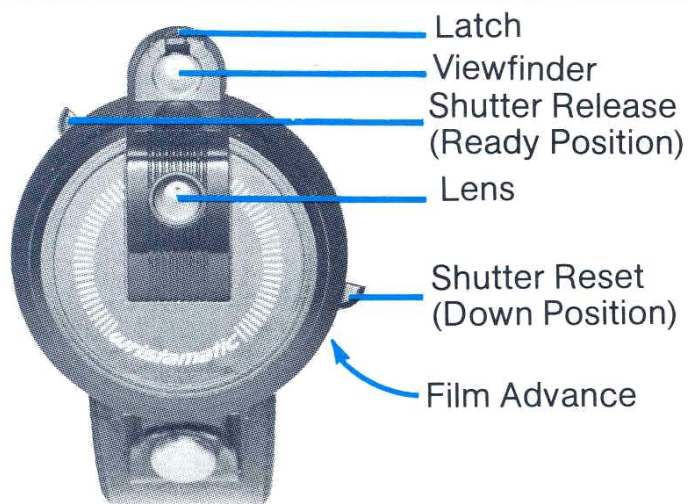
Appareil de petit format pour vue isolée 24x36 sur plaque ou sheet film 1x1^{1/2}" ou 6 vues 24x36 sur roll-film 1^{1/2}", ou sur roll-film 828 avec dos spécial construit par T.A. Cubitt & Son, Londres. Objectif Kern Aarau CCL 3B Anastigmat 35/3.5-16. Viseur optique et viseur d'angle et visée sur dépoli. Obturateur central avec 22 vitesses: T, 4^{1/2} à 1/500^e sec. Boîtier métallique, diamanté et surfacé. Filtres incorporés, têtes stéréoscopique et panoramique, posemètre à extinction, télémètre couplé, 2 dos roll-film. Fabriqué de 1937 jusqu'au début de la Deuxième Guerre mondiale à environ 5.000 exemplaires, c'est une merveille de précision suisse; appareil regroupant un maximum de fonctions sous un volume réduit.

Constructeur: Lecoultré et Cie,
Le Sentier, Suisse pour Compass
Cameras Ltd, Londres.
Inventeur: **Noël Pemberton-
Billing**, Angleterre



Comment tenir
le **COMPASS**
au moment de l'utilisation
du télémètre





Technical Details

Film: Magna color daylight type for prints, high quality reproduction and resolution.
Speed: ASA 100 21 DIN
Size: 112 Filmdisk™ cassette, 6 exposures producing 10 mm. diameter negatives.

Lens: f11, 20 mm., fixed focus 5 ft. to infinity, coated.

Shutter: Permanent magnet shutter; 1/100 second.

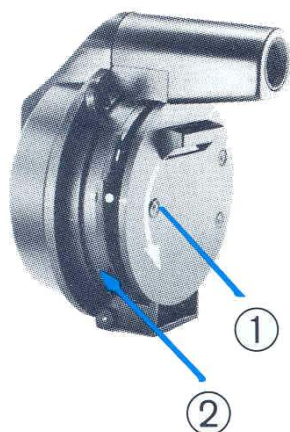
Manufactured under U.S. Patent #4081806
Designed, manufactured and assembled in the United States of America.
Design and specifications subject to change without notice.

Photographica

Two of the



Advancing Film



To Take First Picture:

1. Rotate the Film Advance in a counterclockwise direction one complete revolution (facing back of camera), until the white dot again lines up with the white arrows. (A rapid clicking sound indicates correct operation).
2. **Move Shutter Reset to the down position – the Shutter Release will automatically move to the "Ready Position." The number "1" now appears between the white arrows. The camera is now ready to take a picture.**
3. To take a picture, push down on the Shutter Release. To prepare for next picture, move Shutter Reset to down position, etc. . . . Do not reset after the sixth picture has been taken.

Circular Color Prints

This example of a round picture was taken at an angle. The picture has been turned to its proper position. It is not necessary to line up the camera lens horizontally or vertically when taking pictures. A picture may be taken at any angle and the final print will be upright or straight, as it may be turned because of its circular shape.

Standard size prints are 100 mm (4") diameter.



Camera Care

Both your camera and the film are sensitive to extreme heat and light. Never leave your camera inside a parked car with the sun shining on it. Except for cloudy, cool days, it is generally a good practice to always remove your camera from the car. Extra protection may be obtained for your camera when it is not in use with the optional case described on the enclosed order form. You can, of course, wear your WRISTAMATIC™

in any weather. The shutter will not rust and is not affected by high humidity.

After an exposed Filmdisk™ has been removed from the camera, do not expose the Filmdisk™ to intense light like the sun. Do not move the inner portion of the Filmdisk™ with your finger as you may inadvertently expose your pictures.

A New Concept

COMPACT

The only camera that becomes part of you

EVER READY

With you whenever the action occurs

UNIQUE

Circular prints! Eliminates the need for photo alignment

AUTOMATIC

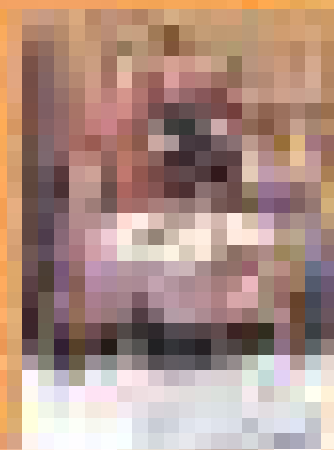
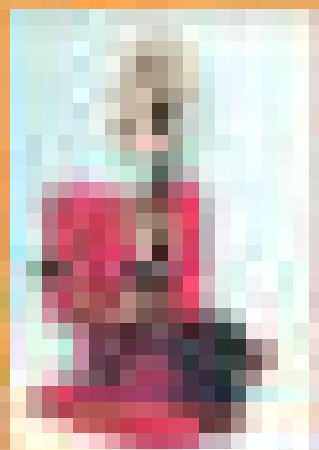
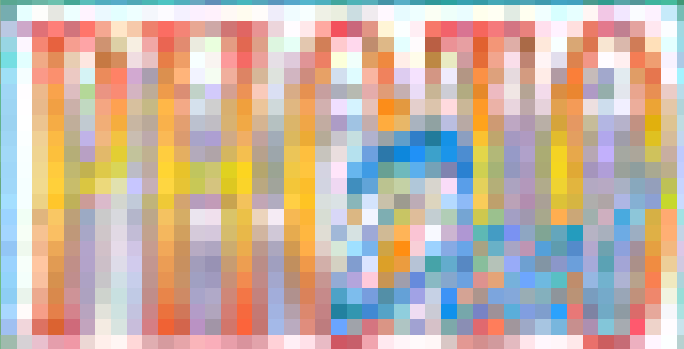
No focusing! Set exposure! Film advance feature eliminates double-exposure

RELIABLE

The only camera with a patented magnetic shutter-unaffected by heat, cold and humidity

JAM FREE

The only camera with patented round film cassettes





MAGNACAM CORPORATION
16 Muller Road Oakland, New Jersey 07436

WRISTAMATIC™

compact / ever ready / unique circular prints

THE WRIST CAMERA™



 MAGNACAM™

With the stereoscopic head (normally stored in the side of the camera) the Compass can be used for taking consecutive exposure 3-D pictures. A bubble level on the top of the camera serves as an aid to alignment.

The built-in exposure meter works on the Compass number system. There are numbers for each shutter speed, lens aperture, filter factor and film speed. These are added together and then matched to the exposure meter reading.

Originally designed to use glass plates, packed in individual light-tight envelopes, the Compass has a beautifully designed plate back. There's also a ground glass

screen, as well as a magnifier for critical focusing.

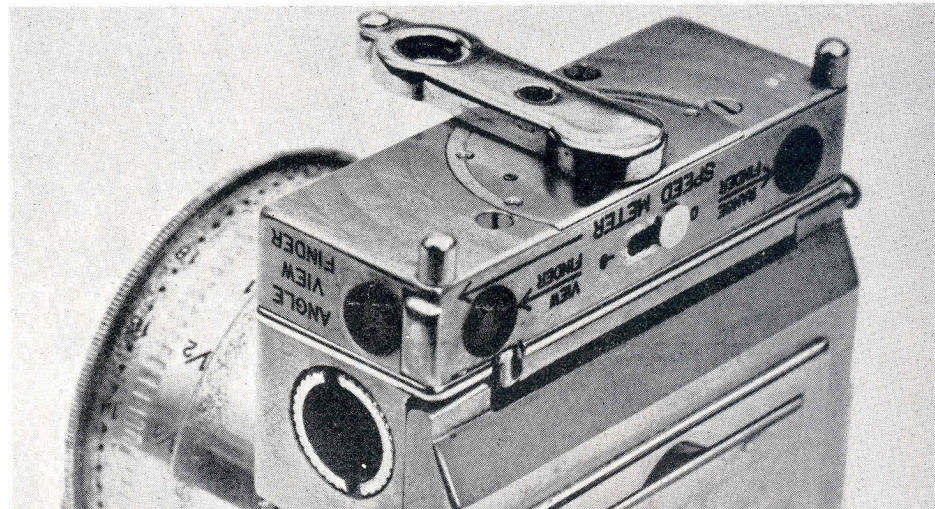
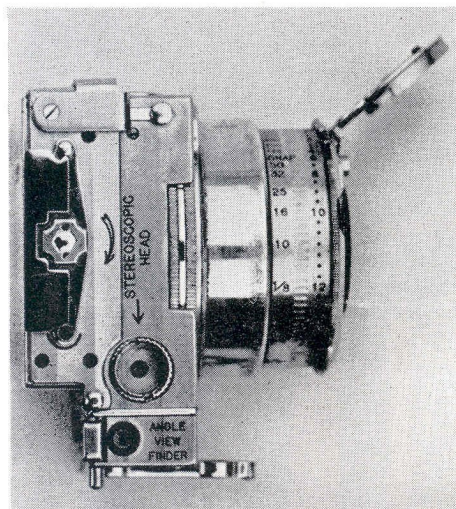
A spring-loaded pin allows quick interchange with the roll film back. Like the plate back, this was beautifully made and offered semi-automatic film advance, with the pressure plate retracting during winding on to prevent scratching.

Besides being a wonder of design, the Compass is one of the most beautifully made cameras this writer has seen. The term 'built like a fine watch' is particularly appropriate, for the camera was actually made by Le Coultre, the famous watch makers.

Unfortunately, so much has been built into

so small a camera that it's not the easiest – or the quickest – to use. It was never a commercial success. Estimates are that not more than some 2,500 were ever made. The selling price in Britain was £30, with £5 for the roll film back. Production of the special film and plates required has long been discontinued by Ilford.

However, Compass cameras are still usable. New roll film backs – unfortunately larger than the originals – to take eight pictures on 828 film are available at £10 10s from T. A. Cubitt & Sons, 22 Davenport Street, London NW1. Cubitts offer service and spares for the Compass. What they don't have, they'll make.



Above left: the roll film back, which added very little to the bulk of the camera, used a special Compass film which gave six exposures, 26×24mm, per roll.

Above right: the click-stopped 'foot' for taking panoramic pictures is located on the underneath side of the camera.

TV PHOTOGRAPHY SERIES

It has been ten years since BBC-Television produced an adult series of programmes for amateur photographers. Now – overdue but more than welcome – comes the news that a new series is planned for the autumn.

'Better Photography' will comprise ten half-hour programmes, scheduled to commence on BBC-1 on Sunday, 3 October and to be screened each Sunday from 11.30 am to noon until 5 December – with repeats each following Saturday at the same viewing times.

The series will be accompanied by a 64-page illustrated booklet which will be on sale to the public via photographic retailers and booksellers, or direct from BBC Publications, 35 Marylebone High Street, London W1.

Says Sheila Innes, who is producing the series for the Further Education Department at the BBC: 'This group of ten programmes is designed for amateur photographers of all ages who want to take better pictures, but are not sure how to set about it. 'The object of the series is threefold: first, to make the technical side of photography easy by explaining, step by step and with practical demonstrations, the basic information required to produce sharp, grain-free prints with a full range of tones; secondly, to remove the "mystique" from the aesthetic side of photography and offer in its stead some practical tips for achieving exciting results, based on the experiments and experience of some of Britain's leading photographers; thirdly to increase the excitement and fun which photography as a hobby offers to every amateur.' Two basic concepts will be stressed throughout the 'Better

Photography' series. First, the necessity for developing, through practice, an intuitive technique. ('Any skilled craftsman must achieve complete mastery over his tools, and the amateur photographer must acquire absolute mastery over his camera, otherwise his technique is likely to inhibit him and become an end in itself rather than a means to an end', says Miss Innes in her introduction to the booklet.)

Secondly, the importance of seeing, and not just looking, will be emphasized. To quote the producer again: 'It is by learning to look afresh at familiar things and to see them in an unfamiliar way that each individual can develop his personal way of seeing things, and therefore of interpreting them with a camera.'

The ten programmes will deal comprehensively with all facets of picture making and camera technique. Such well-known names as Kevin MacDonnell, Leo Vala, David Bailey, Zoë Dominic, Harold Cole, Allan Cash, Norman Hall, Norman Parkinson, Terence Donovan, Peter Newington, Eric Hosking and Gerry Cranham will describe their individual approaches to photography. Camera types and the basic principles of photography will be discussed in the first programme on 3 October. Subsequent programmes will deal with lenses and accessories (10 October); photographing people (17 October); photographing places (24 October); home processing 31 (October); colour photography (7 November); photo-journalism (14 November); photography in advertising (21 November); functional photography (28 November); special techniques and trick effects (5 December).

Photography Hints

Occasionally some of your pictures may not meet your expectations. The following table will help you improve the quality of your photographs.

Result	What to Do
1. Blurred Pictures	The usual cause of blurring is movement, either of the camera or the subject. Practice holding the camera steady and gently moving the shutter without film in the camera. Make sure your subject is holding relatively still. Do not take pictures closer than four feet.
2. Dark Pictures	You tried to take a picture when the light level was too low. Wait for adequate light conditions to take pictures.

the top position directly below the Viewfinder facing outward.

4. Insure that the Shutter Reset is in the up position. Close camera. A slight click when the camera sections come together indicates that the camera is completely closed.

CAUTION: Do not move the parts of the Filmdisk cassette because exposure of the film may result.



Film Processing

Two options are available to you for having your Filmdisks™ processed. The store from which you purchased your Magnacam WRISTAMATIC™ may provide processing services and will also sell you additional film.

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The standard Magna color print is 100 millimeters (about 4 inches) in diameter.

An order form is enclosed for the purchase of specially designed frames and albums for your favorite photographs, and for additional Filmdisks™.

Wearing the Wristamatic:

NOTE: The Wristamatic camera may be worn and operated on either the right or left wrist.

1. Put the end of the strap through the metal loops. Keep the strap above the silver stud.
2. **Advance the strap to the opening that feels most comfortable and push the stud through that opening.**
3. To remove the camera, push down on the stud and pull out the strap.

NOTE: When putting on or removing the camera, do not rest the front of the camera on a hard surface.



Contents:

A New Concept	1
Camera Parts (Front View)	2
Wearing the Wristamatic	3
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Advancing Film	6
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Taking Pictures	8, 9 & 10
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Service & Processing

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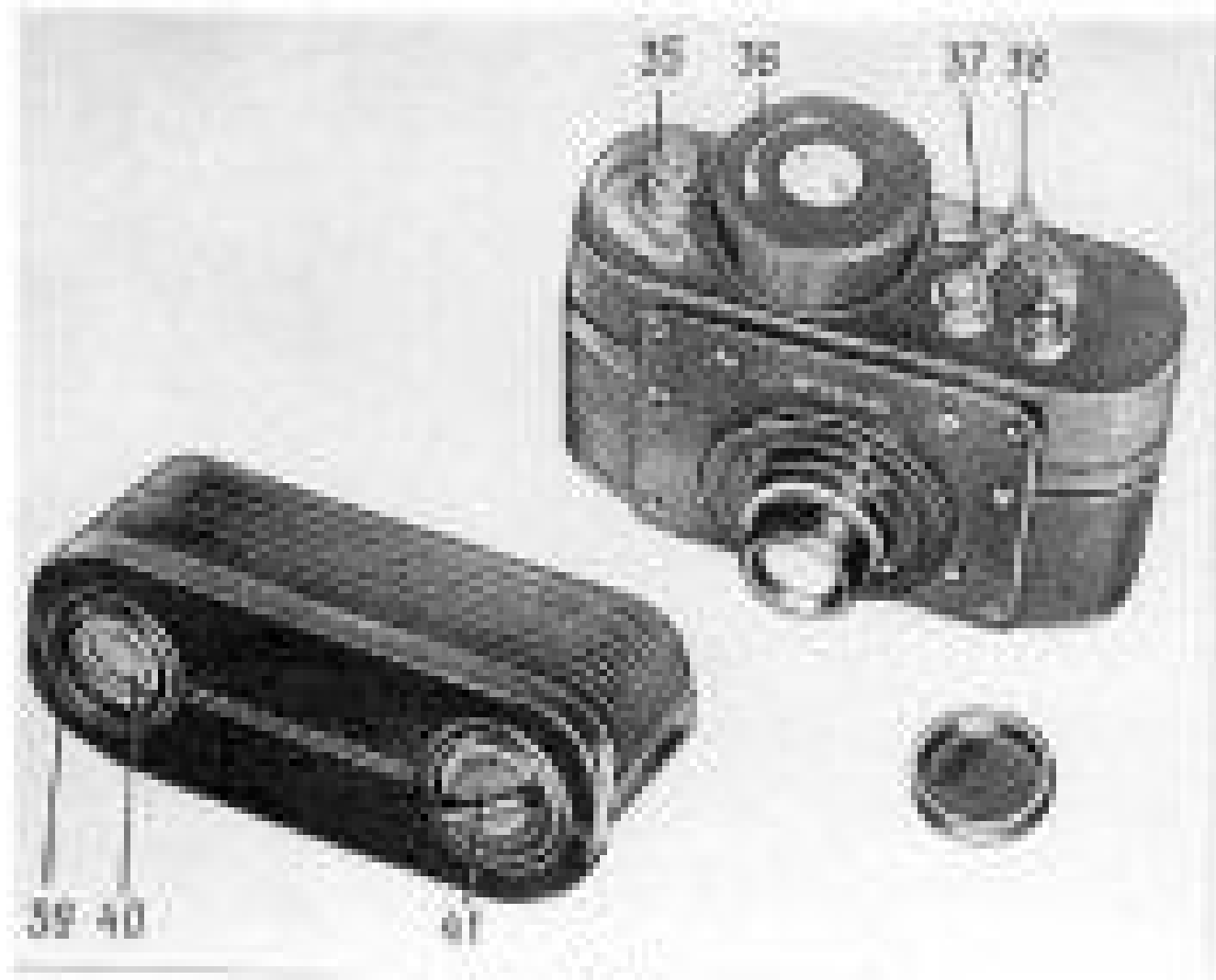


Fig. 5. Camera

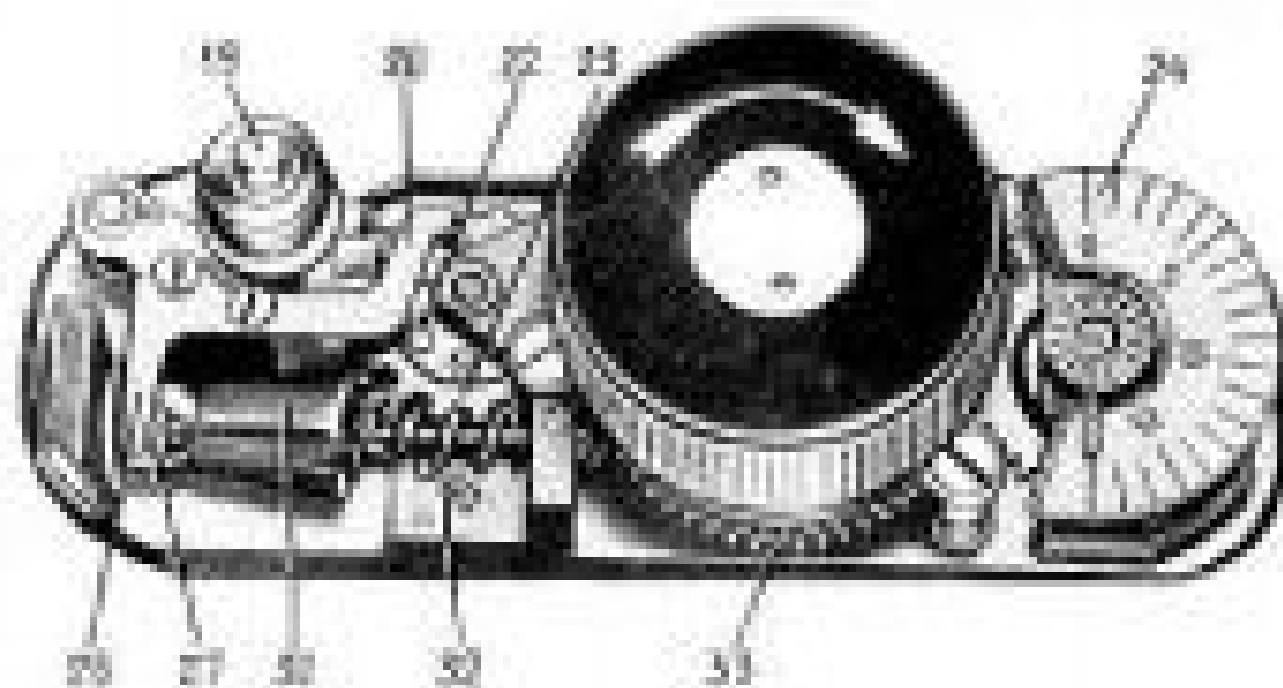
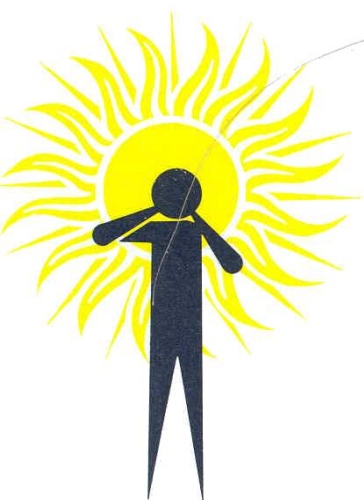


Fig. 6. Drive mechanism



You will get the best pictures on sunny or partially sunny days. The sun should come from behind you or in an arc extending from either side (see illustration).

Learn to photograph your subjects quickly to catch them in their most relaxed and natural attitudes. Try to limit the number of people in one picture to three or four. Remember that simple pictures often have more impact than those with too much subject matter.

Unloading Film

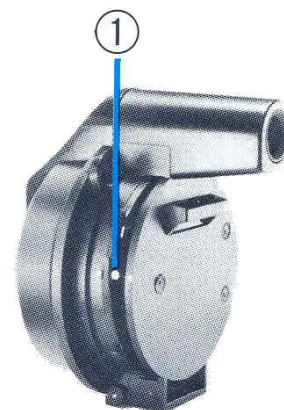
To remove exposed Filmdisk:

1. After taking the sixth picture, rotate the Film Advance in a clockwise direction (facing back of camera) until the white dot again lines up with the white arrows.

2. **Open camera.**

3. Remove exposed Filmdisk. Another Filmdisk may be loaded at this time.

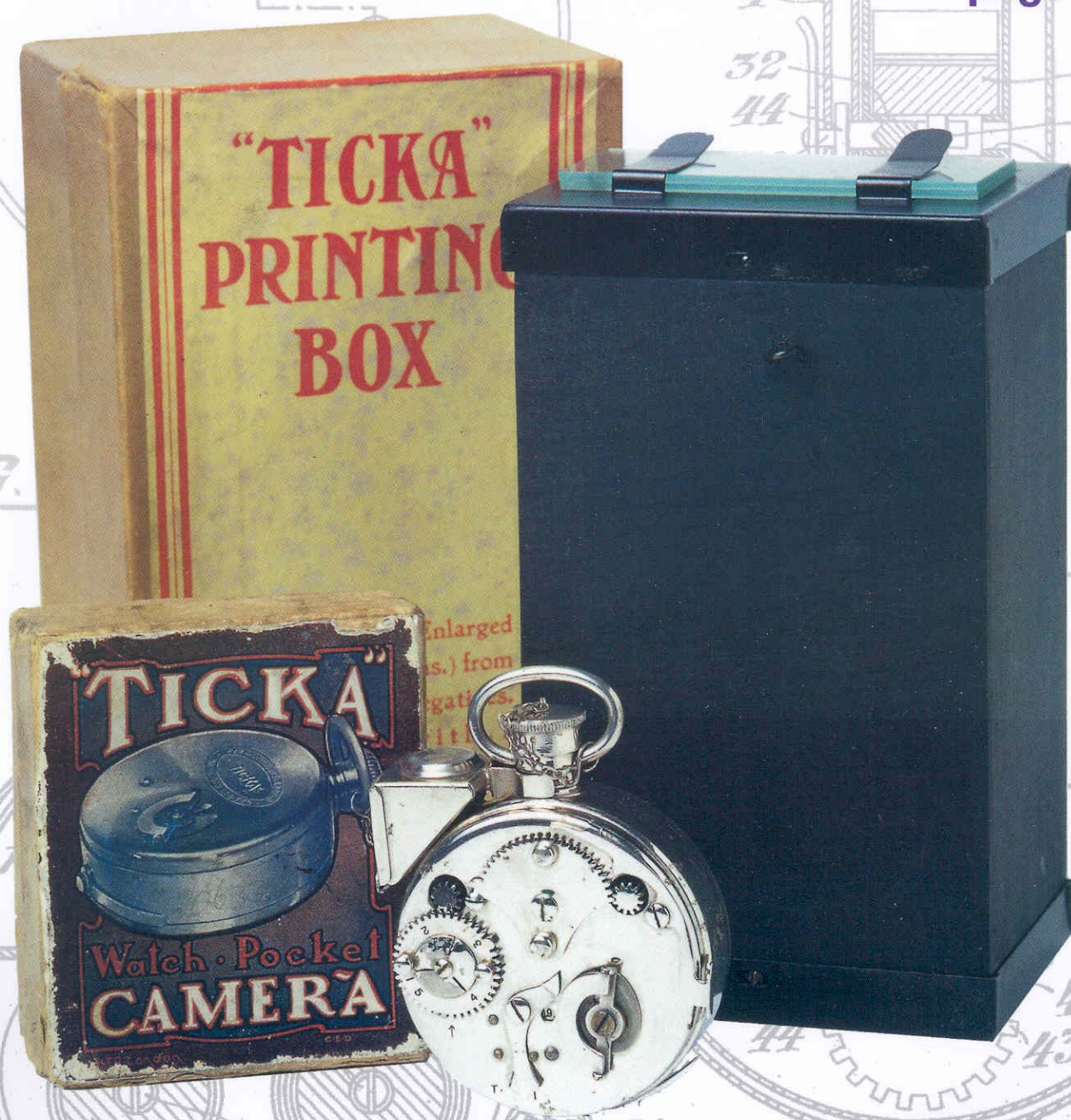
NOTE: To avoid confusion between exposed and unexposed Filmdisks, it is recommended that the exposed Filmdisks be stored in the mailing envelope provided with each package.



Photographica world

Every tick a photograph:
the story of the Ticka camera

- page 9



Taking Pictures

To take pictures with your WRISTAMATIC™ on your wrist, hold your arm steady when looking through the viewfinder. Push down the shutter with the second finger of your other hand.

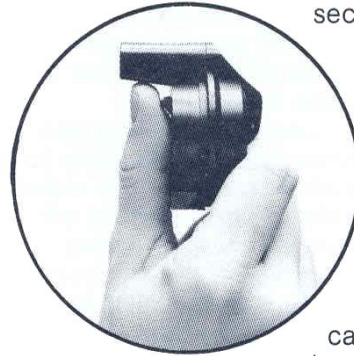
To increase steadiness:

1. Take a breath and hold it for a moment while pressing the shutter down.
2. Rest the inside of your wrist on the bridge of your nose, or
3. Hold your arm diagonally (see illustration), or in any comfortable position.
4. Before taking the next picture, push the shutter reset down.



To take pictures with the camera off your wrist, hold the camera by the bottom section. Place your second finger across the front, being careful not to place a finger in front of the lens, and your thumb behind the camera (see illustration).

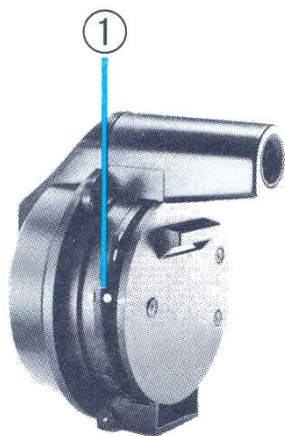
You will find that the sharpest pictures will be of subjects between 5 and 10 feet from your camera. The lens on your camera is high quality and will give you excellent depth of field. Background material will be unusually clear.



ENCICLOPEDIA



Loading Film



1. Turn the Film Advance (cassette drive) until the white dot is aligned with the white arrows. A clicking sound will occur as the cassette drive is rotated.
2. Open camera. Hold camera firmly by the outer edge and depress latch with index finger.
3. Remove Filmdisk from wrapper. Place Filmdisk into back of camera—the raised rectangle part of the Filmdisk should be at

Result

3. A partial picture or no picture
4. Subject is off-center
5. Misty, foggy picture
6. Color is off

What to Do

Something is obstructing the lens. Usually it is your finger or the wrist strap. Keep your finger and the strap away from the lens.

Check your use of the viewfinder. Make sure you are keeping it close enough to your eye.

The lens is probably not clean. The lens is recessed and should never be cleaned with a fluid. Blow off the dust if possible, or lightly use a dry cotton swab to clean the lens. Dusting with a special camera lens brush is recommended.

The film you are using may be outdated. Be sure that you do not let the film be subject to excessive heat.

COMPASS CAMERA LTD

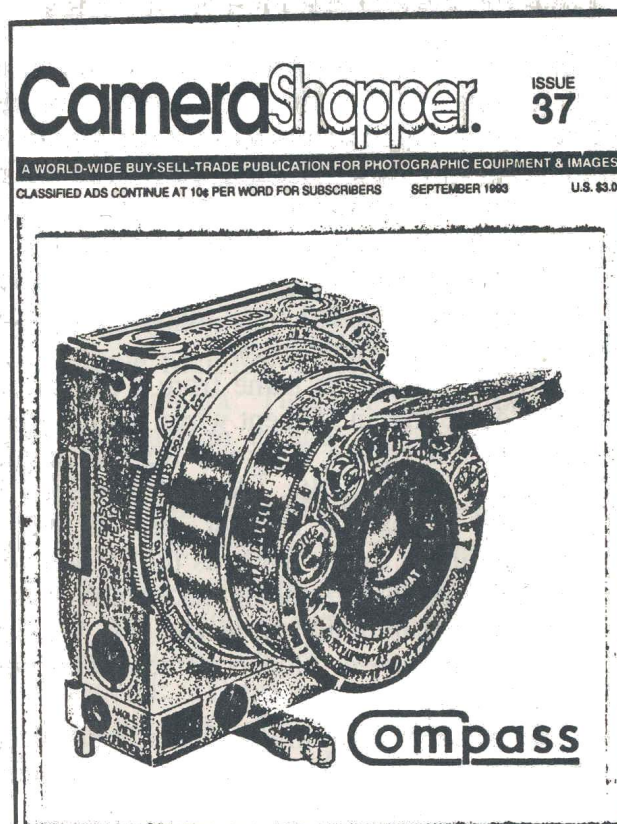
a treatise by Frank R. Marshman
with illustrations by Shep Wright

Of all the wonders of the camera world, and there are many, sitting in a class by itself is the camera world jewel, the COMPASS by LeCoultre. There are very few cameras that instinctively cause a reverence by anyone lucky enough to own or even handle one, but the initial reaction to holding a COMPASS is "WOW"!

The excellent article "The Compass Camera" by Lou Marcus, published in *CameraShopper*, has covered much of the information about the origins of the COMPASS camera so I shall not. Suffice to say he did an excellent job with the areas he documented. My background of 25 years as a camera mechanic having personally repaired over 35,000 cameras plus my passion of the study of watch mechanics has given me a more than natural curiosity of how things work. With this interest, when I was offered the chance to clean a COMPASS camera belonging to my friend Richmond Crawford I jumped at the chance. Since information is not available for this camera I made a record of the camera as is my habit. However, the excitement of this project got me to persuade Mr. Crawford to extend use of his camera so I could make a through examination and detailed drawing of the mechanism.

It was designed by Noel Pemberton Billings and converted into a technical form that could be manufactured by LeCoultre. The COMPASS camera came about in 1936 as an attempt by the LeCoultre et Cie Watch Co., (now Jaeger-LeCoultre), to find a new venture to replace the slowing pocket watch market LeCoultre has for over 100 years made some of the finest mechanical watches in Switzerland. Their skill and talent have made their timepieces sought after as both quality time keeping machines and works of art, bring the finest tradition of design and finish together. It is in this tradition that the COMPASS camera was manufactured.

The first COMPASS cameras started to be sold in 1937 and due to their beautiful design and exquisite finish were well received despite their 39 pound price tag. (Leica was selling for around 15 pounds.) In 1938 LeCoultre determined that the



The Compass Camera

COMPASS was not up to their standards so they did an unheard of thing: they did a complete exchange program offering an even swap for the improved COMPASS II camera. It was very successful. Consequently, very few of the original COMPASS cameras exist today.

The most fascinating thing about the COMPASS, (I am speaking of the II since there is no way to distinguish between the two,) other than the design and execution, is the simplicity.

First, it is well built. The entire camera is made of solid metal with no leather to hide the screws and seams. This requires great attention to tolerances and to the treatment of the exterior. All the screws are polished to a high luster finish, all the metal surfaces that are flat have a diamond-cut finish, all the numbers and letters are engraved in minute detail, and the joints are virtually invisible.

To understand the eloquence of this camera we must first understand how a typical camera is designed and constructed. A camera requires three things: a box for film; a shutter to control the

exposure of the film; and a lens to focus the image on the film. Most manufacturers approach the design as separate acts. The shutter is designed and built by a shutter manufacturing company. The lens is designed and manufactured by a lens manufacturing company. The body is designed and built by a body manufacturing company. These then come together at some point and a name is put on the final camera. The result of this fragmented manufacturing method is that every part is unique to itself and not the finished camera.

The watch making industry has an entirely different approach to designing, one that is homogeneous, (every part is designed to work with every other part). In watches, the gears, the pinions, the hands, the plates, the case, and even the screws are regarded of equal importance. Because every wheel added, or changed, affects the dynamics of the ratio of consumption of power of the main spring, in the science of watches simplicity is the rule of the game.

All parts, with the exception of the lens elements were manufactured at the plant in La Sentier. This allowed for exceptionally tight tolerances as well as an integrated design. And this same KISS thinking created a camera requiring less than 100 parts including all of the screws, springs, and ball bearings! Compare this to the Canon F1 with over 3200 parts, or the Compur 00 shutter which has almost 100 parts by itself.

HOW IT ALL WORKS

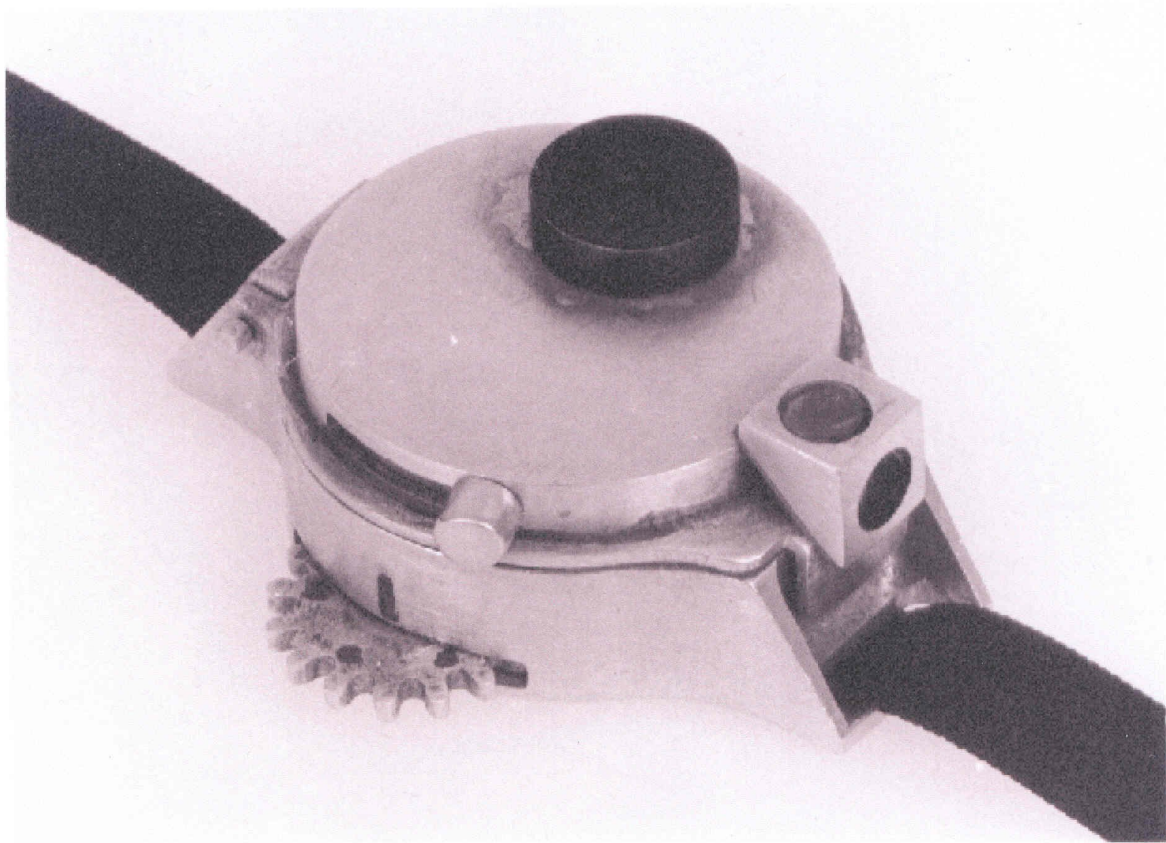
Now that we have seen the design, putting it all together is even more interesting... The speed is selected first. This is important since, unlike other cameras, once the camera has been wound the speeds cannot be made to go faster. That is an undesirable feature but apparently one of the trade offs the designers made. The position of the shutter speed dial ring determines how far the timing gear is charged.

The winding wheel is rotated with the thumb. It is directly connected to the drive gear which is keyed into the main spring. The drive gear rotates the timing gear which charges to the previously determined shutter speed position and the latching pawl locks the gear. As the timing gear engages the two retard trains the one-way ratchet, (DETAIL C), on the first wheel of each train slips backwards so the entire train does not have to move. Simultaneously, as the timing gear starts to

move, the release button locking plate moves to the left, preparing to capture the release button. The two shutter blade wheels (the opening on the bottom) are also connected to the bottom gear of the drive gear. As the drive wheel turns one revolution, it has fully cocked the opening shutter blade which is now in the 3 o'clock position. The back side of this blade has a pin that is now pushing against the shutter limiting spring. As the wheel is rotated farther, the closing blades continue to rotate while the opening blade ratchets against the gear being pushed back by the shutter limiting spring. And finally, the main spring is wound. Note: the more the wheel is rotated the more the mainspring is wound. This gives the mainspring its greatest power at the 4.5 second maximum setting where the greatest inertia is on the mechanism. This is quite different because most other shutters use a constant spins tension or add tension only for the highest speeds to give an extra push. The watchmaking thinking is visible here since watches and clocks always add more power as more inertia is encountered.

The shutter is now ready to be released. When the instant release button is depressed the edge which is wedge shaped begins pushing the latching pawl away from the drive near. The bottom of the button becomes latched by the locking plate and is locked down until the cycle is completed. The timing gear starts to rotate in the counterclockwise direction and the two shutter blade wheels start to rotate in the clockwise direction. The opening blade is soon fully open and begins pushing against the other side of the shutter limiting spring. The exposure has finally begun! At the 4.5 second point both inertia gear trains are fully engaged and the timing gear is retarded. The closing blade rotates and the opening blade's spring tooth ratchets against the drive gear. This will continue until the timing gear reaches the 1/4 sec. point then the "B" retard drops out. The timing gear now moves quicker and at the 1/10 sec. point the "A" retard drops out. The gear now spins to the stop. The closing blade is now back to the cover point and a pin on the top of the timing gear pushes the latching plate back unlocking the release button which pops out. The exposure is now complete and the shutter is ready for the next exposure.

TIME exposure is a slight variation of the sequence inasmuch as when the shutter is set to the



Hand-made Prototype of Wrist Camera

(Made of Aluminum)

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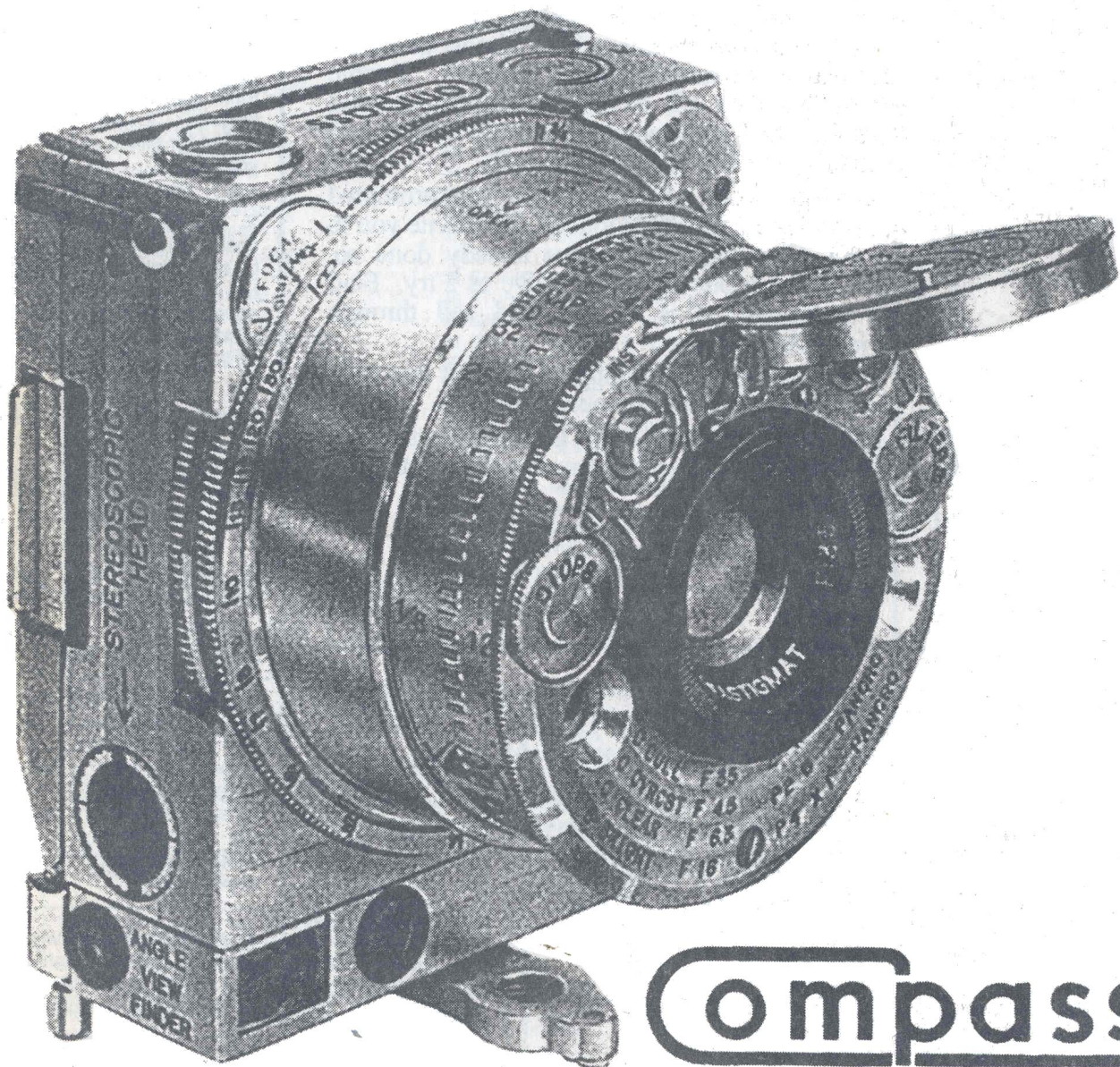
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THE COMPASS CAMERA

By Lou Marcus

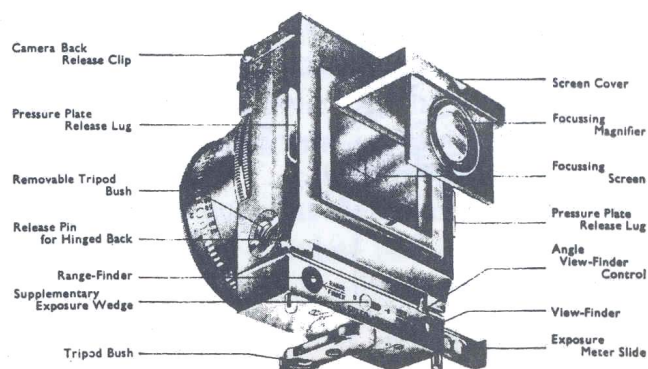
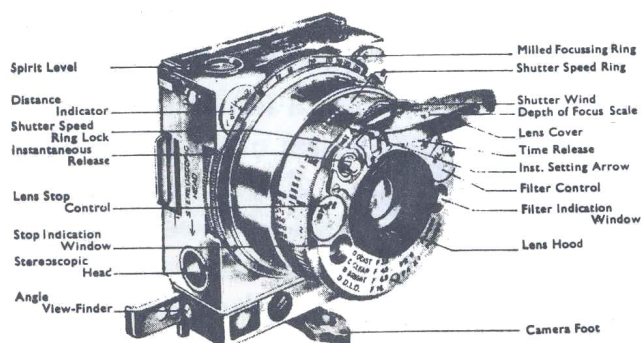
Neither an antique nor a classic, the Compass Camera nevertheless, is an unusual and unique collectors' item and is becoming exceeding rare. It is an important camera in my collection, since it represents one of my earliest acquisitions. The Compass Camera was first brought to my attention while I was with the Signal Corps, around 1940. I was attracted to it particularly because of its unusual design. No one considered it to be a threat to the Leica or the Contax, and of course it was not. Most of us considered the Compass to be a novelty camera, though a pretty expensive novelty camera. The Compass, however, is capable of producing good pictures. The format is relatively large for a camera considered to be almost a subminiature in its day.

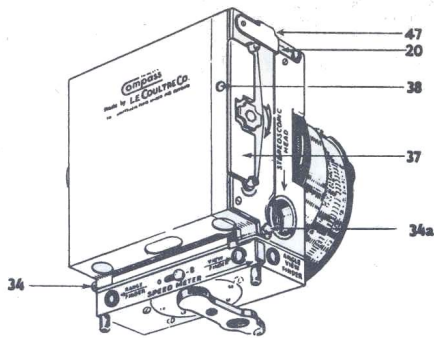
The inventor of the Compass, Mr. Noel Pemberton-Billing, spent more than six years in developing and testing the cameras, etc. The well-known watch company LeCoultre et Cie. manufactured the camera at Le Sentier, Switzerland for Compass Cameras Ltd., a British organization. Americans were first introduced to the Compass when an article on it appeared in the August 1937 issue of Popular Photography. It was heralded with some slight amusement and skepticism as a novelty rather than as a serious photographic instrument.

The following is quoted from the Popular Photography article. "It is called the Compass, because presumably it is about the size of a pocket compass or possibly because it points the way to as yet unexplored photographic territory." The author however, in spite of his doubts, apparently never examined the camera, for he goes on to say.... "The revolutionary improvements in the miniature that have appeared in the past few years are familiar to all camera fans; supplementary lenses for every conceivable purpose, automatic coupling of focusing with rangefinder in one aperture, use of inexpensive motion picture film, foolproof film wind making double exposures impossible,....etc." "No camera with which I

am familiar contains all these, features...." "The new Compass camera contains all these features (with the one exception of the microscope lens over the ground glass) and is about the size of the Contax and Leica and weighs less than half as much, i.e., seven and three-quarter ounces." There are separate windows for range finder and view finder, 35mm motion picture film cannot be used, or I should say, was not meant to be used. Special film was spooled by Ilford Ltd. for the camera. Double exposures are possible and can occur just as easily as in any simple box camera. He was even wrong about the "one exception." A unique feature of the Compass is the focusing magnifier built into the cover for the focusing screen. It is similar to the small, high powered folding magnifying glasses used by jewelers. He was right about the size and weight, though.

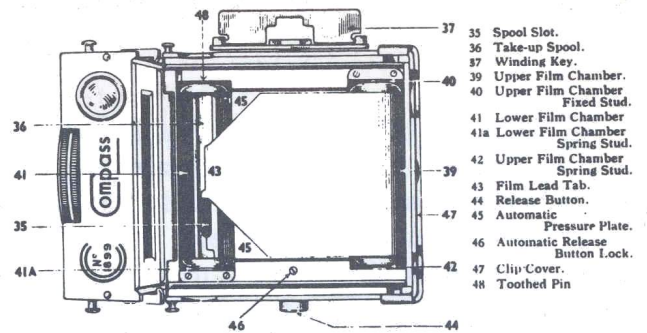
The dimensions of the Compass Camera are 2 3/4 x 2 1/8 x 1 1/4 inches. Weight--approximately 7 3/4 ounces. Negative size--24x36mm. The lens is a CCL Anastigmat, focal length 35mm, made by Kern, Switzerland. The stops range from f3.5 to f16. Minimum focusing distance is 20 inches. The lens is coupled to a coincidence-type range finder. Focusing can also be accomplished by means of either the scale or the ground glass. There is a brilliant optical viewfinder with right angle adjustment. The lens is housed in a collapsible mount. The shutter, rotating sector-type, is behind the lens and offers 22 speeds from 4 1/2 seconds to 1/500 of a second, and "time", in separate exposure increments. Shutter speeds are set around the barrel of the lens with a special latch and is one of the unusual features of the Compass. In my estimation, this is a tribute to the watchmaking skill of LeCoultre. The Compass is also equipped with an extinction type exposure meter, built in, somewhat like a tiny slide rule. This meter is oriented to work with the unit system of the shutter and the irises, which are similar to Waterhouse stops.





View of rollfilm back closed

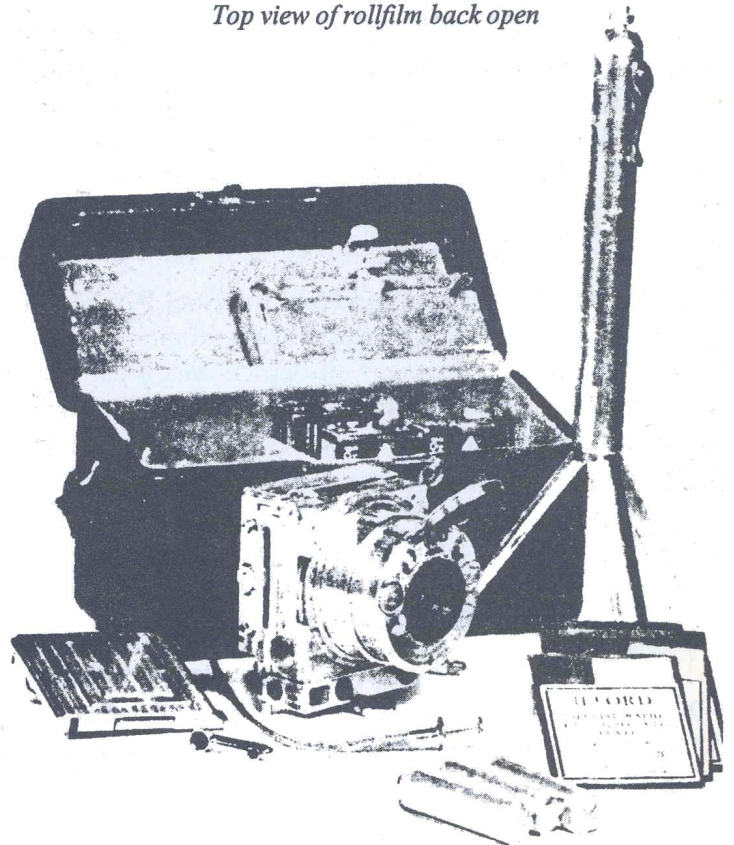
- 34 Spring Hinge Pin.
- 34a Spring Hinge Pin.
- 37 Winding Key.
- 38 Indicator Window.
- 39 Camera Back Release Clip.
- 47 Clip Cover.



Top view of rollfilm back open

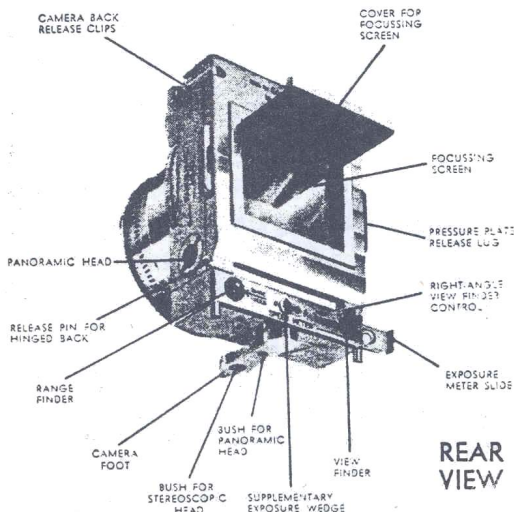
An interesting feature of the camera is the use of small "envelopes" which are holders for glass plates or film. The envelopes are used with the Compass back, which contains a ground glass pressure plate and the magnifying glass. The back can be removed and replaced with a roll film back. Exposures are counted automatically and each roll contains film for six exposures. A separate roll film back for 828 film was manufactured by T. A. Cubitt & Son, London. Panoramic and stereoscopic pictures are also possible with the aid of several built-in devices. There are also three built-in filters, yellow, orange and green, mounted in a rotating turret. The camera would not be complete without the small aluminum tripod which when folded resembles an old fashioned fountain pen. The body of the Compass Camera is constructed of duralumin and looks more like a fine example of jewelry than a camera.

This article was prepared from material contained in a reprint from the *Photographic Collectors' Newsletter*, Volume II, Number 5, contents copyrighted.



The Compass as it appeared in 1936-37
Note the absence of the folding magnifier

Left: Page 37 of the early booklet "Something New Under the Sun"
Right: Page 37 of the later version



REAR VIEW

the human desire to see the results quickly a very natural one. So provision must be made, in any system of photography that claims to be complete, for the processing of negatives and the production of prints. This is the more desirable because there is, in the after-processes of photography, a fascination which even their reputation as messy, inconvenient and uncertain has failed to obscure.

So Compass Photography does not stop with the Compass Camera. There is a further range of accessories which brings the essential Compass features into the after-processes of developing, printing and enlarging. These essential features are four.

1. Unexampled compactness of apparatus.
2. Wide technical range.
3. Complete simplicity in use.
4. Scientific control of results.

Illustrated description lists of these accessories will be available on request, but the purpose of the more important of them are summarized on the following pages:

THE AFTER PROCESSES



COMPASS CAMERA ON COMPASS POCKET TRIPOD

results quickly a very natural idea, in any system of photography, for the processing of negatives and the production of prints. This is the more desirable because there is, in the after-processes of photography, a fascination which even their reputation as messy, inconvenient and uncertain has failed to obscure.

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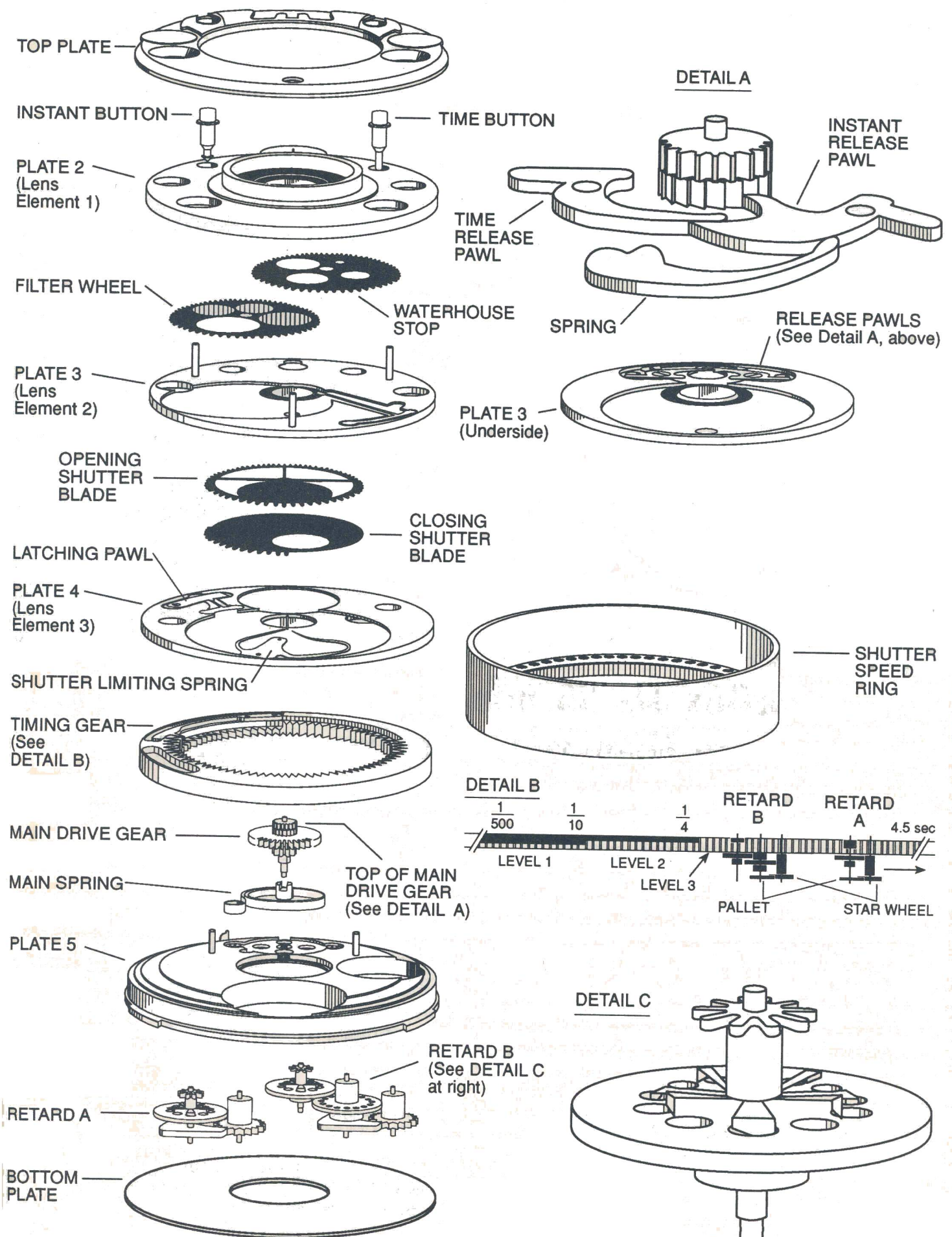
3. Complete simplicity in use.

4. Scientific control of results.

THE AFTER PROCESSES



COMPASS CAMERA ON COMPASS POCKET TRIPOD



"T" position the timing gear will charge to the point where the opening blade is fully uncovered by the closing blade. When the Time button is pushed in it begins to disengage the other latching pawl lever and the pin on the bottom extends into the slot in the timing gear so that when the main gear is disengaged the pin blocks the timing gear so that when the main gear is disengaged the pin blocks the timing gear so it can only rotate far enough for the opening blade to uncover the lens, but not the closing blade to cover it. When the Time button is released and comes forward the latching pawl once again locks the main gear. It will stay in this state until the Instant button is depressed, unlatching the other pawl, allowing the shutter to complete the cycle.

THE TIMING GEAR

The easiest way to visualize the timing gear is to straighten it out and watch as the gear is moved from left to right (DETAIL B). At this point, the gear is fully charged and both sets of retard mechanisms are fully engaged. At this point both retards are engaged but since the very slow gear train (B), has an extra wheel it is slowing the most. As the timing gear passes the 1/4 sec. point retard B is no longer engaged. The gear now moves considerably quicker since retard A (the not so very slow gear train,) has one less wheel and B is no longer retarding. As the timing gear passes the 1/10 sec. point, retard A ceases to restrain the gear and unencumbered, it completes its journey. By setting the speed dial at any point from beginning to end a great variety of speeds can be created.

THE SHUTTER LIMITING SPRING

(PLATE 4)

The shutter blade limiting spring has two purposes. At the stop end (a) it keeps pressure on the opening blade so that as the winding gear moves it will immediately start forward. The other end of the spring (b) tenses the blade in the fully wound position so that it will quickly begin its reverse, opening, movement when the shutter is released. This ratcheting design prevents the teeth from jamming.

As we can see the COMPASS is a special class of camera. It may not have been the finest for optical quality, nor was it the most convenient of tools to use, but in this world of mass produced sameness where you can't tell one from the other without a scorecard, this jewel is a pleasure to

revisit.

By using reverse engineering I will attempt to help understand the nuances of this camera.

The shutter is built in levels with each lens element occupying a separate plate rather than having a tube which holds the glass. This gave the designers 10 areas to spread the mechanism out on, rather than having the usual 2 surfaces most shutters work with, primarily because they are forced to fit the shutter and diaphragm around the lens barrels.

TOP PLATE has all the controls as well as the lens cap and clip and built in lens shade. The reverse side has a cutout for the winding wheel, and the release detent and blocking collar are located here.

PLATE 2 holds the time release button, shutter button, windows for the aperture and filter information, and the first element of the lens. The back side has a cutout holding the four filters wheel and the detent spring.

PLATE 3 has a cutout holding the aperture wheel, (waterhouse stop,) and its detent spring and the second element of the lens. The back has the TIME, (T), and INSTANT release pawls and their operation spring (DETAIL A).

PLATE 4 has the 2 shutter blades and the release lever locking plate and its spring. The drive section of the shutter drive gear protrudes through to engage the teeth of the opening and closing blades. Also, the ratchet teeth that lock the main spring in the charged position can be seen under the drive gear. Under the shutter blades is the blade limiting spring. The back of the plate is where the third element, (rear element,) of the lens is mounted.

The speed setting ring is between Plates 4 & 5.

PLATE 5 holds the governing mechanics of the shutter: the timing gear, the drive gear, the main spring, and the ratchet wheels for the two drive trains. The back has the cutouts for the wheels and detent.

BOTTOM PLATE is the back of the shutter and provides pivot holes for the retard wheels.

So by using six plates to mount the different parts of the shutter mechanism LeCoultre designers created a machine that could do more with less, and that usually means better.

INSTRUCTIONS
FOR THE USE OF
THE COMPASS CAMERA
II

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for
COMPASS CAMERAS LTD.
57 Berners Street
London, W.1

INSTRUCTIONS FOR THE USE OF THE COMPASS CAMERA

The skill and experience necessary for the taking of successful photographs is built into the Compass Camera. It can be made use of, even by those who have no technical knowledge, by a choice of one of two different systems with which the technical adjustments of the camera are linked.

The first of these (the Snap-Shot System) is so simple that it makes the Compass as easy to use as a box-camera, though it has of course a vastly wider range. All the information necessary to operate this system successfully is contained in the brief instruction booklet entitled "Snap-Shots With The Compass Camera," a copy of which is sent out with every camera.

This simple method of use should be adopted at first and continued until the handling of the camera becomes familiar. But satisfactory though this simple system will be found to be in the initial stages, it leaves unexploited many of the technical resources of the Camera and lacks complete scientific control. These are provided by the second system (the Compass Unit System), instructions for which will be found on pages 24 to 30.

Instructions for the use of the various accessories, which are built into the Compass Camera to facilitate certain specialised types of photography, will be found on pages 31 to 37.

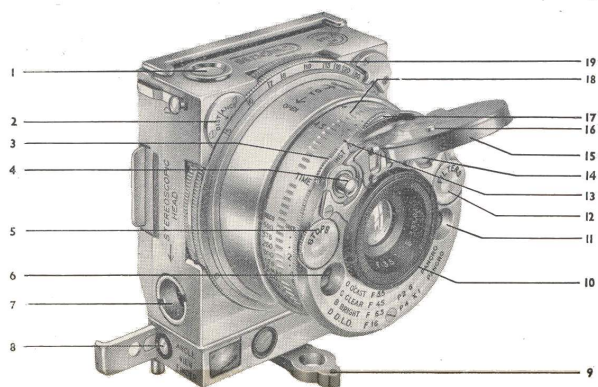


FIG. 1.

- | | |
|----------------------------|---------------------------------|
| 1 Spirit Level. | 11 Filter Indication Window. |
| 2 Distance Indicator. | 12 Filter Control. |
| 3 Shutter Speed Ring Lock. | 13 Instantaneous Setting Arrow. |
| 4 Instantaneous Release. | 14 Time Release. |
| 5 Lens Stop Control. | 15 Lens Cover. |
| 6 Stop Indication Window. | 16 Depth of Focus Scale. |
| 7 Stereoscopic Head. | 17 Shutter Wind. |
| 8 Angle View-Finder. | 18 Shutter Speed Ring. |
| 9 Camera Foot. | 19 Milled Focussing Ring. |
| 10 Lens Hood. | |

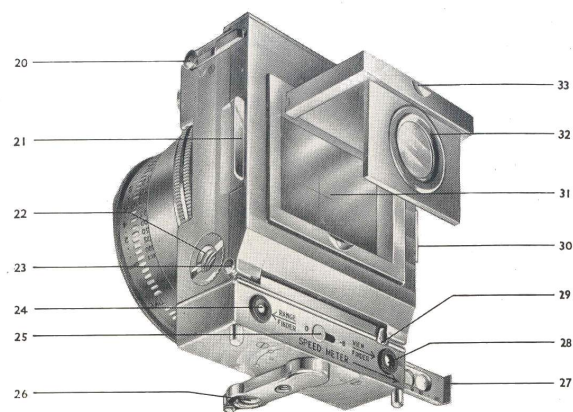


FIG. 11.

- | | |
|----------------------------------|--------------------------------|
| 20 Camera Back Release Clip. | 27 Exposure Meter Slide. |
| 21 Pressure Plate Release Lug. | 28 View-Finder. |
| 22 Removable Tripod Bush. | 29 Angle View-Finder Control. |
| 23 Release Pin for Hinged Back | 30 Pressure Plate Release Lug. |
| 24 Range-Finder. | 31 Focussing Screen. |
| 25 Supplementary Exposure Wedge. | 32 Focussing Magnifier. |
| 26 Tripod Bush. | 33 Screen Cover. |

Section	Subject	Pages
1	Detailed description of the Compass Camera and the handling of its various adjustments	3 to 23
2	The use of the Compass Unit System	24 to 30
3	Supplementary instructions and additional technical notes ...	31 to 37
4	An Index will be found on page	38

Indexed diagrams of the Camera are bound into each end of the book and can be unfolded for easy reference.

All key numbers quoted in the text refer to the numbers on these diagrams.

Other references (as : Fig. 1) relate to the illustrations in the text.

Whenever left or right, or clockwise or anti-clockwise movement is mentioned in this book, it is assumed that the camera is being viewed from the FRONT.

Distance measurements are given in "feet" and in "metres" to cover alternative calibrations engraved on the camera. The word "feet" or "metres" will be found engraved on the focussing ring and depth of focus scale indicating the method of calibration of the particular model.

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SECTION 1

DESCRIPTION OF THE COMPASS CAMERA AND THE HANDLING OF ITS VARIOUS ADJUSTMENTS

OPENING AND CLOSING THE CAMERA

To open out the camera for use, slide out the front extension by shaking the camera forward, then pull out both extensions to the full and lock in position by turning firmly to the left (anti-clockwise). To close camera, turn the front firmly to the right (clockwise), when two quick successive clicks will be heard, indicating the unlocking of the two extensions; the extensions can then be pushed back into the camera.

LENS COVER AND HOOD

To clear the lens, lift the hinged Cover (15). When this Cover is closed it not only protects the lens, but also protects the shutter release and prevents inadvertent exposures.

Under the cover is a telescopic Lens Hood (10) extended by gripping its outer rim, and pulling it forward. This Hood shields the lens from extraneous light and should always be used, as it has no effect other than this shading and does not complicate the use of the camera.

is then turned so that its central Arrow points to the distance in question, the pairs of side "tentacles" will show at a glance how many feet, or alternatively metres, on the near or far side of the main subject the range of sharp focus extends for each individual Stop.

It will be seen, for example, that with the lens focussed at 10 feet, or alternatively 3 metres, the following range of sharp focus is given by the use of the Stops:—

Stop	Value	Range of Focus
0	F/3.5	8 to 13 feet or 2.5 to 4.0 metres
2	F/4.5	7 to 16 feet or 2.2 to 5.0 metres
4	F/6.3	6½ to 20 feet or 2.0 to 6.0 metres
8	F/16	4½ to Infinity or 1.5 to Infinity

LIGHT FILTERS

The control of the Light-Filters built into the Compass Camera is described on page 7. The Unit System of calculating the altered exposure necessitated by their use is given on page 29.

The use of a Light Filter gives more pleasant rendering in monochrome of a coloured subject because it aids a more accurate and subtle "translation" of shades of colour into shades of tone. It gives more *quality* to a picture and therefore should be used as frequently as possible.

An exception to this rule is that negatives taken with the main purpose of making extremely large enlargements are better taken without the use of a



FIG. 2.—How to hold the Camera when taking a picture.

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SHUTTER CONTROLS

There are three operations in the use of the shutter :—

- (a) To set to the required speed.
- (b) To wind.
- (c) To release.

(a) The Shutter Speeds are engraved on a band or Ring (18) encircling the front extension. They are indicated as fractions of a second (in red) and as Compass Units (in black) ; these latter are explained in Section 2. Once set to any speed, the Shutter will continue to repeat that speed automatically with every winding—the Speed Setting Ring is only reset when it is desired to alter the speed.

The Speed Setting Ring is freed by pushing its Locking Catch (3) to the right (clockwise), when a red edge will be revealed. The Ring is now free to revolve and the desired exposure can be brought into line with the black arrow (13) alongside the locking catch. This black arrow is the indicator for all automatic speeds. When the Setting Ring has been correctly placed, the locking catch is pushed to the left and the Ring is then locked against movement.

(b) To wind the Shutter, rotate with the finger-tip the milled wheel (17), which is set in the top edge of the camera front, to the left (anti-clockwise) until it stops. With the Shutter set to a short exposure only a short wind is required ; with longer exposures a longer wind will be found necessary. The Shutter cannot be overwound.

Filter, as these (the heavier ones in particular) filter out the short-wave sharpest-cutting light vibrations. This is only of practical importance when a very considerable degree of enlargement is contemplated and extreme sharpness is desired. Also, it is undesirable to use any Filter when photographing by *artificial* light, either indoors or for night street scenes.

With Orthochromatic plates or films the Wratten K1 filter should be used ; this gives a generally improved tone rendering, in particular emphasising the varying tones of green which without a Filter are inclined all to be much of the same tone and too dark. The use of the K1 filter overcomes this and also gives a truer rendering of the sky, which will have tone.

With Panchromatic films, use the Wratten X1 filter, which gives much the same effects as the K1 with Orthochromatic films, but to a greater degree. Being a stronger Filter it requires a considerable increase of exposure (this is allowed for by the Compass Unit System) and gives a rendering as near scientific accuracy in translating colour into tone as is possible.

The Wratten G Filter is orange-coloured and is intended to give what is known technically as over-correction ; it cuts out haze and mist and is therefore useful in taking pictures of distant places on misty days, and its correction tends to make all green tones in the subject rather lighter than normal and all the blues darker. This is often useful for pictorial effects.

(c) To release the Shutter. For all automatically timed exposures the Shutter is released by pressing the stud marked "INST" (4) on the camera front.

For TIME exposures of greater length than $4\frac{1}{2}$ seconds the Shutter is operated as described on page 31 under TIME EXPOSURES.

For the correct Shutter Speed to use under various conditions see Section 2.

LENS STOPS

Four lens Stops are provided, giving effective apertures of F/3.5, F/4.5, F/6.3 and F/16. They are controlled by the milled wheel marked "Stops" (5) on the left of the camera front, and the Stop in place is indicated in the circular window (6) just below this wheel. By revolving the wheel any Stop desired can be brought into position. Each Stop is indicated in the window by a figure inside a letter.

The letters are linked with the simple system of use described in "Snap-Shots With The Compass Camera," the figures are Compass Units, the system of use of which is the subject of Section 2.

The normal technical information regarding the Stops is engraved in red, together with list of Weather Conditions (see "Snap-Shots" for details of use) just below the indicator window. For further information regarding the use of Stops, see paragraphs on Depth of Focus Indicator on page 35.

of the camera to the other, gives the camera two positions with the axis of the lens parallel—the condition necessary for the taking of stereoscopic pairs of pictures.

To take stereoscopic pairs of pictures, set the camera on a tripod as described and take one exposure with it in position "A"; reload, then swing the camera round (without moving the tripod) to "B" and make the second exposure.

As there must be a short interval between the two exposures, this method of taking Stereograms is suitable only for subjects that will not show movement.

Prints or positive slides from the pairs of negatives can be made and mounted (that taken on the left is mounted on the right and vice-versa) and viewed through a stereoscope in the usual way.

DEPTH OF FOCUS SCALE

Built into the hinged cover which protects the Compass lens is a Depth of Focus Scale (16). At whatever distance a lens is sharply focussed, objects a little closer and a little further away will also be sharp, while those much closer and much more distant will not be sharp. The effective range of sharp focus of a lens in this respect, its "depth of focus," depends upon the size of the Stop used in it.

On ascertaining by the use of the Range-Finder or measurement the distance of the main subject from the camera, the central disc of the Depth of Focus Scale

FOCUSSING SCALE

The front of the milled Focussing Ring is engraved with a Scale of distances in feet or alternatively metres. By estimating or measuring the distance from camera to subject and setting this Scale with the correct number of "feet" or "metres" in line with the arrow engraved "Distance" (2) the camera will be correctly focussed.

Automatic and more accurate results will be obtained by using the range-finder.

THE RANGE-FINDER

If the camera is pointed toward a subject which is then viewed through the circular lens marked "Range-Finder" (24) at the bottom of the camera back, two images of the subject will be seen. There is a blue image all over the field of view, and super-imposed on this, a small circular yellow image. This yellow circle must be in the centre of the blue field, as it will be if the eye is directly behind the viewing lens.

Comparing the central yellow image with the section of the blue image upon which it is super-imposed it will be seen that the same objects appear in both, but that they may be slightly displaced vertically (see Fig. 4). By rotating the milled Focussing Ring (19) the relative position of the two images of any selected part of the subject can be adjusted, and from being one above the other they can be made to overlay one another and coincide exactly (see Fig. 4).

Each adjacent pair of negatives taken as the camera is swivelled round in this way will show just sufficient overlapping of subjects matter to make it easy to join up prints made from them. Two, three, four and five negatives may be taken, according to the extent of view which it is desired to include. The number of negatives necessary can be judged by looking through the view-finder with the camera in its various positions.

STEREOSCOPIC PICTURES

A pair of pictures which, when viewed through a stereoscope gives a Stereoscopic or third-dimensional effect can be taken with the Compass Camera as follows:—

Unscrew the Stereoscopic Head (7) from its setting in the side of the camera and screw it into the bush provided on the camera foot (9). Take the detachable Tripod Bush (22) from the other side of the camera and screw it on to the tripod. If the Stereo Head is now dropped over the Tripod Bush (as shown in Fig. 10) the camera will be firmly fixed on the tripod, but it can be held in either of the positions "A" or "B" as shown. In "A" the camera-foot is turned right, in "B" turned left, in each case to a definite stop.

The engagement of the Stereo Head and the Tripod Bush is such that the camera can be turned through exactly 180° (half circle) without moving the tripod. This movement, combined with the swinging of the foot from one side



**Hand-made Prototype
of Wrist Camera**
(Made of Aluminum)

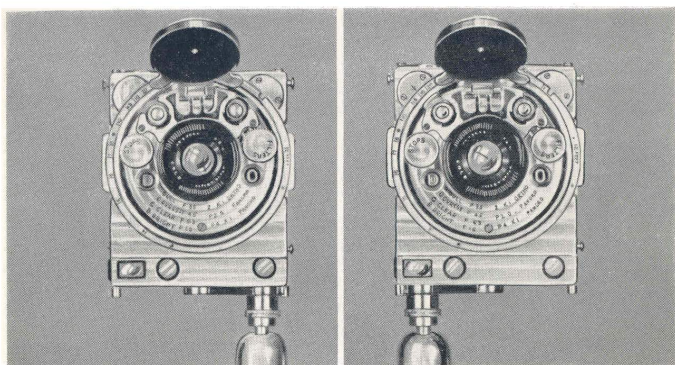


FIG. 10.—The two positions of the Camera when taking Stereoscopic pairs of pictures.

LIGHT FILTERS

A set of three coloured Light Filters is built into the Compass Camera. They are controlled by the milled wheel engraved "FILTERS" (12) on the right of the camera front. Whether a Filter is in place, and if so which, is indicated in the circular window (11) just below the wheel. There are four positions of the Filter Control, the respective indications in the window being :—

0. Lens open, no Filter in place.
2. Wratten K1 Filter (for Orthochromatic plates or films).
- P.2. Wratten G Filter (for Panchromatic plates or films).
- P.4. Wratten X1 Filter (for Panchromatic plates or films).

The conditions in which these Filters should be used are briefly described in the notes on pages 36 and 37. The numbers are Compass Units (see Section 2, page 29) while the letter P indicates that the Filter in place is suitable only for use with Panchromatic emulsions, not with Orthochromatic plates or films.

FOCUSSING

The camera is focussed for subjects at various distances by revolving the milled Focussing Ring (19) which is between the body of the camera and the back extension. Three methods of setting to the correct focus are provided :—

1. The Focussing Scale. 2. The Range-Finder. 3. The Focussing Screen.

Time exposures are only practicable when the camera can be fixed on a tripod or other firm support, and even then care must be exercised to keep the camera completely steady during the exposure.

SPIRIT LEVEL

When photographing many subjects, and especially when taking stereoscopic pairs or panoramic sets of negatives, it is desirable for the camera to be quite level. The Spirit Level is fitted in the top of the camera to facilitate this; when the bubble in the red liquid is central the camera is level.

PANORAMIC PICTURES

Following is the procedure necessary to take a set of negatives, the prints from which can be joined up to make a continuous Panoramic picture.

Screw Tripod into Camera foot (9), turn the camera on the tripod as far as it will go to the left. Set it up before the selected view, being careful to see by aid of the Spirit Level (1) that the camera is level. As the camera is rotated to the right on the camera foot, it will be felt to click firmly into four successive positions. Turn the camera in this way to see how many exposures will be necessary to include the desired part of the view. Each exposure is, of course, made as a separate plate or film. For ease in printing and joining up, the same shutter speed and lens stop should be used throughout, so that the negatives will be even in density.

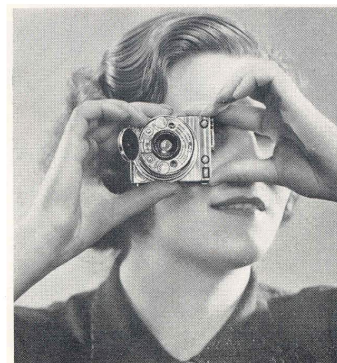


FIG. 3.—How to hold the Camera when operating the Range-Finder

faster or slower emulsions will be given — or + numbers which should be subtracted from or added to the meter readings as indicated above.

SPEED TABLES

In addition to giving the *correct exposure for the negative* it is important that the Shutter Speed should suit the subject and the conditions in which it is being photographed. It is not possible, for instance, to photograph a moving subject sharply with a slow Shutter Speed, nor can satisfactory pictures be taken with the camera held in the hand if long exposures must be given—slight camera tremble will cause lack of sharpness.

Until the handling of the camera becomes familiar and it is possible to hold the camera still for longer exposures (a facility that will be achieved after very little experience) it is wiser not to use a higher Unit number than 6, unless the camera is rested on a firm support. Thereafter it is desirable to observe the following rules so that the exposure may not be too slow for the subject :—

When holding the camera in the hand, do not use a higher Unit number than	...	...	...	...	...	...	...	...	...	8
When taking moving figures, do not use a higher Unit number than	...	...	...	...	...	...	...	...	...	6
When taking very rapidly moving subjects (cars and horses racing), do not use a higher Unit number than	...	...	...	...	...	...	...	...	...	4

When such portions of the range-finder images coincide, the part of the subject they represent is in sharpest focus. A little practice may be necessary to achieve this quickly and accurately, but care expended in mastering the very simple operation involved will be more than repaid by the sharpness of the resultant pictures.

The easiest way is to hold the camera sideways between the first finger and thumb of the left hand and turn milled Focussing Ring (19) with first finger and thumb of the right hand, in which case images when out of focus will be displaced vertically (see Fig. 3).

GROUND GLASS FOCUSING SCREEN. (Fitted only on Envelope Backs)

The Focussing Screen (31) is built into the pressure plate in the hinged back of the camera. It is revealed by pulling back the lower edge of the hinged screen cover (33). If the Shutter is opened at "TIME" (with Stop 0 and no Filter in place) the image that will be received on the plate or film can be seen and—with the aid of the Magnifying Glass (32) built into the hinged cover (33)—focussed on the ground glass.

A small Cross is seen on the centre of the Ground Glass Screen. The purpose of this Cross is to enable each Compass user to ascertain the exact focussing point of the Magnifying Glass according to his own individual eyesight. With the Shutter opened and the camera pointed to the light this Cross must be carefully

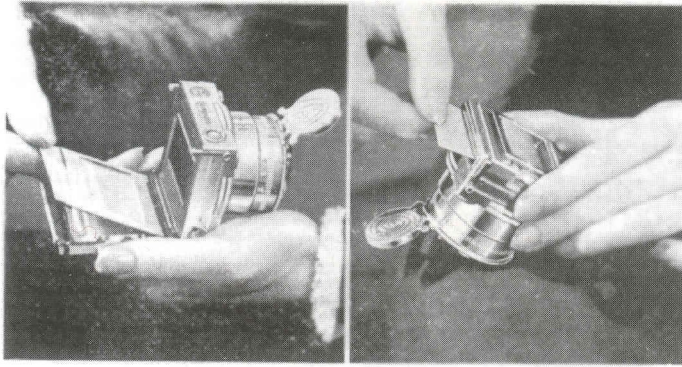


FIG. 5.—Insert Envelope in Camera Back behind Red Lens

FIG. 6.—Press in the Pressure Plate Release

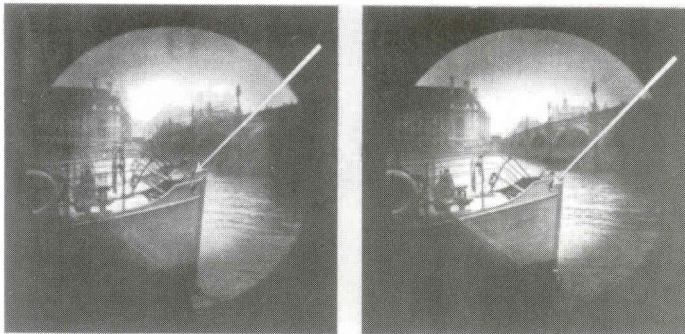


FIG. 4.—The first picture shows the Rangefinder image when the picture is *not* in focus. The second picture shows the image when the Camera is focussed *correctly* on the bows of the boat. . . . There is now only a single image of this part of the subject.

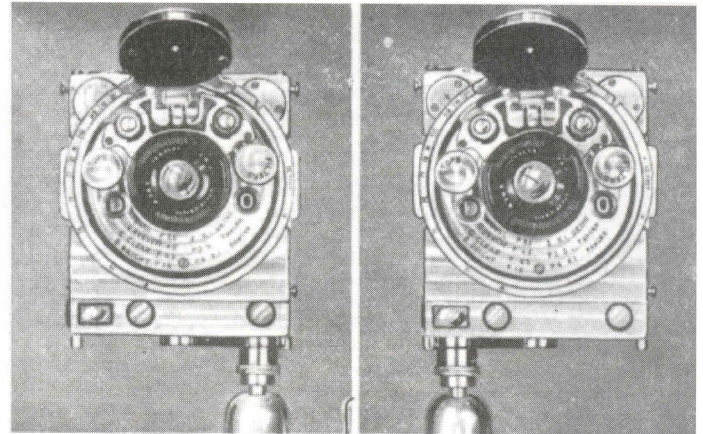
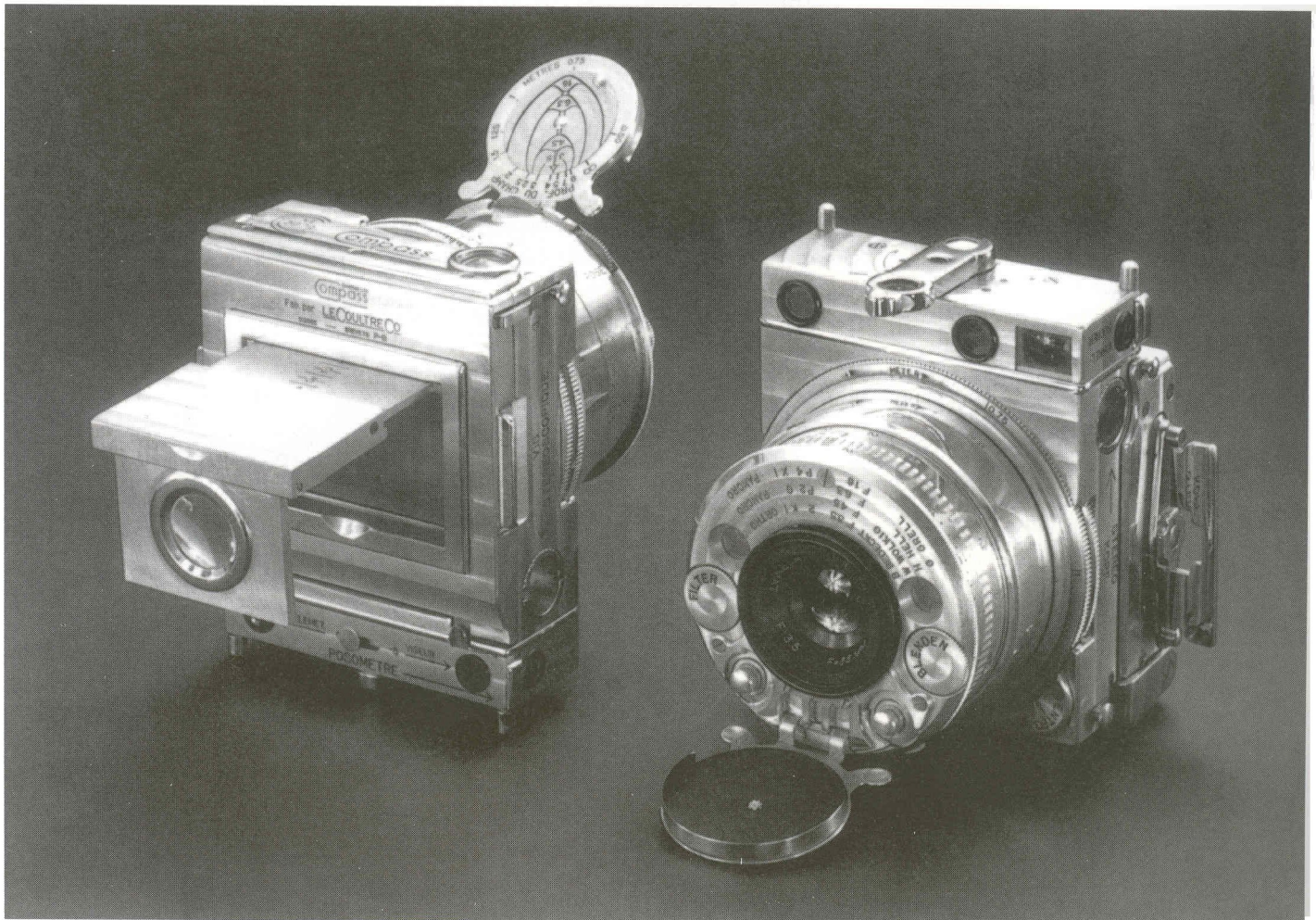
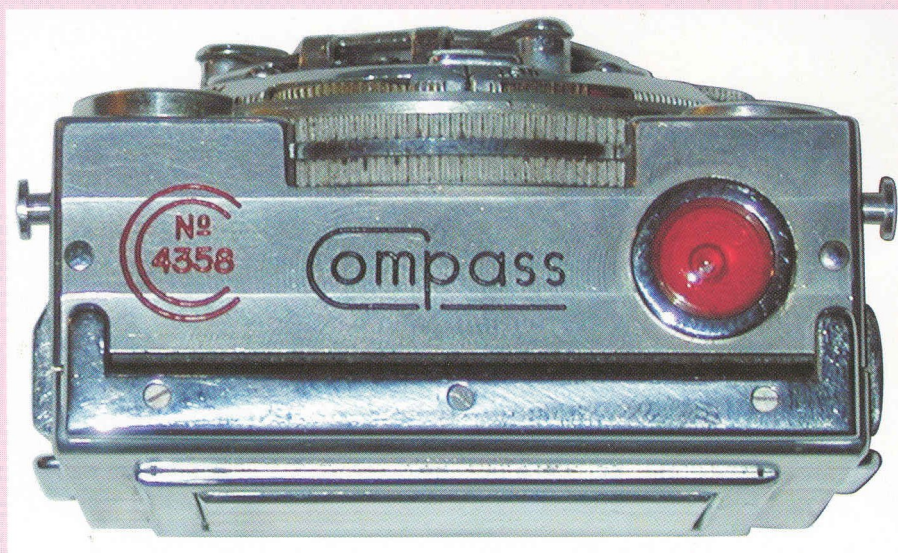


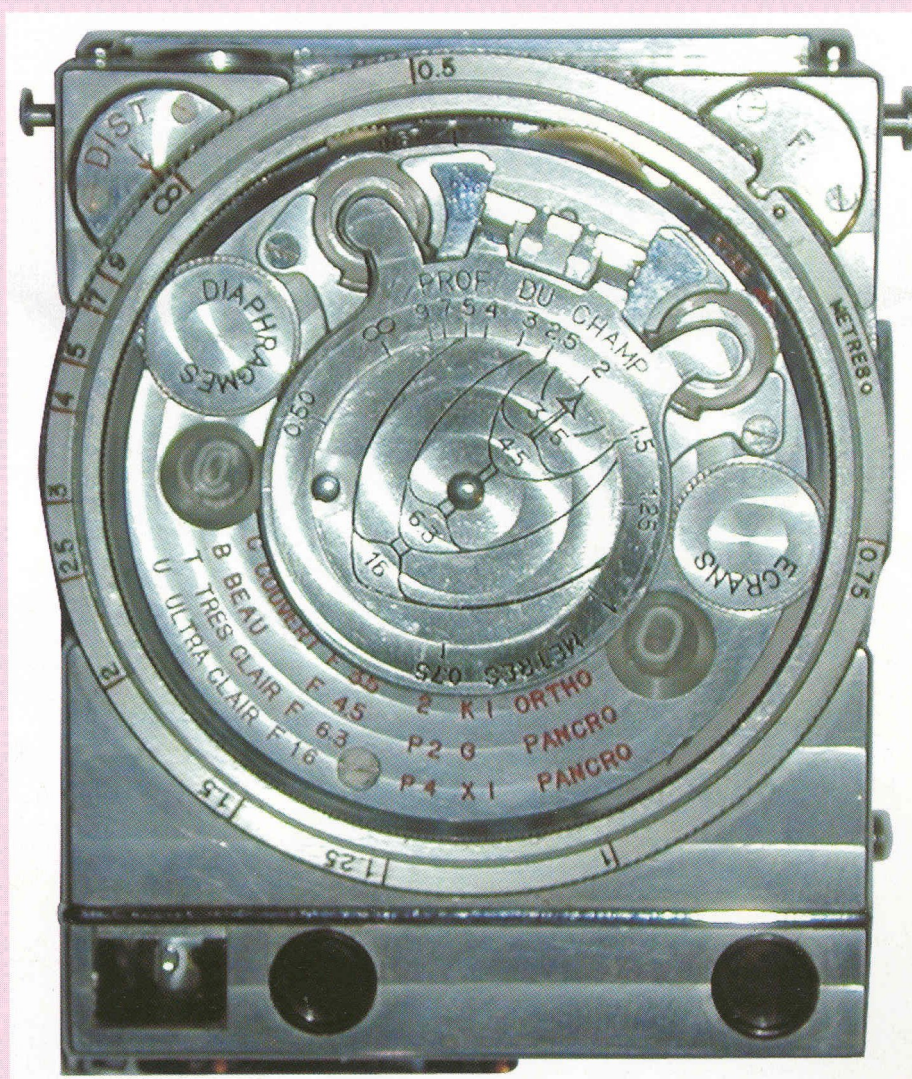
FIG. 10.—The two positions of the Camera when taking Stereoscopic pairs of pictures

COMPASS du Musée Suisse des Appareils Photographiques à VEVEY





COMPASS



COMPASS, coll. KOILSKI, photos GHNAISSIA

HOW TO USE THE RANGE-FINDER.

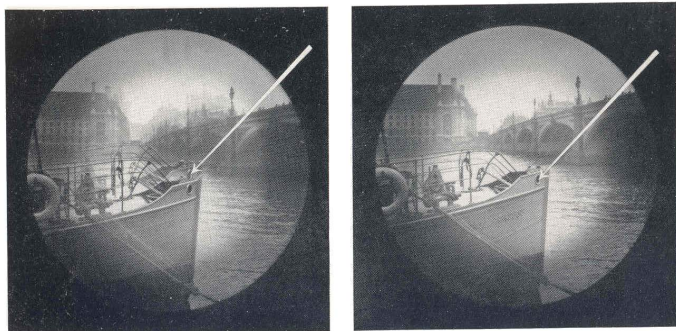


FIG. 4.—The first picture shows the Range-Finder image when the picture is *not in focus*. The second picture shows the image when the Camera is focussed *correctly* on the bows of the boat. . . . There is now only a single image of this part of the subject.

SECTION 3

SUPPLEMENTARY INSTRUCTIONS AND ADDITIONAL TECHNICAL NOTES

THE CAMERA ON A TRIPOD

The removable Tripod Bush (22) is fitted to take the standard tripod screw. To fix the Compass Camera on a tripod for the taking of *vertical* pictures the Tripod must be screwed into the Bush, with the Bush in its normal position in the side of the camera ; in order to fix the camera on a tripod to take *horizontal* pictures, the Tripod is screwed direct into the fixed Bush (26) provided on the camera foot.

TIME EXPOSURES

Should lighting conditions make necessary an exposure exceeding $4\frac{1}{2}$ seconds, the non-automatic Shutter Speed Setting should be used. Rotate the Shutter Speed Setting Ring (18) so that the word "TIME" engraved on the shutter speed band, is set opposite the red arrow above the word "TIME" engraved on the right-hand side of the camera face. After winding, the shutter is opened by pressure on the "TIME" button (14) and closed after the desired interval by pressure on the "INST" button (4).

focussed with the Magnifying Glass by sliding the Glass forward and backward until the outline of the Cross is sharp and clear cut. The correct setting of the Magnifying Glass for the user's own eyesight can then be read on the engraved scale on the top of the magnifying glass panel. This setting is simply repeated on the scale whenever it is desired to use the Magnifier again.

FOCUSSING MAGNIFIER

Having set the Magnifying Glass to the correct focussing distance, the image of the subject to be photographed can then be clearly viewed on the Ground Glass Screen and the camera lens focussed, if necessary, by turning the milled Focussing Ring until the necessary sharpness is seen in the image of the subject on the Ground Glass Screen.

The image on the Screen will be more clearly seen if it is shaded from extraneous light by hooding it round with a hand. After focussing on the Ground Glass Screen it is of course necessary to *close the Shutter before loading* the camera with a plate or film.

Most users of the camera will find it easier to focus with the Range-finder, but ability to use the Ground Glass Screen is frequently of considerable value in composing the picture that is to be taken.

USING SMALLER STOPS

The widest lens Stop is marked "0." The smaller Stops are each given a Unit number, which is engraved inside the letter indicating Weather Conditions. The letters are used only in the simple system described in the foreword. If one of the smaller Stops is used its Unit number must be added to the exposure Meter reading in order to obtain the correct shutter speed (e.g., with a Meter reading of 2 and Stop 4 in position, the shutter should be set to 6 Units).

More detailed information about the use of the smaller Stops is given in the paragraph describing the Depth of Focus Indicator, on pages 35 and 36.

FILTER FACTORS

Similarly each Light-Filter is given a Unit number and when a Filter is used in the lens this number must also be added to the Meter reading. So with a Meter reading of 2 and with Stop 4 and Filter 2 in position, the correct shutter setting would be 8 Units.

PLATES AND FILMS

A wide range of plates and films will eventually be available for use with the Compass Camera. On the packing of each plate or film a Compass Unit Factor will be marked. Emulsions of standard speed will be marked "O" while

to be possible. When this supplementary Wedge is in use, 8 must be *deducted* from the exposure meter reading (e.g., if the slide reading with the supplementary Wedge in position is 14, $14-8=6$, and 6 is therefore the corrected Unit setting for the Shutter).

MINUS READINGS

In very brilliant lighting conditions, or when using a very fast plate or film, a *minus* reading may be obtained. For instance, with the supplementary Wedge in the exposure Meter, a reading of only 4 might be obtained. As the use of the supplementary Wedge calls for a subtraction of 8 from the original reading, this leaves a resulting Unit figure of -4 . As there is no Shutter Setting lower than 2 Units, this -4 must be built up to at least $+2$. This is done by introducing Stops and/or Filters to a Unit total of 6, say, Stop 4 and Filter 2.

SPEED SETTING

Having arrived at a correct Unit reading, set the Speed Setting Ring (18) so that this Unit number (engraved in black on ring) is immediately opposite the black arrow (13) engraved on the top of the face of the camera, when the exposure will be correct, using a plate or film of normal speed, with the lens open to its widest and with no light-filter in position.

TO LOAD THE COMPASS CAMERA WITH PLATES

(For loading roll films, see pages 15 to 20.)

The Compass Camera Back fitted with the ground glass focussing screen is designed to take the Compass plate Envelopes.

Each Envelope consists of two parts, one sliding within the other. When the Inner envelope is pushed home the two make a completely light-proof container for the sensitive plate. When the Inner envelope is withdrawn the sensitive plate is revealed through the frame cut in the Outer envelope, so it is essential that the Inner envelope shall only be withdrawn when the whole is loaded into the camera and the camera back closed.

To avoid accidental partial withdrawal, Envelopes should be handled by the sides, not by the top.

To load the camera, the hinged back is released by pressing the studs (20) on either side of the camera at the top. The Envelope is placed (cut-out frame towards the lens) into the little red shelf at the bottom of the hinged back and the back is then closed. (See illustration on page 14, Fig. 5.)

To uncover the plate inside the camera ready for exposure, press inwards the two pressure plate release lugs (21 and 30) on the sides of the hinged back. This relieves all pressure from the Envelope and the Inner envelope can be withdrawn

Compass

Cher monsieur Cyclope,

Merci pour ton article sur le COMPASS. Celui paru dans ton numéro 1 était vraiment trop succinct pour répondre à mon tout récent problème :

Cet été, de passage dans le Valais, il me fut donné l'occasion d'acheter à un prix très raisonnable un de ces fantastiques boîtiers, entrevu à Bièvres mais en son temps financièrement inaccessible. Ce numéro 2641 en poche, dévalant les bords du lac, nous fîmes halte, ma collectionneuse- trésorière et moi au superbe musée photo de Vevey qui dispose d'une vitrine très complète sur le sujet. Là petit pincement au cœur assez désagréable, nous nous aperçûmes (note que je tâche de m'exprimer dans le style qui sied à l'époque de l'engin !) que notre appareil est dépourvu du couvercle rabattant devant l'optique ! Voilà ce que c'est que de céder à un coup de cœur ! (pas de confusion... c'est bien de l'achat de l'appareil qu'il s'agit !)

Retrouvant nos pénates Tourangelles je me mets en tête de combler cette lacune tout en sachant qu'à la casse la pièce est introuvable. Je dois pouvoir la faire refabriquer ! (pour ne pas dénaturer l'objet, la copie sera discrètement estampillée à mon nom et datée sur l'envers)

Le lycée Technologique d'ici étant tout juste équipé d'une machine 5 axes, à guidage laser et bignotron intégré, doit pouvoir me dépanner au vu de la photo du sus cité numéro 1. Hors mes bonnes relations levèrent les bras au ciel en voyant les contours en forme de tête de Mickey de la pièce manquante, la taille des axes, et les finitions "bouchonnées" de la pièce. Des jours de programmation binaire, qu'ils invoquent : on a beau être spécialisés en micro bécanes, il y a des limites à l'amitié. En revanche on appelle les collègues et les élèves pour admirer le savoir-faire et la finition helvète des années 30.

En désespoir de cause, j'écris derechef et sans illusion, à la maison Jaeger Lecoultre, toujours opérationnelle dans l'horlogerie de luxe (même tarif aligné sur le carat de Compass, et même qualité). Ils sont toujours à "Le Sentier" dans le jura Suisse. Ma missive circonstanciée est courtoise pour cause d'opportunité opportuniste. Le service client me répond en 3 jours sous forme d'un volumineux paquet (ouvert par les douanes... tiens pourquoi ?)

- Une charmante lettre d'excuses comme quoi les 3 pièces n'étaient plus disponibles en stock et depuis longtemps...

- La copie couleur, haute qualité, sur bristol, du mode d'emploi original (hélio) en français, que j'avais failli acheter fort cher sur Internet (e-bay) la semaine d'avant.

- Des copies d'articles de presse, et publicités (dont le fac-similé du dépliant d'époque)

- Les copies des "bleus" de fabrication du "cache- poussières" (voilà, je sais son nom exact) et de ses 4 composants dont je ne soupçonnais pas l'existence.

- Et.... des photocopies couleur du calepin original de l'ouvrier super qualifié qui usinait les pièces en question, avec cette énigmatique page de rangement de nombres.

- ça c'est du service après vente !!!

Ces recherches et l'envoi des documents ont été faits gracieusement alors que j'avais proposé un défraiement. Du coup, c'est avec reconnaissance que mon regard s'est porté du côté des montres Jaeger Lecoultre dans les vitrines spécialisées au moment de ma quête de cadeaux conjugaux de fin d'année.

Conséquences : je n'ai plus trop de sous pour m'offrir un dos rollfilm... si j'en trouve un !

En lisant ces documents, on apprend que si les Compass modèle 1 (1936-1937) sont si rares, c'est parce qu'ils avaient la fâcheuse tendance à tomber en panne et qu'ils auraient été réparés et modifiés en modèles 2, par l'usine (à ce propos, il faudra qu'un jour je vous parle d'un certain Zenit 16.)

Ce Compass modèle 2 était vendu 30 Livres. L'optique est un anastigmat à 4 lentilles. On constate également qu'ils ont été gravés : en Français, Anglais et Allemand... il y en aurait-il en autres langues ?...en tous cas ça fait cher la collec de variantes.

Donc, muni de ces précieux documents j'essaye à nouveau mon collègue récalcitrant. Son sourire s'élargit : les colonnes de nombres ne sont rien d'autre que les coordonnées dont sa machine, dernier cri du virtuel appliqué, a besoin pour se mettre au travail. Pour ne pas avoir l'air étonné il se lance dans des histoires de plateaux diviseurs utilisés à l'époque et auxquelles je n'ai pas saisi grand chose ! Mais c'est pas tout : d'après les plans, c'est de "l'avional" qu'il faut lui donner à grignoter au monstre automatique !

Pierre, mon vieux copain de lycée n'est pas encore retraité du CNES et est en relation avec des gars de l'aérospatiale à Toulouse : il doit me trouver ça : pas de chance, ils sont trop jeunes et ne font pas dans l'archéologie. C'est donc un autre ami, prothésiste dentaire, qui va me sortir de là en me proposant un alliage nickel-machin-truc inaltérable et très résistant dans de faibles épaisseurs. J'attends le résultat.

En fait, l'idéal serait de trouver un bout, d'une sorte de Duralumin employé dans l'aéronautique d'avant guerre et qui avait la propriété de ne pas s'oxyder comme l'alu après fraisage, tout en étant très solide sous de faibles cotes et de plus acceptait sans broncher un pliage sous rayon court. (si un passionné en a un bout de 40x40x5mm dans sa cave, je suis évidemment preneur... avec gratitude)

Tant que j'y suis, j'aurai besoin d'une représentation (photocopie p.e.) de la face avant ANGLAISE afin d'avoir un modèle précis des gravures de l'échelle de profondeur de champ.

Pour en finir, j'avais bien évidemment sollicité les conservateurs du musée de Vevey, qui tout aussi aimablement m'avaient répondu à la hauteur de leurs possibilités : une expo temporaire, dont ils s'excusaient, bloquant pour un temps les vitrines, c'est très récemment que je reçus gracieusement (ça doit être une habitude en Suisse francophone...) des photocopies de la dite face avant, mais hélas gravée en allemand, et... toute une documentation issue d'une certaine revue "Cyclope" dont ils sont dépositaires et dont le numéro de décembre 2000 traite du sujet : quelle chance ! Merci encore à eux. Je leur renvoie ici toute ma sympathie et vous signale que ce musée, en plein centre historique de Vevey, tout près du vaste parking central au bord du lac, est remarquable par son accueil, sa clarté et surtout qu'il est passionnant pour vos enfants : un dispositif de découverte, jeu de piste et expérimentation est spécialement conçu pour eux ; ainsi ils vous fichent la paix quand vous concentrez sur la vitrine de vos passions... enfin presque parce que vous serez souvent sollicités pour vérifier les réponses. Ma fille de 4 ans ne décrochait plus de la table d'exposition lumineuse au sous-sol, maintenant qu'elle en a 9, elle y file directement et fabrique en série des Rayogrammes.

Comme j'en ai l'habitude je me suis bien évidemment essayé à produire des images avec mon Compass : à la première tentative ce fut l'échec. J'ai coupé un bout de film 135 (FP4) et l'ai coincé sur le dépoli. Raté : il a pris le jour par tous les interstices : voile général. Je renouvelle en collant du gaffer sur tout le tour et sur le dos de l'appareil : encore voilà ! A la troisième fois, avec 2 épaisseurs de collant noir mais sans viseur pour cause d'emballage trop bien fait (dans l'obscurité totale évidemment !) j'ai obtenu le cliché ci-joint en utilisant le système de pose intégré (à extinction) : 125^{ème} à f 1:4.5 pas de filtre, soleil de janvier entre 2 averses. Pas de critique sur le sujet s.v.p. : j'ai pris le plus contrasté à 3 pas de ma porte ! Développement Rodinal : tirage 6x9 puis agrandissement partiel d'un 40x65, le résultat est très convenable mais souffre à l'évidence d'un manque d'acutance. Bien cordialement, **Alain BERRY**

P.S. - Un article de presse britannique a comparé sa conception à un arbre de Noël, lequel, et c'est une grave lacune, serait seulement dépourvu de placard à cocktails ! Si faute de Compass, vous avez possédé une M.G. ou toute autre anglaise de ces années là, vous comprendrez l'auto-dérision de la remarque. Outre manche, quand ça les prend, ils empiètent tout ce qu'ils trouvent dans la plus petite boîte possible... et ça fonctionne. Ce n'est pas de la technique... c'est un pari !

TO ATTACH ROLL FILM BACK TO CAMERA

If the hinged back, which accommodates the plate envelopes for single exposures, is in place on the camera it must first be removed. This is effected by releasing it from the top clips (20) and then withdrawing the spring hinge pin (23), enabling the back to be lifted off the fixed hinge pin on the opposite side.

To attach the roll film Back, lay the camera face down and place the roll film Back in position on it. The two spring hinge pins (34 and 34a), *see diagram on page 17*, should then be pulled outwards—when the Back will drop into position and can be secured by releasing the pins.

The top clips (20) on the camera back grip the roll film Back firmly and hold it closed against the camera. The clip Cover (47) which folds down over the clips prevents accidental release. A finger-nail groove is provided in the centre of the clip Cover.

TO LOAD THE ROLL FILM BACK

With the roll film Back hinged to the camera but not held closed by the top clips (20) the Back is ready for loading with film.

First, turn the Winding Key (37) in the direction indicated by the arrow, until a *black ** appears in the indicator window (38).

The Winding Key must always be turned clockwise, i.e., in the direction indicated by the arrow engraved alongside it. "One turn" is intended to indicate one complete

is to say, though the Range-Finder image will not cover the full field of view given by the camera lens, it does show accurately the direction in which the camera is pointed and what will appear in the centre of the picture taken.

ANGLE VIEW-FINDER

To operate the Angle View-Finder pull out the catch (29) sunk in the camera back just above the view-finder. The subject can then be seen through the window marked "Angle View-Finder" (8) in the side of the camera. As this enables snap-shots to be taken at right-angles to the direction in which the photographer is looking, it is of special value in obtaining natural pictures of camera-conscious subjects.

HOLDING THE CAMERA

Owing to the exceptionally small size of the camera care must be taken when holding it to avoid any part of the hand obscuring any part of the Lens or the Range-Finder or View-Finder. (Figs. 2 and 3 illustrate effective methods.)

If the camera is held pressed firmly against the forehead, as its design intends, great steadiness results and comparatively long exposures can be given,

Do not *jerk* the camera when pressing the Shutter Release. It should be pressed gently and firmly against either the forehead or the pressure of a thumb on the back of the camera. This gives a steady camera and sharp negatives.

SECTION 2

TO USE THE COMPASS UNIT SYSTEM

The Compass Unit System ensures the scientific accuracy of the exposure given to every plate or film, however difficult the conditions and complex the factors involved.

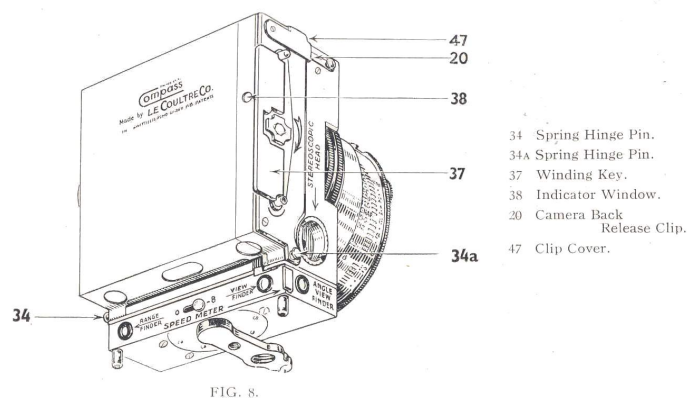
Used in conjunction with the Compass Range-Finder, which gives similar facility in obtaining sharp focus, this System removes all necessity for guesswork in photography and enables even the inexperienced to achieve technically satisfactory results with complete certainty.

The keystone of the Unit System is the Exposure Meter, or Speed Meter, built into the Camera.

EXPOSURE METER

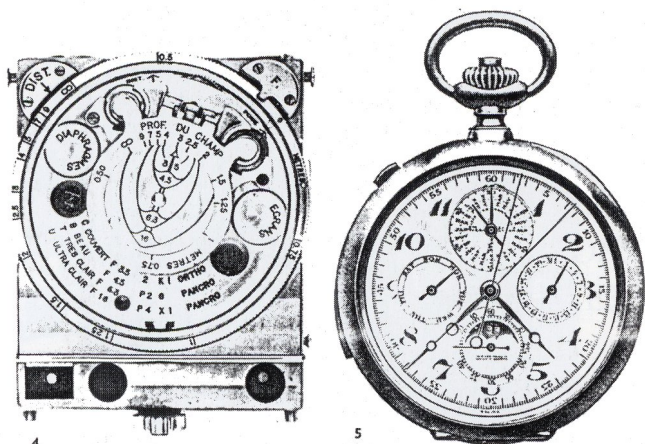
At the back of the base of the camera is an arrow engraved "Speed Meter," pointing to a Slide (27) which can be pulled out from the side of the camera.

To use the Exposure Meter under normal lighting conditions, set the sliding knob (25) in the centre of the back of the camera to "0" and look through the View-Finder (28) at the subject which is to be photographed; while so doing gradually pull out the Exposure Meter Slide (27).

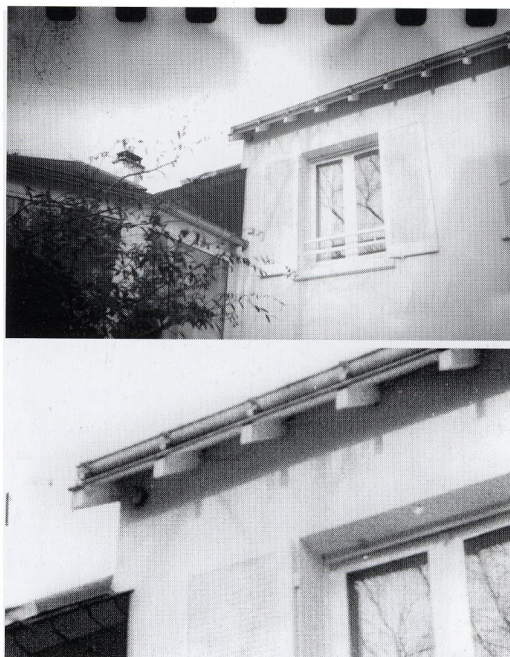


Compass

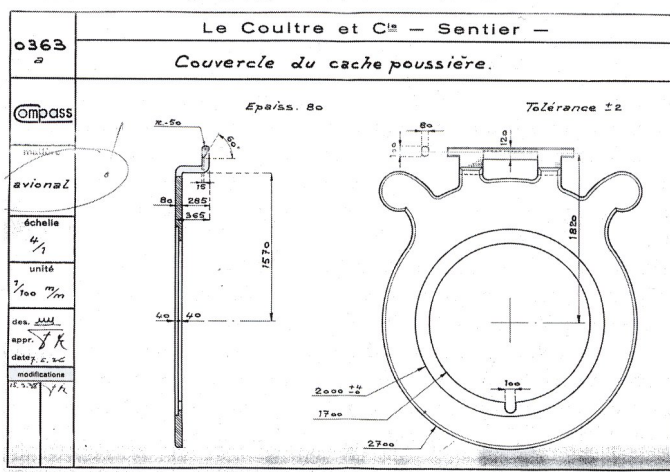
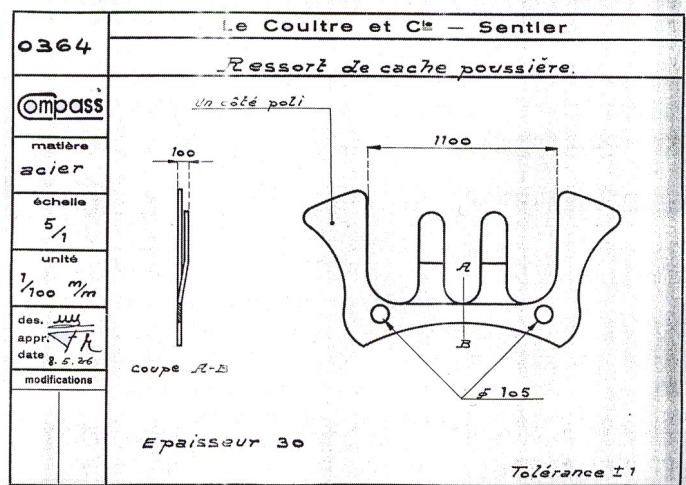
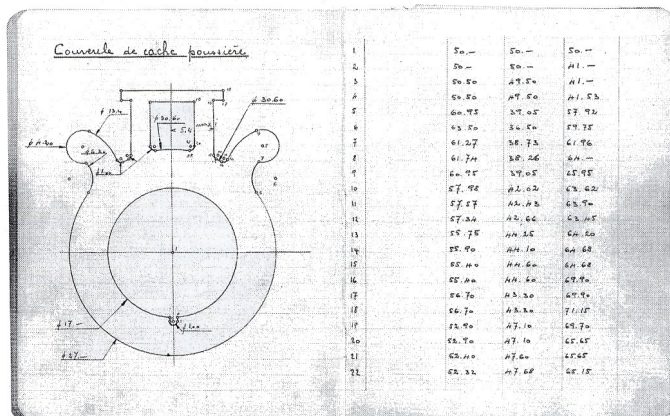
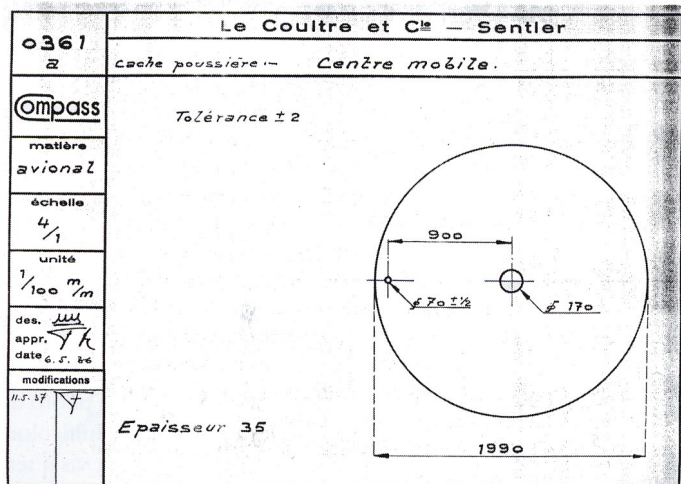
Petite suite par Alain Berry



"la maison Jaeger Lecoultrre, toujours opérationnelle dans l'horlogerie de luxe (même tarif aligné sur le carat de Compass, et même qualité)"



Agrandissement linéaire du négatif 35mm Compass



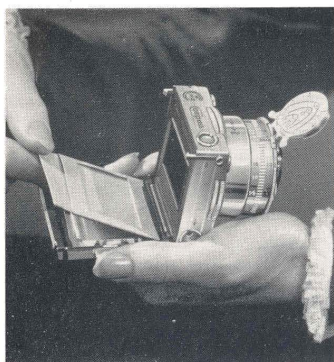


FIG. 5.—Insert Envelope in Camera Back behind Red Ledge.

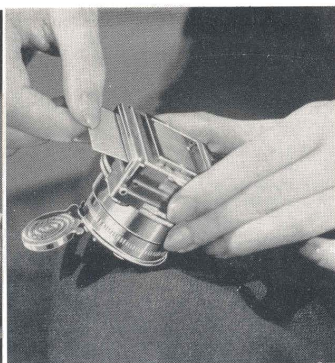


FIG. 6.—Press in the Pressure Plate Release Lugs and withdraw end of Envelope.

to which the image should be darkened when a reading is taken, but the *variable* factor is not quite so easily compensated for: it will probably be found that in very dim light the tendency is to read too low a number (and so to give under-exposure); while in very bright light the tendency is to read too high a number and so to over-expose. A few trials will show what allowance to make in such extreme conditions of lighting. As the adaptability of individuals' eyes varies so greatly it would be of no practical value to suggest what allowances are likely to be desirable.

An extreme example of the adaptability of the eye is its adjustment to artificial light. When calculating exposures "after dark" it will usually be found necessary to add 6 to 8 Units to the reading obtained by the Exposure Meter.

The extent to which the eye adjusts itself to the general lighting conditions is well illustrated by the entirely different effect given by the headlights of a car (a) in daylight and (b) after dark. The lamps emit exactly the same light in each case, but in daylight it is hardly visible (the aperture of the eye being automatically "stopped down") while after dark it will be dazzlingly brilliant as the eye will have "opened up" to adjust itself to the prevailing darkness.

When the light on the subject is so brilliant that the fullest extension of the Meter fails to black out the subject sufficiently to give a Unit reading, the sliding knob referred to above (25) must be pushed over from "0" to "8." This introduces an additional Density Wedge which cuts out sufficient light for a reading

ONOSCOPE SHUTTER SPEED TEST

Name	W. Ruston	Shutter Marked	1 second	Actual Time Is	9.65 second
	361 Water St.	1/2	"		1.27 "
		XIV 1/4	"		1.11 "
Date	July 25/56	XIV 1/8	"		1.785 "
		XIV 1/10	"		1.5 "
Type	Compass Camera	XIV 1/12	"		2.3 "
		1/50	"		4.565 "
Test No.	16837	XIV 1/125	"		100 "
		1/200	"		130 "
Tested by	J.S.V.	1/250	"		220 "
		XIV 1/35	"		30 "
Your flash synchronization has been		1/400	"		310 "
checked OK	☐	1/500	"		350 "
		1/1000	"		" "

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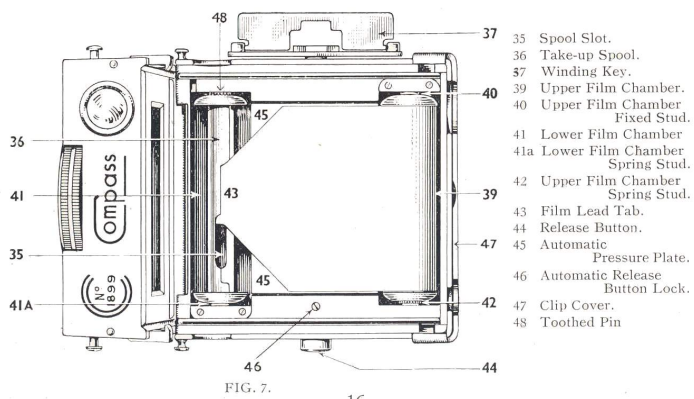
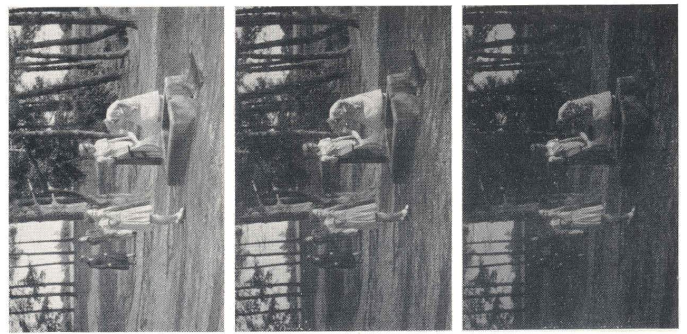


FIG. 9.—How to use the Exposure Meter.
(Showing three stages of the View-Finder image.)



(i.) Clear.

(ii.) With Exposure Meter partially out.

(iii.) With Meter pulled out to correct reading.

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INSTRUCTIONS FOR THE USE OF THE COMPASS CAMERA.

*Issued by Compass Cameras, Limited,
57, Berners Street, London, W.1.*

To use the Compass Camera in the most simple manner possible, it is only necessary to follow the brief instructions on pages 4 to 13.

This simple method of use, though highly satisfactory in its results, leaves unexploited many of the technical resources of the Camera and lacks accurate scientific control. When it is desired to achieve the latter, full instructions will be found in later pages.

Also there are built into the Compass Camera a number of accessories intended to facilitate certain specialized types of photography.

INSTRUCTIONS
FOR THE USE OF
THE
COMPASS
CAMERA

*E. Allom & Co., Ltd.,
Suffolk House, E.C.4*

As the Slide is pulled out the image in the View-Finder becomes darker and darker (see Fig. 9). At that point where the high-lights (the brightest parts of the subject forming the central or most important part of the picture) are still clearly visible (but when a small further movement would black them out entirely) stop pulling out the Slide and read off the lowest number of the series engraved on the lower edge of the Slide. This figure is the Compass Unit.

In order to obtain a true reading it is essential to take it from the high-lights of the subject. If any sky, or some brilliantly lighted object which is not important to the picture, is visible in the view-finder it may be many degrees lighter than these high-lights, but should be ignored when taking the Unit reading. See illustrations (Fig. 9).

Although exposures calculated by the aid of this Exposure Meter are normally extremely accurate, it is desirable at first to check the readings by reference to the resultant negatives—so that any adjustment in the readings which are necessary on account of the *personal factor* can be made.

This *personal factor* is due to variations in eyesight, both the *constant* difference between the eyesight of two persons (one may be able to see in much dimmer light than the other) and the even greater variation in the sight of one individual at various times, due to the capacity of the eye for adjustment to the prevailing lighting conditions.

The *constant factor* will soon be adjusted for by discrimination as to the degree

by pulling out the part which protrudes through the "letter box" slot in the camera top until a definite stop is reached (see Fig. 6). When the Inner envelope is fully withdrawn the pressure lugs are released and the picture can be taken.

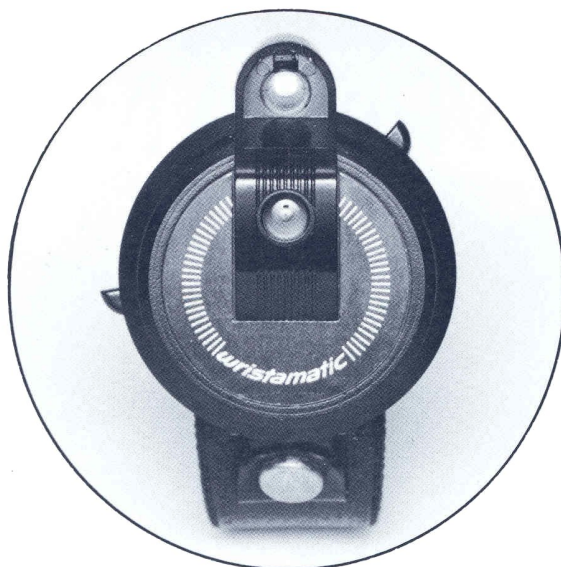
After taking, press the pressure plate release lugs inwards, while the Inner envelope is pushed down through the slot to its original "closed" position. *Be sure it is pushed right home. If an Envelope has been bent or damaged by careless handling or carrying, it will sometimes be found that the Inner envelope will not push completely home: if this occurs it can usually be corrected by partially withdrawing the Inner envelope again, and gently "working" it down into its fully closed position while the pressure-plate release lugs are pressed inwards as far as they will go.*

After closing the Envelope, release the lugs, open hinged back, and remove Envelope. When the Envelope has been used, tear off special Paper Indicator Tab fixed on the back, as a sign of exposure. This will prevent accidental re-employment of a used Envelope and consequent double exposure.

TO LOAD THE COMPASS CAMERA WITH ROLL FILM

(To load with Compass Envelopes, see pages 13 to 15.)

It will facilitate a speedy understanding of the working of the Roll Film Back if these instructions are first read straight through, and are then followed closely in detail as the film is loaded.



WRISTAMATIC™ SPECIFICATIONS

Lens: f11, 20mm., fixed focus 5 ft. to infinity, coated.
Shutter: Permanent magnet shutter; 1/100 second.



MAGNA 112™ COLOR PRINT FILM

Contains three instant loading cassettes.
Each cassette contains a color Filmdisk.
Six exposures per Filmdisk—18 exposures per package.

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Design and specifications subject to change without notice.

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NOTE.—If this is done it must be remembered that after the Spool is extracted the Winding Key will have to be turned to complete its revolution, i.e., until the black * shows in the window (38), before reloading.

The sealed spool and the now empty spool on which the film was loaded into the back can be removed by pressing the Release Button (44) which withdraws the spring studs and enables the spools to spring out. Replace empty spool in lower spool chamber according to loading instructions, ready for taking up the next spool of film.

The Release Button (44) is fitted with an automatic safety catch which prevents it being operated when a film is in position and when the roll film Back is closed against the camera, but *when the Back is open it is important that this Release Button should not be pressed except when it is desired to remove a fully exposed and duly sealed film Spool from the camera.*

VIEW-FINDER

The subject is viewed and arranged by sighting it through the circular lens marked "View-Finder" (28) on the right of the camera at the bottom. This Finder shows how much of the subject will be included, but in this respect it is completely accurate only when the camera is *held with the View-Finder lens close to the eye.*

When it is desired to focus the subject by range-finder right up to the moment of exposure, the range-finder can itself be used as a sighting View-Finder. That

revolution of the handle, starting and finishing with the red spot engraved on the handle resting in the red semi-circle engraved on the side.

Two bobbins or film Spools are required, one ready loaded with film and the other empty to serve as a "take-up" spool on to which the film is wound after exposure. The necessary empty spool (together with a spare, in case of loss) is supplied with each roll film back.

Notice that the two ends of the Spools are dissimilar. At one end the Hole is the full diameter of the spindle, and the cap or end of the spool is smooth, at the other end the Hole is smaller and is surrounded by a ring of Shallow Teeth.

Insert the empty take-up Spool into the lower film chamber (41), *see diagram on page 16*, with its Toothed End towards the Winding Key side of the back, and with the Slot in its spindle (35) uppermost. If the Spool is placed in this position with its Toothed End close against the corresponding teeth surrounding the Pin (48) in the film chamber, it can be snapped into place by pressure on the opposite end—where it should be firmly engaged by the spring stud (41A).

The full Spool should now be removed from its outer carton and tinfoil wrapping. The paper seal *partially* broken by pulling Tab (43) and the Spool then loaded into the upper film chamber (39). This is done by inserting the end with the larger Hole on to the fixed stud (40) on the Winding Key side of the Back, and pressing down the opposite end until it clicks into place and is held firmly by the spring stud (42).

Compass

H. S. PANCHROMATIC FILM. COMPASS FACTOR - 4

H. S. Pan is a very fast film, and there is a tendency to over-expose when taking outdoor photographs.

SNAPSHOTS.

In bright sunlight use Stop **f16.**
In pale **f6.3.**
On dull days **f4.5.)** a 25th second
Subjects in shadows **f4.5.)** exposure.

DEVELOPEMENT - tank.

*When using Johnson's Fine Grain and Kodak
D 76 and DK 20 Developers, give the film
25 minutes at 65° f
20 „ at 70° f
For temperatures between 65° & 70° vary the
time accordingly.*

PROCESSING CHARGES.

Developing	.....	.....	.....	2/6d per doz.
Contact Prints	.....	.....	.....	2/6 „ „
Album „	.....	.....	.....	4/3 „ „
Postcards - if available	.....	.....	.....	-/6 each.

TERMS OF BUSINESS :- Cash with order or on delivery.

COMPASS CAMERAS, LIMITED.

War emergency offices:
COOMBE LEIGH. KINGSTON HILL. SURREY.
Telephone KIngston 5052.

The Wratten G filter is orange-coloured and is intended to give what is known technically as over-correction; it cuts out haze and mist and is therefore useful in taking pictures of distant places on misty days, and its correction tends to make all green tones in the subject rather lighter than normal and all the blues darker. This is often very useful for pictorial effects.

TO REMOVE HINGED BACK.

The hinged back can be removed, if desired, by releasing it from the hold of the top clips (19) and then withdrawing, as far as it will go, the spring pin (31) which forms the right hinge at the bottom of the back. The back can then be freed by an upward and outward movement, but force should not be used or the pin that forms the left hinge may be bent.

All key numbers quoted in the text refer to the numbers on these diagrams. Other references (as Fig. 1) relate to the illustrations in the text.

Whenever left or right, or clockwise or anti-clockwise movement is mentioned, it is assumed that the camera is being viewed from the FRONT.

For clarity this instruction book is divided into four sections, as follows :—

<i>Section.</i>	<i>Subject.</i>	<i>Pages.</i>
1	Outline instructions for the use of the Compass as a simple snapshot camera	4-13
2	Detailed description of the Compass Camera and the handling of its various adjustments	14-33
3	The use of the Compass Unit System	34-42
4	Supplementary instructions and additional technical notes	43-54
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An indexed diagram of the camera is bound into each end of the book for easy reference.

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WRIST A M A T I CTM



THE WRIST CAMERATM

COMPACT

The only camera that becomes part of you

EVER READY

With you whenever the action occurs

UNIQUE

Circular prints! Eliminates the need for photo alignment

AUTOMATIC

No focusing! Set exposure! Film advance feature eliminates double-exposure

RELIABLE

The only camera with a patented magnetic shutter-unaffected by heat, cold and humidity

JAM FREE

The only camera with patented round film cassettes



MAGNACAM CORPORATION
16 Muller Road, Oakland, New Jersey 07436

Now draw the Tab (43) of the Paper Spool Lead towards the empty spool, *just far enough for it to be comfortably fitted into the Slot (35) in the spindle of the empty spool*. The Tab should be entered into the wide portion of the Slot and slid along the narrow portion as far as it will go.

The action of drawing the Tab (43) towards the take-up spool breaks completely the Paper Seal with which the loaded spool is protected. Give the Winding Key one complete turn, making sure that the Paper Lead is well centred on the Pressure Plate (45), and remove the broken Paper Seal which will have detached itself from the spool.

The roll film Back should now be closed against the camera, making sure that the top clips on the camera back fully engage in the slots provided for them and hold the back secure. The Clip Cover (47) is then folded down on the clips to prevent accidental release.

TO USE THE ROLL FILM BACK

The Winding Key (37) is now turned to bring the film into position for exposure. After several turns a *red* Dot will be seen in the indicator window (38), this is followed by another *red* Dot and then a *red* Δ , a warning that the next turn will bring a *red* 1 into the window and the first film into position for exposure in the camera.

After this film has been exposed, the Winding Key must be wound a further complete turn when a *red* 2 will show, and the film will be in place for the second exposure, and so on until the sixth exposure has been made.

Always wind on the film immediately after making an exposure.

TO UNLOAD THE ROLL FILM BACK

After the sixth exposure has been made, wind on the film until two separate *black* Dots followed by a *black* Δ appear in the indicator window. The *black* Δ indicates that the film is completely wound off on to the take-up Spool and is ready for unloading.

The roll film Back can now be opened by unfolding Clip Cover (47), releasing the top Clips (20) and letting the Back fall open on its hinges. When the Back is opened the film with its protective paper lead and trailer will be found wound on to the take-up Spool. It should be sealed *before removal from the camera* with the gummed Slip provided, as if it is taken out carelessly *before* sealing, the paper may spring partially open, allowing light to fog the edges of the film.

If, when the camera is opened, the loose end of the gummed Slip attached to the spool paper is on the lower side of the Spool, and therefore cannot be reached, the Winding Key can be slowly turned just as far as may be necessary to bring the loose end of the gummed Slip into a position convenient for sealing.

The use of a Light Filter gives more pleasant rendering in monochrome of a coloured subject because it aids a more accurate and subtle "translation" of shades of colour into shades of tone. It gives more quality to a picture and therefore should be used as frequently as possible.

An exception to this rule is that negatives taken with the main purpose of making extremely large enlargements are better taken without the use of a Filter, as these (the heavier ones in particular) filter out the short wave sharpest-cutting light vibrations. This is only of practical importance when a very considerable degree of enlargement is contemplated and extra sharpness is desired.

Which Filter of the set built into the Compass it is best to use depends very

clicks, indicating the unlocking of the two extensions, will be heard; the extensions can then be pushed back into the camera.

SET SHUTTER SPEED.

Set the shutter to "Snap" by pushing the milled shutter speed locking catch (20) to the right (clockwise) and turning the shutter speed ring (2) until the word "Snap" comes opposite the black arrow (7) engraved at the top of the camera front. Lock the speed ring in this position by turning the locking catch (20) back to the left. Once speed ring is set and locked at "Snap" the shutter will only require re-winding before each exposure.

NO FILTER.

See that the figure "0" appears in the little window (9) immediately below the

milled ring marked "Filters" on the camera front.

LENS STOPS.

On the opposite side of the camera front is a similar milled ring engraved "Stops" (15). By revolving this, Stops of different sizes are brought into place in the lens. Which Stop is in place is indicated in the window (14) immediately below the milled wheel.

LIGHTING.

With the shutter set permanently to "Snap" the Stop should be varied according to the light on the subject to be photographed, as below :—

For subjects in brilliant sunshine and for such subjects as sea-scapes, open landscapes, mountains, etc., without heavy shadows—

Use Stop B (BRILLIANT).

its central arrow points to the distance in question, the pairs of side "tentacles" will show at a glance how many feet on the near or far side of the main subject the range of sharp focus extends for each individual Stop.

It will be seen, for example, that with the lens focussed at 10 feet, the following range of sharp focus is given by the use of the Stops.

Stop.	Value.	Range of focus.
0	 $f3.5$	 8 to 13 feet.
2	 $f4.5$	 7 to 16 feet.
4	 $f6.3$	 $6\frac{1}{2}$ to 20 feet.
8	 $f16$	 $4\frac{1}{2}$ to Infinity.

LIGHT FILTERS.

The control of the Light-Filters built into the Compass Camera is described on page 19. The Unit System of calculating the altered exposure necessitated by their use is given on page 40.

SECTION 1.

INSTRUCTIONS FOR THE USE OF THE COMPASS AS A SIMPLE SNAPSHOT CAMERA.

The following simple method of using the Compass Camera will give a remarkably high percentage of satisfactory results. More detailed directions regarding the various adjustments of the camera will be found in Sections 2, 3 and 4.

SET UP CAMERA.

To open out the camera for use, slide out the front extension by shaking the camera forward, pulling out the two telescopic extensions to the full and lock into position by turning firmly to the left (anti-clockwise). To close camera, turn the front extension firmly to the right (clockwise), when two

largely upon the type of plate or film in use and the subject.

With Orthochromatic plates or films the Wratten K1. filter should be used ; this gives a generally improved tone rendering, in particular emphasising the varying tones of green which without a filter are inclined all to be much of the same tone and too dark. The use of the K1. filter overcomes this and also gives a truer rendering of the sky, which will no longer appear as a blank white patch, but will have the shadings.

With Panchromatic films use Wratten X1. filter, which gives much the same effects as K1. with Orthochromatic films, but to a greater degree. Being a stronger filter it requires an increase of exposure (this is allowed for by the Compass Unit System) and gives a rendering as near scientific accuracy in translating colour into tone as science has yet made possible.

Press the lugs (16) at the side of the hinged back inwards, and at the same time pull the end of the Envelope which protrudes through the opening at the top of the camera ; (Fig. 2) pull it out to the point at which it stops. The plate or film is now uncovered in the camera, ready for exposure.

DISTANCE.

If the focussing ring (1) of the camera is turned so that "30" feet (engraved on the face of the ring) appears opposite "Focal Distance" (18) everything from 15 feet to furthest distance will be sharply focussed. To take subjects nearer to the camera, estimate the distance (or pace it out in yards) and set the focussing ring to the appropriate number of feet.

WIND THE SHUTTER.

Wind the shutter by turning with the thumb the milled wheel (3) at the top

This movement, combined with the swinging of the foot from one side of the camera to the other, gives the camera two positions with the axis of the lens parallel—the condition necessary for the taking of stereoscopic pairs of pictures.

To take stereoscopic pairs of pictures, set the camera on a tripod as described and take one exposure with it in position "A"; reload, then swing the camera round (without moving the tripod) to "B" and make the second exposure.

As there must be a short interval between the two exposures, this method of taking Stereograms is suitable only for subjects that will not show movement.

Prints or positive slides from the pairs of negatives can be made and

mounted (that taken on the left is mounted on the right and vice-versa) and viewed through a stereoscope in the usual way.

DEPTH OF FOCUS SCALE.

Built into the hinged cover which protects the Compass lens is a Depth of Focus Scale (4). At whatever distance a lens is sharply focussed, objects a little closer and a little further away will also be sharp, while those much closer and much more distant will not be sharp. The effective range of sharp focus of a lens in this respect, its "depth of focus," depends upon the size of the Stop used in it.

On ascertaining by the use of the Range-finder or measurement the distance of the main subject from the camera, the central disc of the Depth of Focus Scale is then turned so that

With normal subjects when the light is bright and clear but not brilliant—

Use Stop C (CLEAR).

For general use in dull weather and with subjects in shadow—

Use Stop O (OVERCAST).

For dark days and subjects in heavy shadow, as under trees, and for very well-lighted interiors*—

Use Stop D (DULL).

* Other interiors will require longer exposures and should be taken according to the instructions in Section 3.

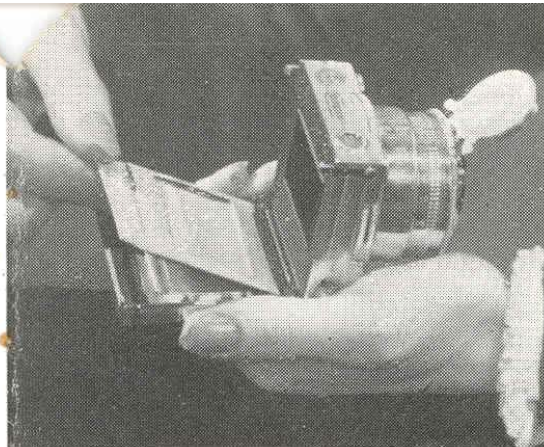
LOAD THE CAMERA.

To take a photograph, open the back of the camera by pressing the spring clips (19). Fit in Envelope (frame towards the lens) in the little ledge at the bottom of the spring back (Fig. 1), and close the back.

stereoscopic or third dimensional effect can be taken with the Compass cameras as follows :—

Unscrew the Stereoscopic Head (13) from its setting in the side of the camera and screw it into the bush provided on the camera foot (29). Take the Panoramic Head from the other side of the camera and screw it on to the tripod. If the Stereo Head is now dropped over the Panoramic Head (as shown in Fig. 8) the camera will be firmly fixed on the tripod, but it can be held in either of the positions "A" or "B" as shown. In "A" the camera-foot is turned left, in "B" turned right, in each case to a definite stop.

The engagement of the Stereo and Pan heads is such that the camera can be turned through exactly 180° (half circle) without moving the tripod.



LOAD THE CAMERA.

FIG. 1.

WITHDRAW
END OF
ENVELOPE.

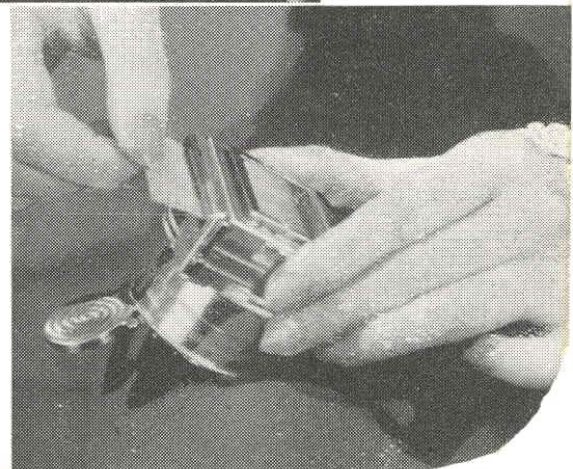


FIG. 2.

of the view. Each exposure is, of course, made as a separate plate or film. For ease in printing and joining up, the same shutter speed and lens stop should be used throughout.

Each adjacent pair of negatives taken as the camera is swivelled round in this way will show just sufficient overlapping of subject matter to make it easy to join up prints made from them. Two, three, four and five negatives may be taken, according to the extent of view which it is desired to include. The number of negatives necessary can be judged by looking through the viewfinder with the camera in its various positions.

STEREOSCOPIC PICTURES.

A pair of pictures which, when viewed through a stereoscope gives a

Open the camera back by pressing inwards spring clips (19) and remove the Envelope, picking it out by its sides—**not pulling the top**. Close the camera back and tear off the paper indicator tab from Envelope, to show that it has been exposed.

The following simple sequence is therefore all that is necessary in order to take pictures by this method.

	<i>Page</i>
Select Lens Stop	6
Wind Shutter	8
Load Envelope into camera and withdraw inner Envelope	7
Adjust focussing	8
Lift lens cover	10
Sight subject through View-Finder	10
Press shutter release	10
Close Envelope and remove from camera	10

MAGNACAM CORPORATION



16 Muller Road
Oakland, New Jersey 07436
Telephone 201 337 3960

Dear Valued Customer:

The Wristamatic is a new way of taking pictures. The user may experience problems. To help solve them, please, review this list:

- A. READ THE INSTRUCTION BOOK pages 2-10. Take note of each picture.
 1. Pictures shown without the strap are for clarity. Do not remove the strap.
 2. Pictures show both front and back views. When views change be sure to locate the correct position of the Shutter Release and the Shutter Reset.
- B. Having read pages 2-10, these hints may make the camera easier to use.
 1. ANOTHER OPENING METHOD, use when camera is not on wrist:
 - a. With fingers close to the camera back, grasp the strap end with the holes
 - b. Your thumb should fall close to the top, forward area of view finder.
 - c. With other hand grasp the outer edges of camera and lift up and away, while pushing down with the aforementioned thumb on the top of view finder just behind the line that separates the front & back of camera.
 2. AFTER THE CASSETTE IS IN THE CAMERA:
 - a. Any doubts that the cassette has opened may be eased by rotating the Film Advance to the white dot, again. It will not affect anything.
 - b. If the Film Advance stops and will not move counter clockwise (facing back of camera) the cassette is usually at fault. Rotate the Film Advance clockwise about a quarter turn, remove the cassette, send it to Magnacam for new film. Start with new Filmdisk.
 3. AFTER THE FILM ADVANCE HAS BEEN MOVED AROUND TO THE WHITE DOT:
 - a. The lever on the same side of the camera as the Film Advance (Called Shutter Reset) should be UP (close to viewfinder). Now move lever down. When the Reset lever stops #1 will line up (approx.) with the arrows.
 - b. The lever on the other side of the camera (called Shutter Release) is now UP and the camera is ready to take the first (#1) picture.
 - c. Pushing the Shutter Release all the way down will take picture #1.
NOTE: The Shutter Reset will move back to the UP position.
 4. AFTER TAKING SIX PICTURES:
 - a. #6 is in line with arrows - Shutter Release is Down and Reset is UP.
 - b. With your thumb push the Film Advance in clockwise (facing back of camera) direction until any one of three things happens:
 - 1) there is a rapid clicking
 - 2) the advance stops or is difficult to move
 - 3) The white dot is approached - going back through 5,4,3,2,1.
 - c. When it happens you may then open the camera, put the exposed Filmdisk in the envelope for processing & load another one for fun.

Best Wishes,
Customer Service

SPECIAL POINTS.

Pull out the front **firmly** and then, turn left **firmly** to lock.

Though the Compass is compact it is **not** flimsy.

Always handle the plate and film Envelopes by **their edges**. To pull one out of a case or pocket by its top may partially open it and fog the film or plate.

Never guess the distance from your subject if you can **measure** it.

When pressing the shutter release **hold camera still**, any movement will result in a blurred picture. If you can lean against some firm support, so much the better.

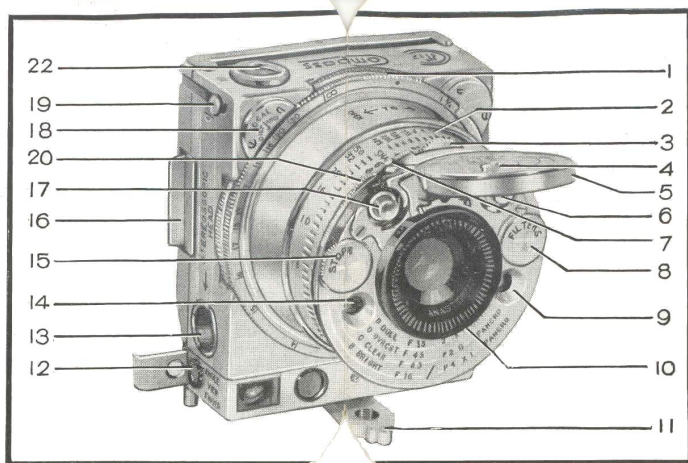
Do not **jerk** the shutter release; press it firmly against the supporting pressure of your thumb at the back of the camera.

top of the camera to facilitate this; when the bubble in the red liquid is central – the camera is level.

PANORAMIC PICTURES.

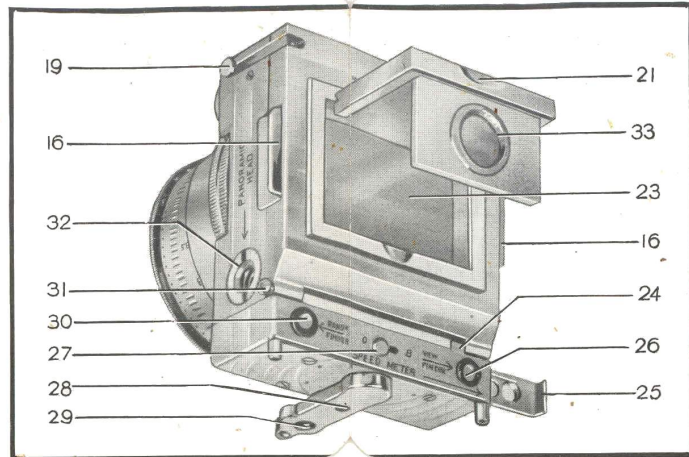
Following is the procedure necessary to take a set of negatives, the prints from which can be joined up to make a continuous panoramic picture.

Fix the Panoramic Head (32) into the camera foot (28) (Fig. 9), then screw on to a tripod. Turn the camera on the tripod as far as it will go to the left. Set it up before the selected view, being careful to see by aid of the Spirit Level (22), that the camera is level. As the camera is rotated to the right on the camera foot, it will be felt to click firmly into five positions. Turn the camera in this way to see how many exposures will be necessary to include the desired part



FRONT VIEW

1. Milled Focussing Ring
2. Shutter Speed Ring
3. Shutter Wind
4. Depth of Focus Scale
5. Hinged Lens Cover
6. "Time" Release
7. Instantaneous Setting Arrow
8. Filter Control
9. Filter Indicating Window
10. Lens Hood
11. Camera Foot
12. Angle View-Finder
13. Stereoscopic Head
14. Stop Indicating Window
15. Lens Stop Control
16. Pressure-plate Release Lug
17. Instantaneous Release
18. Focus Setting Arrow
19. Camera Back Release Clip
20. Shutter Speed Ring Lock
22. Spirit Level



BACK VIEW

16. Pressure Plate Release Lug
19. Camera Back Release Clip
21. Cover for Focussing Screen
23. Focussing Screen
24. Angle View-Finder Control
25. Exposure Meter Slide
26. View-Finder
27. Supplementary Exposure Wedge
28. Bush for Panoramic Head
29. Bush for Stereoscopic Head
30. Range-Finder
31. Release Pin for Hinged Back
32. Panoramic Head
33. Focussing Magnifier

fractions of a second (in red) and as Compass Units (in black) ; these latter are explained in Section 3. Once set to any speed, the shutter will continue to repeat that speed automatically with every winding—the speed setting ring need only be reset when it is desired to alter the speed.

The speed setting ring is freed by turning its locking catch (20) to the right (clockwise), when a red edge will be revealed. The ring is now free to revolve and the desired exposure can be brought into line with the black arrow (7) alongside the locking catch. This black arrow is the indicator for all automatic speeds. For TIME exposures the word "TIME" on the setting ring is brought opposite the red arrow which is just above the "TIME" release stud (6). When the setting ring has been correctly

Camera. On the packing of each plate or film a Compass Unit coefficient will be marked. Emulsions of standard speed will be marked "0" while faster or slower emulsions will be given — or + numbers which should be subtracted from or added to the meter readings as indicated above.

SPEED TABLES.

In addition to giving the **correct exposure to the negative** it is important that the shutter speed should suit the subject and the conditions in which it is being photographed. It is not possible, for instance, to photograph a moving subject sharply with a slow shutter speed, nor can satisfactory pictures be taken with the camera held in the hand if long exposures must be given—slight camera

TIME EXPOSURES.

Should light conditions make necessary an exposure exceeding $4\frac{1}{2}$ seconds, the non-automatic shutter speed setting should be used. Rotate the shutter speed setting ring (2) so that the word "TIME," engraved on the shutter speed band, is set opposite the red arrow above the word "TIME" engraved on the right-hand side of the camera face. After winding; the shutter is opened by pressure on the "TIME" button (6) and closed by pressure on the "INST" button (17).

THE SPIRIT LEVEL (22.)

When photographing many subjects, and especially when taking stereoscopic pairs or panoramic sets of negatives, it is desirable for the camera to be quite level. The Spirit Level is fitted in the

Be careful to hold the camera so that your fingers do not cover any part of the lens or view-finder. Study and follow the illustration (page 33) showing how the camera should be held.

Having used an Envelope, **tear off special paper indicator tab**, thereby denoting that Envelope has been used already. This will prevent two pictures being taken on one plate.

ERRATA.

Page 13, last paragraph.

The special paper indicator tab should be torn off the envelopes before an envelope is loaded into the camera, not after exposure as stated.

SECTION 2.

DETAILED DESCRIPTION OF THE COMPASS CAMERA AND THE HANDLING OF ITS VARIOUS ADJUSTMENTS.

OPENING AND CLOSING THE CAMERA.

To open out the camera for use, slide out the front extension by shaking the camera forward, then pull out both extensions to the full and lock into position by turning firmly to the left (anti-clockwise). To close camera, turn the front firmly to the right (clockwise), when two clicks, indicating the unlocking of the two extensions, will be heard ; the extensions can then be pushed back into the camera.

SECTION 4.

SUPPLEMENTARY INSTRUCTIONS AND ADDITIONAL TECHNICAL NOTES.

THE CAMERA ON A TRIPOD.

The Panoramic Head (32) is fitted to take the standard tripod screw. To fix the Compass Camera on a tripod for the taking of **vertical** pictures the Tripod must be screwed into the Head, with the Head in its normal position in the side of the camera ; in order to fix the camera on a tripod to take **horizontal** pictures, the Head must be unscrewed from its housing in the side of the camera (a small coin is ideal for this purpose) and screwed into the bush (28) provided on the camera foot.

tremble will cause lack of sharpness. Therefore it is desirable to observe the following rules :—

When holding the camera in the hand, do not use a higher Unit number than 10

When taking moving figures, do not use a higher Unit number than 6

When taking very rapidly moving subjects (cars and horses racing), do not use a higher Unit number than 2

As the use of smaller stops and light-filters tends, as a rule, to improve the quality of negatives (see notes on pages 30 to 54), it is as well to build up the meter-reading by their use to the highest Unit number permissible according to the above table.

LENS COVER AND HOOD.

To clear the lens, lift the hinged cover (5). When this cover is closed it not only protects the lens, but also protects the shutter release and prevents inadvertent exposures.

Under the cover is a telescopic lens hood (10) extended by gripping its outer rim and pulling forward. This hood shields the lens from extraneous light and should always be used.

SHUTTER CONTROLS.

There are three operations in the use of the shutter :—

(a) To set to the required speed.

(b) To wind.

(c) To release.

(a) The shutter speeds are engraved on a band or ring (2) encircling the front extension. They are indicated as

of the camera-front as far as it will go to the left (anti-clockwise). When the shutter is fully wound the wheel stops.

UNCOVER LENS.

Lift up the hinged cover (5) which protects the lens.

SIGHT THE SUBJECT.

Sight the subject which you wish to take through the lens marked "View-Finder" (26) on the right of the base of the camera-back. Press the stud marked "Inst" on the camera front thus making the exposure.

See page 33 for an illustration showing how to hold the camera when shooting.

UNLOADING.

After exposure, press in lugs (16) on side of camera back and push back the part of Envelope that was withdrawn. **Be sure it goes right back to its original position.**

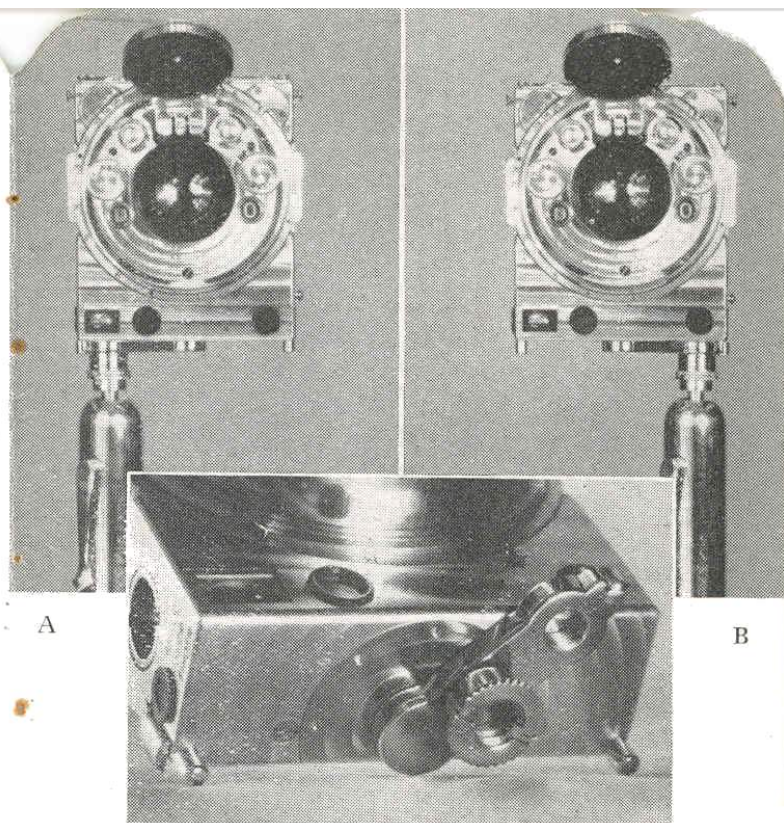


FIG. 8.—*Above*—The two positions (A and B) of the camera when taking Stereoscopic pairs of pictures.

FIG. 9.—*Below*—Panoramic head screwed into camera for

The numbers are Compass Units (see Section 3) while the letter P indicates that the filter in place is suitable only for use with Panchromatic emulsions, not with Orthochromatic plates or films. For information regarding the use of these filters, see page 51.

FOCUSSING.

The camera is focussed for subjects at various distances by revolving the milled focussing ring (1) which is between the body of the camera and the back extension. Three methods of setting to the correct focus are provided.

1. The Focussing Scale.
2. The Range-Finder.
3. The Focussing Screen.

FOCUSSING SCALE.

The front of the milled focussing ring is engraved with a scale of distances in

FIG. 7.
THE VIEW-
FINDER
IMAGE.

Clear.

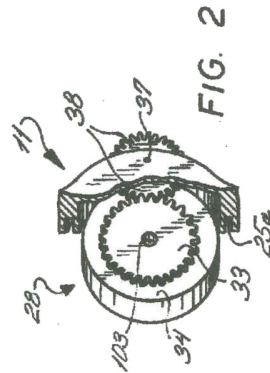
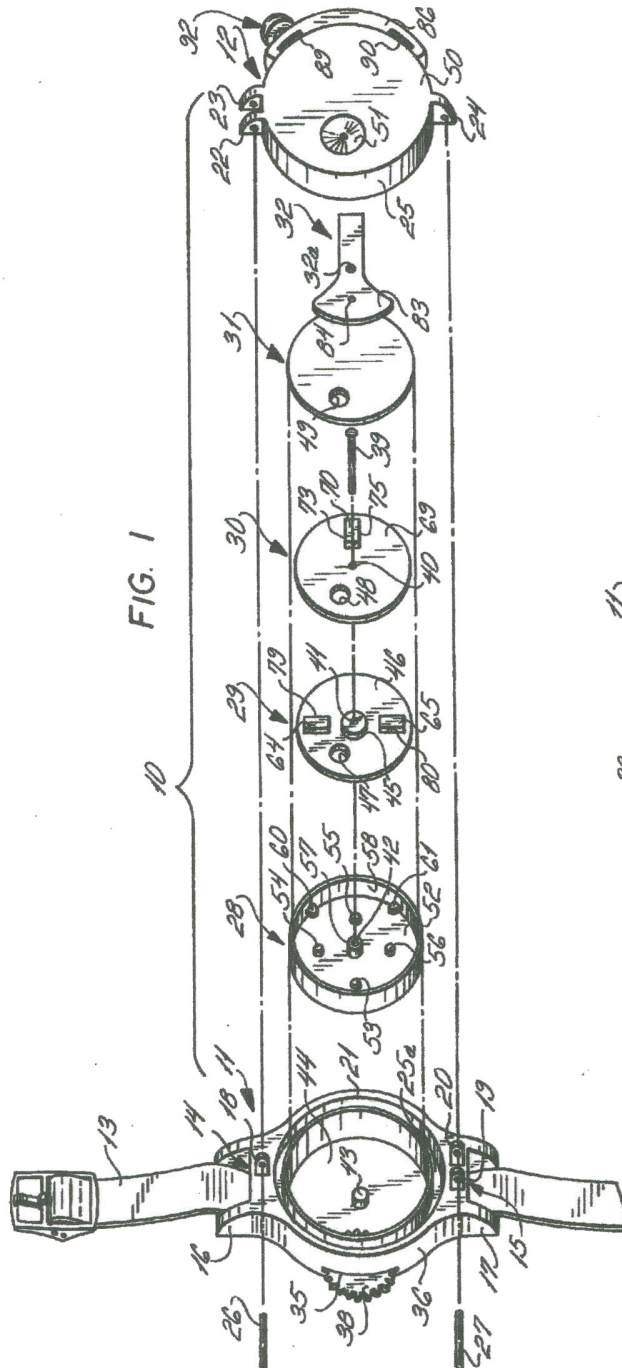


With Expo-
sure meter
partially out:



With Expo-
sure meter
pulled out to
correct read-
ing.





to the exposure meter reading in order to obtain the correct shutter speed (e.g., with an exposure-meter reading of 6 and stop 4 in position, the shutter should be set to 10 units).

More detailed information about the use of the smaller Stops is given in the paragraph describing the Depth of Focus Indicator, on pages 50-51.

FILTER FACTORS.

Similarly each light-filter is given a Unit number and when a filter is used in the lens this number must also be added to the meter-reading. So with a meter reading of 6, with Stop 4 and Filter 2 in position, the correct shutter setting would be 12 units.

PLATES AND FILMS.

A wide range of plates and films will be available for use with the Compass

placed the locking catch is turned to the left and the ring is then locked against movement.

(b) To wind the shutter, rotate the milled wheel (3) which is set in the top edge of the camera front to the left (anti-clockwise) until it stops. With the shutter set to a short exposure only a short wind is required; with longer exposures a longer wind will be found necessary. The shutter cannot be overwound.

(c) To release the shutter. For all automatically timed exposures the shutter is released by pressing the stud marked "INST" (17) on the camera front. For TIME exposures of greater length than $4\frac{1}{2}$ seconds the speed setting ring is set to "TIME," and the shutter wound; the shutter is then opened by pressing the "TIME" stud

(6) and closed again after the desired interval by pressing the "INST" stud.

LENS STOPS.

Four lens Stops are provided, giving effective apertures of $f3.5$, $f4.5$, $f6.3$ and $f16$. They are controlled by the milled wheel marked "STOPS" (15) on the left of the camera front and the Stop in place is indicated in the circular window (14) just below this wheel. By revolving the wheel any Stop desired can be brought into position. Each Stop is indicated by a figure inside a letter. The letters are linked with the simple system of use described in Section 1, the figures are Compass Units, the system of use of which is the subject of Section 3.

The normal technical information regarding the Stops is engraved in red, together with list of weather conditions (see Section 1 for details of use) just

SPEED SETTING.

Having arrived at a correct Unit reading, set the speed setting ring (2) so that this Unit number (engraved in black on ring) is immediately opposite the black arrow (7) engraved on the top of the face of the camera when the exposure will be correct, using a plate or film of normal speed, with the lens open to its widest and with no light filter in position.

USING SMALLER STOPS.

The widest lens Stop is marked "0." The smaller Stops are each engraved with a unit number, which is engraved inside the letter indicating weather conditions. The letters are used only in the simple system described in Section 1. If one of the smaller Stops is used its Unit number must be added

be deducted from the exposure meter reading (e.g., if the slide reading with the supplementary wedge in position is 14, $14-8=6$, and 6 is therefore the corrected Unit reading.

MINUS READINGS.

In very brilliant lighting conditions, or when using a very fast plate or film, a **minus** reading may be obtained. For instance, with the supplementary wedge in the exposure meter, a reading of only 4 might be obtained. As the use of the supplementary wedge calls for a subtraction of 8 from the original reading, this leaves a resulting Unit figure of -4 . As there is no shutter setting lower than 2 Units, this -4 must be built up to at least $+2$. This may be done by introducing stops and/or filters to a Unit total of 6 or more.

below the indicator window. For further information regarding the use of Stops, see paragraphs on Depth of Focus Indicator on page 50.

LIGHT FILTERS.

A set of three coloured light filters is built into the Compass Camera. They are controlled by the milled wheel engraved "Filters" (8) on the right of the camera front. Whether a filter is in place, and if so which, is indicated in the circular window (9) just below the wheel. There are four positions of the filter control, the respective indications in the window being :—

- O. Lens open, no filter in place.
- 2. Wratten K1. Filter.
- P.2. Wratten G. Filter.
- P.4. Wratten X1. Filter.



Prepared by
GEVAERT

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6 EXPOSURES

AGFA AGFA-GEVAERT AGFA-GEVAERT

entirely, stop pulling out the slide and read off the lowest number of the series engraved on the lower edge of the slide. This figure is the Compass Unit.

In order to obtain a true reading it is essential to take it from the **high-lights of the subject**. If any sky is visible in the view-finder it will be many degrees lighter than these high-lights, but should be ignored when taking the Unit reading. See illustrations (Fig. 7).

When the light on the subject is so brilliant that the fullest extension of the meter fails to black out the subject sufficiently to give a Unit reading, the sliding knob referred to above (27) must be slid over from "0" to "8." This introduces an additional density wedge which cuts out sufficient light for a reading to be possible. When this supplementary wedge is in use 8 must

feet. By estimating or measuring the distance from camera to subject and setting this scale with the correct number of feet in line with the arrow engraved "Focal Distance" (18) the camera will be correctly focussed.

Automatic and more accurate results will be obtained by using the range-finder.

THE RANGE-FINDER.

If the camera is pointed toward a subject which is then viewed through the circular lens marked "Range-Finder" (30) at the bottom of the camera back, two images of the subject will be seen. There is a blue image all over the field of view, and super-imposed on this, a small circular yellow image. This yellow circle must be in the centre of the blue field, as it will be if the eye is directly behind the viewing lens.

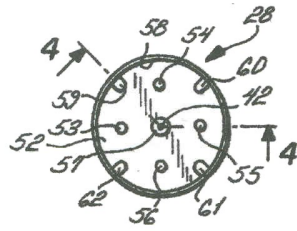


FIG. 3

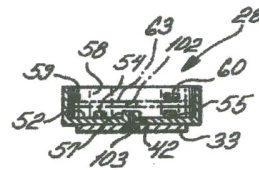


FIG. 4

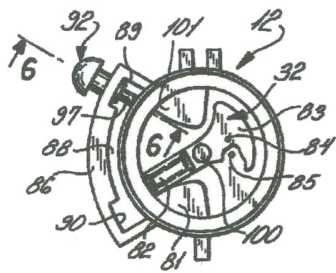


FIG. 5

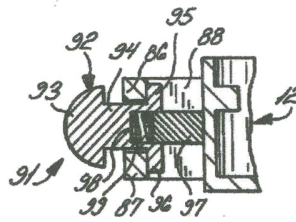


FIG. 6

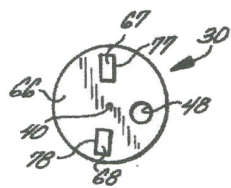


FIG. 7

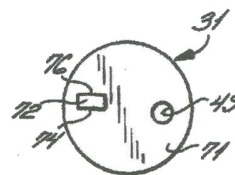


FIG. 8

SECTION 3.

TO USE THE COMPASS UNIT SYSTEM.

The Compass Unit System ensures the scientific accuracy of the exposure given to every plate or film, however difficult the conditions and complex the factors involved.

Used in conjunction with the Compass Range-finder, which gives similar facility in obtaining sharp focus, this System removes all necessity for guess-work in photography and enables even the inexperienced to achieve technically satisfactory results with complete certainty.

The keystone of the Unit System is the Exposure Meter, or Speed Meter, built into the Compass Camera.

THE TWO
IMAGES IN
THE RANGE-
FINDER.

FIG. 3.



ABOVE :
**OUT OF
FOCUS**

ON LEFT :
IN FOCUS



FIG. 4.

Comparing the central yellow image with that section of the blue image upon which it is super-imposed it will be seen that the same objects appear in both, but that they may be slightly displaced laterally (see Fig. 3). By rotating the milled focussing ring (1) the relative position of the two images of any selected part of the subject can be adjusted, and from being side by side they can be made to overlay one another and coincide exactly (see Fig. 4). When such portions of the range-finder images coincide, the part of the subject they represent is in sharpest focus. A little practice may be necessary to achieve this operation quickly and accurately, but no pains should be spared in this connection in view of the important bearing it has on the results.

EXPOSURE METER.

At the back of the base of the camera is an arrow engraved "Speed Meter," pointing to a slide (25) which can be pulled out from the side of the camera.

To use the Exposure Meter under normal lighting conditions, set the sliding knob (27) in the centre of the back of the camera to "0" and look through the view-finder (26) at the subject which is to be photographed; while so doing gradually pull out the Exposure Meter Slide (25).

As the slide is pulled out the image in the view-finder becomes darker and darker (see Fig. 7). At that point where the high-lights (the brightest parts of the subject forming the central or most important part of the picture) are barely visible, when a small further movement blacks them out

After taking, press the pressure plate release lugs inwards while the inner envelope is pushed down through the slot to its original "closed" position. **Be sure it is pushed right home.** Then release the lugs, open hinged back, and remove Envelope. When the Envelope has been used, tear off special paper indicator tab fixed on the back, as a sign of exposure. This will prevent accidental re-employment of a used Envelope and consequent double exposure.

VIEW-FINDER.

The subject is viewed and arranged by sighting it through the circular lens marked "View-finder" (26) on the right of the camera at the bottom. This finder shows how much of the subject will be included, but in this respect it is completely accurate only when the

camera is held with the View-finder lens close to the eye.

When it is desired to focus the subject by range-finder right up to the moment of exposure, the range-finder can itself be used as a sighting view-finder. That is to say, though the range-finder image will not cover the full field of view given by the camera lens, it does show accurately the exact direction in which the camera is pointed and what will appear in the centre of the picture taken.

ANGLE VIEW-FINDER.

To operate the angle view-finder, pull out the catch (24) sunk in the camera back just above the view-finder. The subject can then be seen through the window marked "Angle View-Finder" (12) in the side of the

camera. As this enables snapshots to be taken at right-angles to the direction in which the photographer is looking, it is of special value in obtaining natural pictures of camera-conscious subjects.

HOLDING THE CAMERA.

Owing to its exceptionally small size, care must be taken when holding the camera to avoid any part of the hand obscuring any part of the lens or the range-finder or view-finder. (Figs. 5 and 6 illustrate effective methods.)

If the camera is held pressed firmly against the forehead, as its design intends it to be, great steadiness results and comparatively long exposures can be given without the use of a tripod.

To load the camera, the hinged back is released by pressing the studs (19) on either side of the camera at the top. The Envelope is placed (frame towards the lens) into the little shelf at the bottom of the hinged back and the back is then closed. (See illustration on page 9, Fig. 1).

To uncover the plate or film inside the camera ready for exposure, press inwards the two pressure plate release lugs (16) on the sides of the hinged back. This relieves all pressure from the Envelope and the inner envelope can be withdrawn by pulling out the part which protrudes through the "letter box" slot in the camera top until a definite stop is reached (see Fig 2). When the inner envelope is fully withdrawn the pressure lugs are released and the picture can be taken.

TO LOAD THE COMPASS CAMERA.

The standard back with which every Compass Camera is provided is designed to take the Compass plate and flat film Envelope.

Each Envelope consists of two parts, one sliding within the other. When they are pushed home they are completely light-proof. When the inner envelope is withdrawn the sensitive plate is revealed through the frame cut in the outer envelope, so it is essential that the inner envelope shall only be withdrawn when the whole is loaded into the camera and the camera back closed.

To avoid accidental partial withdrawal, envelopes should be handled by the sides, not by the top.



FIG 5.—HOW TO HOLD THE CAMERA WHEN
USING THE RANGE-FINDER.

PUBLISHED BY
COMPASS CAMERAS LTD
57 BERNERS STREET
LONDON, W.1

TELEPHONE: MUSEUM 5306

45/49, CAMBRIDGE RD, KINGSTON-ON-THAMES,
Phone: KINGSTON * 7195.

PRINTED IN GREAT BRITAIN

PHOTOGRAPHY

SYSTEMATISED

AND

SIMPLIFIED

GROUND GLASS FOCUSSING SCREEN.

The focussing screen (23) is built into the pressure plate in the hinged back of the camera. It is revealed by pulling back the lower edge of the hinged screen cover (21). If the shutter is opened at "TIME" the image that will be received on the plate or film can be seen and with the aid of the magnifying glass (33) built into the hinged cover (21) focussed on the ground glass. A small cross is seen on the centre of the ground glass screen. The purpose of this cross is to enable each Compass user to ascertain the exact focussing point of the magnifying glass according to his own individual eyesight. With the shutter opened and camera pointed to the light this cross must be carefully focussed, by sliding the magnifying



FIG. 6.—HOW TO HOLD THE CAMERA WHEN TAKING A PICTURE.

THE COMPASS CAMERA CLUB

45/49 CAMBRIDGE ROAD

KINGSTON-ON-THAMES

To whom all Enquiries and Complaints should be addressed.



COMPASS FLAT FILMS AND ROLL FILMS

Flat films for the COMPASS Camera are supplied in Postal Wallets containing one dozen. Three types of film are available, High-speed panchromatic (H.S. Pan.), Fine grain panchromatic (F.G. Pan.), and Orthochromatic.

Each one is enclosed in a patent daylight loading envelope and it is essential that, to obtain the best possible results, they should be returned to the Compass Camera Club for processing.

H.S. Pan or F.G. Pan	2/6 per Wallet of 12.
Orthochromatic	2/4 " " " 12.

Roll films for use in the Roll Film Back are supplied in Fine Grain Pan only. Each spool takes 6 exposures.

Cartons of 2 Films	1/11.
--------------------	-------

A number of accessories are available for the Compass Camera.
For particulars please send for separate leaflets.



PROCESSING CHARGES

DEVELOPING COMPASS FILM

Superfine grain only.
Flat Films, 2/- per dozen. Minimum charge, 6d.
Roll Films, 9d. per spool.

CONTACT PRINTS

2/- per dozen. Minimum, 6d.

ALBUM PRINTS

Whole negatives only will be enlarged on glossy and semi-matt paper only.
Size $4\frac{1}{2} \times 3$.
 $3\frac{1}{2}$ d. each black and white. $4\frac{1}{2}$ d. each sepia.
Selective enlarging is not undertaken under this heading.

POST CARDS

Non-selective. Glossy or semi-matt only.

	<i>Black and White.</i>	<i>Sepia.</i>
Less than 6	4d. each.	6d. each.
6 or more from 1 negative	$3\frac{1}{2}$ d. "	$4\frac{1}{2}$ d. "

ENLARGEMENTS

	<i>Black and White.</i>	<i>Sepia.</i>	
$5\frac{1}{2} \times 3\frac{1}{2}$	6d. each.	8d. each.	"Hand-made" on Glossy,
$6\frac{1}{2} \times 4\frac{3}{4}$	1/- "	1/3 "	semi-matt, matt or cream.
$8\frac{1}{2} \times 6\frac{1}{2}$	1/6 "	2/- "	From whole negatives,
10×8	2/- "	2/6 "	selected portion, shaded,
12×10	2/6 "	3/- "	spotted, etc.

LANTERN SLIDES. 5 × 5 c.m.

Bound complete. 1/6 each. 12 or more, 1/3 each.

Every possible care will be taken of negatives, prints, etc., entrusted to us, but no liability whatever can be accepted for loss, damage or delay to same whether in transit or otherwise, and orders are only accepted on this express condition.



It is the earnest desire of the Directors to offer to all present and future Compass Camera owners the most efficient Service both for their products and the development and printing of films, and they invite all Compass Camera owners to assist them both by enquiry and suggestions, not only to maintain the high reputation which Compass products have justifiably acquired, but to extend their scope of operation.

Do not jerk the camera when pressing the shutter release. It should be pressed gently and firmly against either the forehead or the pressure of a supporting thumb on the back of the camera. This gives a steady camera and sharp negatives.

glass forward and backward until the outline of the cross is sharp and clear cut.

The correct setting of the magnifying glass for the user's own eyesight can then be read on the engraved scale on the top of the magnifying glass panel. This setting is simply repeated on the scale whenever it is desired to use the magnifier again.

Having set the magnifying glass to the correct focussing distance, the image of the subject to be photographed can then be clearly viewed and the camera lens focussed, if necessary, by turning the milled focussing ring until the necessary sharpness of image is obtained on the ground glass screen. The image on the screen will be more clearly seen if it is shaded from extraneous light by hooding it round with a hand.

CYCLOPE

L'AMATEUR D'APPAREILS PHOTOGRAPHIQUES



“La REFLEX MAGICA” - 1^{ère} partie, Le “XX^{ème} SIECLE” de Cornu, COMPASS, Match deux 15mm reflex, MULTICOLORE, CLUB CYCLOPE etc..

ABOUT PHOTOGRAPHY



Photography is one of the most satisfying and enduring of the pleasures of life; it has the charm of an art, the fascination of a science, and, to those who are less exacting, the easy pleasures of a simple hobby.

A photograph has two great qualities. Firstly, it is permanent. "God gave us memory that we might have roses in December" is a lovely saying, but how many of us in December *can* vividly remember a June garden? A photograph is memory made permanent.

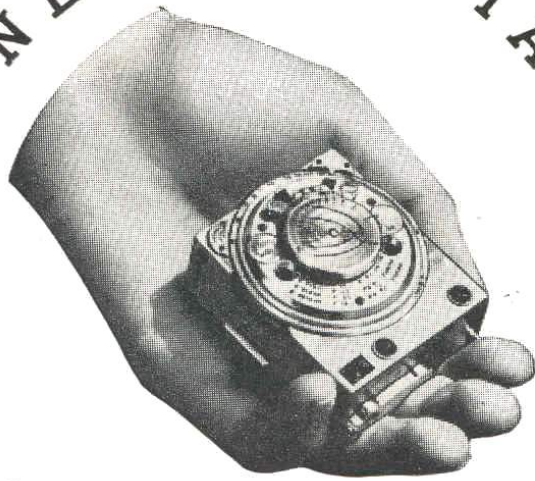
Secondly, a photograph can be shared with a friend half the world away as easily as in your own home circle. Equally may it be shared with those who do not know the tongue you speak as with those who do. In the earlier days of photography it

was a hobby [for a strong man, since its practice demanded that a dark room be wheeled or carried

wherever a picture was to be taken. Then, ten or twelve years ago, Miniature Photography—the photography of to-day—appeared. It appeared not as a tentative experiment, but as *un fait accompli*. That it was able to do this was due to the work of many technicians, chemists, opticians and scientific engineers who had, in fact, little interest in "still" photography and certainly no deliberate intention of developing it along the lines it took. These were the technicians of the great Ciné industry.

Three developments, taking place side by side, combined to make miniature photography a practical possibility.

NINE ESSENTIALS



When the designer of the Compass Camera set out to create a new camera, he took the following points as fundamental and essential.

as an integral part of the camera.

1. It must be small enough to be carried anywhere and everywhere with no more conscious effort than is involved in carrying a cigarette case.

2. It must be comprehensive in its range, available not only for ordinary snapshots and time exposures, but for high-speed subjects, panoramas, stereograms, etc.

3. It must be simple to use and swift in operation where speed and simplicity are desired.

4. It must be complete, with every essential accessory built in

5. It must include some simplifying system, which enables its full technical range to be exploited in all its possibilities with complete ease and certainty, even by the inexperienced.

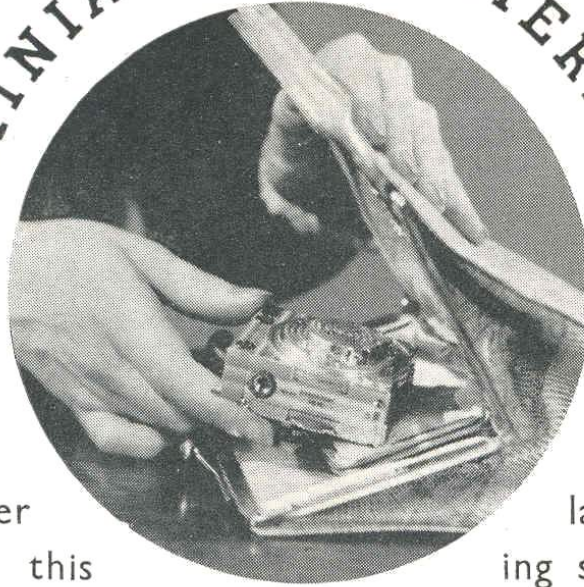
6. It must be finished in a style comparable to that of a high-grade watch.

7. It must be made entirely of metal, to ensure strength and durability under all conditions.

8. It must be made to the highest standards of precision achievable by modern manufacturing technique.

9. It must, when complete, be a single scientifically designed unit, not an assembly of parts.

MINIATURE CAMERAS



Sensitive films were made with finer grain—that is to say, the negative image was built up of finer particles, so that this grain was no longer prominent when big enlargements were made. Lenses of far greater resolving power were computed, so that negatives could be made sharper and more clean cut ; and finally, the Camera Engineer arrived and by skill in design, and care in manufacture, produced cameras of such accuracy and fineness of adjustment that full use could be made of the new excellence of lenses.

To-day, embodying these developments, a well-equipped miniature camera has a greater range of usefulness, and can be adapted to more varied work than any previous type of camera. Yet despite their undoubted

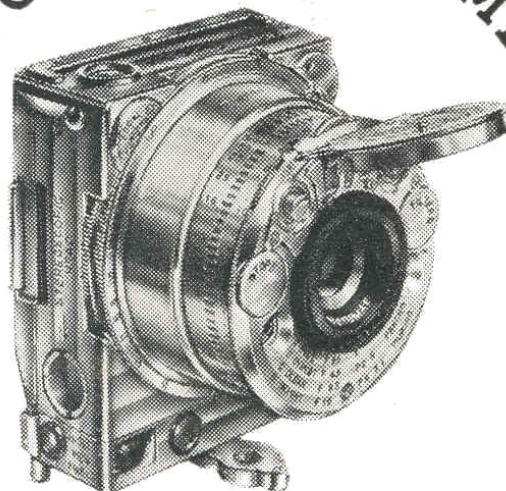
mechanical and technical efficiency and the wide range of their power, the lack of any simplifying systems for a long

time made miniature cameras complicated to operate. It was also necessary, if it was desired to complete the outfit, to carry numerous accessories and attachments. Many pictures were spoiled through the impracticability of always carrying extra gear ; others were lost altogether when circumstances did not permit the constant companionship of a camera, still extremely bulky in proportion to the size of the negative taken.

These were serious inconveniences. Which brings us to the genesis and purpose of the Compass, the first miniature Precision Camera and the keystone of Compass Photography.



THE COMPLETE CAMERA



How brilliantly successful has been the achievement of combining these many apparently irreconcilable features into one instrument can be fully appreciated only when the camera itself is seen and handled.

The beauty of its finish, its extraordinary combination of lightness and strength, its many unique technical features, and the accuracy of its mechanical movements make it difficult to describe adequately in terms that yet express its remarkable simplicity of operation, although for those interested a technical specification of the Compass is given on page 20.

A considerable degree of skill and experience has always been necessary for the production of good photographs under varied and difficult conditions. Hitherto

the camera user has had to provide this; but with the Compass the skill and experience are built into the camera. There is a simplified linking of each of its technical features which has made this *the easiest camera in the world to use*. The Compass is not merely a camera: it is a system of photography.

The systems by which the Compass Camera are normally used are extraordinarily comprehensive, complete and adaptable. There are two systems built into the Camera, while for those who do not wish to use either, the normal data is also engraved.

The more elementary of the two systems is intended to give the highest possible percentage of good results by the user deciding if the day is Overcast, Clear or Bright and setting a dial.

COMPASS UNIT SYSTEM



With eye to the aperture, slowly pull out the slide marked Speed Meter, when the image in the viewfinder grows darker and darker, until the brightest parts only are visible. The number shown on the scale engraved on the slide is now read.

This is the Compass Unit reading and, if the shutter is set to the same unit number, the exposure will be correct for the chosen subject in the prevailing light, provided that the figure 0 appears in each of the little circular windows on the Camera front.

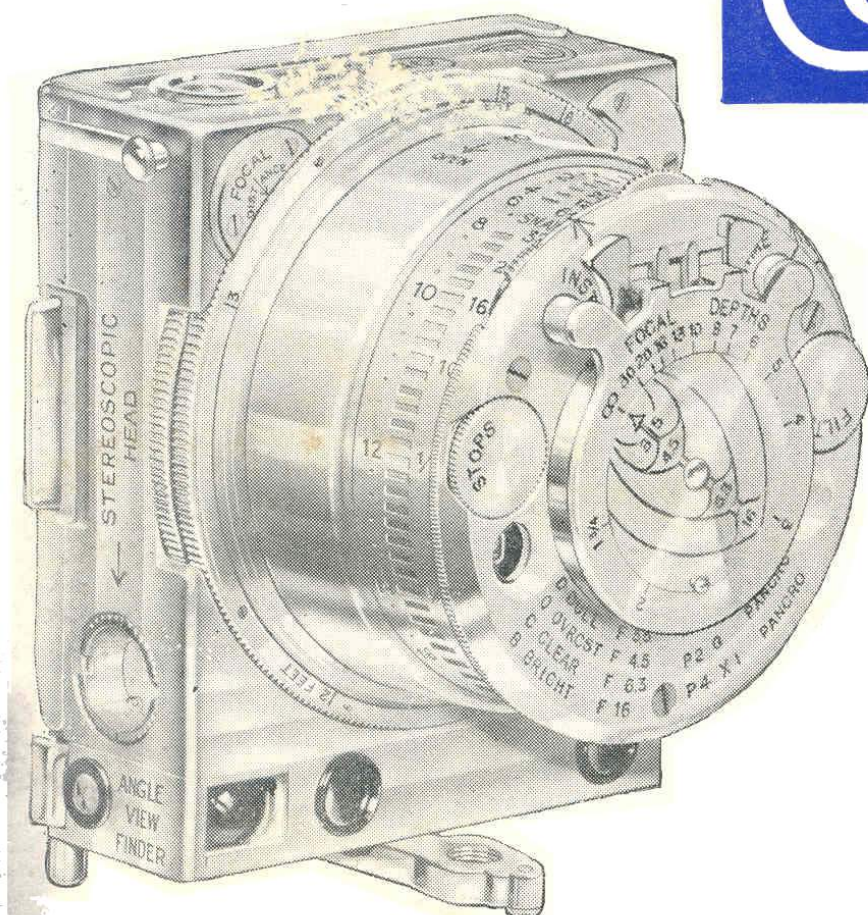
These windows show which lens-stops and light-filters are in place. When 0 appears in each of these, the lens is open to its widest and there is no filter in position; but a variation is often wanted. If a smaller stop is

placed in the lens, or a light-filter is introduced, a new number appears in the corresponding window. By adding

these numbers to the Unit reading, and setting the shutter to the resultant total, the correct exposure for even the most complicated combination of stops and filters is arrived at instantly.

For instance, if the unit reading is 6 and the stop marked 4 and the filter marked 2 are in place, the shutter should be set to 12 units. In this case, a lens aperture of f6.3 will have been employed with a Wratten K.1 filter, with a multiplying factor of 2, and a shutter speed $\frac{1}{8}$ sec. But all these somewhat confusing technicalities have been left in the care of the Compass System, which may be relied upon for accurate results.

Compass



A Compass CAMERA FULL SIZE

AND FULLY EXTENDED
TELESCOPES FLAT WHEN
CLOSED

The Camera combines
Compactness of Apparatus

Dimensions. $2\frac{1}{2} \times 2\frac{1}{8} \times 1\frac{1}{8}$ in.
Weight. 8 ounces.
Size of negatives. 36×24 mm. (about $1\frac{1}{2} \times 1$ in.)

WIDE TECHNICAL RANGE

Lens. f3.5 Kern of 37 mm. focal length.
Shutter. Automatic exposure from 1/500 sec. to $4\frac{1}{2}$ secs. and time exposures.
Focussing by range-finder, scale, or ground glass screen. From infinity to 21 ins. by coupled range-finder, focussing scale, or on ground glass focussing screen, with focussing magnifier.
Depth of Focus Indicator. Embodied in lens cover.
Range-finder Coupled with focussing adjustment to give correct focussing automatically.
View-finder. Brilliant optical finder, with right-angle adjustment.
Tripod Bush. Taking the standard $\frac{1}{4}$ in. tripod screw.
Stereoscopic Head. Enables stereoscopic pairs of negatives to be taken.

Panoramic Head.

Spirit Level.
Lens Hood.
Filters.

Exposure Meter.

Pressure Plate.

Enables a series of negatives to be taken embracing more than half the full circle, with sufficient overlap to enable effective panoramic pictures to be produced from them.
Mounted on top of camera.
Collapsible, built into camera front.
K1 Yellow—For orthochromatic emulsions.
G Orange—For contrast effects on panchromatic emulsions.
X1 Green—For panchromatic emulsions.
Of the Extinction type, built into the view-finder and calibrated in conjunction with the shutter, stops and filters.
Spring operated to ensure correct register.

SIMPLICITY IN USE

For utmost simplicity there is a Snapshot system, and then a more advanced Unit system coupling the exposure meter with the stops and filters.

The Compass Camera is made for Compass Cameras Limited (a wholly British Company, licensee of the exclusive Compass patents), by Le Coultre et Cie of Sentier, Switzerland, famous as the makers of the finest and the smallest watches in the world.

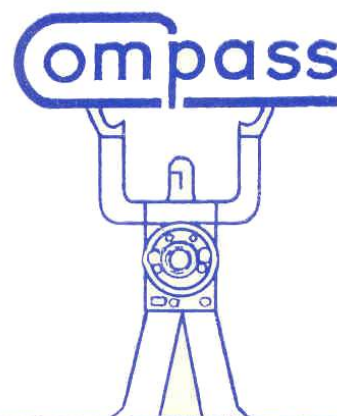
Thus for the first time watchmaking technique and watchmakers' standards of accuracy are available in a camera.

Compass Camera (complete with back to take Flat Films in Compass Envelopes).

Price £33.

For full description see 24-page booklet, "Photography Simplified and Systematised."

ALL PRICES SUBJECT TO ALTERATION WITHOUT NOTICE



SIMPLE OPERATION



For possibly ninety-nine out of every hundred pictures that beginners wish to take, this system is successful. Indeed, it is recommended that newcomers to photography should practise with the Compass Snapshot System before utilising the full resources of the unique Compass Unit System. In this way, new Compass users become thoroughly familiar with the "feel" of the Camera before they explore its latent possibilities to the full.

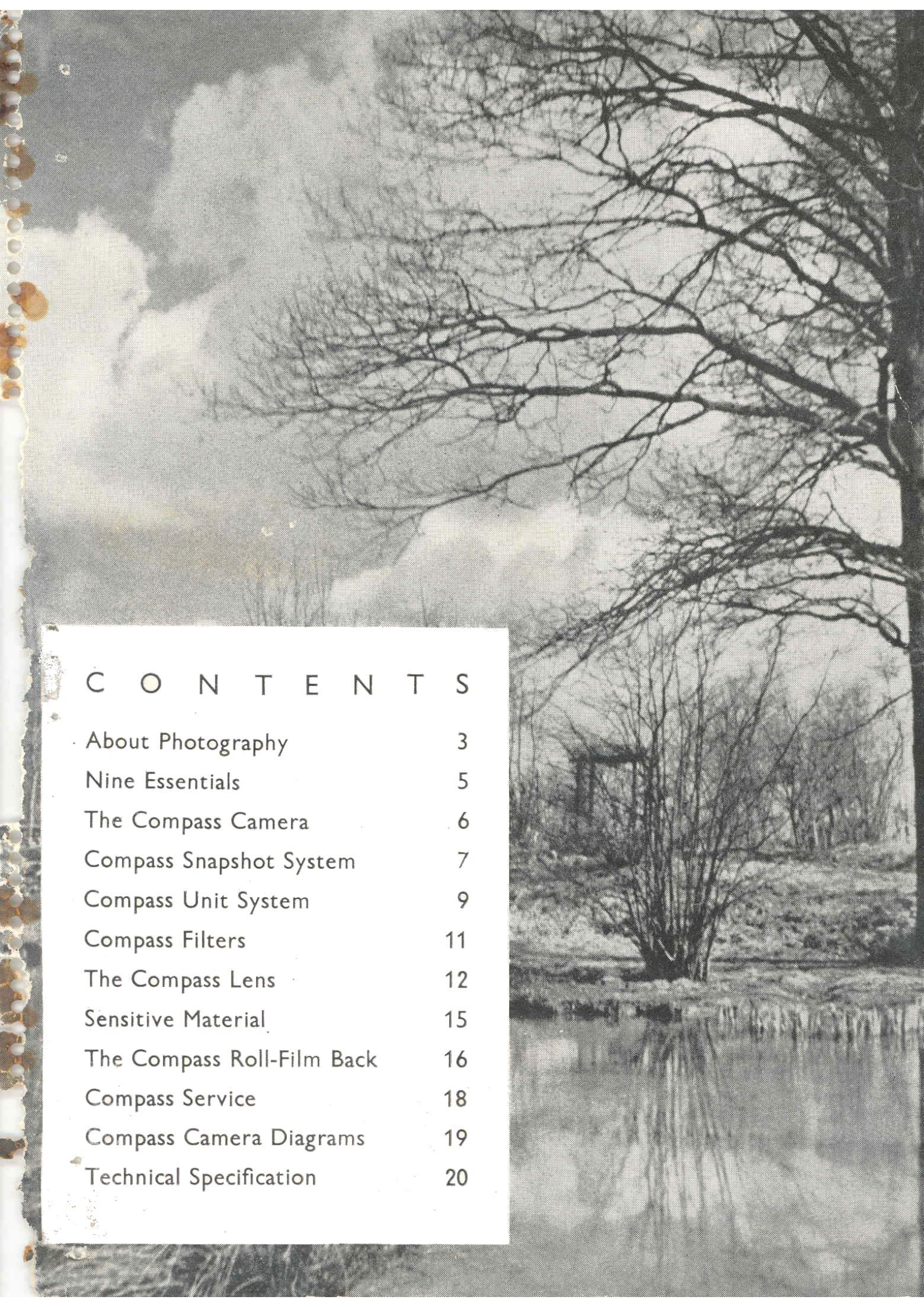
As the Compass Snapshot System does not make use of the full scope and range of the technical equipment of the Camera, its results cannot have quite that scientific accuracy and certainty given by the second—and complete—system of use. This second system is the more

remarkable and useful because of the very wide range of camera adjustments with which it is linked.

Whilst widening a camera's range of shutter speeds greatly increases its scope, it does at the same time increase the possibility of errors in use. That is why many people obtain better results with simple cameras than with more complicated ones. But a simple camera is of necessity severely limited in its range and in the conditions under which it can be used successfully.

It is the special virtue of the Compass Camera that, while its unique technical equipment gives it the widest range of usefulness of any camera in the world, its system of use makes it as easy to use as a box camera for the simplest sea-side and holiday snapshots.



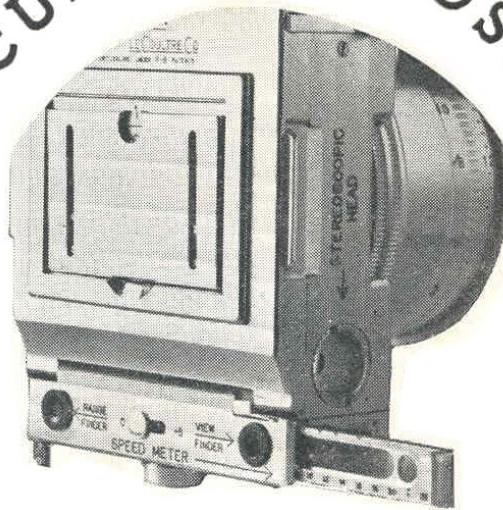


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ACCURATE EXPOSURE



For example, the Compass brings, for the first time, order, simplicity and certainty into the complicated and normally uncertain matter of estimating the correct exposure. That this is normally complicated and uncertain is ruefully admitted by most amateurs, whose experience rarely leads as far as certainty or consistency of results. This is not surprising when the complexity of the variable factors is considered.

To estimate accurately the degree of exposure required involves consideration of the colour and tone of the subjects, the intensity of the light falling on it, the speed of the film, and possibly an allowance for the use of a light-filter. Having derived from these factors a degree of exposure sufficiently correct for practical

purposes, it is then possible to give this by any one of a bewildering number of combinations of

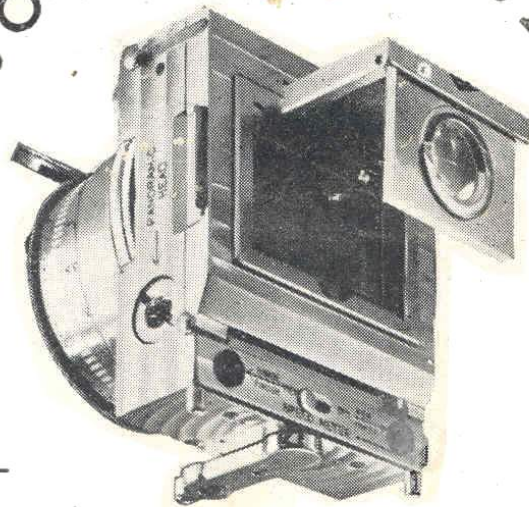
lens-stops and shutter speeds. It is no wonder that to most photographers exposure is still the great uncertainty.

The use of a separate exposure-meter can be a help in estimating light values; but, apart from the inconvenience of carrying extra bulky apparatus it is no great aid to simplification.

To estimate the correct exposure with scientific accuracy when using the Compass takes approximately ten seconds. It makes no demands on photographic experience, and the calculations involved are no more complicated than adding two to four.

All that is necessary is to look at the subject through the view-finder built into the camera.

ABOUT FOCUSING



The Compass Camera can be sharply focussed on a subject at any distance; either roughly, by estimating the distance and setting the focussing ring to the appropriate number of feet, or by the use of the simple optical range finder. This is linked mechanically with the focussing adjustment and gives sharp focus on the subject with complete accuracy.

With all lenses, the larger the stop the more light it lets through, while the smaller the stop, the greater the range or depth of sharp focus. Generally, it is sufficient to focus on the principal point of the subject; but with some subjects it is especially desirable to have in very sharp focus things considerably nearer to and further from the camera than this

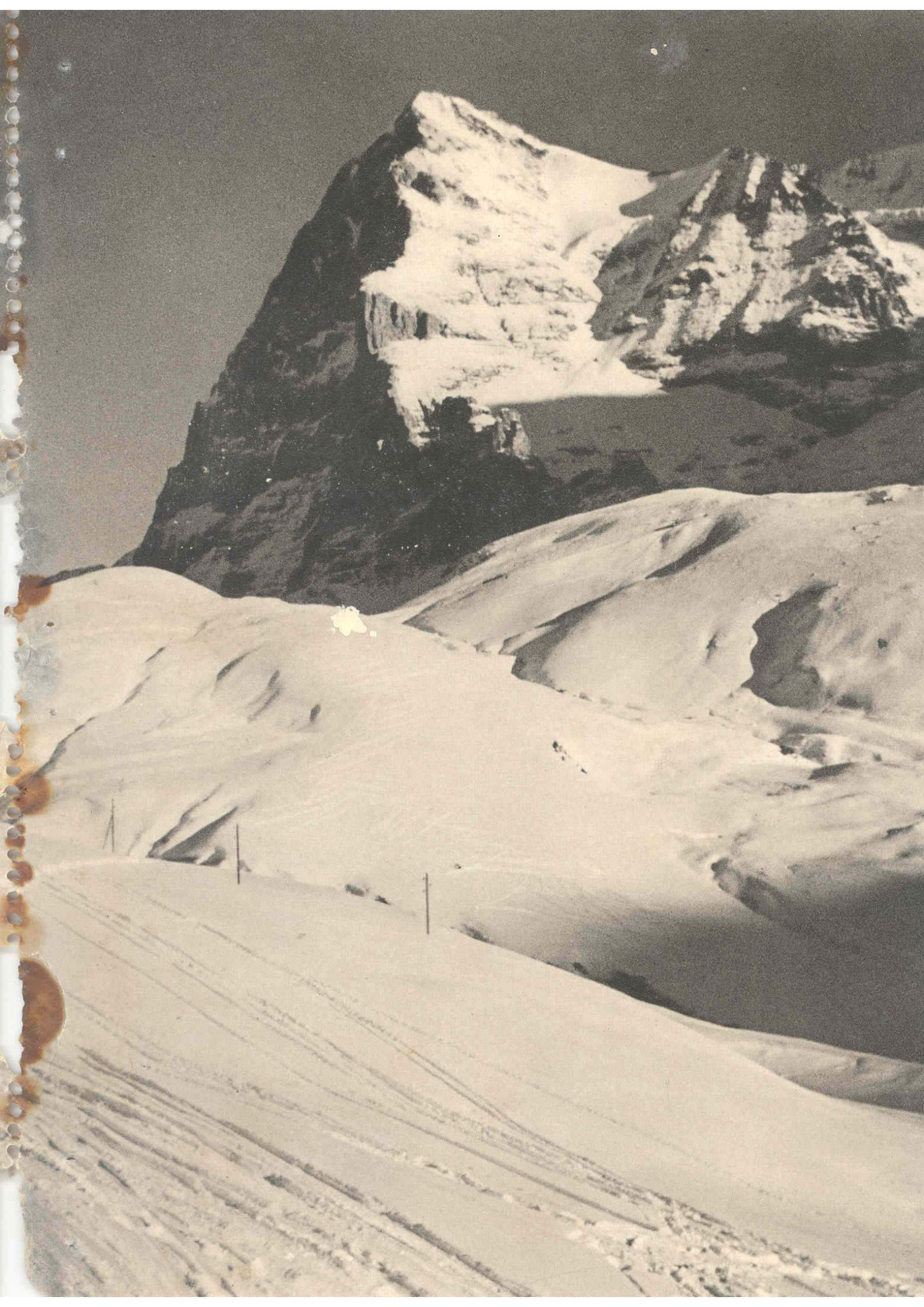
principal point.

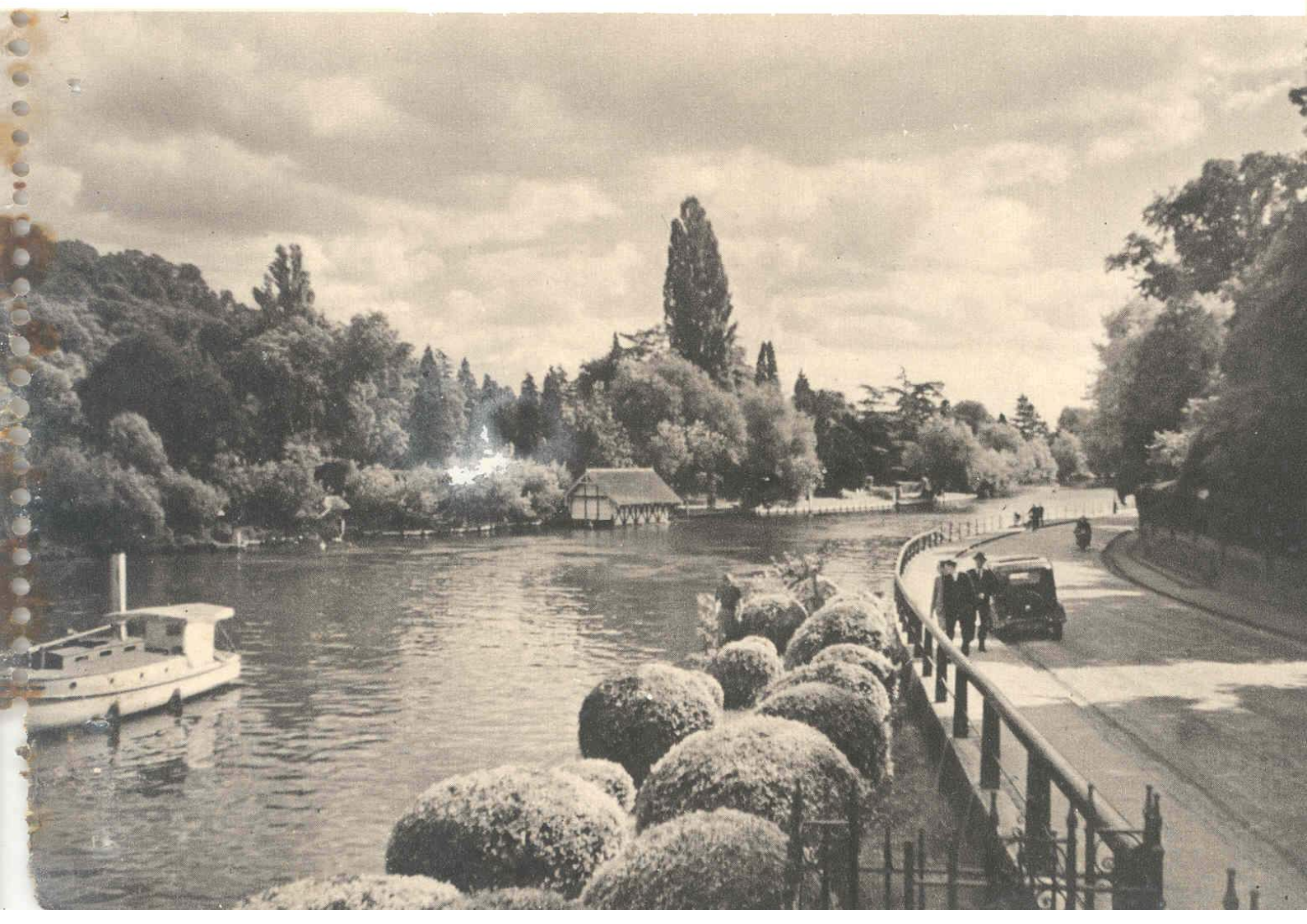
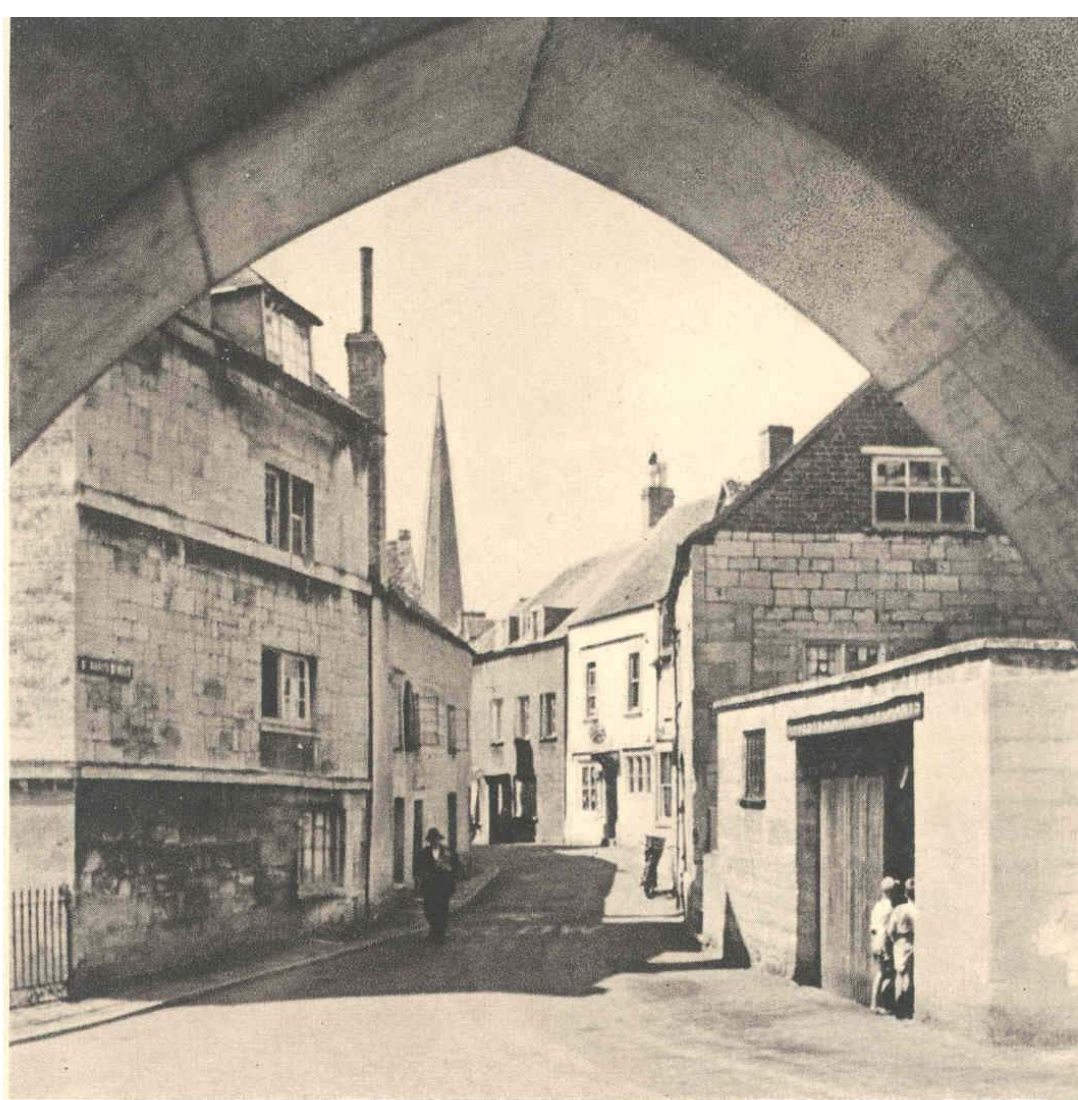
Such a subject might be the interior of a room, with the camera focussed on

a vase of flowers say seven feet away, with a chair only four feet away and a window fifteen feet away, both of which it was desired also to have sharp in the picture. In such circumstances the Compass depth-of-focus scale shows positively and at a glance which lens stop should be used.

There is also built into every Compass a full-size focussing screen upon which every picture, or any special picture as may be desired, can be focussed, studied and composed.

The effect of light-filters upon exposure has already been referred to (on page 9); but the filters themselves are entitled to the following brief description.





ABOUT FILTERS



The modern panchromatic film is sensitive to all colours and is capable of translating the most difficult and complex subject into monochrome with extraordinary accuracy. But for the greatest subtlety it is still necessary to aid the panchromatic film by using a suitable light-filter. Also there are some occasions, as when photographing in a misty or hazy atmosphere, when the use of a filter is essential if a crisp result is to be obtained.

The Compass System eliminates the drawbacks associated with filters and so makes their constant use natural.

A set of three light-filters is built into every Compass Camera. There is nothing extra to carry, nothing to forget. The filters are built-in between the lenses,

optically an excellent position, where they are sealed against dust and damage.

The Compass Unit System makes the calculation of the variation of

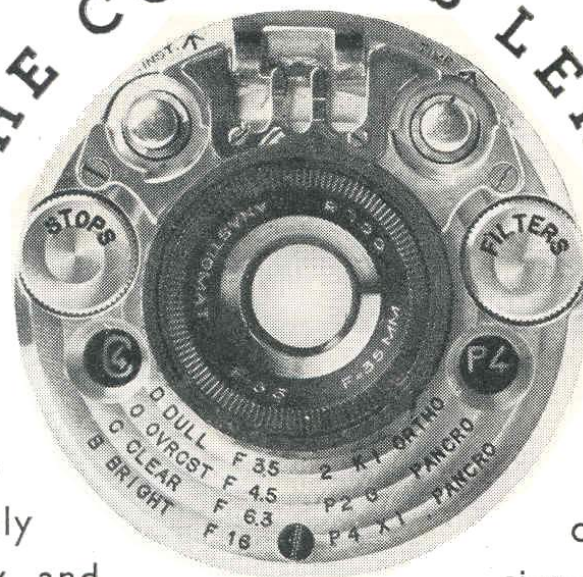
exposure necessitated by their use simply a matter of adding 2 or 4 to the meter reading.

The set of filters fitted as standard comprises a Wratten K.1 which gives normal correction on an Orthochromatic film; a Wratten G, an orange filter which is especially valuable for taking clear pictures in a hazy atmosphere and for special pictorial effects; and a Wratten X.1 for scientifically correct rendering of all colours on panchromatic film. This is the standard set of filters, ~~but it is part of the Compass service to fit any set of three filters that may be selected to special order.~~

THE COMPASS LENS

However well a camera may be designed and made, its practical usefulness depends very largely upon the quality and suitability of the lens with which it is fitted. Like every other feature of the camera, that fitted to the Compass was designed for its special purpose. Its development, incidentally, involved more than five years of exhaustive experiment. It is unique among lenses in having been designed and built as an integral part of the camera.

In order to preserve that compactness which is an essential feature of the Compass, it was necessary actually to build the lens into the camera mechanism. There is no separate lens mount and, therefore, *no* fitting of the lens into the camera—they were designed and are built as a unit,

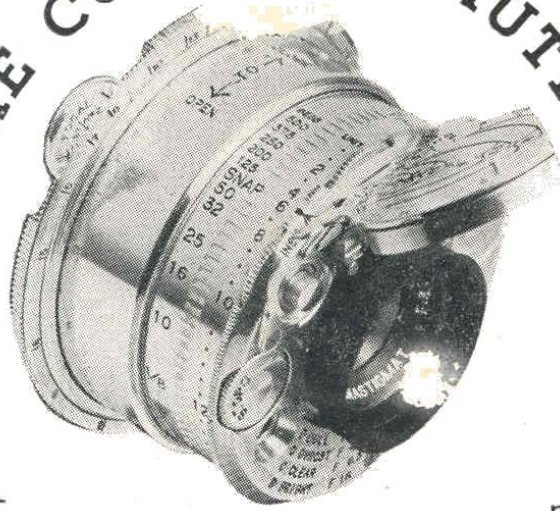


with the resultant achievement of unexampled compactness *plus* extreme mechanical and optical efficiency.

It was found, when the old method of taking a standard lens and building a camera which it would fit was abandoned, and the two were designed together *de novo*, that many of the normal compromises could be eliminated. In short, the Compass Lens is a lens designed and built with no other consideration than that of producing complete technical efficiency combined with the utmost simplicity in operation.

Technically the Compass Lens may be described as a fully corrected four-glass Anastigmat, consisting of two single and one cemented elements, having a focal length of 37mm. and working at a maximum aperture of f3.5.

THE COMPASS SHUTTER



Next in importance to the lens in the equipment of a camera stands the shutter. That built into the Compass is of an entirely new type, using for the first time in standard photographic equipment watch-making technique and watch-makers' standards of accuracy.

Time-exposures of any duration can of course be given; but as its range of automatic speeds is from $\frac{1}{500}$ to $4\frac{1}{2}$ seconds, the Compass can be used under an extraordinarily wide range of lighting conditions when using the automatically timed speeds only. It is worth noting that the Compass Exposure Meter has sufficient range to cover the same wide scale of lighting.

There remains to describe a number of subsidiary accessories which are built into the Compass

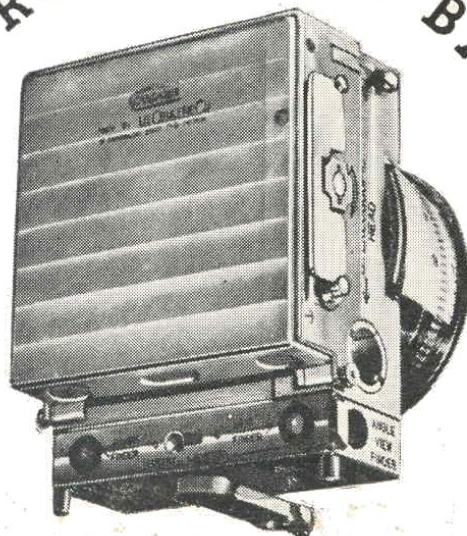
Camera where they are no trouble to carry, are never forgotten, and do not complicate the use of the camera.

Such an accessory is the lens-hood which is sunk into the Compass Camera front and can be extended in a moment. Its purpose is to shield the lens from extraneous light.

Then there is a right-angle viewing device built into the Compass View-finder, enabling pictures to be taken at right angles to the apparent line of sight. This is an accessory which will be used more and more as its value is appreciated.

Built-in panoramic and stereoscopic fittings in conjunction with the Compass Pocket Tripod—the size of a fountain-pen—open up these fascinating branches of photography to Compass owners.

THE ROLL-FILM BACK



For those who prefer the special advantages of roll-film loading, a special back is provided which replaces the normal Envelope Back and which, when in place, increases the thickness of the camera by rather less than a quarter of an inch.

Compass Roll-film Spools contain film for six exposures. They can be loaded extremely quickly and automatically drop into the correct position in the Camera. There is no possibility of under- or over-winding the film as one complete turn of the handle moves it forward exactly the full distance required between

exposures. Incorporated in the Roll-film Back is a withdrawable spring pressure-plate. This is withdrawn as the film is rolled on, so that no friction marks can be caused; yet at the moment the picture is taken the film is held firmly and in the exact focal plane, and as *flat as any film can be held*.

So it is claimed for the Compass that it can be used with glass-plates, the most accurate material made, with all the advantages of single daylight loading, or with a roll-film as flat as any roll-film can be.

A list of the sensitive materials available for use with the Compass Camera will be sent on request.

United States Patent [19]

Seckendorf

[11] 4,081,806

[45] Mar. 28, 1978

[54] CAMERA

[76] Inventor: Bernard A. Seckendorf, 144-23 77th Ave., Flushing, N.Y.

[21] Appl. No.: 712,484

[22] Filed: Aug. 9, 1976

[51] Int. Cl.² G03B 19/02; G03B 17/26; G03B 9/10

[52] U.S. Cl. 354/121; 354/250; 354/288

[58] Field of Search 354/250, 266, 268, 288, 354/75, 76, 82, 121, 100

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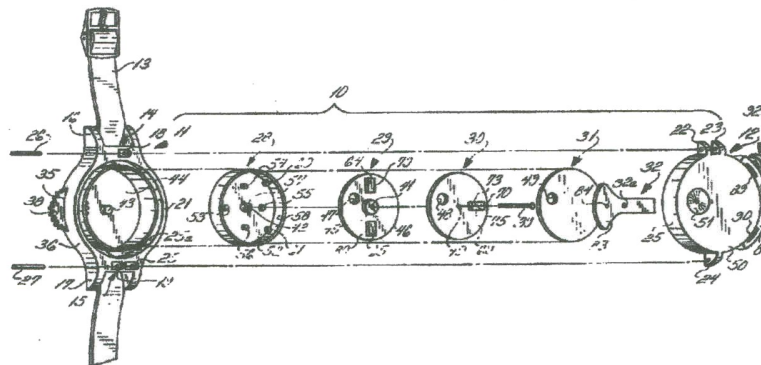
Primary Examiner—Edna M. O'Connor

Attorney, Agent, or Firm—C. Bruce Hamburg

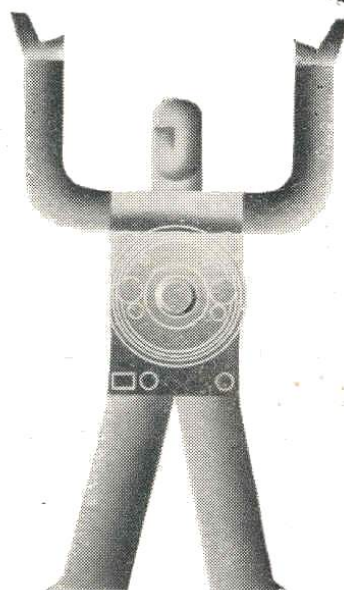
[57] ABSTRACT

A photographic film cassette comprises a cylindrical container having a circular bottom, a circular piece of photographic film supported in the cassette substantially parallel to the bottom of the cassette and means fixed to the cassette and adapted to be engaged by means for rotating the cassette for successive exposure of sectors of the film therein. Also, for a camera, there is provided the combination of a shutter and a shutter actuating means, the shutter comprising a single member at least a portion of which is a first permanent magnet and the shutter actuating means comprises a second permanent magnet. The shutter is actuated by the shutter actuating means by magnetic repulsion. The cassette and shutter mechanism, while not limited to such use, lend themselves particularly well to use in a wrist camera. The wrist camera comprises a casing of diameter substantially no greater than the diameter of the wearer's wrist, a wrist band for snugly securing the casing to the wrist, the aforementioned cassette, means for rotating the cassette from outside the casing, a lens in a wall of the casing and the aforementioned shutter mechanism.

17 Claims, 8 Drawing Figures



COMPASS SERVICE



No question is too small for the Technical Staff to be glad to give advice on—and, on the other hand, however complex and involved a problem may be, the best possible solution will be provided.

Because the demand for first-class miniature processing is still ahead of the supply, we have installed a small modern processing plant. Only Compass negatives will be processed and only processing of the finest quality will be done.

The service will be reasonably rapid; but speed will not be a fetish, because it is inimical to

quality. This service will be available to every Compass user, either through his Compass Dealer or direct.

The Compass Camera is a British invention and is manufactured for Compass Cameras, Ltd., by Le Coultre & Cie., at Le Sentier, Switzerland.

For more than a hundred years the Le Coultre factories have been famous for the production of the finest watches made. There, craftsmanship is still a living tradition and has taken into its service the finest scientific technique, the most modern precision machinery.

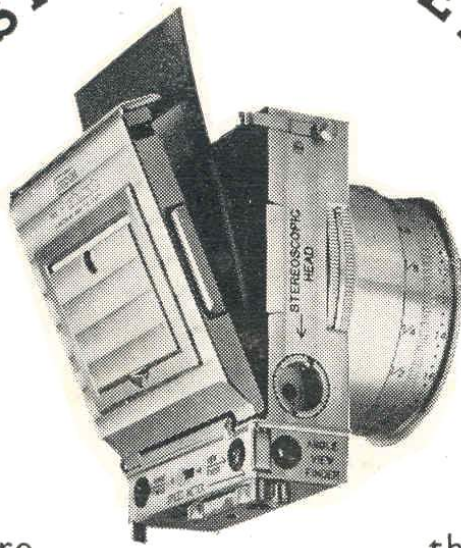
All the plates reproduced in this book are from enlargements of negatives taken with the Compass Camera.

SENSITIVE MATERIAL

Finally, and though it comes last in this description of the Camera, it might be considered first in importance, there are the special Compass methods of loading sensitive material into the Camera.

The first of these methods represents as complete a break with conventional photographic practice as any feature of the Camera. It is the Compass Envelope. Compass Envelopes are little light-tight paper envelopes in which glass plates are sold ready loaded. They have all the advantages of single metal or wooden dark slides—with none of the dark slides' disadvantages of high cost, weight and bulk.

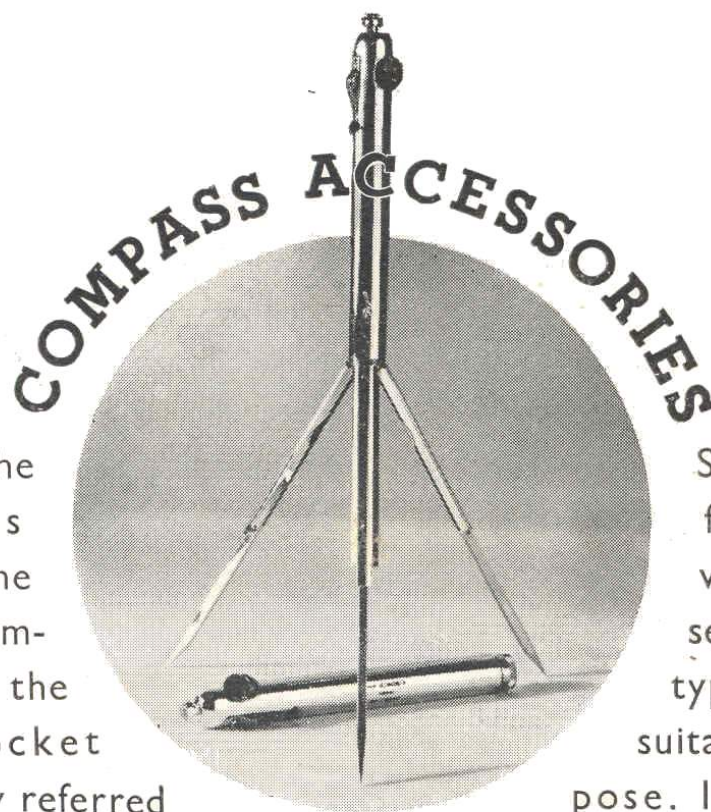
After the plate has been duly exposed, it is removed from the envelope for development. The Compass patent envelope gives all



the advantages of single plate loading. Exactly the number of negatives desired can be exposed; there is no urge to shoot unwanted subjects "to finish the roll," and any can be selected for immediate development while a variety of types of material can be carried.

Hitherto it has not been possible to use glass-plates with miniature cameras. It is generally agreed that for the highest degree of precision in negative making, the rigidity of the glass-plate and the perfectly plain, *always* flat surface on which the emulsion is coated, have advantages which no other negative material can equal.

For the first time the Compass Envelope gives the photographer who demands glass-plates, the advantage of *daylight* loading, hitherto the monopoly of film.



Included in the accessories available to the user of the Compass Camera is the Compass Pocket Tripod already referred to. When folded, this resembles a fountain-pen in size and shape.

A wide selection of leather and other cases for the Camera, Envelopes, Roll-film Back and Spools, etc. is available, and details will be sent upon request.

A small attachment which can be fitted over the shutter release by a bayonet joint enables a standard pattern cable release to be used to actuate the shutter.

This is particularly useful when the Camera is being used on a Compass pocket tripod.

A leaflet is published, giving a list of the various plates and films already available, packed in Compass Envelopes and Roll-film

Spools, with information which will facilitate the selection of the type of film most suitable for any purpose. In due course

plates and films for use in the Compass Camera, and appropriate processing services, will be available throughout the world.

Compass Cameras, Limited, who have the pleasure of presenting the Compass Camera to the public, is an entirely British organisation, with headquarters at 57 Berners Street, London, W.1, five minutes from Oxford Circus. *The ownership of a Compass is an invitation to make the fullest use of the services available at Berners Street.*

Personal calls, letters addressed direct, and requests forwarded through Compass Dealers will be equally welcomed.



Instructions for Using the
ENSIGN MIDGET CAMERA

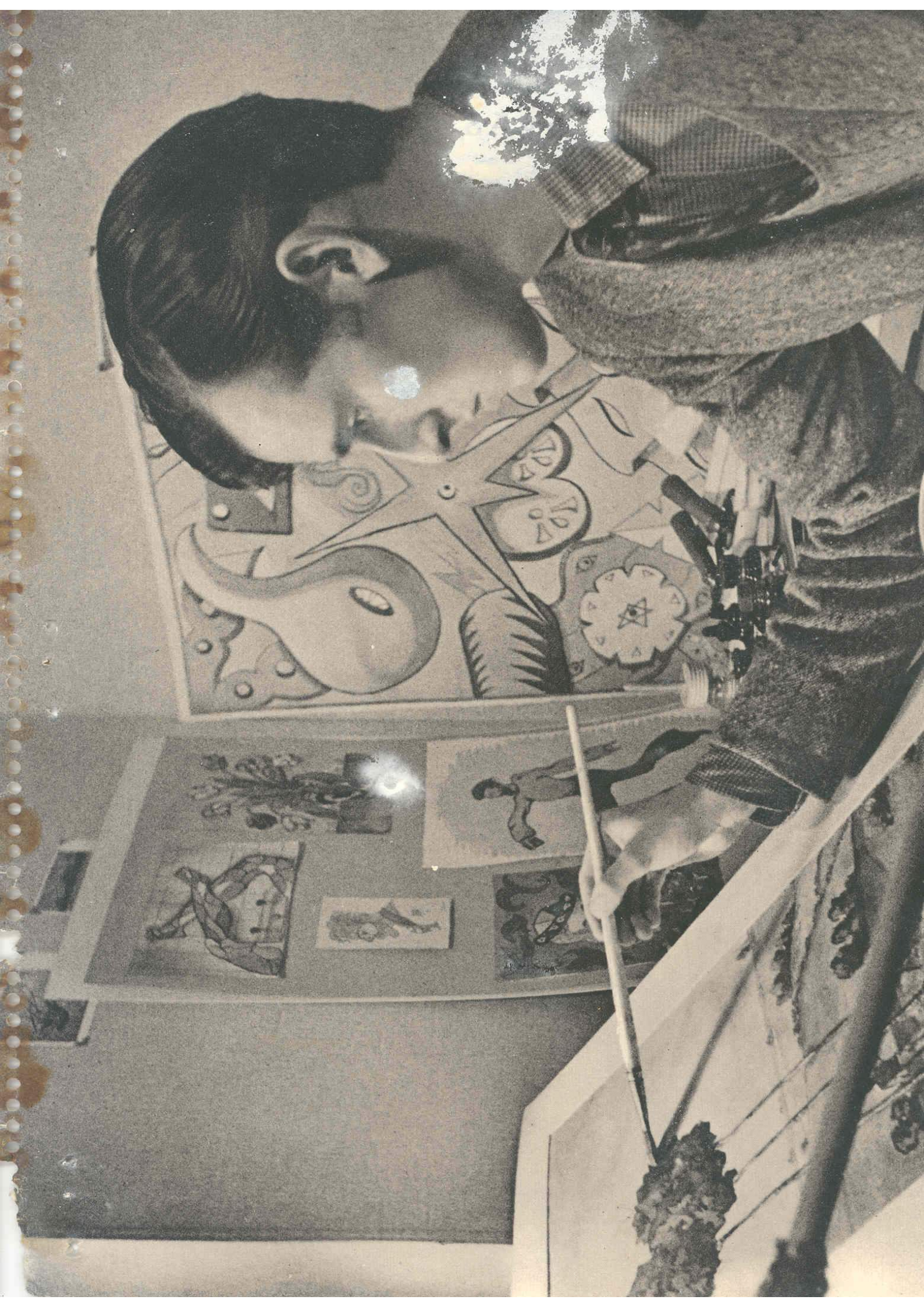
Size of picture 4×3 cm.

Spool E 10.

The compactness of the **ENSIGN MIDGET** is rendered possible by the careful design of its working adjustments, and it is worth while for the user to study them in order to obtain the fullest value in results from such a unique camera.

2

ENSIGN
LUKOS
THE FULL-SPEED FILM
FOR CLEARER PICTURES



After completing the sixth exposure, wind film completely off, then remove the back and seal film with the "EXPOSED" label **before removing it from the carrier**, otherwise it may slacken and become fogged. Withdraw winder, swing out carrier and remove the spool, transfer empty bobbin from bottom chamber to top (it may be placed in chamber either way-round) and the camera is ready for re-loading.

CAUTION. Do not wind spool with the Camera closed : there is a risk of scratching the film on the back of the bellows.

ENSIGN, LIMITED

LONDON, W.C.1

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Printed in England.

Hold the camera by the two ends in the thumb and fingers of one hand, grasp the centre portion with the other and pull out. (Fig. 1). The front locks in the ends of the four struts.

The BRILLIANT VIEW FINDER is in position ready for an upright picture ; (view between the corners thus) —

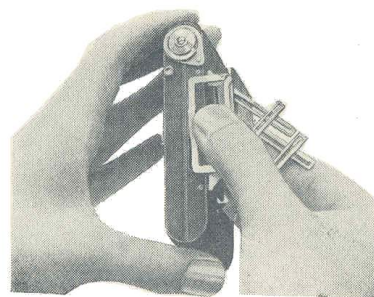


Fig. 1.

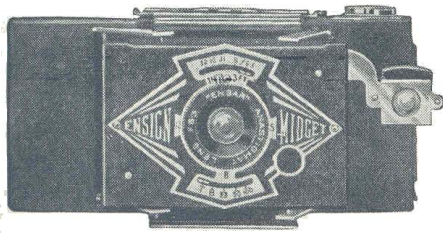


Fig. 2.

If a horizontal picture is required it can be swung out on its bracket (Fig. 2)

and the view

will then be

between the

corners thus:



Note—Unless the winder is fully engaged (Fig. 11) the back cannot be put on.

Continue winding the film until the figure 1 appears in the red window at the back of the camera. The film is now in position for the first exposure.

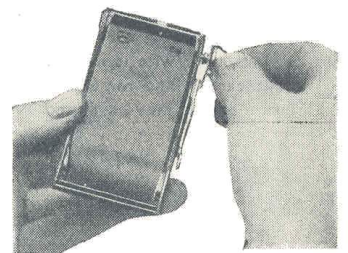


Fig. 11.

COMPASS SPECIFICATION

The Compass Camera is available in one model, in one finish. It is supplied in a limp leather slip-in case, complete to the following specification :

Dimensions. $2\frac{3}{4}" \times 2\frac{1}{8}" \times 1\frac{1}{4}"$. **Weight.** $7\frac{3}{4}$ ounces

Size of negatives. 36×24 mm. (about $1\frac{1}{2}" \times 1"$).

Lens. C.C.L.3 Anastigmat 37mm. focus, working at f3.5.

Shutter. Automatic exposures from $1/500$ sec. to $4\frac{1}{2}$ secs., and Time exposures.

Focussing. From infinity to 21 ins. by linked range-finder, focussing scale, or on ground-glass focussing screen.

Depth of focus scale. Built into hinged lens cover.

Range-finder. Linked with focussing adjustment to give correct focussing automatically.

View-finder. Brilliant optical finder, with right-angle adjustment.

Direct and right-angle tripod bush. Taking a standard $\frac{3}{16}"$ tripod screw.

Stereoscopic head. Enables stereoscopic pairs of negatives to be taken.

Panoramic foot. Enables a series of negatives to be taken embracing more than half the full circle.

Spirit level. Mounted on top of camera.

Lens hood. Collapsible, built into camera front.

Filters : Any set of three filters can be fitted, the standard set consisting of : K1. Yellow, G. Orange, X1. Green.

Exposure meter. Built into the view-finder and marked in conjunction with the shutter, stops and filters.

Film pressure plate. A spring-operated plate.

For simple snapshotting. There are indicators on shutter and lens-stop adjustment to show the normal positions for average snapshots.

COMPASS GUARANTEE

Though the Camera is made in Switzerland, it will be serviced by Le Coultre technicians in the principal centres of the world.

Owing to the method of construction adopted, it is practically impossible for a Compass Camera to break down or cease to function perfectly through any defect of material or workmanship—but if at any time any Compass Camera does so break down it will be repaired and adjusted at once and without charge, subject to the conditions of the Company's standard form of guarantee which can be obtained by all purchasers.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 4,081,806

DATED : March 28, 1978

INVENTOR(S) : Bernard A. Seckendorf

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 55, change "aspect to" to --aspect of--.
Column 3, line 57, change "a gear 33" to --the gear 33--.
Column 5, line 19, change "reciprocating" to --reciprocation--;
line 52, change "With" to --When--.
Column 7, line 33, change "being in insuffi-" to --being in suffi- --;
line 60, change "projectng" to --projecting--.
Column 8, line 59, change "lmit" to --limit--.
Column 9, line 30, change "than" to --then--.
Column 10, line 31, change "field" to --fields--.

Signed and Sealed this

Third Day of October 1978

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

DONALD W. BANNER
Commissioner of Patents and Trademarks

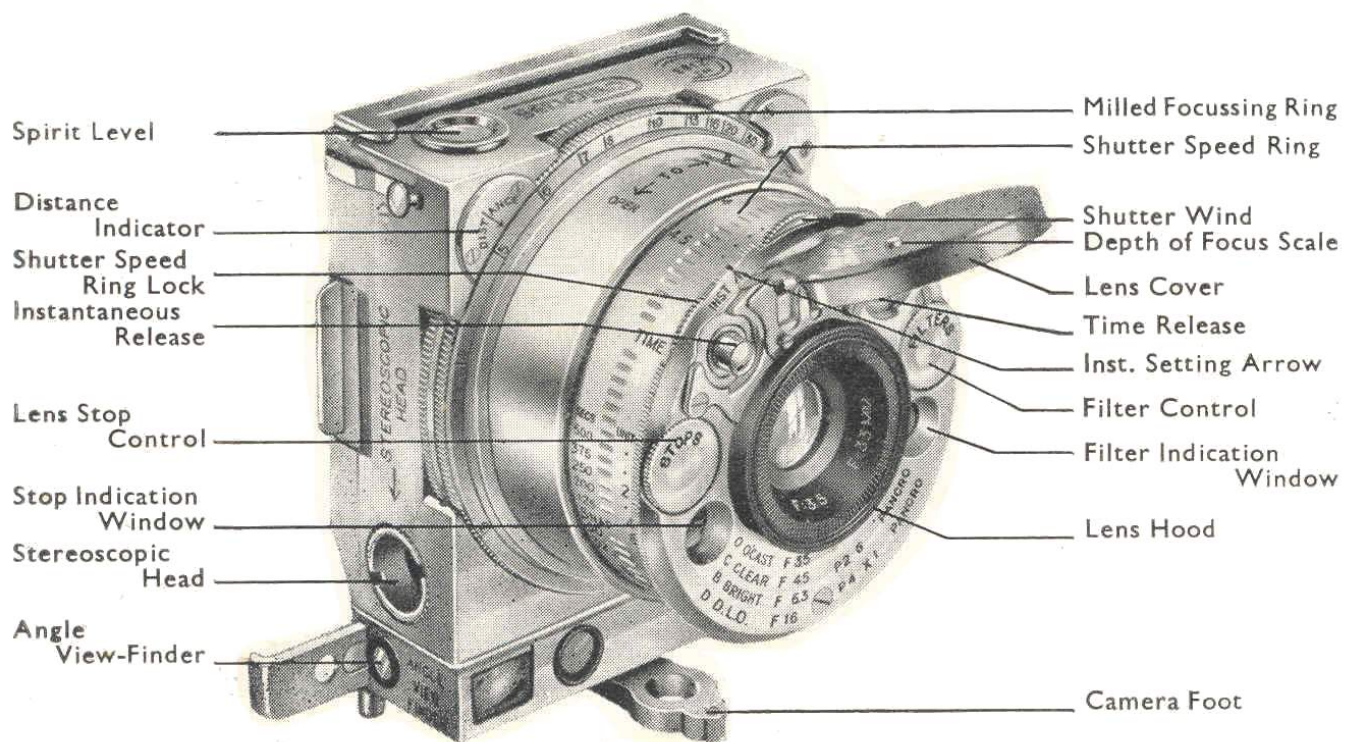


FIG. I

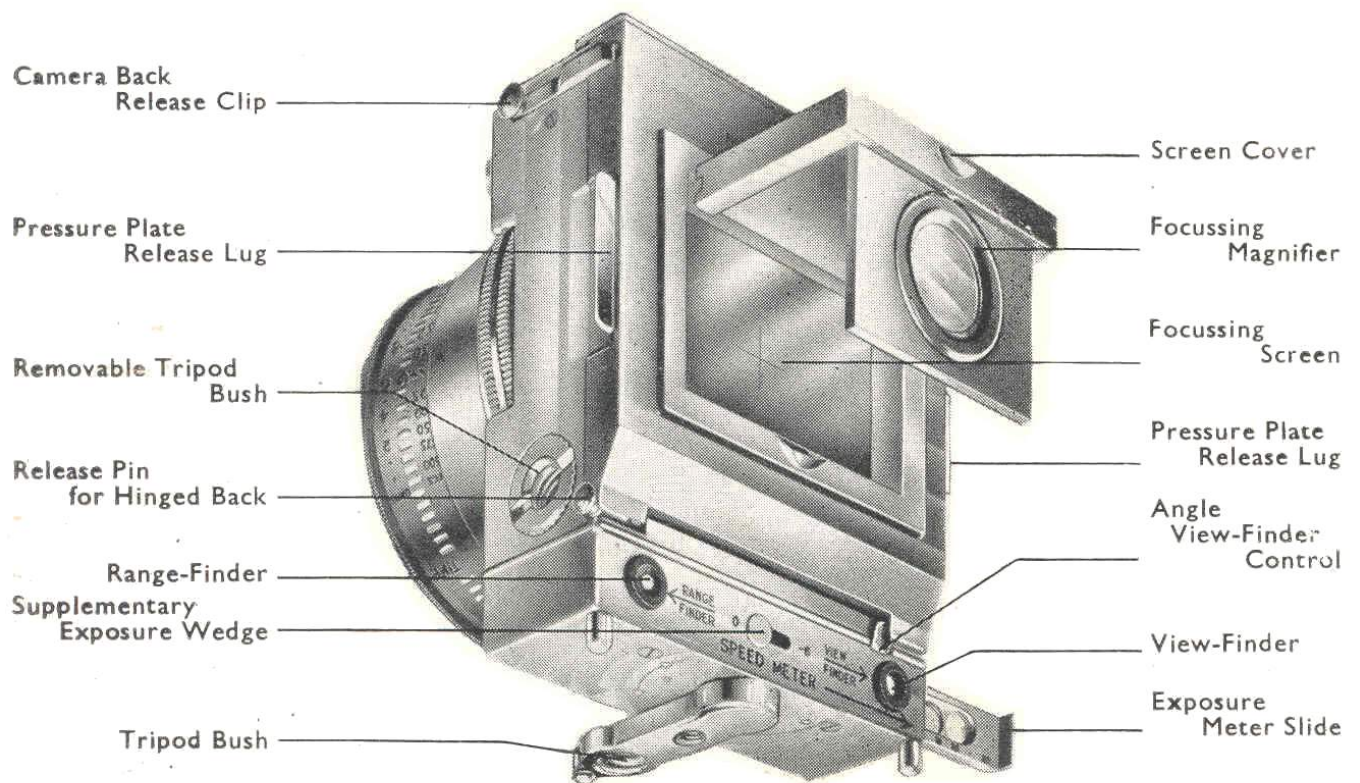


FIG. II

WHY WIDE-ANGLE?



The advantages of a wide-angle lens are not widely understood. Firstly, a wide-angle lens gives greater depth of focus, more all-over-sharpness, than any other type. This makes focussing easier and more certain.

The second characteristic of the wide-angle lens is its breadth of view. Used from the same view-point and on the same size of film as a lens of longer focal length, it includes more of the subject, though as a natural corollary, it shows the subject on a smaller scale.

With many subjects, such as interiors of rooms, street scenes and buildings, which can only be taken from close-up, the "inclusiveness" of the wide-angle lens is imperative for results.

Thirdly, the wide-angle lens

has a special value in the taking of groups, portraits and close-ups, giving them a curious and most striking intimacy and reality.

The design of the Compass Camera does not permit the fitting of interchangeable lenses. To permit of their use it would have been necessary to sacrifice much of the compactness, simplicity in use and completeness which are essential features of the Camera. So, as this would have been too high a price to pay for the single virtue of interchangeability, it was necessary to design the one lens which was to be available to cover as wide a field as possible. *It is claimed that no other single lens has a higher standard of general utility or greater adaptability to a large variety of special purposes.*



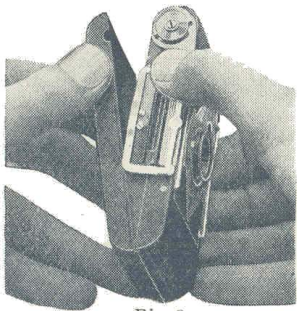


Fig. 8.

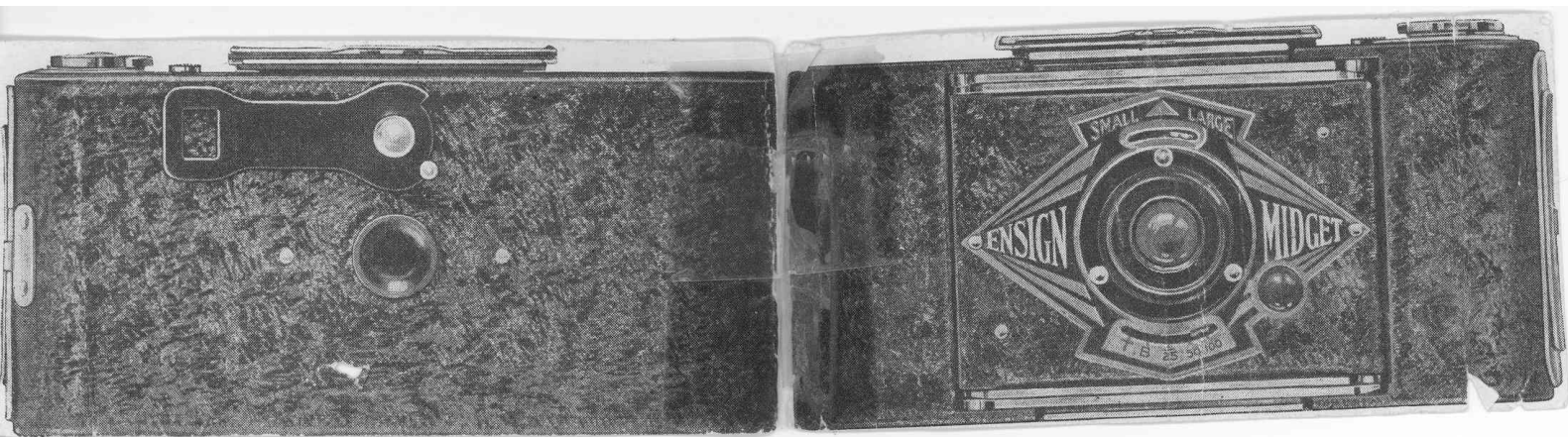
pressure is given to the struts (Fig. 7) until the front is free.

TO OPEN THE BACK, slide the top catch, as indicated by arrow, and lift off back by grasping it just below the winder, where a small stud furnishes a grip. The back unhooks at the lower end (Fig. 8).

The Camera produces sharp pictures at all distances from 3 feet to Infinity without any adjustment of the lens position. The No. 2 CAMERA is fitted with the "Ensar" Anastigmat Lens F/6.3, and stops for Iris diaphragm values of F/8, F/11, F/16 and F/22 are provided. This model is furnished with a focussing adjustment, the front cell of the lens being turned until the pin projecting from it faces either of the five positions marked in red; Inf., 12, 8, 5 and 3 feet. (Fig. 5).



Fig. 5.



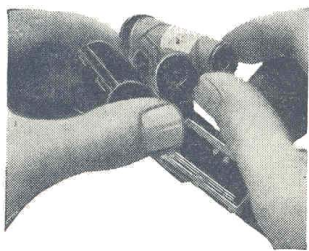


Fig. 10.

12

TO LOAD, swing out lower spool carrier, slide the moving end outwards, and insert new spool (Fig. 10): break the seal, press carrier back into chamber, and lead paper over the rollers to the receiving spool in the top chamber. Give the winder one or two turns to draw paper tight, then replace back.

The DIRECT-VISION VIEW FINDER is a frame folded down on to the lens front, and a back sight on the camera back. Lift up the top half of the folded frame and continue to lift until the second section rises (Fig. 3) and both click into the upright position. Swing up the back-sight against its stop.

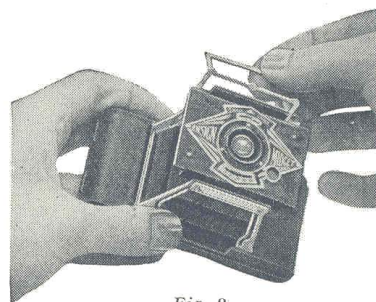


Fig. 3.

5



Fig. 4.

6

Viewing the subject through the back-sight (Fig. 4) gives an eye-level perspective, and the amount included in the front frame will be taken on the film. The No. 1 CAMERA is furnished with an Optical System of novel construction (Patent No. 271186). The two stops are marked "small" for use with brilliant light or sunshine, and "large" for use when conditions are dull or cloudy.

WHEN REPLACING THE BACK it is important that the two hook projections on the back fit into two corresponding recesses in the body. It is easier to do this if the camera is held with the bottom end uppermost (Fig. 9). For convenience in loading the films both carriers are made to swing out from the spool chambers, but they are permanently attached and cannot be lost. The upper one must, before attempting to swing out, be freed by withdrawing the winder; the lower one is free to swing.

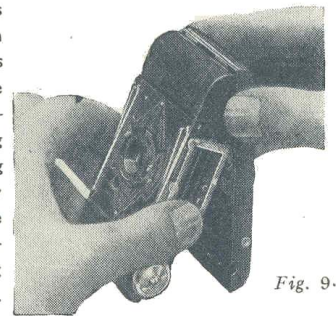


Fig. 9.

11

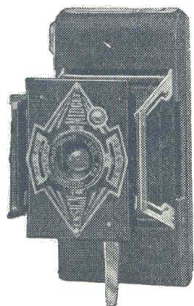


Fig. 6.

Objects between these distances may be provided for by intermediate positions of the pin, thus half-way between 12 and 8 will be correct for 9 to 10 feet, etc.

Both Cameras have the same shutter with settings for three Instantaneous speeds, $1/25$ th, $1/50$ th and $1/100$ th second (approximately), also Bulb and Time.

The trigger is just behind the lens front on the right side (opposite the view-finder) where is it well protected from accidental operation. Here is situated also the leg for standing the camera erect when taking an upright picture (Fig. 6). Before closing the Camera the Brilliant View-finder must be returned to its original vertical position.

WHEN CLOSING THE CAMERA care is necessary in order to avoid pressing the bellows folds in; hold the four struts with the thumbs and **second** fingers of each hand, thus leaving the fore-fingers free to press on the front, whilst a slight **outward**

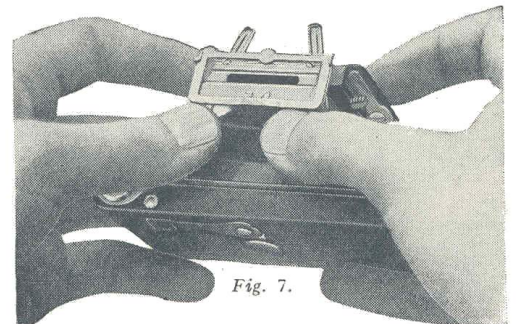


Fig. 7.



Fig. 2.

If a horizontal picture is required it can be swung out on its bracket (Fig. 2) and the view will then be between the corners thus:



Note—unless the winder is fully engaged (Fig. 11) the back cannot be put on.

Continue winding the film until the figure 1 appears in the red window at the back of the camera. The film is now in position for the first exposure.

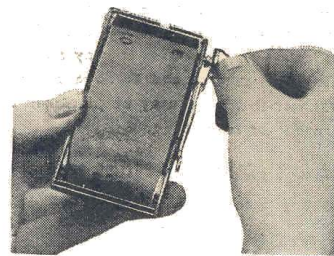


Fig. 11.

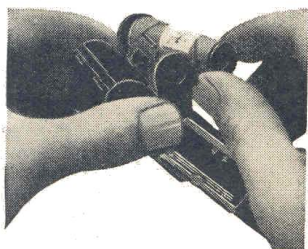


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12

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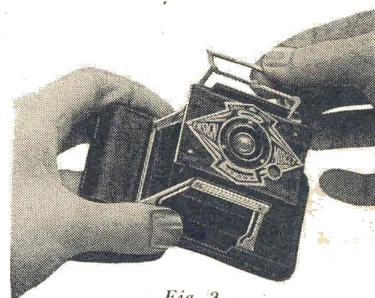


Fig. 3.

5

OCTOBER 1978/\$1.50

MODERN PHOTOGRAPHY

**Tiny, Terrific
Pentax
110 SLR!!**



**What *Really*
Happens When
You Push Film?**

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**100 Lines/mm
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Lenses???**

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Complete Test**

**10-pg. Guide
To All Major
SLR Cameras**



Instructions for Using the
ENSIGN MIDGET CAMERA

Takes roll film 4×3 c.m., Ensign Lukos E 10.

The compactness of the ENSIGN MIDGET is rendered possible by the careful design of its working adjustments, and it is worth while for the user to study them in order to obtain the fullest value in results from such a unique camera.

ENSIGN
LUKOS
THE FULL-SPEED FILM
FOR CLEARER PICTURES

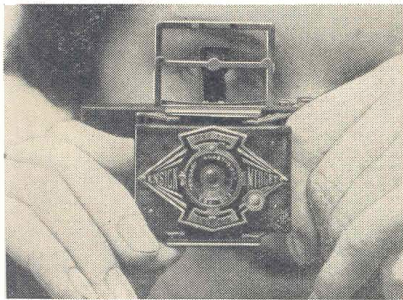


Fig. 4.

6

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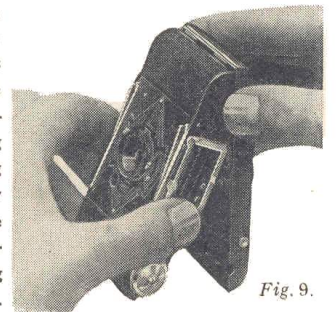


Fig. 9.

11

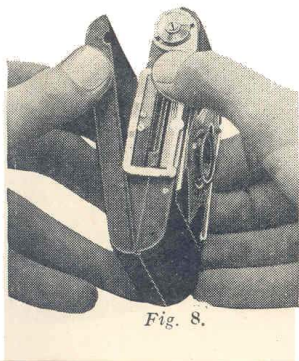


Fig. 8.

pressure is given to the struts (Fig. 7) until the front is free.

TO OPEN THE BACK, slide the top catch as indicated by arrow, and lift off back by grasping it just below the winder, where as small stud furnishes a grip. The back unhooks at the lower end (Fig. 8).

The Camera produces sharp pictures at all distances from 5 feet to Infinity without any adjustment of the lens position. The No. 2 CAMERA is fitted with the "Ensar" Anastigmat Lens F/6.3, and stops for Iris diaphragm values of F/8, F/11, F/16 and F/22 are provided. This model is furnished with a focussing adjustment, the front cell of the lens being turned until the pin projecting from it faces either of the five positions marked in red; Inf., 12, 8, 5 and 3 feet. (Fig. 5).



Fig. 5.



After completing the sixth exposure, wind film completely off, then remove the back and seal film with the "EXPOSED" label **before removing it from the carrier**, otherwise it may slacken and become fogged. Withdraw winder, swing out carrier and remove the spool, transfer empty bobbin from bottom chamber to top (it may be placed in chamber either way round) and the camera is ready for re-loading.

CAUTION. Do not wind spool with the Camera closed : there is a risk of scratching the film on the back of the bellows.

ENSIGN, LIMITED

LONDON, W.C.1

14

Hold the camera by the two ends in the thumb and fingers of one hand, grasp the centre portion with the other and pull out. (Fig. 1). The front locks in the ends of the four struts.

The BRILLIANT VIEW FINDER is in position ready for an upright picture ; (view between the corners thus) —

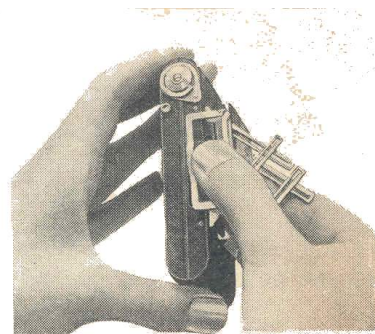


Fig. 1.

3



Fig. 6.

8

Objects between these distances may be provided for by intermediate positions of the pin, thus half-way between 12 and 8 will be correct for 9 to 10 feet, etc.

Both Cameras have the same shutter with settings for three Instantaneous, speeds, $1/25$ th, $1/50$ th and $1/100$ th second (approximately), also Bulb and Time.

The trigger is just behind the lens front on the right side (opposite the view-finder) where it is well protected from accidental operation. Here is situated also the leg for standing the camera erect when taking an upright picture (Fig. 6). Before closing the Camera the Brilliant View-finder must be returned to its original vertical position.

WHEN CLOSING THE CAMERA care is necessary in order to avoid pressing the bellows folds in; hold the four struts with the thumbs and **second** fingers of each hand, thus leaving the fore-fingers free to press on the front, whilst a slight **outward**

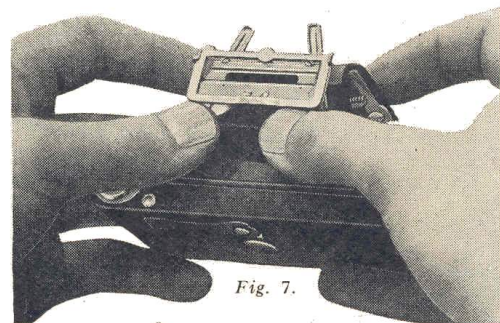
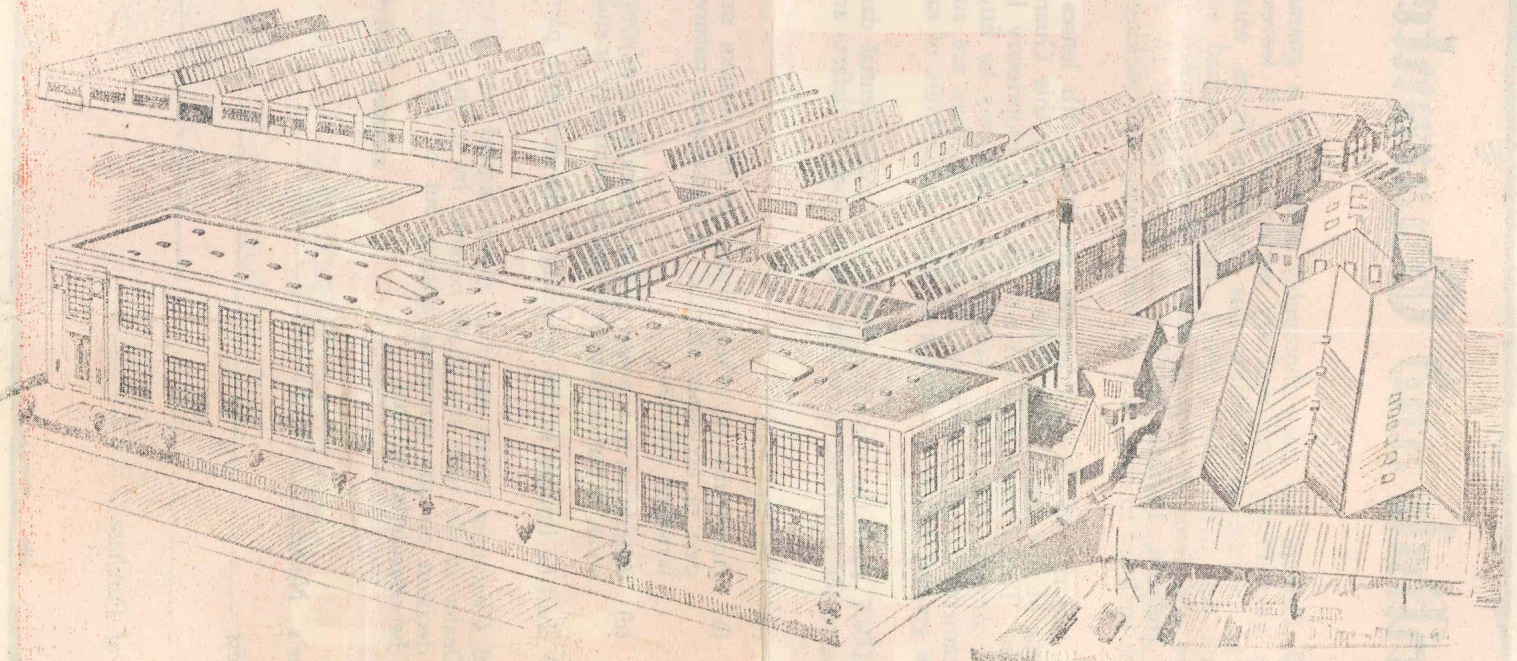


Fig. 7.

9

Where "ENSIGN" CAMERAS are made



"ENSIGN" Works, Walthamstow, London

British and Guaranteed

This Camera has been thoroughly tested and is guaranteed to be mechanically and optically perfect when it leaves our factory. In case of complaint, this Guarantee Form, with the owner's full name and address, should be attached to the camera and returned carriage paid to Ensign, Limited, 88/89, High Holborn, London, W.C.1. A remittance of 1/- should also be enclosed to cover cost of return postage and packing.

The majority of Ensign Cameras are fitted with lenses and shutters of our own manufacture and to such this Guarantee applies. This Guarantee shall not apply to proprietary lenses and/or shutters not of our manufacture which may be fitted to our cameras; such proprietary lenses and shutters are subject to the general service conditions of the manufacturers of same.

Neither shall the guarantee cover any consequential damage arising to the purchaser or to the making good of defects arising from:—

- (a) Use and wear.
- (b) Accidental or other damage to the camera or any part or accessory thereof, of whatsoever nature and however arising.
- (c) Alteration in any way of the camera or its adjustments so as, in our opinion, to affect its reliability or stability.

And shall be limited to the replacing of the defective parts.

This Guarantee is not operative unless signed and dated by the Dealer at the time the goods covered by it are purchased. Our decision on any questions arising out of this Guarantee must be considered as final.

ENSIGN, LIMITED.

Dealer's Name

Address

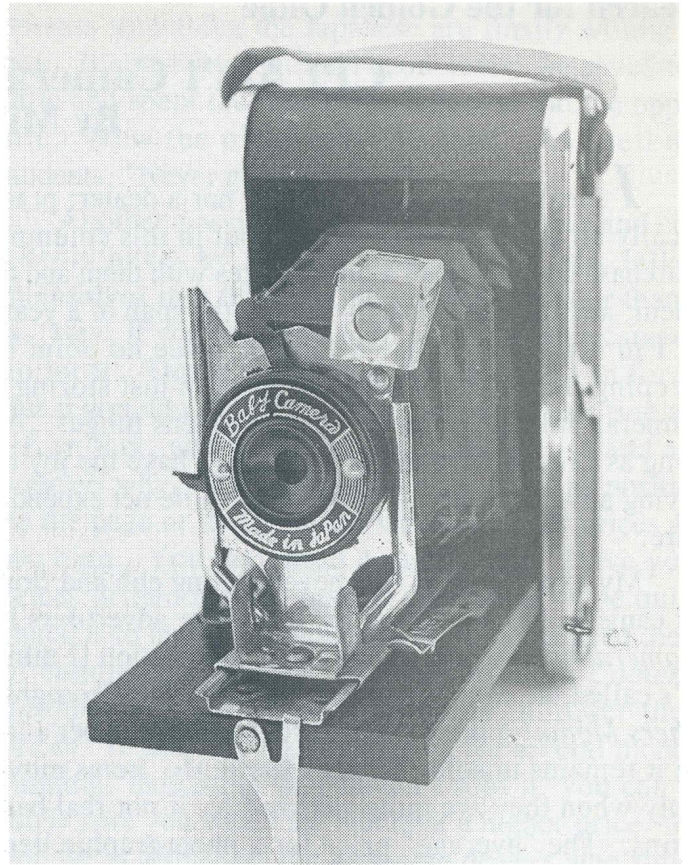
Date of Purchase

G. J. Jones

taking. Had the camera also been offered with a really good quality four element f/4.5 lens, it would have been fully competitive with the best folding cameras of the day. Happily, it is still possible to use Midget cameras. Attaching short lengths of 35mm film to cut down 120 rollfilm paper backing will produce a somewhat smaller than normal image, as long as loading spools are available.

The Ensign Midget superbly demonstrated how a subminiature camera was capable of producing a larger negative. Of course, the Midget's secret was that only one dimension, its slimness when closed, was truly impressive. The other two dimensions, however, enabled the camera to make a larger image while still remaining only a little over three inches in length. Yet, despite the Ensign Midget's success and its potential, its design contained several flaws. The four long corner struts bent with age and the resulting misalignment led to increasingly poor pictures. Many inexperienced photographers, in their haste to open and close the mechanism, often bent a strut or two and then tried, usually unsuccessfully, to bend them back into shape. At times, even new strut cameras posed difficulties simply because machining was not precise enough to guarantee continuing film plane to lens alignment after the camera was repeatedly opened and closed. Even worse, the delicate bellows materials were easily damaged. As a result, only one subsequent very small camera used a folding/bellows design, and it exemplified all the weaknesses of this shape. The Baby Camera was a very small folding plate camera manufactured in Japan in the 1930s. With a simple meniscus lens and a single speed shutter, it produced a 40x55mm image on plates and had little to recommend it. Because no company name marks the camera, the manufacturer remains unknown though it is very similar to several other cameras produced during these same years, including: the Asahi-Go and Asahi Special folding cameras produced by the Asahi Camera Works; the Highking folding camera produced by the Y. S. Company; the Special Camera, also manufactured in Japan during the 1930s.

None of the problems associated with bellows folding cameras were insurmountable. The Retina series and the Zeiss Ikon Ikonta A, both introduced in 1934 along with the Midget, demonstrated that bellows design could be used on a smaller camera. Of course, both cameras were significantly larger and



BABY CAMERA

heavier than the Ensign Midget. Subsequent subminiature design abandoned folding bellows forever, however. By the end of World War I, a new and revolutionary material made the use of costly leather bellows technologically passe. That new and exciting material? Why Bakelite, of course! Molded plastic was lighter than metal bellows cameras and could be made into very small durable shapes. It was also much cheaper to produce and far uglier to. Next issue--"Bakelite Beauties! Everything the bellows camera was not and more!"

© 1995 Jerry Friedman

"The original and only actual vest pocket camera." Subsequently, Houghtons also introduced larger versions of the same design. The latter were even more popular because they were only 1/4 to 1/3 inch thicker, though somewhat longer and wider, yet they made larger contact prints, still the most common method for turning negatives into photographs. Indeed, even larger negative size was possible in a five inch camera which might only be fractionally wider when closed. But, was it possible to miniaturize this design to develop a bellows subminiature camera? The negative would demand enlargement, of course, but this very fact permitted real small camera dreams.

Magnus Neill also designed a smaller version of the Ensignette in 1917 but the first World War halted its production. In 1934, however, with better emulsions available, the old smaller Ensignette design reemerged with the name the Ensign Midget. Like its larger and older sibling, the Ensignette, the Midget came in various models, all of which, when closed, were only 3 1/2 x 1 5/8 x 5/8 inches. With the bellows extended, the last dimension increased to 2 3/8 inches. And yet, despite the Midget's small size, the camera produced a negative 1 1/4 x 1 5/8 inches, or 3x4cm, on special E-10 paper backed rollfilm. To put this into perspective, the Midget was a fraction of the Retina's size and weight but produced a negative almost 50% larger.

The three models represented three different levels of photographic sophistication appropriate for three different audiences. The Midget #22, the least expensive of the Midget trio, was essentially a box camera and offered only Instantaneous and Time

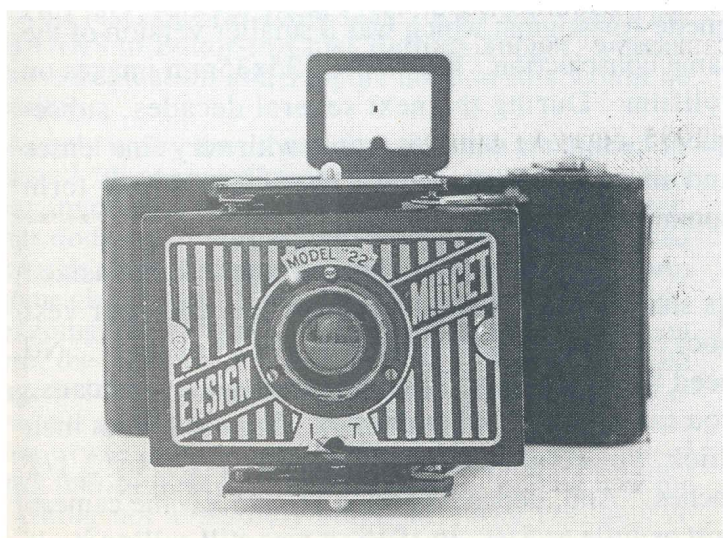


MIDGET #55

exposures. The f/11 lens was a fixed focused "All-Distance" optic. The #22 may not have taken better pictures than a Kodak box camera, but it demanded only a fraction of its space and could fit the most narrow pocket. Model #33 was like the Model #22 but offered a choice of apertures consisting of 'small,' about f/16, and 'large' which was f/6.3. The lens was fixed focus but the choice of apertures permitted greater exposure flexibility but also delivered greater depth of field in full sun light. Shutter speeds on the Model #33, were also improved and included 1/25, 1/50, 1/100 second plus B and T. Model #55, an improved Model #33, offered the same shutter speeds, but with a much better Ensar Anastigmat f/6.3 lens which could be closed down to f/22 and focused from three feet to infinity.

Models #33 and #55 featured two types of viewfinders; one a folding wire frame and the second a swing out reflex brilliant mirror glass type attached to the lens standard. Both cameras also had a fold-down leg attached to the front standard to keep the camera steady when placed on a flat surface, for time exposures. In addition, all three cameras had well made wraparound leather cases to protect the cameras. The Midget, which remained in production until 1944 proved very popular and in 1937, Houghtons marketed a Silver Jubilee version in sterling silver to commemorate the silver jubilee anniversary of England's king and queen.

Of the three models, the #55 was certainly the most advanced and was capable of serious picture



MIDGET #22

Circular Camera

A new revolutionary type of pocket camera is the Petal, which operates on the principle of the retina of the human eye. Round in shape,



and the size of a half-dollar, the Petal camera can be worn as a lapel camera or on a key chain. It takes six exposures per cartridge and enlargements are good. The cartridge retails for \$1.00; the camera itself for \$20.00, tax included.

Myra Camera Co., Inc.
New York, N. Y.

Films to fit the **ENSIGN** **MIDGET**

ENSIGN LUKOS E10
SELO S10

6 exposures.

SELO FINE GRAIN
PANCHROMATIC
6 exposures.

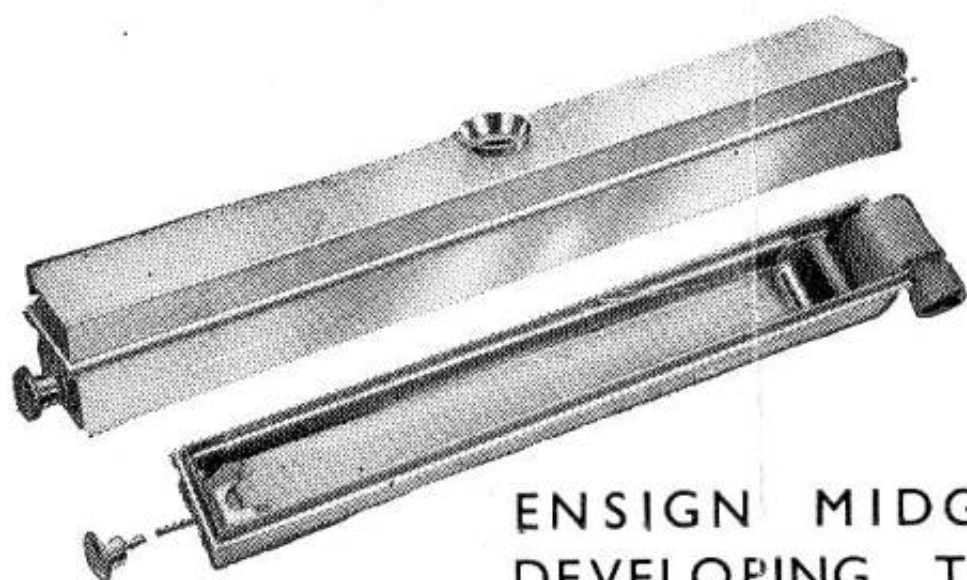


PRINTED IN ENGLAND

ENSIGN MIDGET CAMERA

Service
and
Accessories

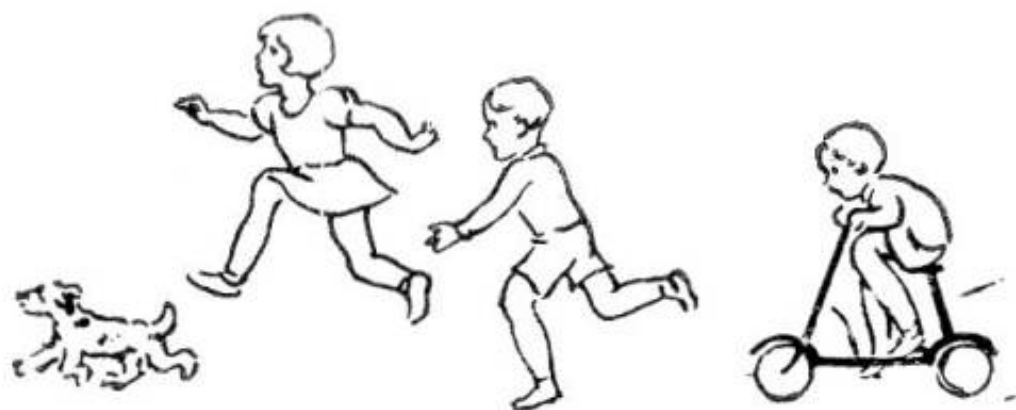
ENSIGN, LIMITED, LONDON



ENSIGN MIDGET DAYLIGHT DEVELOPING TANK enables the process of developing to be carried out completely in daylight without any difficulty, and with the certainty of absolutely perfect results. The Tank is very well made in hard brass heavily nickel-plated, and is exceedingly simple to use.

Price 12/6

Much of the joy of picture-making is in the actual developing of the film and the making of the print. Midget Film is so easy to handle, that the processes are reduced to complete simplicity, and there is no laborious dark room work. A few simple accessories only are required, and the work can be done almost anywhere.

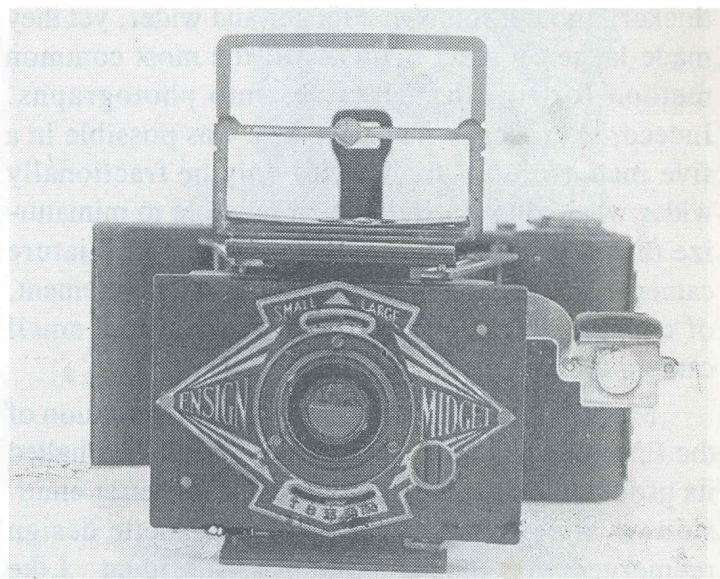


Subminiature Bellows/Folders by Jerry Friedman

Since World War II, most subminiatures have been small metal rectangular cameras. Some, such as the Minox, featured an exaggerated length; others, like the Minolta 16 or Mamiya 16 series do not but all comprise rectangles. This design development though so obvious today, was not easily achieved but rather depended upon considerable advances in both camera and optical construction which permitted locating the lens within the camera so that optical alignment to film alignment would remain exact. An important design consideration for all cameras, this was especially important in tiny models for which the slightest digression meant an impossible blurred or unfocused negative. Since the small negative had to be enlarged so much more than a larger negative the need for precise optical to film plane alignment was absolutely crucial. Indeed, one of the earliest of subminiature cameras, the Houghtons' Expo/Ticka, of 1904, discussed several months ago, bears witness to this requirement. Indeed, a strong tube "watch stem," held the Expo lens tightly in place. Even more, the Expo/Ticka employed a rigid cassette to hold long strips of specially cut film to guarantee precise film and optical alignment. This revolutionary first use of a cassette for a subminiature camera anticipated subsequent developments. The Police Expo altered this round design to produce the now near universally used rectangle.

Subminiature cameras had all become rectangles but some, in addition, folded to gain greater use of space. For decades, view cameras used collapsing bellows to keep overall camera size manageable, at least while the camera was closed. Once rollfilm became popular and readily available, smaller sizes, such as 127 film, also greatly enhanced small folding bellows camera possibilities. Of course, fitting 127 size film into an Expo represented a challenge, but building a collapsible bellows type camera around 127 or other small rollfilm was more easily accomplished.

Since 1912 thin bellows cameras, or "vest pocket cameras", as they were called, had been enormously popular. Houghtons, Agfa/Ansco, Ernemann, Zeiss and Kodak all produced a great variety of cameras of this shape with many different lens and shutter com-



MIDGET #33

binations. While very thin when closed, their bellows enabled these cameras to make relatively large 3x4 inch negatives for contact printing or enlarging.

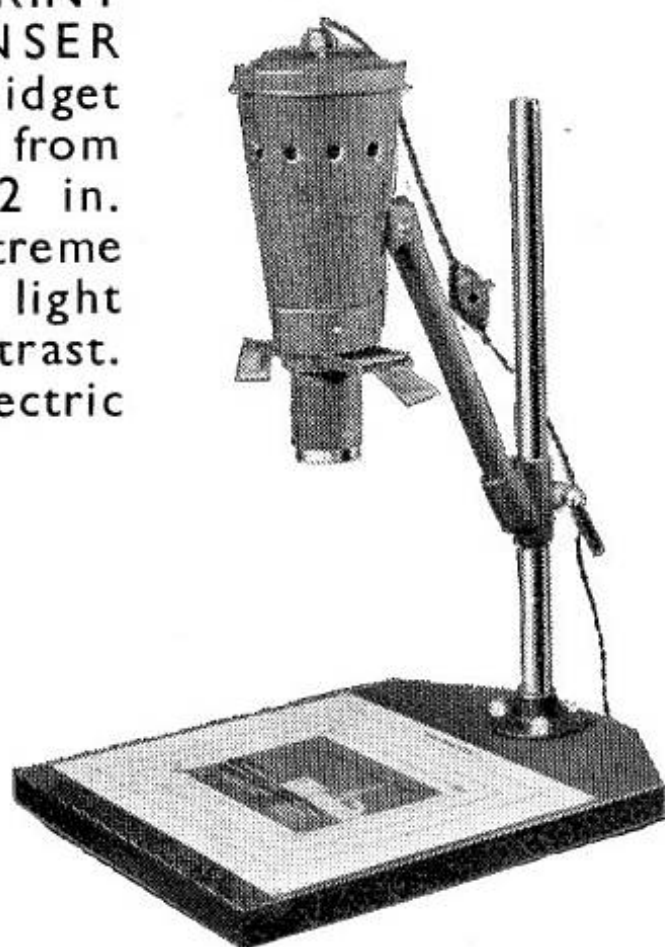
As early as 1909 Houghtons introduced Magnus Neill's newest design, the Ensignette No. 1 which made six 4x6cm images on rollfilm. Neill had also designed the Expo/Ticka. When closed, the Ensignette was a petite 4 x 1 7/8 x 3/4 inches which made it the size of a package of cigarettes and the smallest folding camera available. Open, the lens standard extended to 3 1/4 inches, and the camera opened and closed with four corner struts with little difficulty. Three years later the same firm introduced the Ensignette Anastigmat which was a smaller version of the same construction. It produced 35x35mm images on rollfilm. During the next several decades, subsequent Ensignette cameras, some with very fine lenses and shutters, rivalled the Expo/Ticka's long term commercial success.

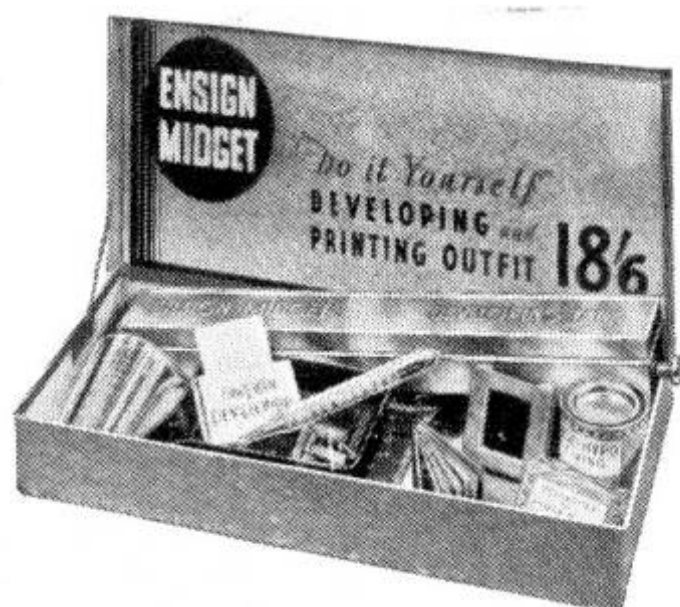
Advertisements for the Ensignette emphasized its small size. "Here's a camera that fits your vest pocket," one advertisement in 1912 boosted. "No need to miss a would-be treasured picture because you can't carry a bulky camera. Only 3/4 of an inch thick, yet actual perfect picture is 1 1/2 by 2 1/2 inches." And, depending upon the model, the camera cost as little as \$10. In 1916, it was still calling itself

ENSIGN MIDGET MAGNAPRINT
 SUPER SPEED CONDENSER
 ENLARGER. Will enlarge Midget
 or $\frac{1}{2}$ -V.P. negatives to any size from
 $2\frac{1}{4}$ in. $\times$ $3\frac{1}{4}$ in. to 15 in. $\times$ 12 in.
 Fitted with f/6.3 lens, giving extreme
 speed. Condenser diffused light
 gives fine definition and contrast.
 Complete with masks and electric
 fittings (no lamp).

£4 10 0

100-watt	Silvalux	opal
lamps	...	3/2





ENSIGN MIDGET DAY-
LIGHT "DO IT YOURSELF"

DEVELOPING AND PRINTING
OUTFIT, contains Daylight Developing
Tank, and all the necessary accessories
for complete developing and printing.

Price 18/6



ENSIGN MIDGET FINE GRAIN DEVELOPER, a specially prepared developer to give the finest possible grain in Ensign Midget negatives, and each packet can be used for several films.

Price, per packet 3d.

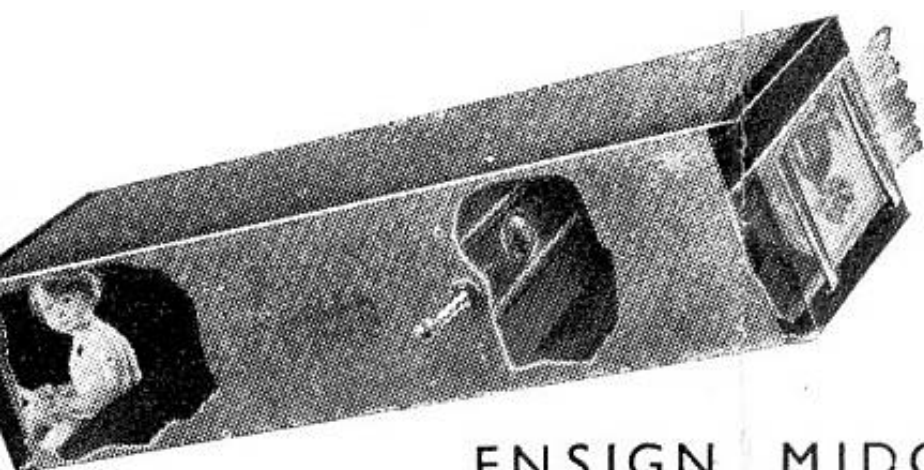
ENSIGN MIDGET ACID FIXING SOLUTION, specially prepared for Ensign Midget Films.

Per 4 oz. tin 7d.



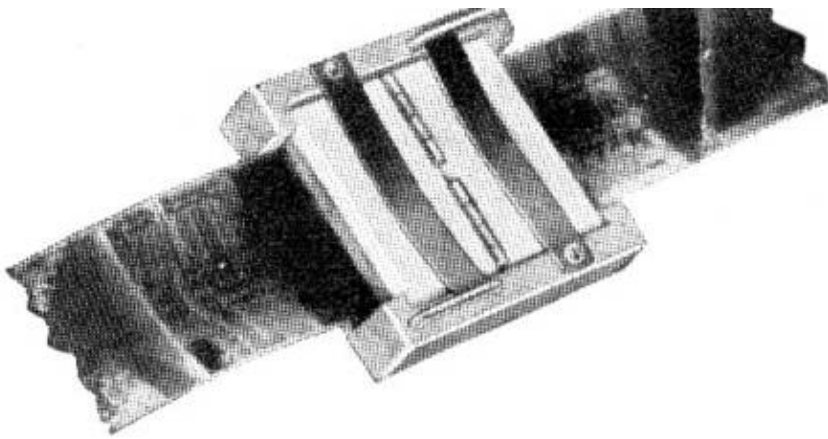


A $2\frac{1}{4}" \times 3\frac{1}{4}"$ Large Print from a Midget Negative.



ENSIGN MIDGET DAYLIGHT
ENLARGING PRINTER, for making
standard $3\frac{1}{4} \times 2\frac{1}{4}$ prints from Ensign
Midget negatives. Exceedingly simple
to handle, no more knowledge being
required than for printing with an
ordinary printing frame.

Price 17/6



ENSIGN MIDGET PRINTING FRAME,
prints the film in strip without cutting.
Substantially made and complete with
glass 1/-



ENSIGN MIDGET PRINTING PAPER.
Barnet BAR-GAS for gas light printing,
per packet of 32 sheets ... 6d.

Ilford SELTONA daylight self-toning
per packet of 26 sheets ... 6d.

CAMERA

BACKGROUND OF THE INVENTION

This invention relates to cameras. More particularly, this invention relates to a novel shutter mechanism, a novel film cassette and a wrist camera incorporating the shutter mechanism and the film cassette.

The camera art has reached a high level of sophistication. Consequently, many cameras are expensive, relatively fragile and expensive to repair. Shutter mechanisms, among other parts of these sophisticated cameras, suffer these disadvantages. Film cassettes are available for some of these cameras but are not as simple and compact as might be desired. For one thing, these film cassettes must incorporate storage and take-up spools for a roll of film. Moreover, despite all the sophistication in the camera art, a simple, inexpensive wrist camera has not heretofore been provided.

The objects of the present invention include the providing of a shutter mechanism, a film cassette and a wrist camera which overcome the aforementioned shortcomings of the prior art.

Other objects and advantages of the invention will be apparent from the following description of the invention.

SUMMARY OF THE INVENTION

According to one aspect of the invention, there is provided a photographic film cassette comprising a cylindrical container having a circular bottom, a circular piece of photographic film supported in the cassette substantially parallel to the bottom of the cassette and means fixed to the cassette and adapted to be engaged by means for rotating the cassette for successive exposure of sectors of the film therein. The means fixed to the cassette may comprise a gear fixed to the bottom of the cassette. The cassette may further comprise a first circular cover for the cassette, an aperture formed through the first cover, the axis of the aperture being spaced a predetermined distance from the axis of the container, a second circular cover, means mounting the second cover for rotation relative to the first cover and both covers for rotation of the container relative to both covers, an aperture formed through the second cover, the axis of the aperture being spaced from the axis of the cassette by the aforementioned predetermined distance, whereby the apertures in the covers can selectively be brought into or out of mutual alignment. The cassette may further comprise means for holding the apertures of the covers in mutual alignment when the container is rotated in one direction and for holding the apertures of the covers out of mutual alignment when the container is rotated in the opposite direction.

According to another aspect to the invention, there is provided in a camera, the combination of a shutter and a shutter actuating means, the shutter comprising a single member at least a portion of which is a first permanent magnet and the shutter actuating means comprising a second permanent magnet. Means may be provided pivotally mounting the shutter with one pole of the magnet defining one extremity of the aforementioned member. There may also be provided means for holding the second magnet for displacement of the second magnet from a position remote from the first magnet to a position in which the axis of the second magnet has moved past the axis of the first magnet with the magnetic fields of like poles of the magnets interact-

ing at both positions whereby the shutter is held in place by magnetic repulsion, then actuated by magnetic repulsion when the second magnet is displaced so that its axis passes that of the first magnet and then again held in place by magnetic repulsion.

According to yet another aspect of the invention, there is provided a wrist camera comprising a casing of diameter substantially no greater than the diameter of the wearer's wrist, a wrist band for snugly securing the casing to the wrist, means for holding a disc of photographic film in the casing, means for rotating the holder from outside the casing, a lens mounted in a wall of the casing, a shutter for admitting the passage of light from the lens to the disc when open and blocking the passage of light from the lens to the disc when closed, the axis of the lens being substantially parallel to and being spaced from the axis of rotation of the holding means and intersecting the holding means, whereby successive sectors of a disc of photographic film carried by the holding means can be exposed by alternately actuating the shutter to expose a sector of the disc and rotating the holder to bring another sector of the disc into intersecting relationship with the axis of the lens. The "holding means" herein may be the aforementioned cassette. When the cassette has a gear fixed on the bottom thereof, the camera may further include a slot formed through the wall of the casing and a gear rotatably mounted in the slot with part of that gear extending into the casing and meshing with the gear fixed to the bottom of the cassette and part of the gear mounted in the slot projecting from the casing, whereby the gear mounted in the slot can be manually rotated from outside the casing thereby to rotate the cassette. The wrist camera may also comprise means for holding the apertures of the covers of the cassette in alignment with the lens when the container is rotated in one direction and for holding the apertures of the covers out of alignment with each other when the cassette is rotated in the opposite direction.

The aforementioned shutter mechanism may be incorporated in the wrist camera. In that regard, it will be recalled that the shutter comprises a single member, at least a portion of the member being a permanent magnet. The wrist camera may further comprise means pivotally mounting the shutter with one pole of the magnet adjacent the periphery of the casing and the other pole remote from the periphery of the casing. The magnetic means for actuating the shutter comprises, it will be recalled, a permanent magnet. The camera may further comprise means for holding the shutter actuating magnet in an orientation with one of its poles adjacent the periphery of the casing and the other of its poles remote from the periphery of the casing and for permitting the shutter actuating magnet to be displaced from a position remote from the shutter magnet to a position in which the axis of the shutter actuating magnet has moved past the axis of the shutter magnet, the pole of the shutter actuating magnet adjacent the periphery of the casing and the pole of the shutter magnet adjacent the periphery of the casing being like poles whereby the shutter is actuated by magnetic repulsion when the shutter actuating magnet is displaced so that its axis passes that of the shutter magnet.

It can readily be appreciated that the cassette and the shutter mechanism of the invention can be incorporated in cameras other than wrist cameras. Nevertheless, the simplicity and compactness of the cassette and the shut-



ENSIGN MIDGET ELECTRIC PRINT-
ING BOX, prints contact prints from
Ensign Midget strip negatives. Fitted
with electric battery and accurately
positioned bulb to give even illumina-
tion.

Price, with bulb and battery ... 10/6

When giving your spools for developing
Always ask for
“LARGE PRINTS”

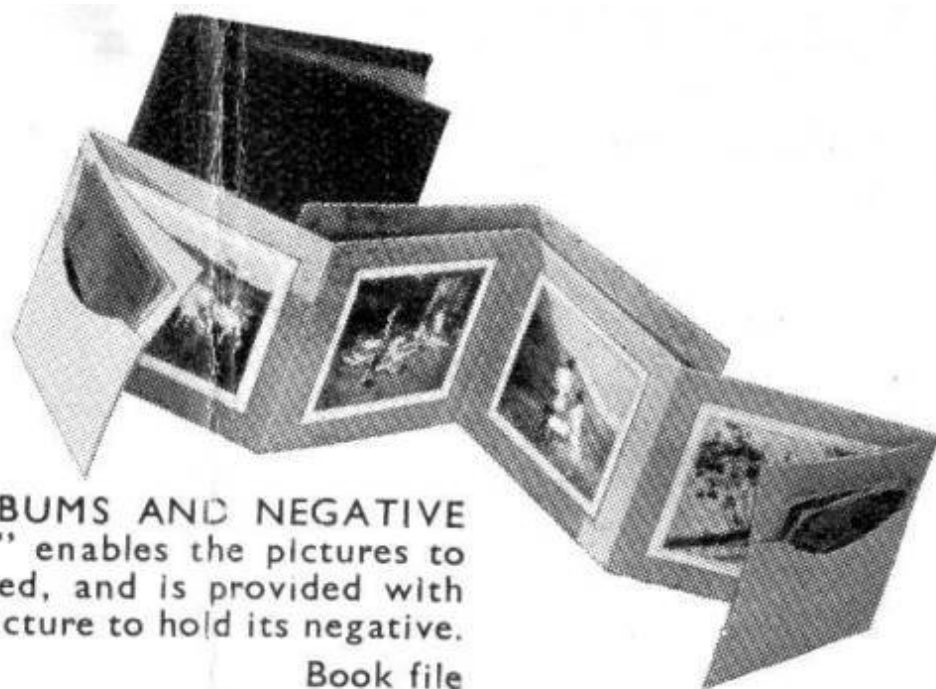
$2\frac{1}{4}" \times 3\frac{1}{4}"$

(Same price as ordinary $2\frac{1}{4}" \times 3\frac{1}{4}"$ prints)

from
your

ENSIGN
MIDGET
NEGATIVES





ENSIGN MIDGET ALBUMS AND NEGATIVE FILE. The "Print-Neg" enables the pictures to be attractively displayed, and is provided with a pocket behind each picture to hold its negative.

Book file
of 6

To take six Midget pictures and negatives.

No. 3012 with Prairie Card Cover .. 1/-

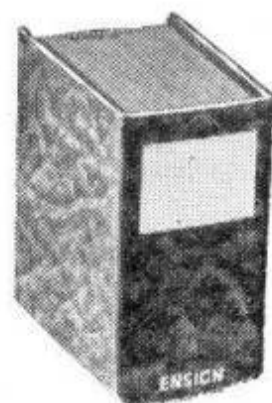
No. 3013 with Leather Cloth Cover.. 2/-

To take 8 Midget negatives and "Large Prints"

$2\frac{1}{4} \times 3\frac{1}{4}$:—

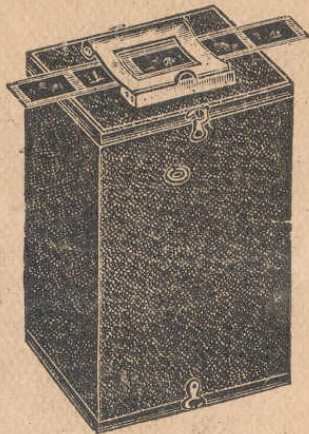
No. 3014 with Prairie Card Cover .. 2/-

No. 3015 with Imitation Leather Cover 3/-



SHOULD owners of the WATCH CAMERA be unable to obtain films in their localities, we shall send films, on receipt of remittance, by mail to any part of the United States or Canada, post paid. See price list on page 14.

NOTICE

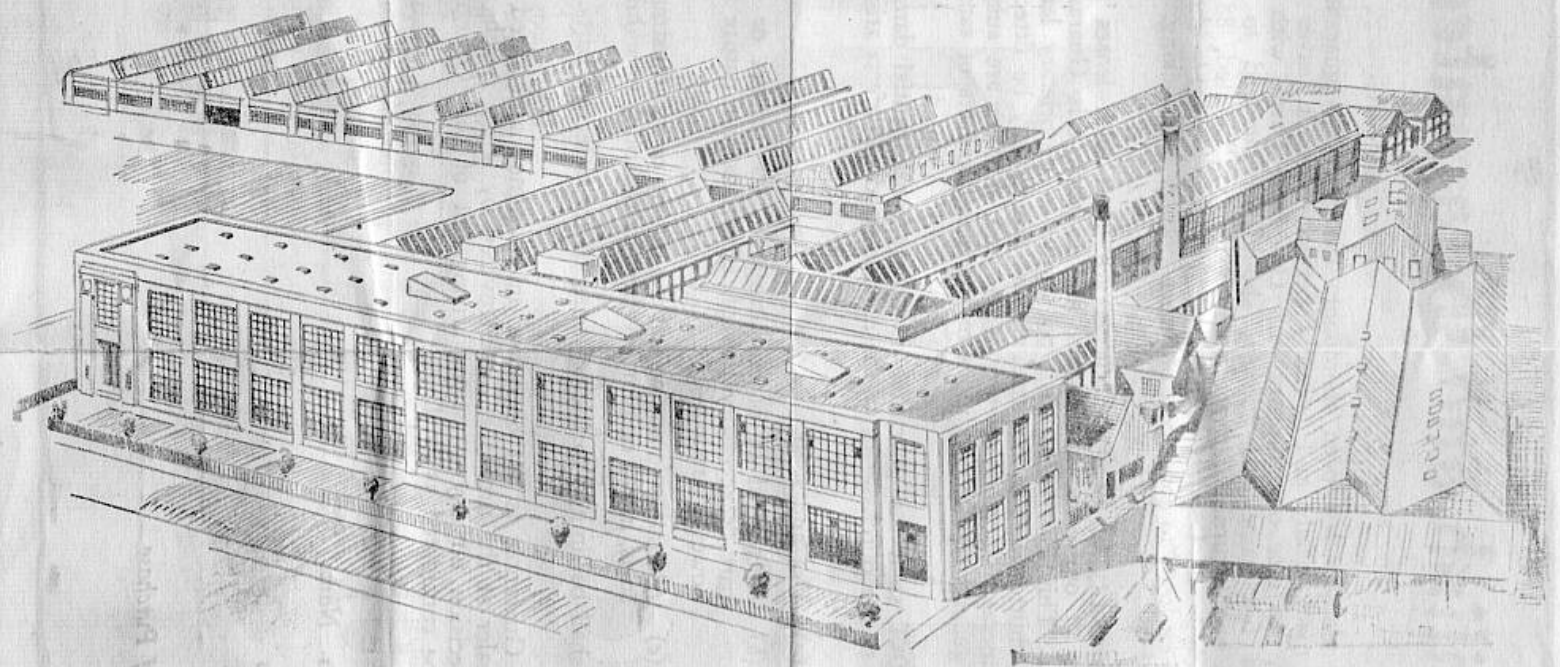


Watch Camera Enlarger
See Description Page 13

Directions for The **Expo Watch Camera**

SEND ALL ORDERS TO
JOHNSON SMITH & CO
Distributors, 3224 N. HALSTED ST., Chicago

Where "ENSIGN" CAMERAS are made



"ENSIGN" Works, Walthamstow, London



(2) Now take off cover of camera in the manner shown in Fig. 1 of diagrams on flap of cover above.

(3) Assuming that the necessary film-cartridge has been provided, put cartridge in camera—loading always in the shadow—as shown in Fig 2 of diagrams, and if cartridge does not go down into place easily, turn the winding-key slowly to the right and with gentle pressure on cartridge it will drop into place. (Film price, page 14.)

(4) Replace cover on camera in the manner shown in Fig. 3 of diagrams—cover projection fitting into

Expo Printing Frame (for small Expo pictures only) .. .35
Bromide paper for Enlarger,
package of 1 doz. sheets17

EXPO CAMERA CO.,
241-243 West 23rd St. New York

EXPO POLICE CAMERA

Is a highly efficient small Camera made by the Manufacturers of the WATCH CAMERA.

A finely made little camera—size, $2\frac{1}{2} \times 3\frac{3}{8}$ inches, one inch thick—that slips into the pocket and is ready for

INSTANT use without attracting attention.

LOADS IN DAYLIGHT with film for 12 Pictures, size $1 \times 1\frac{5}{8}$, which can be enlarged to post-card size, without loss of detail, in the Police Camera Post Card Enlarger.

Price of Police Camera without leather carrying case, in United States or Canada, \$7.00, postpaid.

Carrying Case, \$1.00 extra.

Police Camera films, 12 exp.30

Police Camera Post Card

Enlarger \$4.00

EXPO CAMERA CO.

241-243 West 23rd Street, New York

How to Use **Expo Watch Camera**

This little camera is extremely simple of construction and operation, yet the operator will save his time and insure against injuring the mechanism, by giving a few minutes attention to this direction book.

(1) Before loading make sure that the letter "S" shows at the indicator window, located on the back of camera, and if it does not show, turn winding-key,—to the right always—until "S" appears.

**PRICE-LIST, POSTPAID,
of
CAMERA AND ACCESSORIES**

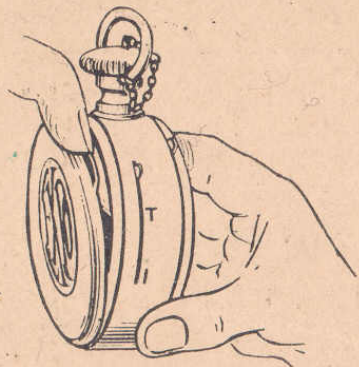
War Tax Included

Expo Watch Camera	\$3.50
Expo Enlarger	3.00
Expo View Finder, ground glass, reversible	.75
Expo Brilliant, Reversible Finder	.85
Expo Films	.30
Expo Leather Carrying Case ..	.50

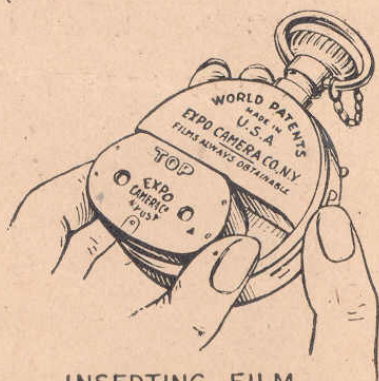
small slot on rim of case—and when cover is snapped shut, be sure to **press cover down all the way around its edge.**

(5) Now turn the winding-key until No. 1, the first exposure, shows at the indicator window, and after **making sure that the cap covering the stem is securely on,** set the shutter, as is shown in Fig. 4, by drawing the movable lug back along the slot to I—Instantaneous. **(Shutter should never be drawn back unless the cap securely covers the stem.)**

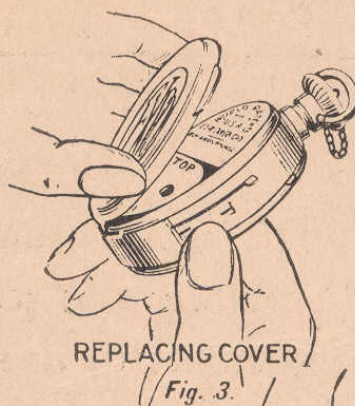
(6) With the shutter set to I, remove the cap from the stem, turn the stem ring aside so that it will not



REMOVING COVER
Fig. 1



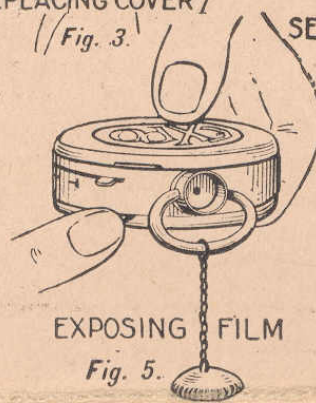
INSERTING FILM
Fig. 2



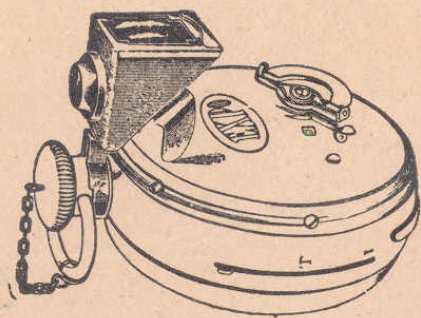
REPLACING COVER
Fig. 3



SETTING THE SHUTTER
Fig. 4



EXPOSING FILM
Fig. 5



Camera Equipped with
Reversible Finder

Smithsonian

VOLUME 35

Eyes for spies

A hunting camera designed
to be concealed in a pocket
can catch in a single
photo a whole scene

By Michael J. H. Smith

obstruct the lens opening and point the camera—holding it steady and level—at the object to be photographed and release the shutter by pressing the push-button—the small projecting lug on lower edge of camera near stem—as shown in Fig. 5, and the exposure is made.

Expo is of universal focus and a picture may be taken from a distance of two feet to infinity. The lens, too, is of wide angle and a little practice will give the range, though a special view-finder—sold separately from camera—may be procured. See price on page 14.

Developing and Fixing Chemicals may be obtained at all photo supply stores and at many drug-stores.

THE EXPO ENLARGER

A companion to the **Watch Camera** (see cut on cover of this booklet) has fixed focus and enlarges **Expo** pictures, up to 2 x 3 inches.

Like all inexpensive enlargers, **Expo** Enlarger requires daylight exposure and the use of bromide paper to insure practical results, and this necessitates the loading and unloading of the Enlarger in a proper dark-room.

(See price on page 14.)

of **Expo**, we develop, print or enlarge **Expo** films sent through the mail at the following prices, postpaid:

Developing	10c
Expo prints, per doz.	15c
Enlarging Expo pictures, 2x3, ea.	12c
Enlarging Expo, pictures, 3x4, ea.	15c

Only the best quality negatives should be sent for enlargement, as poor negatives will make still poorer enlargements.

Cash must accompany all orders,

The two most important things to do after making an exposure the first to turn the winding-key one-half turn to the right and second to replace the cap on the stem. One-half turn—one “click” of the winding-key—will always bring the key to its proper vertical position.

It is important to remember that every half turn of winding-key (every “click” of key) brings a new film or exposure in place, but that the numbers on registering wheel will change only after every two exposures. Thus, when the first film is in position, No. 1 will show and this number will

remain when the key is given half a turn, though the second film or exposure will then be in place. On the next half turn of key—bringing the third exposure—the number will change to 3 and so on, 1, 3, 5, 7, 9, up to 25.

Before lifting the cover of camera to remove the film cartridge—which lifts out—always see that the winding-key has been turned to "S," or otherwise a light-struck or spoiled film will result.

Camera should be unloaded as well as loaded in the shadow and the film cartridge, when taken out, should be

part down, and press it down evenly with a pencil or peg until legs of diaphragm touch lens.

DEVELOPING THE FILM

Watch Camera film may be developed in the regular way, by anyone who has a dark-room, by passing the film strip through a tray of "developer," until the image shows black—usually 5 to 7 minutes—then rinsing and placing in the "fixing bath," until all yellowish substance disappears.

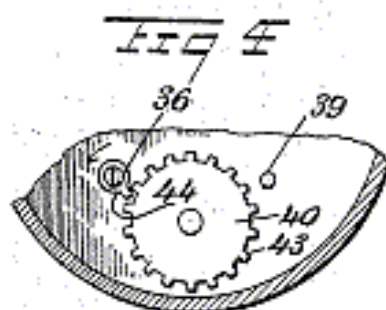
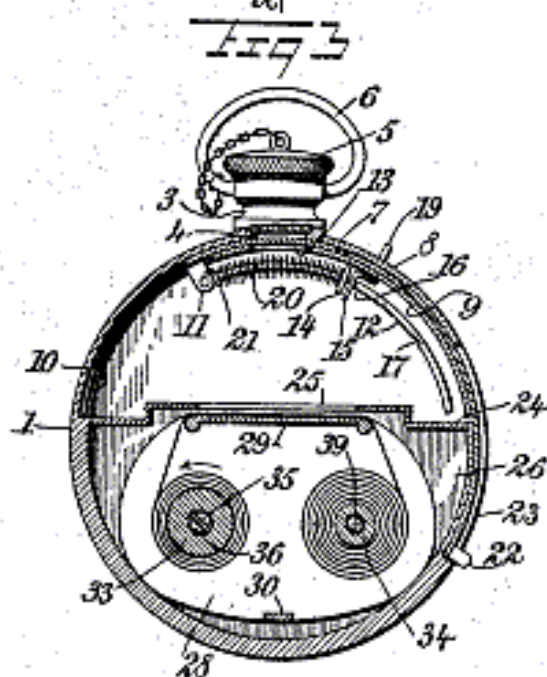
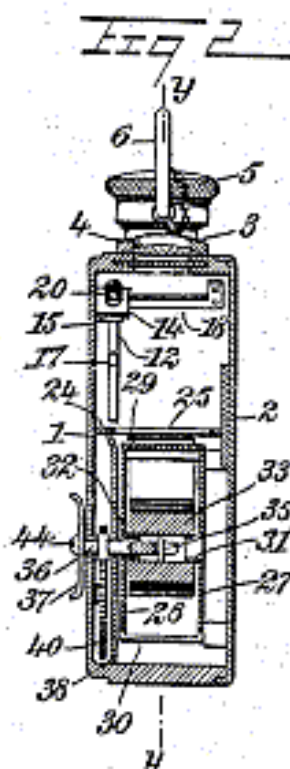
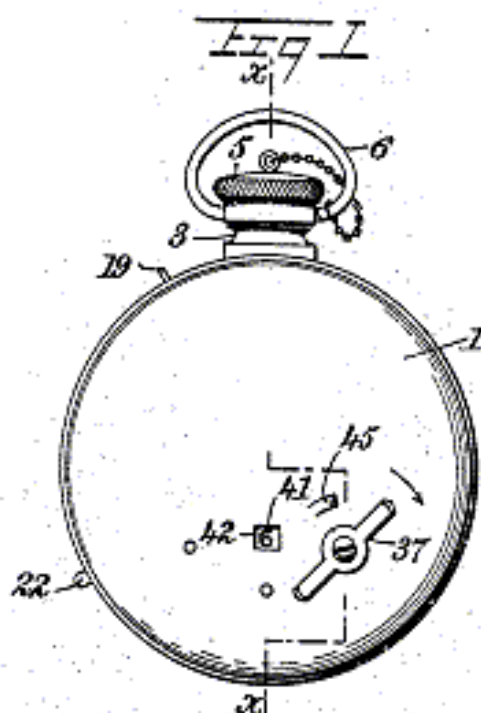
To accommodate those who are not near Photo Supply Dealers, and as well to demonstrate the practicability

No. 789,319.

PATENTED SEPT. 6, 1904.

M. NIELL.
PHOTOGRAPHIC CAMERA.
APPLICATION FILED OCT. 14, 1903.

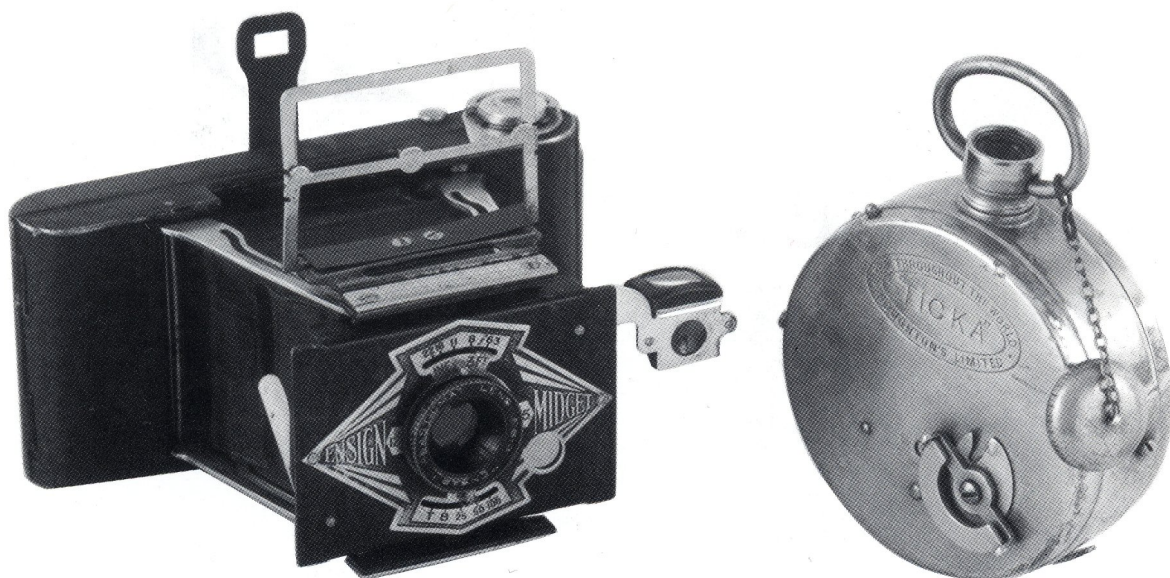
NO MODEL.



WITNESSES:

H. Walker
C. R. Ferguson

INVENTOR
Magnus Niell
BY
Mumma
ATTORNEYS



2 modèles fabriqués par Houghton: **ENSIGN MIDGET** (horizontal) et **TICKA** (Photos Audrey et Alain FLAMAND)

Le nom de HOUGHTON est lié à la photographie dès 1839 à Londres et durera jusqu'en 1961.

Après avoir fabriqué l'ENSIGNETTE en 1909, petit folding genre VEST-POCKET Kodak, apparaît à partir de 1934, une version réduite et re-stylée pour 6 vues 3x4 cm sur bobine spéciale, nommée ENSIGN-MIDGET.

Très beau folding miniature, bien construit, pas plus gros qu'un poudrier une fois replié (dimensions mod. 55: Long. 9,1cm - Hauteur 4,6cm - Epaisseur 2,1cm) pour seulement 150g, il est livré avec un étui cuir et une notice avec en couverture l'appareil représenté à l'échelle 1.

Trois modèles seront fabriqués, plus un modèle jubilé argent en 1935, (célébration jubilé du Roi George).

- Le modèle 22, objectif ménisque, avec obturateur T et Inst.

- Le modèle 33, identique au 22 mais avec 3 vit. Inst. de 1/25 à 1/100

- Le modèle 55, obj. ENSAR anastigmat 6.3 (6.3 à 22), réglage des distances (Infini, 12 - 8 - 5 - 3 feet), obturateur central avec T, B, 1/25 - 1/50 - 1/100

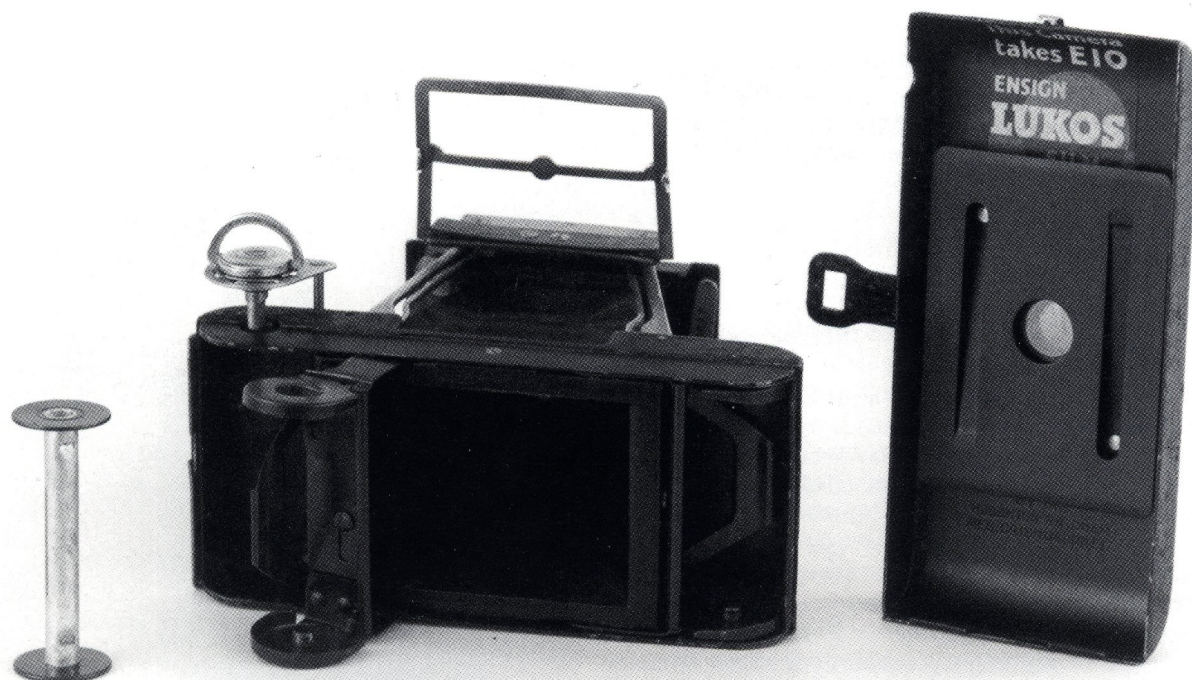
- Le Silver Jubilee en version 33 et 55

L'ENSIGN-MIDGET utilise des pellicules spéciales en rouleau en rouleau telles que l'ENSIGN-LUKOS E10 et SELO-Fine grain panchromatic S10.

Deux viseurs sont utilisables, dont un viseur clair basculant et un viseur à cadre pliant.

Divers accessoires seront proposés pour agrémenter son utilisation. L'ENSIGN-MIDGET comme beaucoup d'appareils miniatures, reste un très bel objet technique et de collection.

Audrey et Alain FLAMAND



Chargement **ENSIGN MIDGET** (vue arrière) (Photo Audrey et Alain FLAMAND)

the camera is not in use, lens should not need cleaning for a long time, but if dust accumulates, the lens may be removed and cleaned with a damp cloth by lifting out the diaphragm—part inside of stem with pin-hole in.

The best way to replace lens is to place it, plane or flat side down, on the uncut end of a lead pencil or any peg of wood or metal that will fit into stem hole, and turn camera up and put stem down over peg on which lens is placed, until lens rests in place. Then, right camera, put in diaphragm, with short legs of this

wrapped carefully in the tinfoil it is sold in, as a protection. (It is always advisable to develop films as soon as possible after exposure.)

GOOD LIGHT FOR SNAP-SHOTS

In making snap-shots, the object to be photographed should be in **bright sun-light** and the one taking the picture should have his back toward the sun. The camera should never be pointed at the sun.

TIME EXPOSURES

Never attempt a time exposure while holding the camera unsupported in the hand.

UNITED STATES PATENT OFFICE.

MAGNUS NIÉLL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
THOMAS WALLACE, OF NEW YORK, N. Y.

PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 789,319, dated September 6, 1904.

Application filed October 14, 1903. Serial No. 176,994. (No model.)

To all whom it may concern:

Be it known that I, MAGNUS NIÉLL, a subject of the King of Sweden and Norway, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Photographic Camera, of which the following is a full, clear, and exact description.

This invention relates to improvements in photographic cameras, an object being to provide a camera of novel form and construction and of a size to be readily carried in a vest-pocket.

A further object is to provide a novel film-strip holder, with means for operating the same to move the strip, whereby new or unexposed surfaces are brought to exposure position.

I will describe a photographic camera embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a photographic camera embodying my invention. Fig. 2 is a section on the line *x x* of Fig. 1. Fig. 3 is a section on the line *y y* of Fig. 2, and Fig. 4 is a sectional detail showing the recording mechanism employed.

Referring to the drawings, 1 designates the casing of the camera, which is substantially in the form of a watchcase, and, in fact, is designed to simulate a watchcase. At one side the casing is provided with a removable cover 2, and on its periphery it is provided with a lens-tube 3 in the form of a watchcase-stem, and in this tube is a lens 4, and the outer end of the tube is provided with a removable cap 5, and connecting with the tube is a ring 6. Movable across the opening of the lens 4 is a shutter consisting of a segmental plate 7, having an opening 8 and movable between the inner surface of the casing and a plate 9 within the casing.

Extended inward from one end of the shutter and through a slot 10 in the inner plate 9 is a lug 11, to which one end of a curved rod 12

is attached. This inner plate 9, it will be noted, has an opening 13 in line with the lens-tube opening. The rod 12 passes loosely through an opening in a lug 14, extended inward from the plate 9, and it also passes loosely through a slot formed in a latch-plate 15, designed to engage with either one of the shoulders 16 17, formed on the rod. This latch-plate 15 is attached to a spring-plate 18, from the free end of which a finger-piece 19 extends outward through an opening in the casing. Surrounding the rod 12 is a spring 20. This spring bears at one end against a collar 21 on the rod adjacent to the lug 11, and at the other end the said spring engages with the lug 14. The object of this spring is to move the shutter to closing position, as will be hereinafter described.

The shutter has at one end a lug 22, which extends outward through an opening 23 in the periphery of the casing. Extended transversely in the casing is a partition 24, provided with an exposure-opening 25, which obviously is in line with the lens. The said partition forms one wall of a chamber 26, in which the holder or magazine for the sensitized strip or film is placed. These holders, with the strips thereon, are designed to be purchased as a complete article, whereby a new one may be placed in the camera when all the surfaces of a previous strip shall have been exposed. In order to be able to load and unload the camera in daylight, the ends of the film-strip are made light-proof.

The holder comprises upper and lower plates 27 28, connected at the front by a plate 29, over which the sensitized strip passes, the said plate 29 being rearward of the opening 25 and opposite the partition 24, and the said plates 27 and 28 are connected by a narrow post 30. The said plates 27 and 28 are provided with inwardly-extended tubular lugs 31 32, which may be formed by pressing in portions of the plates. These lugs form bearings for the take-up spool 33 and the let-off spool 34. Arranged within the spool 33 is a cross-pin 35, designed to engage in an outwardly-opening notch formed in a spindle 36, which extends outward through the bottom

The best way to make a time exposure with **Expo** is first, before setting the shutter, remove the cap and place the end of first or second finger of right hand securely over stem hole. Then rest camera, cover side down (finger still covering stem hole tightly), on a firm level support such as a table and, with the left hand, draw shutter lug half way along slot or to T.—Time,—and then, holding camera down firmly, with the left hand—to prevent the slightest movement—make the exposure by lifting finger of right hand from and replacing it over stem-hole. A time exposure may also be

made by setting the shutter to T and removing and replacing cap in the same manner as with finger. **Before taking finger from stem hole, be sure to close shutter by pressing the push-button.**

The length of time for a time exposure must be governed by the light conditions under which the exposure is made and may vary from a few seconds to a much longer time.

In making an indoor time exposure, do not point the camera at a window, but rather away from the light.

CLEANING THE LENS

If the cap is kept on stem when

or back plate of the casing, where it is provided with a turning-handle 37, it being understood that the said spindle has rotary motion. This spindle not only has a bearing in a wall of the casing, as above described, but also has a bearing in a plate 38, which forms the base upon which the film-strip holder rests. Extended inward from said plate 38 is a short pin 39, designed to pass into the spool 34, which, with the spindle 36, holds the film-strip holder in proper position in the chamber 26. It will be noted that the spool 34 has a cross-pin similar to the cross-pin in the spool 33. This is for convenience in manipulating the parts when the film is first placed in the holder, and it is not in any manner engaged with the said pin 39.

Mounted to rotate between the plate 38 and the adjacent wall of the casing is a tally or recording wheel 40. This wheel is provided with numbers 41, designed to be seen consecutively through a sight-opening 42, formed in the casing-wall, the numbers of course being designed to indicate the number of exposures made. The wheel 40 is provided with peripheral teeth 43, designed to be engaged by a finger 44, connected to the spindle 36.

In the operation when it is desired to make an instantaneous exposure the shutter is to be moved until its end or the lug 22 engages against the end of the slot 23. Then after removing the end of the cap 5 the finger 19 is to be pressed inward, releasing the shoulder 16 of the rod 12 from the plate 15. Then the compressed spring 20 will move the shutter toward its closed position, and when its opening 8 passes rapidly across the lens-tube the exposure will be made. Before the exposure of course the film-spools must be turned until the numeral "0" is seen through the opening 42. When the next exposure is to be made, the turning-handle 37, connected with the spindle 36, carrying the spool 33, is to be turned one-half a revolution, which will bring a new part of the film-strip into exposure position. The size of the spool 33 is such that its circumference is equal to double the size of the exposure-opening 25 in the partition 24. The turning of the handle 37 also imparts movement to the wheel 40, thus bringing a new numeral into view, indicating the number of exposures. When a time-exposure is to be made, the shutter is to be moved until the shoulder 17 engages with the latch-plate 15. At this time the opening 8 will be in line with the lens-tube opening. Upon removing the cap 5 the exposure will be made for the desired length of time, and then upon pressing

the finger-piece 19 the shutter will be moved to close the opening. The spindle 36 is prevented from backward rotation by means of a spring 45, arranged in the path of the arm 37. This spring is pressed out of the metal forming the casing in such manner as to permit the arm 37 to pass readily over it when moving in the right direction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A photographic camera comprising a circular casing closed at the top and bottom, a lens-holder extended from the periphery of the casing, a film-holder in the casing consisting of opposite plates secured together, spools mounted to rotate between the plates, a spindle extended through a wall of the casing and engaging with one of the spools, the said wall of the casing having a sight-opening, a recording-wheel in the casing and having numerals adapted to be seen through said opening, and means carried by the spindle for imparting rotary motion to said wheel.

2. A photographic camera comprising a casing, a lens arranged in the periphery thereof, a shutter movable across said lens, a film-strip holder comprising opposite plates having inwardly-extended tubular lugs, said plates being connected at opposite edges, spools mounted to rotate on said lugs, one of said spools having an interior cross-pin, a spindle passing into the casing and having a slotted end to receive said pin, a recording device operated by the spindle, and a turning-finger on the outer end of said spindle.

3. A photographic camera comprising a casing, a lens and a shutter therefor, a film-holder comprising opposite plates secured together at their opposite edges, lugs extended inward from said opposite plates, spools mounted to rotate on said lugs, a cross-pin arranged in one of the spools, a spindle extended through a wall of the casing and having a slotted end for receiving said pin, the said wall of the casing being provided with a sight-opening, a recording-wheel arranged in the casing and having numerals adapted to be seen through said sight-opening, peripheral teeth on said wheel, and a finger on said spindle for engaging with said teeth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAGNUS NIELL

Witnesses:

JNO. M. RITTER,
C. R. FERGUSON.

ENSIGN-MIDGET



Ensign-Midget + sac + notice app. et accessoires. La notice représente l'appareil plié, échelle 1. Elle se positionne dans le sac de l'appareil

ACCESSOIRES ENSIGN-MIDGET

Films to fit the ENSIGN MIDGET

ENSIGN LUKOS E10
SELO S10
6 exposures.

SELO FINE GRAIN
PANCHROMATIC
6 exposures.

PRINTED IN ENGLAND

L'ENSIGN-MIDGET utilise des pellicules spéciales en rouleau en rouleau telles que l'ENSIGN - LUKOS E10 et SELO-Fine grain panchromatic S10.

When giving your spoils for developing
Always ask for
"LARGE PRINTS"
2 1/4" x 3 1/4"
(Same price as ordinary 2 1/4" x 3 1/4" prints)
from
your
ENSIGN MIDGET NEGATIVES

A 2 1/4" x 3 1/4" Large Print from a Midget Negative.

"En remettant vos bobines Ensign-Midget, demandez les tirages géants



Ensign-Midget plié + sac + notice app. et accessoires. La notice représente l'appareil plié, échelle 1. Elle se positionne dans le sac de l'appareil

ENSIGN MIDGET MAGNAPRINT
SUPER SPEED CONDENSER
ENLARGER. Will enlarge Midget
or 1-V.P. negatives to any size from
2 1/4 in. x 3 1/4 in. to 15 in. x 12 in.
Fitted with f/6.3 lens, giving extreme
speed. Condenser diffused light
gives fine definition and contrast.
Complete with masks and electric
fittings (no lamp).

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100-watt Silvalux opal
lamps 3/2

Agrandisseur avec condensateur

ENSIGN MIDGET DAYLIGHT
ENLARGING PRINTER, for making
standard 3 1/4 x 2 1/4 prints from Ensign
Midget negatives. Exceedingly simple
to handle, no more knowledge being
required than for printing with an
ordinary printing frame.

Price 17/6

Printer 3 1/4 x 2 1/4 in. lumière du jour

ENSIGN MIDGET ALBUMS AND NEGATIVE
FILE. The "Print-Neg" enables the pictures to
be attractively displayed, and is provided with
a pocket behind each picture to hold its negative.
Book file
of 6

To take six Midget pictures and negatives,
No. 3012 with Prairie Card Cover . . . 1/-
No. 3013 with Leather Cloth Cover . . . 2/-
To take 8 Midget negatives and "Large Prints"
2 1/4 x 3 1/4
No. 3014 with Prairie Card Cover . . . 2/-
No. 3015 with Imitation Leather Cover . . 3/-

Albums et rangement des négatifs

ENSIGN MIDGET FINE GRAIN
DEVELOPER, a specially prepared
developer to give the finest possible
grain in Ensign Midget negatives, and
each packet can be used for several
films.

Price, per packet 3d.

ENSIGN MIDGET ACID FIXING
SOLUTION, specially prepared for
Ensign Midget Films.

Per 4 oz. tin 7d.

Chimie: révélateur et fixateur.

ENSIGN MIDGET DAY-
LIGHT "DO IT YOURSELF"
DEVELOPING AND PRINTING
OUTFIT, contains Daylight Developing
Tank, and all the necessary accessories
for complete developing and printing.

Price 18/6

Kit développement-tirage

ENSIGN MIDGET DAYLIGHT
DEVELOPING TANK enables the
process of developing to be carried out
completely in daylight without any
difficulty, and with the certainty of
absolutely perfect results. The Tank
is very well made in hard brass heavily
nickel-plated, and is exceedingly simple
to use.

Price 12/6

Cuve développement lumière du jour

ENSIGN MIDGET PRINTING FRAME,
prints the film in strip without cutting.
Substantially made and complete with
glass 1/-

ENSIGN MIDGET PRINTING PAPER,
Barnet BAR-GAS for gas light printing,
per packet of 32 sheets . . . 6d.

Ilford SELTONA daylight self-toning
per packet of 26 sheets . . . 6d.

Contacteuse ENSIGN MIDGET

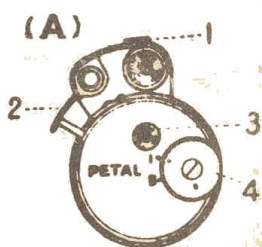
ENSIGN MIDGET ELECTRIC PRINT-
ING BOX, prints contact prints from
Ensign Midget strip negatives. Fitted
with electric battery and accurately
positioned bulb to give even illumina-
tion.

Price, with bulb and battery . . . 10/6

Boîte contacteuse électrique

PETAL CAMERA

LOADING THE CAMERA:

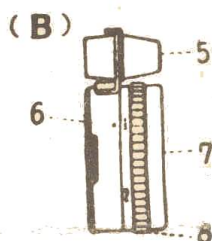


Hold the camera in your left hand. With your right, turn the indented roller (8) to bring the marking figure "1" to the red spot (6). Now, unscrew the back lid (7).

Inside the camera, you will find the small screw (9). Place the film magazine into the camera lightly turning it so that its groove (10) will fit onto the small screw (9). Replace the back lid (7) tightly by turning it clockwise.

Then give the roller (8) one full turn clockwise so that the figure "1" will again come to the red spot (6). Do not fail to do this, because this opens the opening of the magazine in the camera. Now the camera is ready.

TAKING PICTURES:



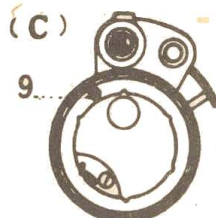
Release the safety lever (1), hold the camera steady, find your object through the finder and gently push down the trigger (2).

There are two speeds for the shutter. "I" is for bright outdoor objects and "B" for dark or indoor objects. Make the adjustment by the small indented dial on the face of the camera.

Of course, this should be done before pushing the trigger. For using "B" speed, the shutter will be opened as long as you are pushing the trigger, it is recommended to steady the camera against a pillar, tree or such rigid thing.

After taking each picture, turn the roller (8) one step clockwise so that the red spot (6) will always indicate the next exposure number in order to avoid double exposures.

When it thus comes to "6" the film is all exposed.



UNLOADING THE CAMERA:

The red spot (6) is at figure "6". Turn the roller (8) counter-clockwise by two steps so that figure "4" will come to the red spot (6). This is essential to close the opening of the magazine before taking it out of the camera. This done, the magazine can be taken out of the camera by simply removing the back lid (7). Exposed magazine should be wrapped with tin foil so that the window will not accidentally open.



MYCRO CAMERA CO., Inc.

527 FIFTH AVENUE, NEW YORK 17, N. Y.

PETAL CAMERA

**Price List for Developing,
Printing and Enlarging
Expo Pictures.**

Developing **Expo** films (25 exp.) 10c.
Printing **Expo** pictures, 1c. each;
10c. per doz.

Enlarging **Expo** pictures, 10c. each;
\$1.00 per doz.

Bromide paper for **Expo enlarger**,
15c per dozen sheets.

The **Expo** range-finder, made special-
ly for the **Expo** camera, price 35c.
These prices include return postage.

Cameras repaired at reasonable
prices.

THE EXPO CAMERA CO.,
140 W. 23rd St.,
New York.

**Directions for Loading
and Operating the
Expo Watch Camera.**

THE **Expo** Watch Camera is very
easy to manipulate, but as with
all other cameras, the directions
should be followed closely, while
manipulating the camera, until the
operator has a knowledge of all the
working parts.

Fig. 2.

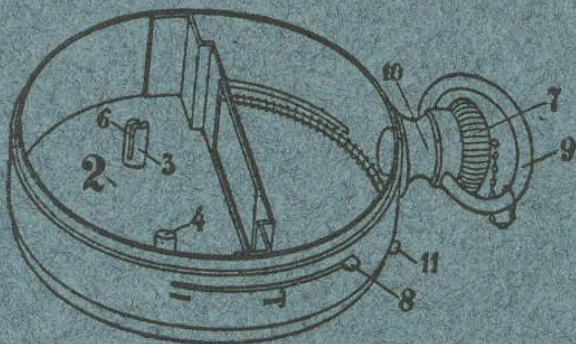


Fig. 4.

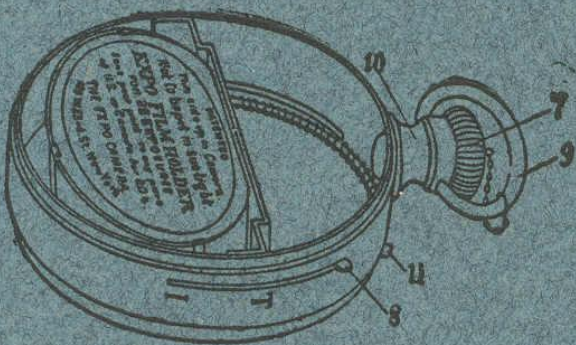


Fig. 3.

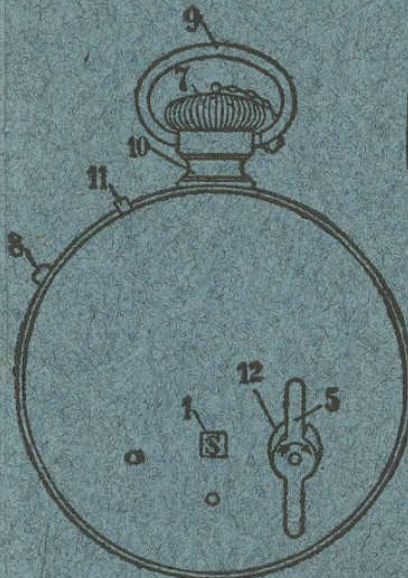
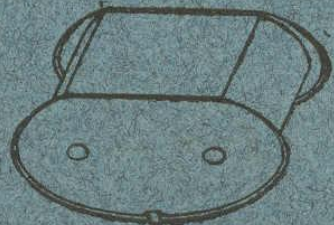


Fig. 5.



Film Holder.



5 changes a film, the change is shown at indicator window only after every second exposure or full revolution of key.)

Time Exposures. Place the camera on a level, firm support, such as a table, or something equally firm, and, if photographing an interior, do not point the lens at a window, or, if this cannot be avoided, draw the shades of windows that come within range of camera.

Open the shutter by moving lug 8 along the slot on side of camera to letter T; then remove cap 7, taking great care not to shake or move camera after cap is removed.

studs or spindles, turn key 5 slowly in direction of arrow, while pressing gently on the top of film-holder, when holder will drop easily into place.

Should film-holder not drop easily into position, never attempt to force it, but turn key 5 slowly, in direction of arrow, while gently pressing on top of film-holder, as stated.

After the film-holder is in proper position, as shown in Fig. 4, put cover on camera carefully, seeing that small lugs or projections on cover fit exactly over small lugs or projections on case; pressing cover down tightly all around, so that

14. Then turn lever back to its first position and the cover will lift off easily.

Before placing Film-Holder in camera, make sure the letter S, meaning stop, appears at the indicator window 1 (Fig. 3), and if S be not present, turn key 5 (Fig. 3) in direction of arrow on key, until S appears at window.

Now insert film-holder, labeled side up, in the back or lower compartment 2 of camera (Fig. 2), so that the two studs or spindles, 3 and 4 (Fig. 2), fit into the two holes in the under side of the film-holder. Should the film-holder not fit easily over these

Another and very simple way of making a time exposure is to remove cap 7, covering stem tightly with finger, and after drawing shutter (lug 8) to T, lifting from and replacing finger to stem.

Give the proper time of exposure, which can only be ascertained by noting the different conditions of light in which a picture is to be taken.

After sufficient exposure, close the shutter by pressing button 11, bearing with thumb or finger slightly on top of camera, so that same may not be disturbed while closing shutter, and replace cap 7.

In making time exposures with the

Expo, key side of camera should be up and monogram or flat side down on table or other support, so that camera will rest firmly during the exposure.

When the 25th or last exposure is made, turn key 5 about four full revolutions (about 8 clicks), until S appears at window; then remove cover of camera (in subdued light) take out film-holder—film is now ready to be developed—wrap in a paper and put in box that film-holder is sold in, to prevent the possibility of injury by light, and camera is ready to re-load as previously directed.

given fair treatment, under fair conditions, and the **Expo** will give perfect satisfaction.

Loading the Expo.

The film for the **Expo** camera is put up in a light-tight holder, and the camera may therefore be loaded in daylight. Care, however, should be exercised that loading is done in subdued light (load in the shade) not in the glare of sunlight.

First remove the cover of the camera by turning lever 13 (Fig. 5) in direction of arrow until lever is in the position shown by dotted lines

This knowledge of the **Expo** may best be obtained by following the directions (see page 7), under the head of "Making the Exposure," while the camera is yet unloaded; the operator thus becoming familiar with the mechanism, without the possibility of wasting a film.

It should be understood at the outset that it is not intended, nor should it be expected, that the **Expo** will do good work under conditions of poor light and poor handling, that would make good work, with the highest priced camera, impossible. What a \$25.00 camera will not do, it would be unfair to ask the **Expo** to do; but

Unlike other cameras, with the **Expo** neither pasting nor extra spool for winding the film is required.

The **Expo Enlarging Apparatus**, a companion to the **Expo Camera** (see cut inside cover), with fixed focus and specially designed for enlarging **Expo** pictures up to about 2 x 3 size, retails at \$1.50.

This enlarger adds wonderfully to the practicability of the **Expo Camera**.

each snap or exposure to turn Key 5 one-half revolution, winding up the exposed film.

After each snap or exposure is made, turn key 5, in direction of arrow, one-half revolution, or until key makes one "click" in passing over catch 12 (Fig. 3), or see that arrow on key 5 changes its position from top to bottom or from bottom to top side of axis of key 5, after each exposure.

No harm can possibly come to camera by turning key 5 more than one-half revolution after each exposure, only that half a revolution of

may be taken from a distance of four feet to infinity.

See price-list on last page for price of Expo range-finder.

Snap Shots: To secure the best results with the **Expo**, as with most other cameras, snap-shots should be taken only when the object is in broad sunlight, with the sun behind the back or over the shoulder of the operator, never with the lens pointing directly at the sun.

In making the **exposure**, first notice that cap 7 (Fig. 3) is securely on, then set the shutter by moving lug 8 (Fig. 2) along the slot on edge of

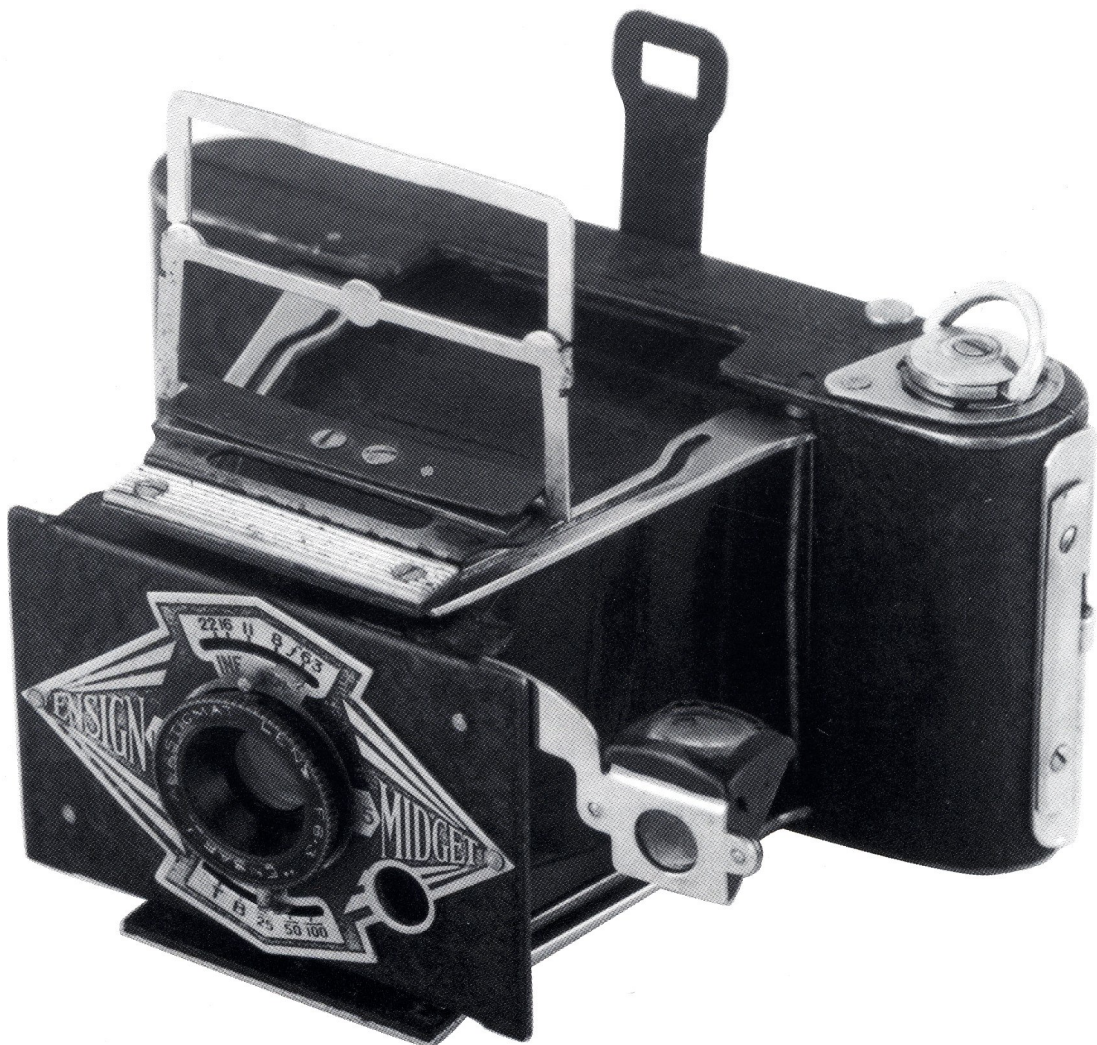
L'ENSIGN-MIDGET

de Houghton

par Audrey et Alain FLAMAND



Un miniature anglais très smart



camera, to the letter I (Instantaneous). Now remove cap, which lifts off, being careful to turn ring 9 (Fig. 2) aside, so that ring will not obstruct opening to lens, which is in stem 10. Neither should fingers nor any part of hand obstruct this opening.

Shutter being set and cap off, as directed, point the stem, which contains the lens, at the object to be photographed, holding the camera steady and level (Camera should not be tilted up or down), press the button 11 (Fig. 2), and the exposure is made.

To guard against the possibility of

any small obstruction, such as sand or dust, interfering with the operation of the shutter while taking a picture, it would be well to test shutter by moving lug 8 to I, and pressing button 11 once or twice before cap 7 is removed.

Except when taking a picture, be careful always to keep cap 7 on stem 10, so that dust may be prevented from entering stem opening and accumulating on and clouding lens.

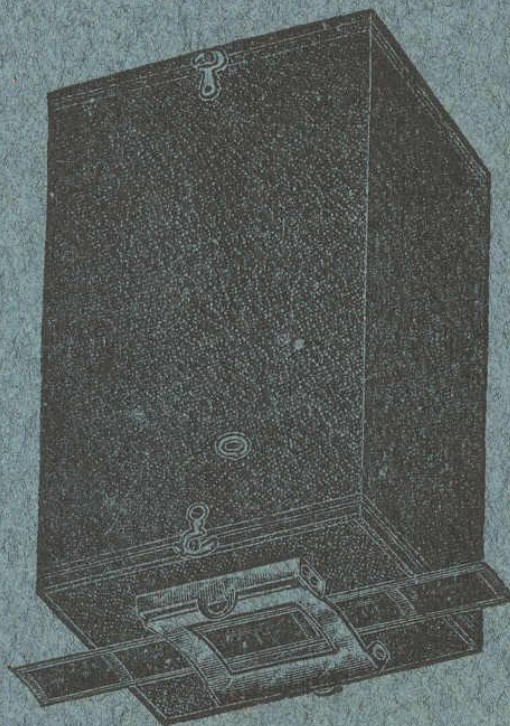
Important.

To avoid forgetting, make it a practice always **immediately** after

Enlarges Expo Pictures
up to 2 x 3 size

NEW
and
NOVEL

The Expo Enlarger
See Cut opposite page.



Expo
Watch
Camera

Two-thirds
Actual
Size



Directions for Using
the

Expo
Watch
Camera

The Expo Camera Co.
140 W. 23d St., New York

U. S. Patent

Sept. 6, 1904

100 which passes through an aperture 32a provided in the shutter 32 (FIG. 5). Stopping members 101 and 81 are integrally formed in the casing 12 to limit the pivotal movement of the shutter 32. One portion of the shutter 32 is a permanent magnet 82 radially oriented with one of its poles adjacent the pivot pin 100 and the other of its poles adjacent the periphery of the casing cover 12. The other portion of the shutter 32 is a shutter leaf 83 having an aperture 84 formed therein. For illustrative purposes, in FIG. 5 part of the leaf 83 has been broken away to show the aperture 85 in the casing cover 12 for the lens 51. The apertures 84 and 85 are equidistantly spaced from the axis of the pin 100 so that the apertures are alignable.

Arcuate members 86 and 87, in which there is formed a track 88, are fixed to the periphery of the casing cover 12 (FIGS. 5 and 6). At the ends of the outer periphery of the track 88 are formed notches 89 and 90. A shutter actuating assembly 91 is mounted for reciprocating along the track 88. The assembly 91 consists of a pin 92 formed with a head 93 and a shank 94, shoulders 95, 96 formed on the shank 94, a cylindrical permanent magnet 97 axially extending from the shank 94 and being slidably received in the blind bore 98 in the shank 94. A helical spring 99 is received in the bore 98 with one end thereof abutting against the base of the bore 98 and the other end thereof abutting against the end of the magnet 97 received in the bore 98, whereby the magnet 97 is biased against the outer periphery of the casing cover 12. The shoulders 95 and 96 are dimensioned to be received in the notches 89 and 90.

Operation of the wrist camera, film cassette and shutter mechanism of the invention will hereinafter be described.

A cassette according to the invention is assembled in darkroom facilities and leaves the darkroom facilities with the apertures 47 and 48 out of alignment so that the film 63 in the cassette is not exposed. The casing cover 12 is removed by pushing out the pins 26 and 27. The cassette is then inserted into the base 11 with the boss 43 received in the bore 103 in the gear 33 and the teeth of the gear 38 engaging the teeth of the gear 33. The cover 12 is then fastened back in place by means of reinsertion of the pins 26 and 27. The gear 38 is then rotated clockwise (as viewed in FIG. 1) with ones thumb. The clockwise rotation of the gear 38 results in counterclockwise rotation of the cassette container 28 by virtue of engagement of the gear 38 with the gear 33. Frictional engagement of the lower cover 29 with the edge of the container 28 results in the cover 29 being carried in a counterclockwise direction along with the container 28. With the aforementioned abutting relationships between the various protrusions formed on the covers 29 and 30 and the disc shaped member 31 have been brought about due to the aforementioned counterclockwise rotation, the apertures 47, 48 and 49 are in axial alignment as hereinabove described. To "snap" a picture, the wrist camera is aimed at the subject, the assembly 91 is depressed to release the shoulders 95 and 96 from the notch 89, and the assembly 91 is slid along the track 88 until the shoulders 95 and 96 snap into the notch 90. The permanent magnet 97 has been arranged with one of its poles adjacent the periphery of the casing cover 12 and the other of its poles received in the bore 98, the pole adjacent the periphery of the casing cover 12 being a pole like the pole of the magnet 82 adjacent the periphery of the casing cover 12, that is, both are North or both are South. Each of the magnets

82 and 97 has an imaginary axis connecting the centers of the poles of the magnet which are at the ends of the magnet. Hence, when the assembly 91 is slid from the notch 89 to the notch 90, as the axis of the magnet 97 passes the axis of the magnet 82, magnetic repulsion snaps the magnet 82 in the clockwise direction as viewed in FIG. 5 until the magnet 82 comes to rest against the stop 101, magnetic repulsion holding the magnet 82 in that position. Of course, at the same time, the leaf 83 is also rotating in the clockwise direction (as viewed in FIG. 5). Hence, the aperture 84 in the leaf 83 passes momentarily into alignment with the aperture 85 containing the lens 51 and an exposure is therefore made. When the assembly 91 is held in place at notch 89 or at notch 90, magnetic repulsion holds the shutter 32 stationary against stopping member 81 or stopping member 101, respectively. Hence, the cooperation between the assembly 91 and the notches 89 and 90 prevents accidental actuation of the shutter 32. The user then rotates the gear 38 again in the clockwise direction as viewed in FIG. 1. The covers 29 and 30 of the cassette are held in place by the counterclockwise torque thus applied, due to the above described abutment of the various protrusions on the upper and lower covers 29 and 30 and the disc shaped member 31 while the container portion 28 of the cassette rotates to bring a subsequent sector of the disc of film 63 into alignment with the apertures 47, 48 and 49. Then, the assembly 91 is moved back to its original position, resulting in another actuation of the shutter by magnetic repulsion. The aforementioned operations are repeated until all of the sectors on the disc of film 63 have been exposed. At this point, the user rotates the gear 38 in the counterclockwise direction as viewed in FIG. 1. Frictional contact between the periphery of the container portion 28 of the cassette and the lower cover 29 thereof causes the lower cover 29 to rotate in the clockwise direction with the container 28, thereby carrying the aperture 47 out of alignment with the aperture 48. Then, the cover 12 can be removed from the base 11 by removing the pins 26 and 27 and the cassette can be removed from the camera without further exposure of the film. The cassette can then be developed without the benefit of darkroom facilities. When the cassette is immersed in a developing fluid, the developing fluid may enter the cassette by passing through the aperture 48 in the upper cover 30 and then through the aperture 47 in the lower cover 29 into the container 28. The developing fluid then contacts the photographic emulsion on the top side of the film disc 63. Also, because the film disc 63 is provided with an aperture 102 and is held above the bottom wall 52 of the container 28 by the bosses 53 to 57 inclusive, and the lugs 59 to 62, inclusive, the developing fluid will also pass through the aperture 102 and circulate under the film disc 63.

While the invention has been particularly described with reference to certain specific embodiments thereof, it is to be understood that these embodiments are intended to illustrate rather than to limit the invention. For example, while a camera of the invention has been illustrated without a view finder, it is apparent that any conventional view finder may be incorporated. Also, the gear 38 may be provided with indicia to assist the user in locating successive sectors of a disc of film for exposure. Furthermore, any of various conventional means may be incorporated to vary the aperture opening to adjust the exposure to varying light conditions and different types of film. Moreover, the camera may

This knowledge of the Expo may best be obtained by following the directions, see page 7, under the head of "Making the Exposure", while the camera is yet unloaded. The operator will thus become familiar with the mechanism, without the possibility of wasting film.

It should be understood at the outset that it is not intended, nor should it be expected, that the Expo will do good work under conditions of poor light and poor handling, that would make good work, with the highest priced camera, impossible. What a

take out film-holder—film is now ready to be developed—wrap in a paper or put in box that film-holder is sold in, to prevent the possibility of injury by light, and camera is ready to re-load as previously directed.

Unlike other cameras, with the Expo neither pasting nor extra spool for winding the film is required.

As will be seen from the Expo prospectus or booklet, it is the intention of the manufacturers of the Expo, to place on sale, at the nominal cost of \$1.50, a new and novel enlarging apparatus, especially adapted for en-

there may be no chance of light being admitted to camera.

Cover of camera being securely on, turn key 5 in direction of arrow, about four full revolutions (about 8 clicks over catch 12), until No. 1 appears at indicator window 1 (Fig. 3); when the film will be in position for taking the first picture.

Note that after each exposure key 5 should never be turned further over catch 12 than to stand in a perpendicular position. (See Fig. 3.)

Making the Exposure.

The **Expo** being of universal focus, no focusing is required, and a picture

key winds up, only film that is exposed or used, while a full revolution—arrow going all the way round—winds up, in addition to exposed or used film, a film that has not been exposed.

Should this trifling error of wasting a film be made, under no circumstance attempt to turn key 5 the reverse way, as film cannot be turned back.

The numbers on ratchet wheel, showing at indicator window 1, read 1, 3, 5, 7, 9, etc., up to 25; the whole number of films in each spool or holder. (*Note that while every half revolution (every click) of key*

larging Expo pictures. It is also the intention to develop print or enlarge Expo films, sent through the mails or otherwise, at the smallest cost consistent with good work.

For instructions for developing, printing and enlarging Expo films, see directions accompanying developing and enlarging outfits which are sold in connection with the Expo camera. A postal card will bring our price list for this work.

**THE EXPO CAMERA,
153 West 23d St., New York.**

DIRECTIONS FOR LOADING AND OPERATING THE EXPO WATCH CAMERA.

The Expo Watch Camera is very easy to manipulate, but as with all other cameras, the directions should be followed closely, while manipulating the camera, until the operator has a knowledge of all the working parts.

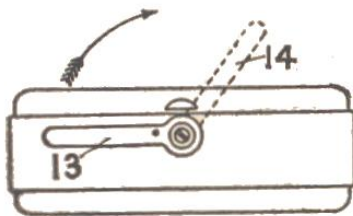


FIG. 5.

camera by turning lever 13 (Fig. 5) in direction of arrow until lever is in the position shown by dotted lines 14. Then

turn lever back, along dotted lines, to its first position and the cover will lift off easily.

Before placing Film-Holder in camera, make sure the letter S. meaning stop, appears at the indicator window 1. (Fig. 3) and if S be not present, turn key 5 (Fig. 3) in direction of

not point the lens at a window, or, if this cannot be avoided, draw the shades of windows that come within range of camera.

Open the shutter by moving lug 8 along the slot on side of camera to letter T; then remove cap 7, taking great care not to shake or move camera after cap is removed.

Give the proper time of exposure, which can only be ascertained by noting the different conditions of light under which a picture is being taken.

After sufficient exposure, close the shutter by pressing button 11, bear-

ing with thumb or finger slightly on top of camera, so that same may not be disturbed while closing shutter, and replace cap 7.

In making time exposures with the Expo, key side of camera should be up and monogram or flat side down on table or other support, so that camera will rest firmly during the exposure.

When the 25th and last exposure, as shown at indicator window, is made turn key 5 about four full revolutions, until S appears at window; then remove cover of camera,

\$25.00 camera will not do, it would be unfair to ask the Expo to do; but given fair treatment, under fair conditions, and the Expo will give perfect satisfaction.

Loading the Expo.

The film for the Expo camera is put up in a light-tight holder, and the camera may therefore be loaded in daylight. Care, however, should be exercised that loading is done in subdued light not in the glare of sunlight.

First remove the cover of the

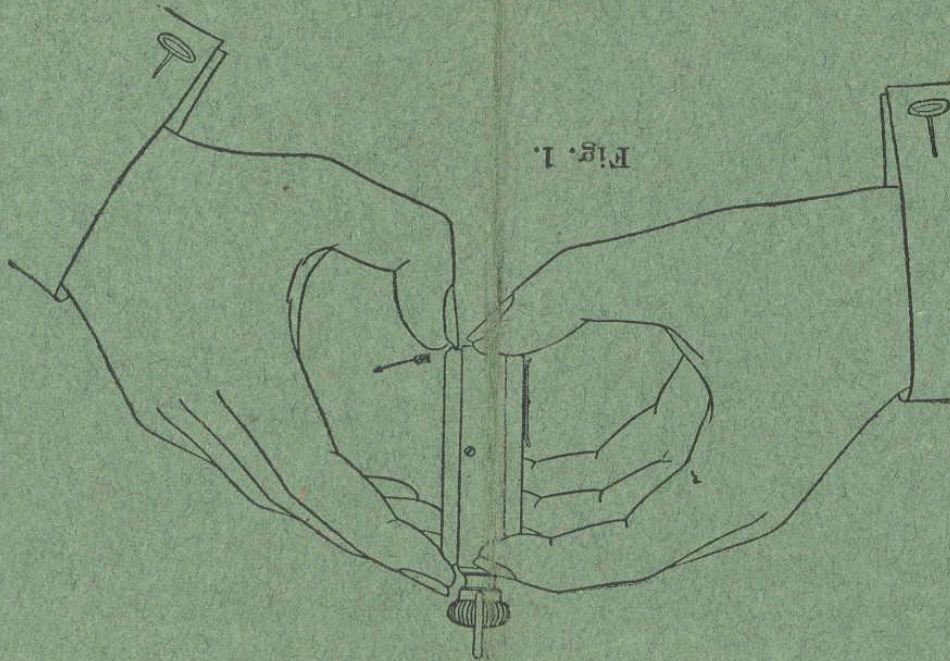


Fig. 1.

**Directions for Using
the**

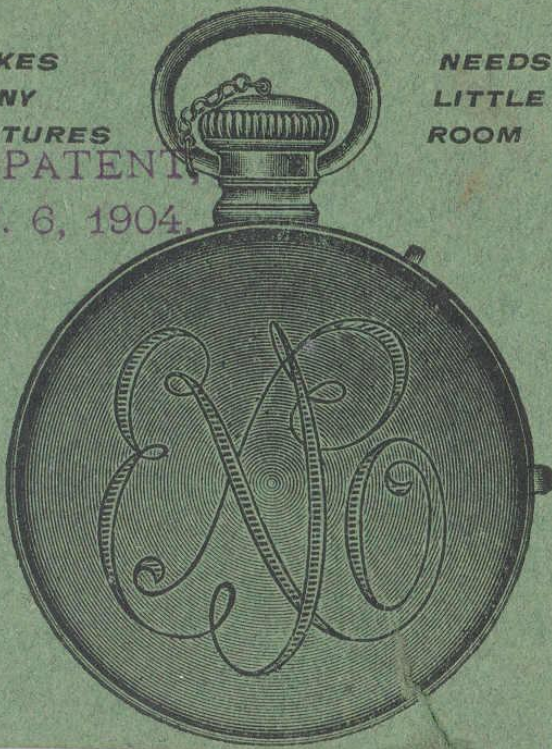
Expo Watch Camera

**The Expo Camera
153 W. 23d St., New York**

**TAKES
MANY
PICTURES**

**NEEDS
LITTLE
ROOM**

**U. S. PATENT
SEPT. 6, 1904.**



IMPORTANT

To avoid forgetting, make it a practice always, **immediately** after each snap or exposure to turn Key 5 one half revolution, winding up the exposed film.

Fig. 2.

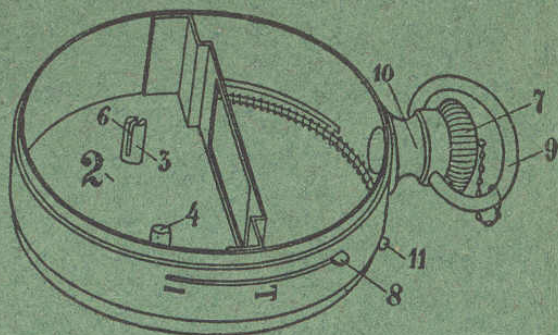


Fig. 4.

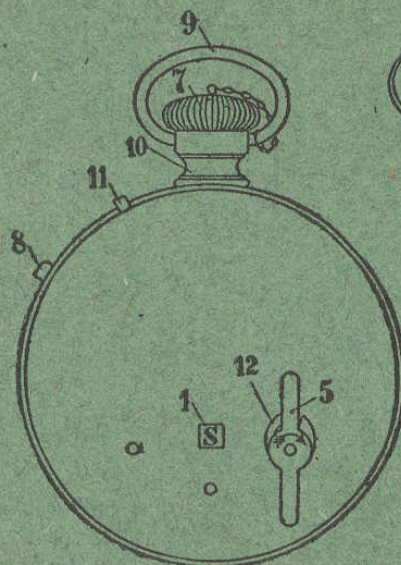
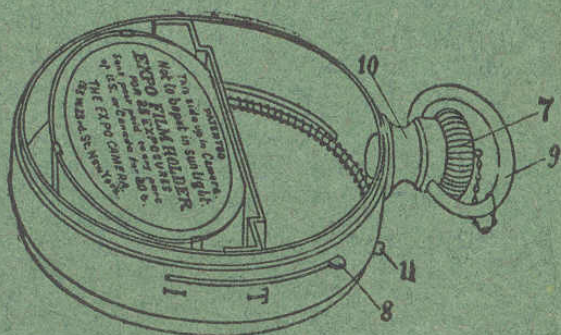
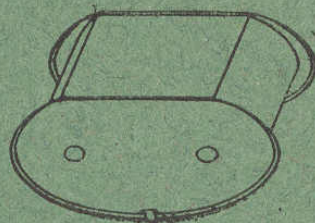


Fig. 3.



Film Holder.

T. WALLACE.

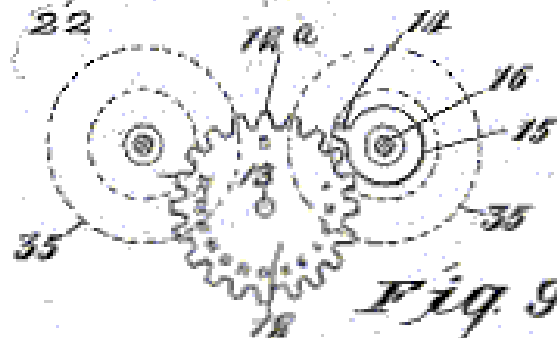
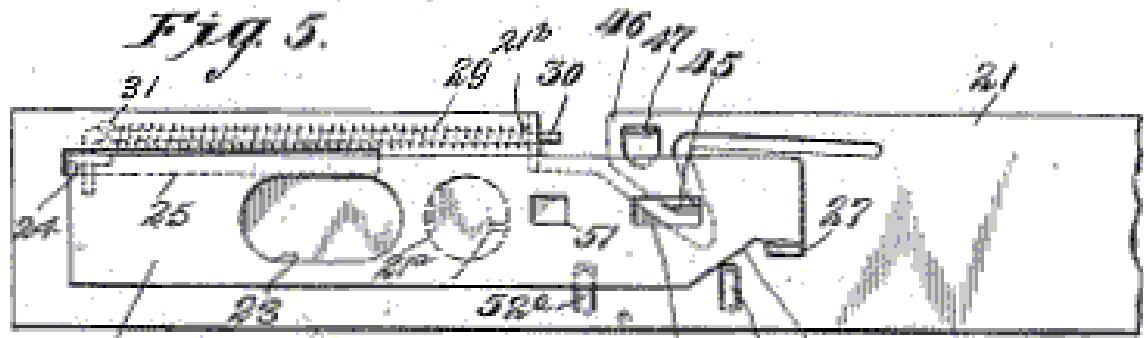
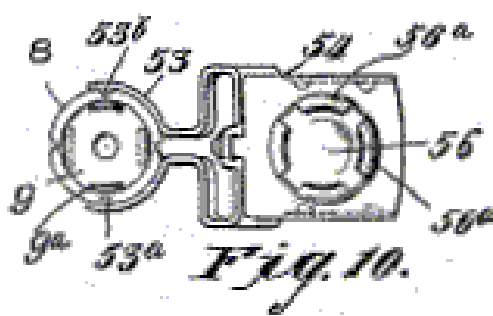
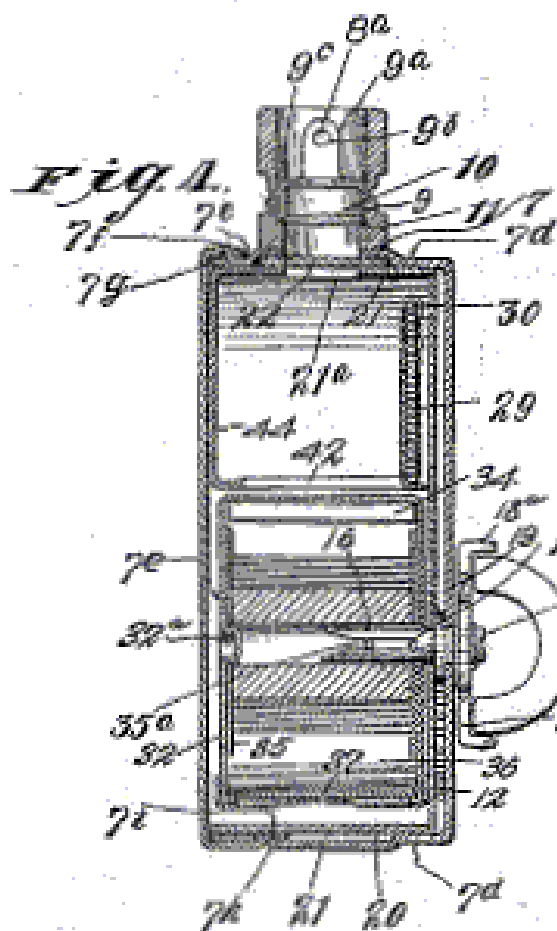
CAMERA SHUTTER AND OPERATING MECHANISM THEREFOR.

APPLICATION FILED JULY 5, 1918.

1,361,939.

Patented Dec. 14, 1920.

2 SHEETS—SHEET 2.

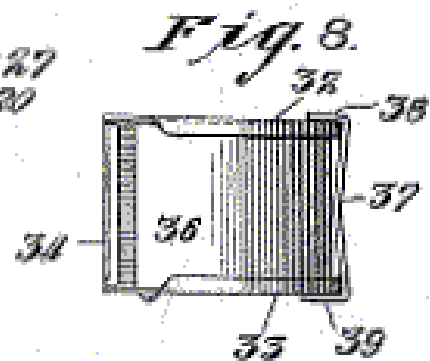
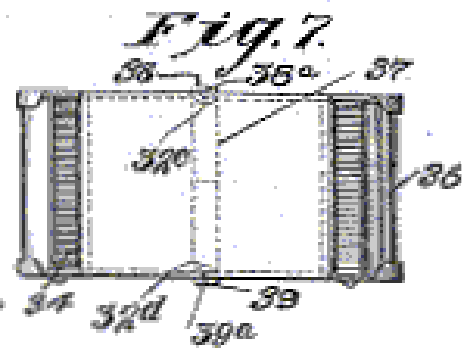
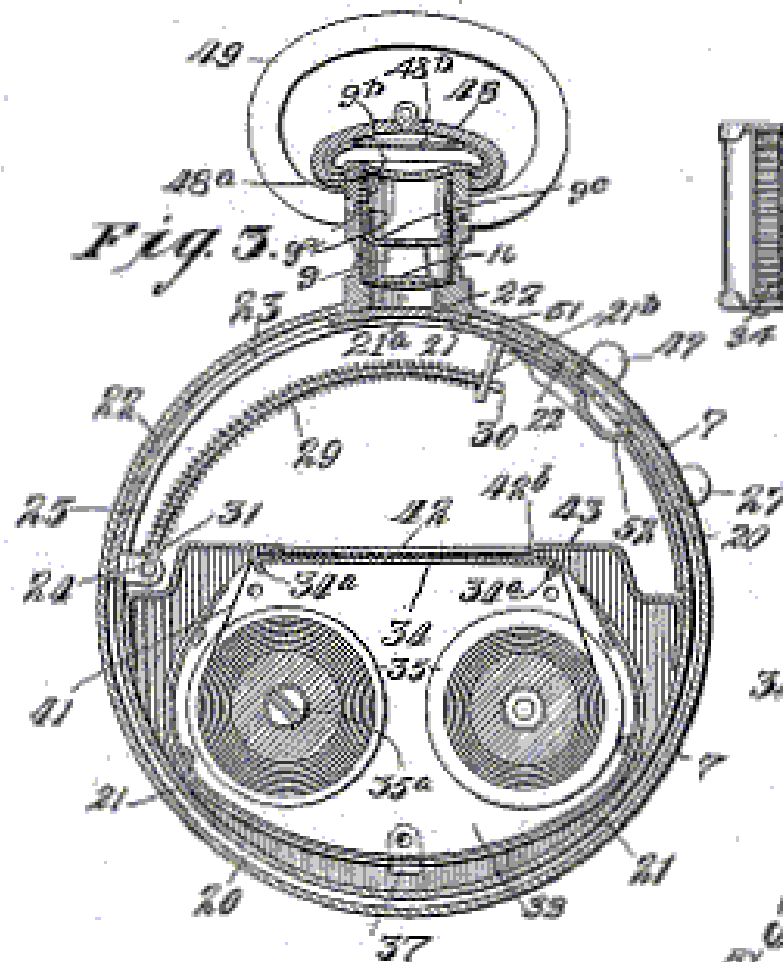
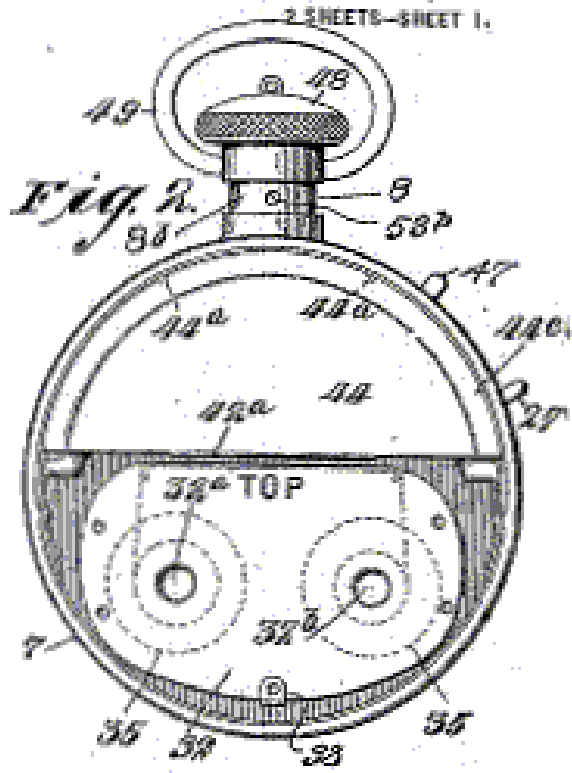
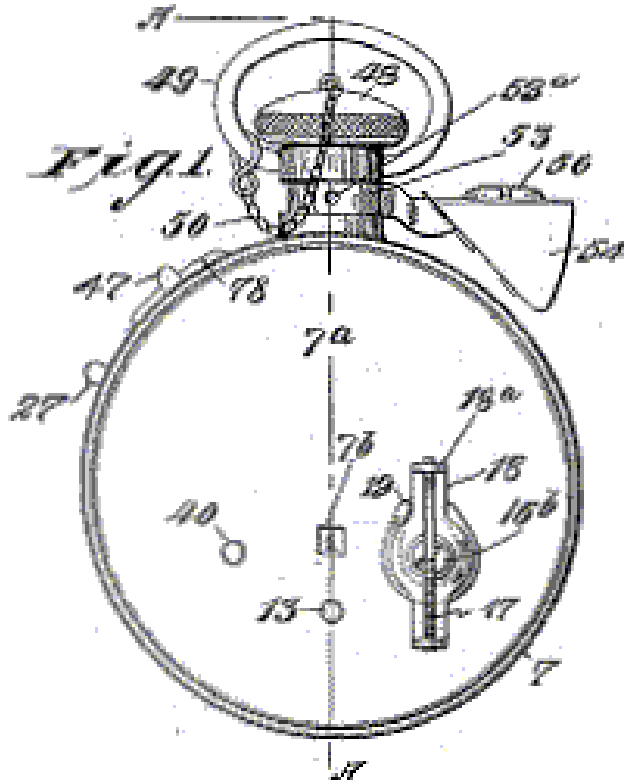


INVENTOR
Thomas Wallace
BY
Clifford E. Denny
ATTORNEY

1,361,939.

Patented Dec. 14, 1920.

2 SHEETS—SHEET 1.



INVENTOR
Thomas Wallace
BY *Clifford E. Jones*
ATTORNEY

ter is held in alternate rest positions against the respective stops by the mutual repulsion of the magnetic fields of the like poles of the magnets, the stop against which the shutter rests at any particular time being that which is more remote from the limit of the arcuate path of the shutter actuating magnet at which the shutter actuating magnet is positioned, and so that when the shutter actuating magnet is moved from one of its rest positions to the other, the axis of the shutter actuating magnet passes the axis of the shutter magnet, whereupon the shutter magnet is sharply repelled until the shutter comes to rest against the other stop.

12. A film cassette comprising a cylindrical container having a circular bottom, means fixed to the cassette and adapted to be engaged by means for rotating the cassette about its axis, a first circular cover for the cassette, a second circular cover overlying the first cover, respective apertures formed through the first and second covers, means mounting the second cover for rotation relative to and coaxially with the first cover, the axis of each of the apertures being spaced from the axis of rotation of the film cassette the same distance, means for maintaining the covers in axially spaced relation from each other, a disc of photographic film having an aperture in the center thereof, means for holding the film disc in spaced relation from the first cover and from the bottom of the cassette, whereby the film is developable in the cassette with the apertures in the covers out of registry and without the benefit of dark-room facilities, the film disc in the cassette than being inaccessible to light but fully accessible to developing liquid.

13. A cassette according to claim 12, in which the means fixed to the cassette comprises a gear fixed to the bottom of the cassette.

14. A cassette according to claim 13, further comprising means for holding the apertures of the covers in mutual alignment when the container is rotated in one direction and for holding the apertures of the covers out of mutual alignment when the container is rotated in the opposite direction.

15. A cassette according to claim 14, in which the means for holding the apertures of the covers in alignment with each other when the container is rotated in one direction and for holding the apertures of the covers out of alignment with each other when the covers

are rotated in the opposite direction comprises on the face of each of the covers facing the other cover a pair of diametrically opposed protrusions.

16. In a camera, the combination of a shutter and shutter actuating means, the shutter comprising a single member, at least a portion of said member being a permanent magnet, a cylindrical compartment containing the shutter, means mounting the shutter for pivoting about the axis of the compartment, the shutter magnet being radially oriented with one of its poles adjacent to the interior periphery of the compartment and the other of its poles remote from the interior periphery of the compartment, the shutter actuating means comprising another permanent magnet, means for guiding the shutter actuating magnet along a substantially less than semicircular arcuate path about the axis of the compartment with the shutter actuating magnet being radially oriented with one of its poles adjacent to the exterior periphery of the compartment and the other of its poles remote from the exterior periphery of the compartment, the poles of the respective magnets adjacent to the respective interior and exterior peripheries of the compartment being like poles, stop means limiting the pivoting of the shutter to an arcuate path of the shutter actuating magnet, the strengths of the magnetic fields of the magnets being selected and the stop means being positioned relative to the limits of the shutter actuating magnet arcuate path so that the shutter is held in alternate rest positions against the respective stops by the mutual repulsion of the magnetic field of the like poles of the magnets, the stop against which the shutter rests at any particular time being that which is more remote from the limit of the arcuate path of the shutter actuating magnet at which the shutter actuating magnet is positioned, and so that when the shutter actuating magnet is moved from one of its rest positions to the other, the axis of the shutter actuating magnet passes the axis of the shutter magnet, whereupon the shutter is sharply repelled until the shutter comes to rest against the other stop.

17. The combination of claim 16, further comprising means for releasably securing the shutter actuating magnet at each of its rest positions, thereby to prevent unintentional actuating of the shutter.

* * * * *

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other cameras, snap-shots should be taken only when the object is in broad sunlight, with the sun behind the back or over the shoulder of the operator, never with the lens pointing directly at the sun.

In making the exposure, first notice that cap 7 (Fig. 3) is securely on, then set the shutter by moving lug 8 (Fig. 2) along the slot on edge of camera, to the letter I (Instantaneous). Now remove cap which lifts off, being careful to turn ring 9 (Fig. 2) aside, so that ring will not obstruct opening to lens, which is in

stem 10. Neither should fingers nor any part of hand obstruct this opening.

Shutter being set and cap off, as directed, point the stem, which contains the lens, at the object to be photographed, holding the camera steady and level (Camera should not be tilted up or down), press the button 11, (Fig. 2) and the exposure is made.

To guard against the possibility of any small obstruction, such as sand or dust, interfering with the operation of the shutter while taking a picture,

it, but turn key 5 slowly, in direction of arrow, while gently pressing on top of film-holder, as stated.

After the film-holder is in proper position, as shown in Fig. 4, put cover on camera carefully, seeing that small lugs or projections on cover fit exactly over small lugs or projections on case, and pressing down tightly all around, so that there may be no possibility of light being admitted to camera.

Cover of camera being securely on, turn key 5 in direction of arrow, about four full revolutions, until No.

changes its position from top to bottom or from bottom to top side of axis of key 5, after each exposure.

No harm can possibly come to camera by turning key 5 more than one-half revolution after each exposure, only that half a revolution of key winds up, only film that is exposed or used, while a full revolution—arrow going all the way round—winds up, in addition to exposed or used film, a film that has not been used.

Should this trifling error of wasting a film be made, under no circumstance attempt to turn key 5 the reverse

- mounted, within this casing, and means for feeding the film positioned exteriorly of the casing; the combination of a spring actuated shutter, and means for setting the shutter at instantaneous and time exposure positions, said means including a yieldable member formed integrally with the interior of the casing and provided with a finger piece projecting through the casing, and an inwardly directed tongue formed on said member and adapted to engage said shutter to lock it in instantaneous and time exposure positions; the release of said shutter being effected by the depression of said finger piece.
2. In a photographic camera comprising a circular casing closed at the top and bottom, and having a portion projecting from its periphery to contain a lens; the combination of a liner for the interior of said casing consisting of a single strip of resilient material, said liner being spaced apart from the inner wall of the casing to form a guideway for the movement of a shutter, a shutter, a spring for actuating said shutter, and means forming a time and instantaneous stops formed integral with said liner; said means embodying a finger piece projecting through said casing, and an inwardly directed tongue adapted for engagement with apertures formed in said shutter.
- THOMAS WALLACE.

formed integral with the side wall thereof and constitutes what may be termed the bottom 7^a, for the purpose of this description. This bottom portion of the casing is provided with a preferably rectangular orifice 7^b through which the indicia on the exposure indicating wheel 12 is rendered visible, this wheel 12 being mounted on the stud 13, the periphery of said wheel being provided with the teeth 12^a spaced for engagement by the projection 14 on the disk 15 fixed to the stud 16. The spindle 16, as will be observed from Fig. 4, is formed with an elongated slot 16^a to engage the film spool which is adapted for registration therewith and which will be hereinafter more fully described, so that the spool may be rotated by turning the handle 17 in the direction of the arrow shown in Fig. 1. This handle is pivoted in the upturned ears 18^a of the plate 18, the latter being rigidly fastened to the spindle 16 by the screw 16^b and being held under tension relative to the exterior of the bottom of the casing by the spring 19 which is punched out of a single blank of material and placed in position between the underside of the plate 18 and the exterior of the bottom of the casing 7^a, as clearly shown in Figs. 1 and 4.

Positioned within the casing 7, the portion intermediate of its edges being spaced from the inner surface of the casing, as shown at 20, by the formation of the shoulders 7^c and 7^d, is a strip of material, preferably of resilient spring metal 21. This strip of material is of the requisite length and width to form a continuous inner wall or lining for the casing and is held therein by frictional engagement with the contracted portions of the wall resulting from the formation of the shoulders 7^c and 7^d.

Disposed between the strip 21 and inner wall of the casing 7, and movable within the space 20, is a shutter 22 having the elongated exposure aperture 23 adapted to register with the lens opening in the stem 8 and the annular orifice 21^a in the strip 21, the orifice 21^a being in alinement with the lens opening. The shutter conforms to the contour of the casing and at one end thereof, on the lower edge, is provided with a right angularly directed projection or tongue 24 which is adapted to ride within the elongated slot 25 in the strip 21. The other end of the shutter is cut away, as indicated at 26, and an outwardly directed finger piece 27 formed thereon which projects through a slot adjacent thereto in the wall of the casing 7. Obviously, the disposition of the shutter parts just described will serve to maintain the shutter in operative position, the cooperating slots and projections forming positive guiding means.

The shutter 22 is functioned to effect an exposure of the film by the expansion of the

coil spring 29 mounted on the curved rod 30, one end of which is turned upwardly and seated in the tongue or projection 24, the body of the rod being freely movable within the bearing provided in the inwardly directed projection 21^b formed integral with the strip 21. This projection also forms a seat for one end of the spring 29, as shown in Fig. 3, the other end of the spring abutting against the stop 31 formed integrally with the rod 30 by a swaging or similar operation.

The film magazine or holder forming a part of my present invention comprises the top and bottom members 32 and 33, and the front face or plate 34 formed integral therewith, the top member having the annular depressions 32^a and 32^b provided therein, and forming studs adapted for seating in the openings in the film spools 35, shown in dotted lines in Fig. 2. The bottom member of the film magazine is apertured in line with these depressions for the reception of the spindle 16, so that the faces of the elongated slot 16^a may engage the cross pin 35^a in the film spool. It will be noted that with the construction of the film magazine or holder as just described, the film spools may be expeditiously inserted therein by reason of the resiliency of the metal, the free edges of the top and bottom members 32 and 33 being held together so that the undersurfaces thereof abut upon the mask paper 36, by means of the spring 37 having the intumed ends 38 and 39 which are provided with detents 38^a and 39^a to register with the complementary depressions 32^a and 32^b on the top and bottom members 32 and 33, respectively, of the film magazine.

When it is desired to use the camera, the film magazine is placed in position, as shown in Figs. 2, 3 and 4, one of the apertures in the bottom member 33 thereof registering with the stud 40, while the spindle 16 passes through the other into engagement with the film spool, as previously explained. The film, indicated at 41, is fed over the plate or front face 34 of the film magazine, the edges of which are beveled, as shown at 34^a, to eliminate the possibility of binding or jamming of the film when being fed thereover. This plate, it will be noted, is in registry with the exposure opening 42 in the partition 43 extending transversely of the casing 7, having a substantially semicircular top member 44 formed integral therewith and adapted to provide a light-proof closure for that portion of the casing which contains the actuating spring and other shutter functioning parts, as clearly shown in Fig. 2.

I have found it desirable to form the upper and lower edges of the exposure opening 42 with ribs 42^a and 42^b to insure proper feeding of the film past the same as I have

way, as film cannot be turned back.

The numbers on ratchet wheel, showing at indicator window 1 read 1, 3, 5, 7, 9, etc., up to 25, the whole number of films in each spool or holder. Note that while every half revolution of key 5 changes a film, the change is shown at indicator window only after every second exposure or full revolution of key.

Time Exposure.—Place the camera on a level, firm support, such as a table, or something equally firm, and, if photographing an interior, do

arrow on same, until S appears a window.

Now insert film-holder, labeled side up, in the back or lower compartment 2 of camera, (Fig. 2) so that the two studs or spindles, 3 and 4, (Fig. 2) fit into the two holes in the under side of the film-holder. Should the film-holder not fit easily over these studs or spindles, turn key 5 slowly in direction of arrow, while pressing gently on the top of film-holder, when holder will drop easily into place.

Should film-holder not drop easily into position, never attempt to force

found in many instances that were these ribs omitted, the film would have a tendency to bind or jam on the edges of this opening. This partition member comprising the partition 43 and the closure portion 44 is held in position by frictional engagement with the inner wall of the casing 7 and the complementary depressions and detents formed in the rim of the wall and the edge of the closure 44, as shown at 44'. In order to insure the proper registry of the film surface to be exposed with the exposure opening 42, it will be noted that the partition 43 is slightly higher than the wall of the casing 7, the portion of the closure 44 adjacent to the edge thereof being beveled, as indicated at 44', to bring it into line with the upper edge of the casing 7, as shown in Fig. 2.

To set the shutter for an instantaneous exposure, the shutter is drawn back against the tension of the spring 29 by means of the finger piece 27 until the projection or stop 45 on the yielding tongue 46 formed by cutting out portions of the strip 21, as clearly shown in Fig. 5, engages with the exposure aperture 23. It will be noted that the yielding tongue 46 has struck up therefrom a right angularly disposed finger piece 47 which projects through a slot provided in the casing 7, as shown in Fig. 3. To effect the exposure of the film, the cap 48 fastened to the ring 49 by means of a chain 50, or the like, is removed from engagement with the stem 8 and the finger piece 47 then depressed or moved inwardly. This effects the disengagement of the projection or stop 45 from the exposure aperture 23 and permits the shutter to function under the expansion of the spring 29 in the usual manner. To effect a time exposure, a slot or opening 51 is punched in the shutter 22, this slot being adapted to be engaged by the stop or projection 45 to align the exposure aperture 23 in the shutter with the lens opening. The cap 48 is then removed from the stem 8 and at the expiration of the required time the shutter is released in the same manner as that explained in connection with the instantaneous exposure operation. To guard against accidental actuation of the shutter when the camera is being carried, I provide an elongated slot 51' spaced from the slot 51 in the shutter 22 which is adapted to engage the projection 45 on the tongue 46, as shown in Fig. 5.

In order to protect the spring operated tongue 46 and the cooperating parts, and render the camera absolutely light-proof, I have found it expedient to provide a plate 52 which is positioned within the casing, as shown in Fig. 3, this plate being of a shape to allow free actuation of the parts covered thereby and being held in rigid engagement with the abutting surface of the strip of

material 21 by means of the ears 52' formed integral with the strip 21 and pressed down into engagement with the upper edge and inner surface of said plate 52.

The stem 8, as will be observed from the drawings, has an annular groove or recess 8' formed therein to receive the spring arms or fingers 53 of the finder 54, these arms being held in positive engagement with the stem 8 by the registration of the detents 53' with the depression 53" in the stem. The finder consists of the usual ground glass 55, the lens 56, and mirror or reflecting medium 57, mounted in an inclined plane, the top, sides and front face of the finder being formed integral with each other, while the reflector or mirror supporting the bottom member is formed integral with the spring arms 53, as shown in Fig. 11, and is secured or fastened to the remaining portion of the finder by the formation of the ears 58 pressed into engagement therewith. The lens 56 is held in the top of the finder by the struck up fingers 56' shown in Figs. 10 and 11, so that, as will be seen, the finder lends itself admirably to economical production.

To open the camera, the complementary parts 7' and 7" may be disengaged by applying pressure to the thumb piece 7' projecting from the rim of the closure 7", as shown in Fig. 1.

The cover or closure 7' is frictionally held in position by the engagement of the complementary detents 7' and 7" on the rim of the casing 7 and closure, respectively, the proper positioning of the closure on the rim being insured by the provision of the tongue 7" which must be inserted in the slot 7' in the casing before the cover or closure 7' can be firmly seated.

From the foregoing description, it will be noted that I have produced a simple and compact camera of the so-called pocket or watchcase type, the operating mechanism being absolutely positive in functioning and fully protected against injury. Furthermore, the arrangement of the parts and the method of positioning the closure 7' and locking it in place, together with the formation of the member 48' positioned within the cap 48 and provided with a swelled portion 48' forming a seal for the lens opening in the stem 8, makes an absolutely light-proof device.

While I have described my invention with reference to the specific details herein illustrated, it is obvious that changes may be made thereto without departing from the spirit and scope of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a photographic camera having a circular casing, a lens holder projecting from the periphery of the casing, a film holder

UNITED STATES PATENT OFFICE.

THOMAS WALLACE, OF BROOKLYN, NEW YORK.

CAMERA-SHUTTER AND OPERATING MECHANISM THEREFOR.

1,361,939.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Application filed July 5, 1918. Serial No. 243,272.

To all whom it may concern:

Be it known that I, THOMAS WALLACE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Camera-Shutters and Operating Mechanism Therefor, of which the following is a specification.

The present invention relates generally to the art of photography and is more especially directed to improvements in the construction of a camera of the general type illustrated and described in United States Letters Patent No. 769,319, issued September 6, 1904 to Magnus Niell.

The object of the present invention is to produce a camera of the so-called watchcase or vest pocket type which may be economically manufactured and assembled, and wherein the number of operating parts is decreased or lessened, thereby producing a much more durable structure than is at present obtainable.

A further object of my invention is to provide a camera possessing the aforesaid characteristics wherein the cooperating parts may be produced by simple manufacturing operations so that the devices may be expeditiously made and put together, numerous individual parts heretofore employed in the specific type referred to having been dispensed with, the equivalents of these elements being formed integral with other components of the camera structure.

My invention also comprehends a new and novel shutter and means for operating the same, together with other details aiming to simplify the construction and production of cameras of the so-called watchcase or vest pocket type, which will become evident as I proceed with the description of my invention.

I have elected to describe one embodiment of my invention in order to afford a clear and comprehensive understanding of the construction and function thereof, but I, of course, would have it understood that I do not limit myself to the specific details set forth, reserving unto myself the full range of equivalents, both in structure and uses, to which I may be entitled under my invention in its broadest aspect.

I shall now proceed to describe my invention with reference to the accompanying drawings, and then point out the essen-

tial elements of novelty therein in the appended claims.

Figure 1 is a bottom plan view of a photographic camera embodying my invention.

Fig. 2 is a top plan view of the camera with the cover of the casing removed to expose the film holder and the guard.

Fig. 3 is a sectional view showing the relative positions of the shutter operating mechanism, film holder and cooperating parts disposed within the camera casing.

Fig. 4 is a sectional elevation taken on the line A—A of Fig. 1.

Fig. 5 is an enlarged plan view of the shutter, its operating mechanism and cooperating parts, in assembled relation prior to being positioned in the camera.

Fig. 6 is a detail of a portion of the shutter operating mechanism.

Fig. 7 is a front view in elevation of the film holder.

Fig. 8 is a side elevation of the film holder.

Fig. 9 is an enlarged detail view of the film operating and exposure recording mechanism; and

Figs. 10 and 11 are respectively, a top plan view and a side elevation, partly in section, of an improved form of finder which I employ in connection with my camera.

Referring now to the drawings in detail, in which like characters of reference are employed to designate similar parts throughout the several views, 7 represents the casing which is preferably made of metal and of an annular shape or configuration, although obviously any other suitable form or material may be employed for the purpose. A casing of the general type illustrated is preferred as the general object of a camera of this type is to simulate a watchcase and to carry out this effect I have found it desirable to provide the case with the equivalent of a watchcase stem, indicated at 8, within which the lens holder 9 embodying a diaphragm 9^a and having a lens 10 seated therein is positioned. As will be noted from Figs. 3 and 4, the stem 8 is provided with an interiorly formed shoulder 11 providing a seat for the lens holder 9, the latter being held in place by the frictional engagement of the ears 9^a with the detents or burs formed upon the interior of the same, as indicated at 8^a, these detents or burs seating themselves in the apertures 9^b of the ears 9^a.

One side or face of the camera casing 7 is

it would be well to test shutter by moving lug 8 to I, and pressing button 11 once or twice before cap 7 is removed.

Except when taking a picture, be careful always to keep cap 7 on stem 10, so that dust may be prevented from entering stem opening and accumulating on and clouding lens.

After each snap or exposure is made, turn key 5, in direction of arrow, one-half revolution, until key makes one "click" in passing over catch 12, (Fig. 3) or see that arrow on key 5

1 appears at indicator window 1, (Fig. 3); when the film will be in position for taking the first picture.

Note that key 5 should always stand perpendicularly, one arm of same pointing to top or stem side of camera, as shown in Fig. 3.

Making the Exposure.

The Expo being of universal focus, no focusing is required, and a picture may be taken from a distance of four feet to infinity.

Snap Shots: To secure the best results with the Expo, as with most

904,005.

Patented Nov. 17, 1908.

2 SHEETS—SHEET 2.

Fig. 6

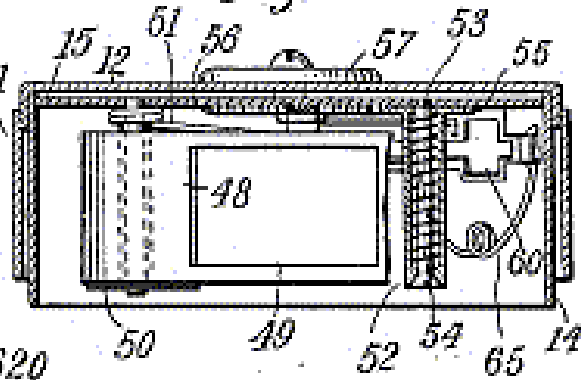


Fig. 5

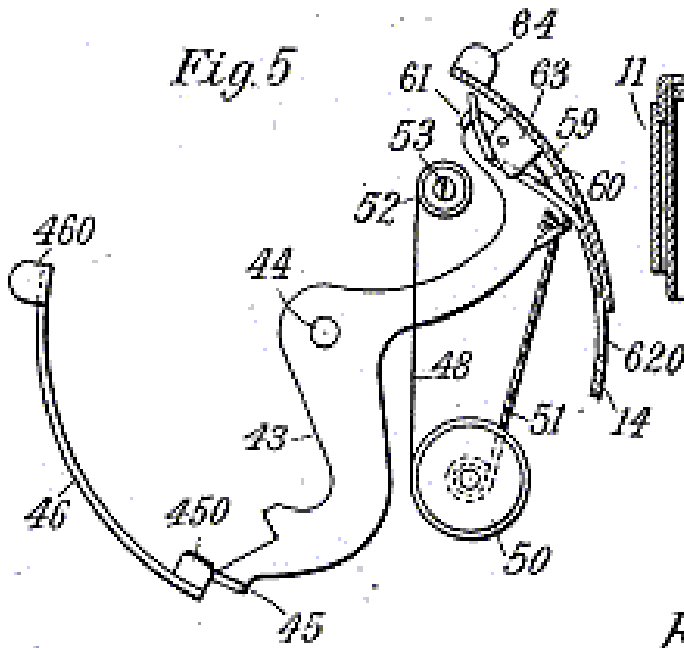


Fig. 7

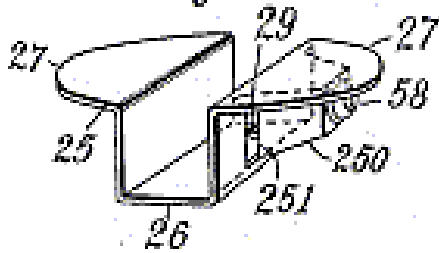


Fig. 8

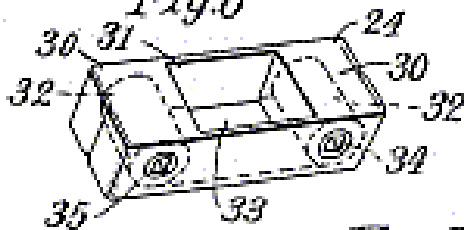


Fig. 9

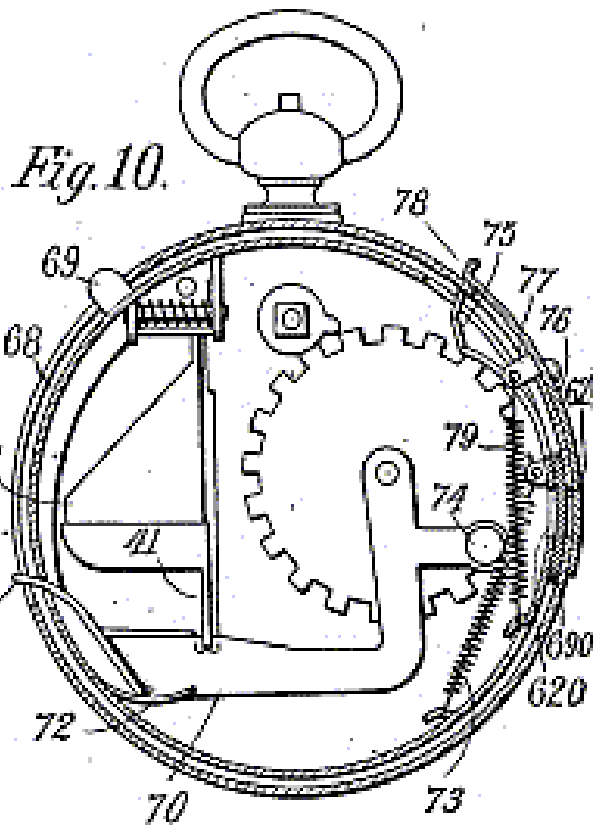
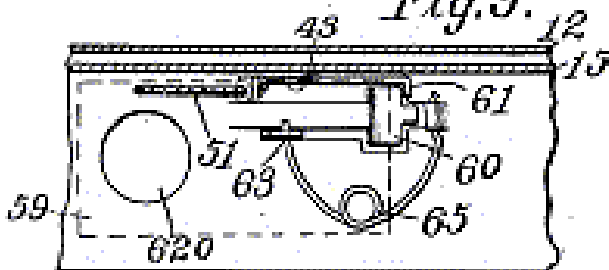
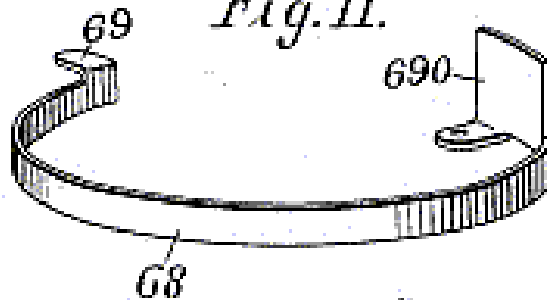


Fig. 11



Witnesses:
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 J. Blake

Inventor
 M. Niell
 By L. Sanford Handke

904,005.

Patented Nov. 17, 1908.

2 SHEETS—SHEET 1.

Fig. 1

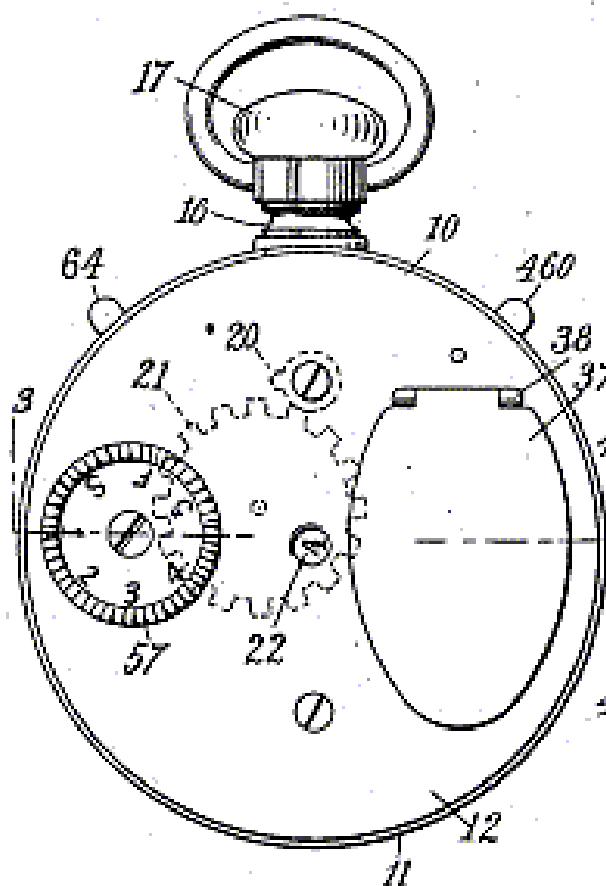


Fig. 2

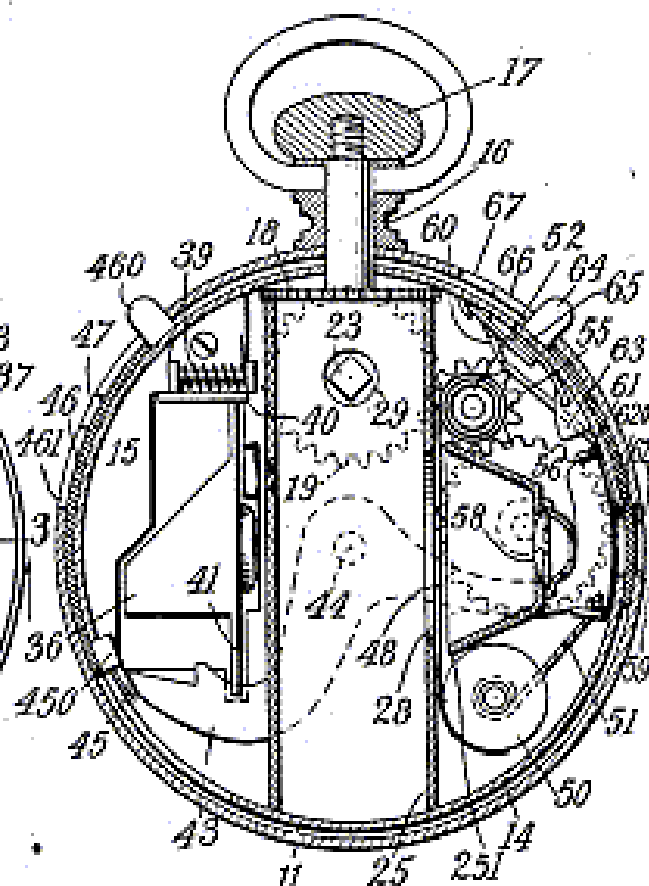


Fig. 3

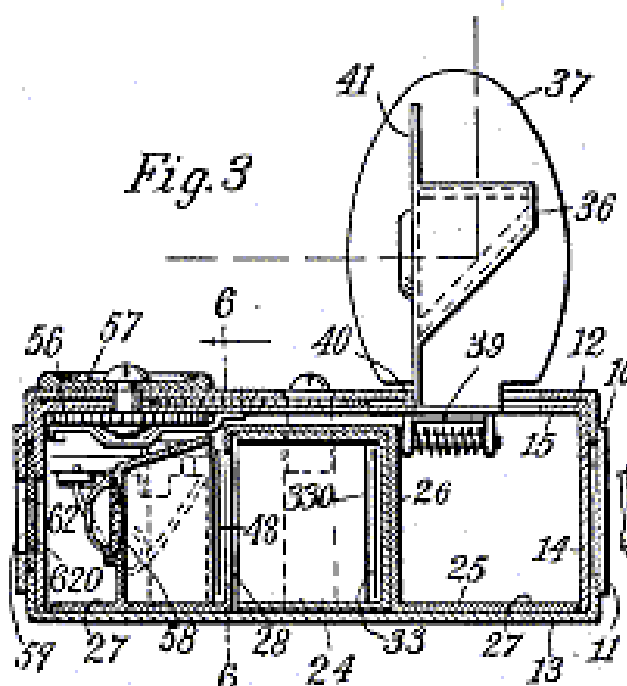
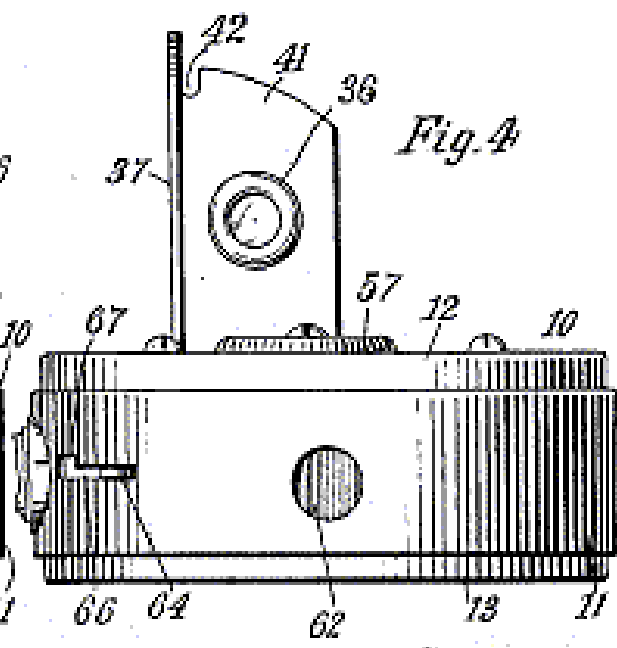


Fig. 4



Witnesses:

L. Sanford Hawks
 J. Blake

Inventor

M. Niell
 By his Attorney Robert M. Brown

ter mechanism are particularly well suited to such a compact camera as a wrist camera.

DETAILED DESCRIPTION OF THE INVENTION

The invention will now be further described by reference to a specific embodiment thereof as illustrated in the drawings, in which:

FIG. 1 is an exploded isometric view of a wrist camera according to the invention;

FIG. 2 is an isometric view, partly broken away, of the cassette having a gear fixed to the back thereof in combination with a gear in the casing for rotating the cassette;

FIG. 3 is a plan view of the container portion of the cassette, showing the interior of the bottom of the cassette;

FIG. 4 is a section taken on section line 4—4 of FIG. 3;

FIG. 5 is a plan view of the open cover of the casing, showing the shutter mechanism;

FIG. 6 is a section taken on section line 6—6 of FIG. 5;

FIG. 7 is a plan view of the underside of the upper cover of the cassette; and

FIG. 8 is a plan view of the underside of the member interposed between the cassette and the shutter mechanism.

With reference to FIG. 1, it is seen that the wrist camera 10 of the invention consists of a casing base 11 and a casing cover 12. A wrist strap 13 is received through slots 14 and 15 in ears 16 and 17 formed on the casing base 11. Between the slots 14 and 15, the wrist strap 13 passes behind the casing base 11. For convenient, comfortable wearing, the dimension of the casing from one lateral extremity to another in the direction of wrist strap 13 is generally less than the diameter of the wearer's wrist. Lugs 18, 19 and 20 are formed on the rim 21 of the casing base 11. Lugs 22, 23 and 24 are formed on the cylindrical side wall 25 of the casing cover 12. The lower edge of the cylindrical side wall 25 is received in an annular groove 25a formed in the rim 21 of the casing base 11, thereby providing a light seal. A pin 26 passes with a snug fit sequentially through lugs 22, 18 and 23 and a pin 27 passes with a snug fit sequentially through lugs 19, 24 and 20, thereby to secure the casing cover 12 onto the casing base 11.

Contained in the casing base 11 are a cassette container 28, a cassette lower cover 29 and a cassette upper cover 30. A disc shaped member 31 is fixed in the casing cover 12.

A gear 33 is formed on the back of the bottom 34 of the cassette 28 (FIG. 2). A blind axial bore 103 is formed in the gear 33. A slot 35 is provided through a side wall 36 of the casing base 11 (FIG. 1). Rotatably mounted therein by means of a pin 37 is a gear 38 which meshes with a gear 33. It is seen that the gear 38 extends partially within and partially without the casing base 11.

The cassette consists of the container 28 in combination with the lower cover 29 and the upper cover 30. These three elements are mounted for relative rotation by means of a pin 39. The pin is slidably received in an axial hole 40 through the upper cover 30 and in an axial hole 41 through the lower cover 29. The pin 39 is, finally, tightly received in a blind axial hole 42 in the container 28. A cylindrical boss 43 is formed axially on the interior bottom wall 44 of the casing base 11 and is received in the bore 103 to serve as a stub axle upon

which the container 28 is rotatable. A cylindrical boss 45, through which is formed a hole 41, is provided on the upper face 46 of the lower cover 29 to serve as a bearing for relative rotation between the lower cover 29 and the upper cover 30.

Apertures 47, 48 and 49 are formed through respective elements 29, 30 and 31. It can be readily seen that the entire assembly has a common axis. Each of the apertures 47, 48 and 49 is spaced from that axis by the same distance. Through the face 50 of the casing cover 12 is provided a conventional camera lens 51. The axis of this lens is spaced the same distance from the aforementioned common axis as are the apertures 47, 48 and 49. Thus, the three apertures 47, 48 and 49 and the lens 51 can be aligned.

Formed on the interior bottom wall 52 of the container 28 are five cylindrical bosses 53, 54, 55, 56 and 57 (FIGS. 1 and 3). The boss 57 is axially located and has the blind hole 42 formed therein and the bosses 53, 54, 55 and 56 are equidistantly spaced thereabout. Formed on the interior cylindrical wall 58 of the container 28, equidistantly spaced and radially interposed between the bosses 53, 54, 55 and 56, are lugs 59, 60, 61 and 62 (FIG. 3). A disc of photographic film 63 (shown in FIG. 4 but not shown in FIG. 1) is supported above and parallel to the interior bottom wall 52 of the container 28 by resting on the bosses 53, 54, 55, 56 and 57. From above, the disc 63 is held in place by the lugs 59, 60, 61 and 62. In this respect, it will be appreciated that the distance between the plane in which the bottoms of the lugs 59, 60, 61 and 62 lie and the plane in which the tops of the bosses 53, 54, 55, 56 and 57 lie is slightly greater than the thickness of the disc 63. An aperture 102 is formed through the center of the disc 63. The aperture permits passage of the pin 39 and also serves another function, which is described hereinafter.

On the upper face 46 of the lower cover 29 are formed a pair of diametrically opposed like protrusions 64 and 65 (FIG. 1). Similarly, on the lower face 66 of the upper cover 30 are formed a pair of diametrically opposed like protrusions 67 and 68 (FIG. 7). On the upper face 69 of the upper cover 30 is formed a single like protrusion 70 (FIG. 1). Finally, on the lower face 71 of the disc shaped member 31 is formed yet another like protrusion 72 (FIG. 8). Each of the protrusions 64, 65, 67, 68, 70 and 72 is oriented substantially radially and is located substantially the same distance from the common axis of the cassette and the camera casing as the other protrusions.

The disc shaped member 31 is fixed in the casing cover 12 with the axis of the aperture 49 therein in alignment with the axis of the lens 51. Only when the side 73 of the protrusion 70 abuts against the side 74 of the protrusion 72, are the apertures 48 and 49 in axial alignment. At other rotational orientations of the upper cover 30 relative to the disc shaped member 31, including when the side 75 of the protrusion 70 is abutting against the side 76 of the protrusion 72, the apertures 48 and 49 are out of alignment. Only when the side 77 of the protrusion 67 and the side 78 of the protrusion 68 abut respectively against the side 79 of the protrusion 64 and the side 80 of the protrusion 65, are the apertures 47 and 48 in axial alignment. At the same time, if the side 73 of the protrusion 70 is abutting against the side 74 of the protrusion 72, the apertures 47 and 48 are in axial alignment with the aperture 49.

The shutter 32 consists of an integral member pivotally mounted in the casing cover 12 by means of a pin

which said holder is fitted, and two wings 27, 27 to position this plate in the casing and to constitute an inside protective cover. In one side wall of the diametric trough is a rectangular exposure-opening 28 (Figs. 2 and 3) and in the bottom of the trough is a hole 29 to receive the winding-post 23. Frame 25 also carries the lens 58 in the front wall of a truncated chamber 250, the lens being located in line with a pair of openings 62, 620 in the casing rim 11 and inner ring 14, which openings may for convenience be termed the "exposing aperture". The sides of the lens-chamber are slotted at 251 for the passage of the shutter-curtain between lens and film. By mounting the lens on the frame 25 it is maintained at a fixed focal distance from the film in holder 24.

As best shown in Fig. 8 I make the roll-holder 24 with two film-spool compartments 30, 30 at its ends and an exposure-compartment 31 in between, with one side open adjacent the exposure-opening 28.

32, 32 are the film-spools and 33 is the film-strip located adjacent the back wall of the exposure-compartment 31 and therefore distant from the front face of the roll-holder by substantially the width of said holder. It will be understood that the film enters and leaves the compartments 30 through narrow slots shown at 330 in Fig. 3. The take-up spool has a hollow squared winding-arbor 34 to fit over the squared winding-post 23 and the let-off spool has a suitable arbor 35 acting as a journal. The package or box formed by this roll-holder may be made of light card-board, thin wood or other suitable material and is sealed at the edges after the film-element is in place, so as to be light-proof. The end or ends of the sensitive strip may be provided with black extension-strips in a known manner, thus enabling this film package to be loaded into the camera and removed in daylight. To get at the film for development the package may be destroyed.

A suitable finder 36 of ordinary construction is affixed to an oval cover-plate 37 hinged at 38 to the top of the casing so that the finder when not in use may fold into the casing through an opening in the top-side wall thereof and then occupy the rear segment of the casing back of the roll-holder. A spring 39 tends to throw the finder out to an operative position as shown in Figs. 3 and 4 where it stands at right-angles to the camera casing and may be used by looking down on its image-showing surface as the camera is held in a horizontal position. The frame of the finder has a stop 40 to arrest it in this position. The said finder frame also embodies a plate 41 at the front of the finder with a notch 42 in its edge adapted to engage a setting-lever 43 which constitutes a catch to hold the finder in its folded posi-

tion, the notch having a beveled approach whereby it displaces and becomes automatically engaged with this lever. The setting-lever lies flat against the inner top plate of the casing and is pivoted on a stud 44 in the center of this plate. One end of it has a projection 45 engaged by an inward projection 450 on a segmental setting-slide 46 which reciprocates between the rim of the casing and the parallel inner ring 14, this setting-slide having an outward projection 460 extending through a slot 461 in the casing to be engaged by the operator's finger in setting the shutter. 47 (Fig. 2) is a notch in the lower side of this slot for a time exposure.

The shutter as here shown is in the form of a curtain 48 operating along the front side of the roll-holder trough and formed with an exposure-opening 49 (Fig. 6). One end of this curtain is fastened to a drum 50 having a pulley at its lower end and around which is wound a cord 51 attached to the second arm of the setting-lever 43. The opposite end of the curtain is attached to a spool 52 surrounding a fixed post 53 and a helical spring 54 has one end attached to the spool and exerts tension to wind the curtain up on the spool. The other end of the spring is fixed to a gear pinion 55 (Figs. 2 and 6) meshing with a gear 56 on the arbor of an adjusting-plate 57 which is exposed outside of the casing. This plate has characters stamped on it indicating different shutter speeds and may be rotated to adjust the tension of the spring 54.

Across the "exposing aperture" 62, 620 operates a segmental slide 59 normally actuated in a lens-covering direction by a spring 65 (Figs. 2 and 6). 60 is a spring catch stamped out of the inner ring 14 and adapted to engage a projection 61 on the second arm of the setting-lever 43 and to be released from such engagement by the action of a cam projection 63 on the slide 59. An outer projection 64 on this slide extends through a slot 66 in the casing-rim to be engaged by the operator's finger and the bottom of this slot has at one end a notch 67 for holding the slide retracted during a time exposure.

The operation of taking an instantaneous picture includes the setting of the shutter and the release thereof, and in setting the shutter the finder is automatically released and projected into operative position. These events are brought about by the operator engaging the finger-projection 460 and throwing the setting-slide 46 to its extreme position as indicated in Fig. 5. The slide carries with it the setting-lever 43 until the projection 61 thereon is engaged by the spring catch 60 whereby the shutter curtain 48 is wound up on drum 50 against the tension of the spring within spool 52. The first move-

ment of the setting-lever 43 releases the finder 36 whose spring throws it out to the operative position shown in Figs. 3 and 4. If merely the release of the finder is desired it may be performed by moving the setting-slide 46 only a short distance without completely setting the shutter. When the shutter is set for an exposure it may be released by the operator's finger engaging projection 64 on the lens cover-slide 59 and moving said slide until the cam projection 63 throws the spring catch 60 out of engagement with the setting-lever. In Fig. 5, projection 63 is just about to throw the catch. This frees the shutter and allows the curtain 48 to move its exposure-opening quickly across the focal space while the lens opening remains uncovered by slide 59. After that the operator releases the lens cover-slide 59 and spring 65 returns it to its normal position covering the exposing aperture. The return of the shutter returns the setting-lever 43 and the setting slide 46 to their initial positions by the action of the shutter spring 54. The finder 36 may now be folded inwardly and re-engaged with the setting-lever.

To make a time exposure the setting-slide 46 is moved until projection 460 enters the notch 47. This moves the opening in the shutter curtain to an exposing position opposite the lens and the exposure may then be made by retracting and releasing the slide 59, its projection 64 being engaged in notch 67, if desired, to hold the slide open for a long exposure. After the time exposure is made, the projection 460 may be released from notch 47 and the shutter allowed to return.

It will be noted that I have combined in one member, namely the slide 59, two functions, namely that of a cover for the lens to prevent an exposure while the opening in the shutter is being moved past the lens during the setting movement of said shutter, and that of a trip or release for liberating the shutter, thus enabling the lens to be uncovered and the shutter released by one operation, but I do not wholly confine myself to this arrangement.

After an exposure the film may be moved to be ready for a new exposure by rotating the winder 17 as previously described.

Figs. 10 and 11 show a modification differing principally in the construction of the shutter and its operating mechanism and in the omission of the stem winder for operating the film strip. In this case the film may be shifted in any approved manner. The film-roll holder and its frame which are removed in this view, may be of the same construction as previously described except that in the roll-holder frame 25 the slots 251 for the passage of the curtain shutter employed in the previous form are preferably omitted.

65 is the shutter-slide of segmental form mounted between the rim and inner ring

and having a finger-projection 69 at one end and the shutter 690 at the other end.

70 is a catch-lever for locking and releasing the finder 36, said lever having a projection 71 at the end of the slot in which projection 60 moves; to be engaged at the completion of the shutter-setting movement or engaged independently by the operator's finger.

72 is the spring for lever 70.

73 is a shutter-retracting helical spring having one end fixed to the casing and the other end fixed to the shutter while its intermediate portion passes around a guide-post 74 on an arm of the lever 70 so as to exert a tangential pull on the shutter through a substantial range of movement. 75 is the spring shutter-catch adapted to engage the rear edge of shutter 690 and 76 is an outside lens cover-slide having an inner cam projection 83 77 to release the catch 75, an outer finger-projection 78, and a retracting spring 79.

I claim:

1. A photographic camera having a casing of watch-case form with an exposing aperture in its rim, a substantially diametric film-roll holder within the casing, and a folding finder occupying the rear segment of the casing and adapted to be projected outwardly from the casing into operative position.
2. A photographic camera comprising a casing with substantially parallel sides and a peripheral wall or rim formed with an exposing aperture, a film-roll holder extending substantially across the middle of the casing, and a finder at the rear of said holder hinged to fold within the casing or to stand out therefrom in operative position.
3. A photographic camera comprising a casing having an exposing aperture, shutter mechanism, and a folding finder controlled by said shutter mechanism.
4. A photographic camera comprising a casing, a finder normally folded within the same and yieldingly projected into operative position, an exposing shutter, and shutter-operating means adapted to automatically release said finder from its folded position.
5. A photographic camera comprising a casing, a finder hinged thereto, a spring to project said finder into operative position, an exposing shutter, and means controlled by the setting of said shutter for automatically releasing the finder.
6. A photographic camera comprising a casing, an exposing shutter, shutter-setting and releasing devices, and a folding finder adapted to be automatically projected into operative position by the operation of setting the shutter.
7. A photographic camera comprising a casing of watch-case form having a rim and side walls, a folding finder operating through an opening in one of said side walls, and

shutter mechanism including a segmental shutter-setting slide mounted on said rim and adapted to automatically cause the projection of said finder into operative position.

5 8. A photographic camera comprising a casing, a folding finder adapted to be automatically projected into operative position, and shutter mechanism including a shutter-setting device adapted to cause such projection of the finder, said finder being also capable of projection at will without setting the shutter.

10 9. A photographic camera comprising a substantially circular casing having a cover to open and close it, a removable roll-holder frame having a substantially diametric trough, a self-contained roll-holder removably mounted in said trough, and devices accessible from the outside of the casing for operating said roll-holder.

15 10. A photographic camera comprising a casing of watch-case form, a film-roll holder diametrically mounted therein, devices accessible from the outside of said casing for operating the film, a removable frame having a receptacle for said holder and portions constituting an inner protective cover, and an outer removable cover forming part of the casing.

20 11. A camera comprising a casing having shutter mechanism and film-operating mechanism, an inner removable frame provided with a lens, and a film-holder removably mounted in said frame and having means for connecting with the film-operating mechanism.

25 12. A photographic camera comprising a

casing of watch-case form having an exposing aperture in its rim, a curtain shutter in said casing having a retracting spring and a cord and pulley for setting the shutter, a setting-lever within the casing having one arm attached to said cord, catch mechanism to engage said arm, and a segmental setting-slide mounted on the rim of the casing and engaging another arm of the lever.

30 13. A photographic camera comprising a casing of watch-case form having opposite side walls and having a rim formed with an exposing aperture, a lens, a curtain shutter in said casing operating back of the lens and rolled at both ends, a spool at one rolled end of said shutter, a retracting spring within said spool, and mechanism mounted on one of said side walls and accessible from the outside thereof for varying the retractive tension of said spring.

35 14. A photographic camera comprising a casing of watch-case form having opposite side walls and having a rim formed with an exposing aperture, shutter mechanism, a progressively-moving sensitive device within the casing adapted to receive a succession of exposures, a stem projecting outwardly from said rim and having a winder, and mechanism connecting said winder with the sensitive device for operating the latter.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, the eighth day of May, 1907.

MAGNUS NIELL.

Witnesses:

G. W. HOPKINS,

R. M. PIERSON.

UNITED STATES PATENT OFFICE.

MAGNUS NIELL, OF NEW YORK, N. Y.

VEST-POCKET CAMERA.

No. 904,005.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed May 9, 1907. Serial No. 573,402.

To all whom it may concern:

Be it known that I, MAGNUS NIELL, a subject of the King of Sweden, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vest-Pocket Cameras, of which the following is a specification.

This invention relates principally to small photographic cameras conveniently designated as "vest-pocket" cameras and its general object is to increase the number of functions performed by the instrument and improve the manner of their performance without increasing the size of the camera casing, which is preferably made to resemble that of a watch. These cameras as now known ordinarily embody a lens-tube in the usual form and location of the watch-stem, and behind it a peripherally-sliding spring-actuated shutter provided with a setting device and a releasing catch or button, the camera further including an interior removable film-holding frame with take-up and let-off rolls, occupying the whole rear half of the case opposite the lens, and suitable winding and registering devices for operating the film and indicating the number of exposures. Among the defects of such prior cameras are that there is no convenient place within the casing for the location of a finder, which, if embodied, would add greatly to the instrument's usefulness, and also that the provision for taking time exposures is inadequate. Moreover the outward projection of the lens-tube may be considered as a feature to be dispensed with if possible.

In my present improvements I have not only provided for the location of the lens within the casing so as to be better protected, but have also transferred the film-holder to a diametric position and devised a new arrangement of the focal plane with relation to said holder so as to preserve an adequate focal distance. An improved interior removable frame retains the film-holder in place and also carries the lens. In the sector of the casing opposite the lens-opening is situated a folding finder adapted to project from the casing when in use, and in connection therewith I have devised certain improved shutter mechanism whereby the setting of the shutter for an exposure releases the finder and permits it to assume its operative position. Associated with the shutter is a novel form of slide which may be re-

tracted to uncover the lens and release the shutter, and this slide may be employed as a time-exposure device when the shutter has been properly neutralized. In the former place of the lens-tube I may locate a knob and spindle connected by suitable mechanism with the wind-up roll of the film and also with the registering device, thus operating like the stem-winding mechanism of a watch.

Of the accompanying drawings, Figure 1 represents a top view of a camera embodying my invention. Fig. 2 represents an inverted horizontal section without the roll-holder. Fig. 3 represents a diametric section on the line 3—3 of Fig. 1 with the finder extended. Fig. 4 represents an edge view showing the finder extended. Fig. 5 represents an inverted plan of the shutter setting and releasing parts. Fig. 6 represents a transverse section on the line 6—6 of Fig. 3 without the roll-holder, its frame and the casing cover. Fig. 7 represents a perspective view of the frame for the roll-holder. Fig. 8 represents a perspective view of the roll-holder. Fig. 9 represents an inner face view of the shutter engaging and releasing parts. Fig. 10 represents an interior view of a modification with the roll-holder and its frame removed. Fig. 11 represents a perspective view of the shutter in this modification.

10 is a circular casing made to resemble a watch case with a peripheral rim portion 11, an integral top plate 12 and a removable cover 13.

14 is an inside ring between which and the rim portion 11 operate the shutter setting and releasing slides 46, 59, and 15 is an inside top plate.

16 is the stem having a winder 17 with a toothed winder-wheel 18 on the inner end of its arbor. This toothed wheel engages a second toothed wheel 19 at right-angles and a trip-dog 20 (Fig. 1) on the arbor of the second wheel engages the teeth of a register-wheel 21 whose numbers show through an opening 22 at the top of the casing. The same arbor has a squared roll-winding post 23 to engage one of the film rolls.

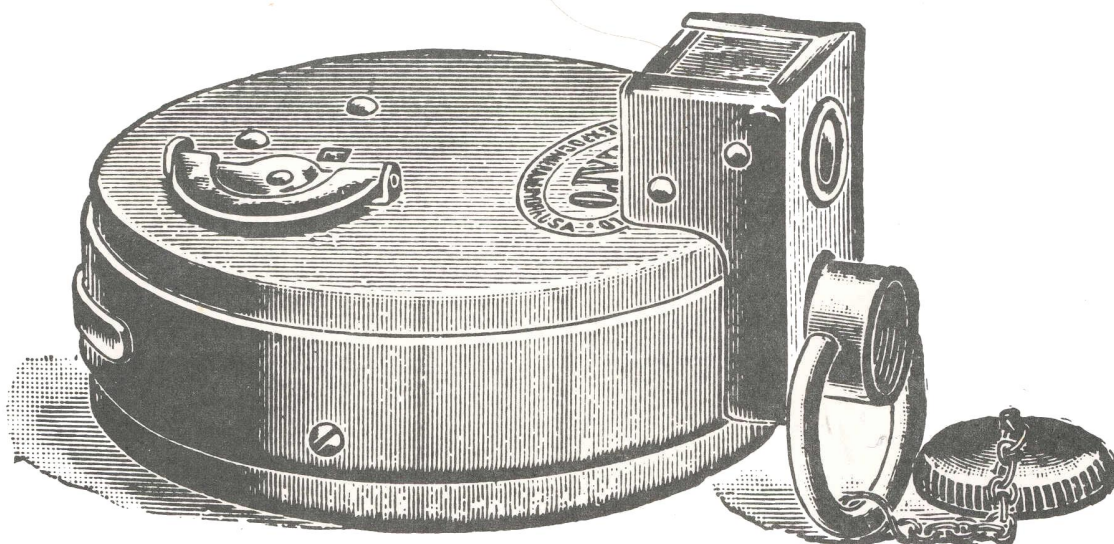
24 is an elongated roll-holder of square section, and 25 is a sheet-metal removable frame, shown in detail in Fig. 7, of general circular form to fill the aperture of the casing, said frame having a diametric trough 26 of the same form as the roll-holder into

THE PHOTOGRAPHIC COLLECTORS' NEWSLETTER

VOLUME II.

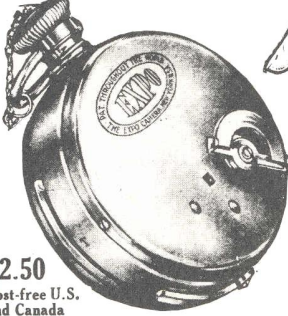
October 1969

NUMBER 1.



THE EXPO

Copyright The Photographic Collectors'
Newsletter 1969



THIS
IS A
CAMERA

\$2.50
Post-free U.S.
and Canada

not a toy camera but the
EXPO WATCH CAMERA

that marvelous little VEST-POCKET CAMERA that weighs but three ounces, and looks so exactly like a watch that it will be thought you are noting the time on your watch, when, in reality, you are taking perfect little pictures $\frac{5}{8} \times \frac{7}{8}$ inch.

A big camera can be carried only occasionally, but the EXPO can be carried *always*, and it loads in daylight with a film-spool of 25 exposures (cost 25 cents); has time and instantaneous shutter, and, in fact, everything a big camera has—except clumsiness.

Many of the reporters of the big daily newspapers and many of the Detective Agencies regularly use the EXPO.

EXPO negatives are full of detail and can be enlarged in a simple manner up to 2 x 3 inches with the EXPO Printing Box.

SEE IT AT YOUR DEALERS OR SEND FOR CIRCULAR AND SAMPLE PRINTS

Dealers will receive a beautiful card of EXPO prints 6 x 9 in. by sending their names and addresses

EXPO CAMERA CO.
254-256 West 23d Street NEW YORK

Kindly mention THE PHOTO-MINIATURE

No. 769,319.

Patented September 6, 1904.

UNITED STATES PATENT OFFICE.

MAGNUS NIÉLL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
THOMAS WALLACE, OF NEW YORK, N. Y.

PHOTOGRAPHIC CAMERA

SPECIFICATION forming part of Letters Patent No. 769,319, dated September 6, 1904.

Application filed October 14, 1903. Serial No. 176,894. (No model.)

To all whom it may concern:

Be it known that I, MAGNUS NIÉLL, a subject of the King of Sweden and Norway, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Photographic Camera, of which the following is a full, clear, and exact description.

This invention relates to improvements in photographic cameras, an object being to provide a camera of novel form and construction and of a size to be readily carried in a vest-pocket.

A further object is to provide a novel film-strip holder, with means for operating the same to move the strip, whereby new or unexposed surfaces are brought to exposure position.

I will describe a photographic camera embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a photographic camera embodying my invention. Fig. 2 is a section on the line *x x* of Fig. 1. Fig. 3 is a section on the line *y y* of Fig. 2, and Fig. 4 is a sectional detail showing the recording mechanism employed.

Referring to the drawings, 1 designates the casing of the camera, which is substantially in the form of a watchcase, and, in fact, is designed to simulate a watchcase. At one side the casing is provided with a removable cover 2, and on its periphery it is provided with a lens-tube 3 in the form of a watchcase-stem, and in this tube is a lens 4, and the outer end of the tube is provided with a removable cap 5, and connecting with the tube is a ring 6. Movable across the opening of the lens 4 is a shutter consisting of a segmental plate 7, having an opening 8 and movable between the inner surface of the casing and a plate 9 within the casing.

Extended inward from one end of the shutter and through a slot 10 in the inner plate 9 is a lug 11, to which one end of a curved rod 12

is attached. This inner plate 9, it will be noted, has an opening 13 in line with the lens-tube opening. The rod 12 passes loosely through an opening in a lug 14, extended inward from the plate 9, and it also passes loosely through a slot formed in a latch-plate 15, designed to engage with either one of the shoulders 16, 17, formed on the rod. This latch-plate 15 is attached to a spring-plate 18, from the free end of which a finger-piece 19 extends outward through an opening in the casing. Surrounding the rod 12 is a spring 20. This spring bears at one end against a collar 21 on the rod adjacent to the lug 11, and at the other end the said spring engages with the lug 14. The object of this spring is to move the shutter to closing position, as will be hereinafter described.

The shutter has at one end a lug 22, which extends outward through an opening 23 in the periphery of the casing. Extended transversely in the casing is a partition 24, provided with an exposure-opening 25, which obviously is in line with the lens. The said partition forms one wall of a chamber 26, in which the holder or magazine for the sensitized strip or film is placed. These holders, with the strips thereon, are designed to be purchased as a complete article, whereby a new one may be placed in the camera when all the surfaces of a previous strip shall have been exposed. In order to be able to load and unload the camera in daylight, the ends of the film-strip are made light-proof.

The holder comprises upper and lower plates 27, 28, connected at the front by a plate 29, over which the sensitized strip passes, the said plate 29 being rearward of the opening 25 and opposite the partition 24, and the said plates 27 and 28 are connected by a narrow post 30. The said plates 27 and 28 are provided with inwardly-extended tubular lugs 31, 32, which may be formed by pressing in portions of the plates. These lugs form bearings for the take-up spool 33 and the let-off spool 34. Arranged within the spool 33 is a cross-pin 35, designed to engage in an outwardly-opening notch formed in a spindle 36, which extends outward through the bottom

INSTANT LOADING SUBMINIATURE

Specifications: Expo camera for making 25 negatives 15 x 22mm. on 17.5mm. roll film in special drop-in cassette. Lens: Fixed-focus 25mm. f/16 meniscus. Shutter: Sliding plate, fixed speed approx. 1/25 sec., time. Accessory: Clip-on waist-level brilliant finder. Price: camera, \$2.50; finder, \$.50; film, \$.20. Manufacturer: Expo Camera Co., New York.

Camera designers have long been fascinated by watches. We had the Lancaster Watch Camera; you opened the case and out popped a "bellows" of spring steel spirally wound, and you inserted in the back a plate holder. Since you could take only one picture per loading, you had to carry a supply of loaded plateholders, and they were more bulky and heavier than the "watch". Then we had the Photoret, with the lens in the side of a watch case; this gave six 15 x 15mm. negatives on a circular sheet of film 2 in. in diameter; between exposures you rotated the film. The camera had to be loaded in the dark. It was not a good design, which is surprising, for it was the invention of W. K. L. Laurie Dickson, who built Edison's Kinetoscope motion picture machine.

The newest camera of this type is the Expo. It is only 2-1/4 in. in diameter. You can take 25 exposures on one loading. Best of all, you can reload it in full daylight. Unlike common box cameras, you don't have to take it apart and fool with paper-backed film. To reload, just flip off the back with the built-in lever, and drop in a lighttight, disposable cassette. We found using the Expo almost too easy. You hold it in the palm of your hand: "Sharp-eyed will be the person who can tell whether you are looking at your watch or taking a picture," boasts the manufacturer. The lens is in the stem of the "watch" and is protected when not in use by a knurled cap which looks like a winding knob. You point it towards the subject. At first we were irked by the lack of a finder, but recently the Expo people have put out a little waist-level ground-glass finder that snaps around the "stem" of the lens. With your thumb you pull a sliding button to cock the shutter, then you press a release button. There are two shutter settings, "I" for instantaneous (about 1/25 sec.) and "T" for time.

To wind on a fresh film you simply turn a key on the back of the camera until you hear a click; the number of the exposure appears in a 1/8 inch square window. We would like to see the numbers big enough to read easily.

We made acceptable enlargements up to 8 x 10 inches; they were surprisingly sharp optically, but the film is too coarse-grained to permit quality blow-ups this big. We recommend that you invest in the \$1.50 fixed-focus Expo Daylight Enlarger for making 2 x 3 inch prints on print-out paper in sunlight.

The British version is called appropriately "The Ticka." ("Every Tick a Picture.") It is identical except for name.

The real novelty of the Expo camera is the instant, "drop in" loading. We think it is the film system of the future,

and will rapidly replace single roll film spools.

The Expo was patented by Magnus Neil on Sep. 6, 1904, and introduced in the following year. It was still offered by dealers in 1912 - along with its \$5.00 big brother, the all-black, 2 x 3 x 1 inch Expo Police Camera, for 12 negatives 1 x 1-5/8 in. It was claimed in that year that 100,000 had been sold.

Beaumont Newhall, Rochester, N.Y.

(Expo cameras for photographs from the collections of Mr. Lou Marcus and Mr. Eaton Lothrop. Expo enlarger and Photo-Miniature advertisement courtesy of Mr. Marcus.)

* * * * *

or back plate of the casing, where it is provided with a turning-handle 37, it being understood that the said spindle has rotary motion. This spindle not only has a bearing in a wall of the casing, as above described, but also has a bearing in a plate 38, which forms the base upon which the film-strip holder rests. Extended inward from said plate 38 is a short pin 39, designed to pass into the spool 34, which, with the spindle 36, holds the film-strip holder in proper position in the chamber 26. It will be noted that the spool 34 has a cross-pin similar to the cross-pin in the spool 33. This is for convenience in manipulating the parts when the film is first placed in the holder, and it is not in any manner engaged with the said pin 39.

Mounted to rotate between the plate 38 and the adjacent wall of the casing is a tally or recording wheel 40. This wheel is provided with numbers 41, designed to be seen consecutively through a sight-opening 42, formed in the casing-wall, the numbers of course being designed to indicate the number of exposures made. The wheel 40 is provided with peripheral teeth 43, designed to be engaged by a finger 44, connected to the spindle 36.

In the operation when it is desired to make an instantaneous exposure the shutter is to be moved until its end or the lug 22 engages against the end of the slot 23. Then after removing the end of the cap 5 the finger 19 is to be pressed inward, releasing the shoulder 16 of the rod 12 from the plate 15. Then the compressed spring 20 will move the shutter toward its closed position, and when its opening 8 passes rapidly across the lens-tube the exposure will be made. Before the exposure of course the film-spools must be turned until the numeral "0" is seen through the opening 42. When the next exposure is to be made, the turning-handle 37, connected with the spindle 36, carrying the spool 33, is to be turned one-half a revolution, which will bring a new part of the film-strip into exposure position. The size of the spool 33 is such that its circumference is equal to double the size of the exposure-opening 25 in the partition 24. The turning of the handle 37 also imparts movement to the wheel 40, thus bringing a new numeral into view, indicating the number of exposures. When a time-exposure is to be made, the shutter is to be moved until the shoulder 17 engages with the latch-plate 15. At this time the opening 8 will be in line with the lens-tube opening. Upon removing the cap 5 the exposure will be made for the desired length of time, and then upon pressing

the finger-piece 19 the shutter will be moved to close the opening. The spindle 36 is prevented from backward rotation by means of a spring 45, arranged in the path of the arm 37. This spring is pressed out of the metal forming the casing in such manner as to permit the arm 37 to pass readily over it when moving in the right direction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A photographic camera comprising a circular casing closed at the top and bottom, a lens-holder extended from the periphery of the casing, a film-holder in the casing consisting of opposite plates secured together, spools mounted to rotate between the plates, a spindle extended through a wall of the casing and engaging with one of the spools, the said wall of the casing having a sight-opening, a recording-wheel in the casing and having numerals adapted to be seen through said opening, and means carried by the spindle for imparting rotary motion to said wheel.

2. A photographic camera comprising a casing, a lens arranged in the periphery thereof, a shutter movable across said lens, a film-strip holder comprising opposite plates having inwardly-extended tubular lugs, said plates being connected at opposite edges, spools mounted to rotate on said lugs, one of said spools having an interior cross-pin, a spindle passing into the casing and having a slotted end to receive said pin, a recording device operated by the spindle, and a turning-finger on the outer end of said spindle.

3. A photographic camera comprising a casing, a lens and a shutter therefor, a film-holder comprising opposite plates secured together at their opposite edges, lugs extended inward from said opposite plates, spools mounted to rotate on said lugs, a cross-pin arranged in one of the spools, a spindle extended through a wall of the casing and having a slotted end for receiving said pin, the said wall of the casing being provided with a sight-opening, a recording-wheel arranged in the casing and having numerals adapted to be seen through said sight-opening, peripheral teeth on said wheel, and a finger on said spindle for engaging with said teeth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAGNUS NIELL

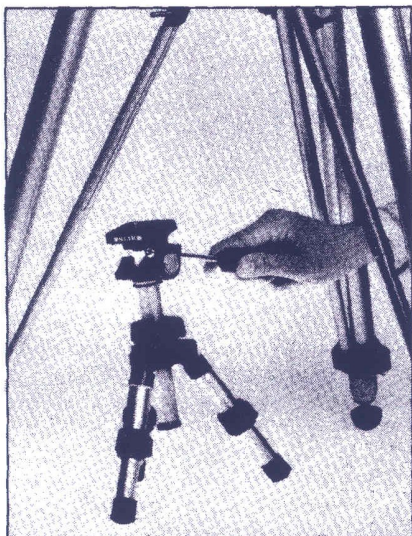
Witnesses:

JNO. M. RITTER,
C. R. FERGUSON.

WHAT'S WHAT WHAT'S WHAT

Towering, Teetering Tiny Tripod Triumphs

It looks like the big wigs in the photo industry are serious about all this miniaturization that's been going on for the past few years. First it was the camera, then lenses and, now, the latest item to get the shrink treatment is that supporting member of our picture-taking cast that has dented many a shoulder and pinched many a finger—the steady, sturdy, stodgy tripod. Typical of this smaller stand being taken by many Japanese tripod makers is the Slik 300G, a snappy chrome and black job that stands a mere 8 in. high when “at rest” and tips the beam at a shoulder-bending 11½ oz.



Dwarfed by a big and brazen Bogen, the Slik 300G shows off its little-brotherly extending legs and column.

This smoothly finished, slick-operating three-legger has the look of a shrunk version of a “big” tripod—and that's exactly what it is. Though intended primarily for table-top use, it's got most of the accoutrements and makes most of the moves of its full-sized cousins. Like suppose you want to extend the legs. Just twist the lock to release and let the inner section drop another 1½ in. You can, of course, also lock the extension at any point between maximum and minimum length. Sorry folks, there are only two sections but what do you expect for \$19.95. If you want more height, raise the center post—that gives you 3½ more in. for a possible total of just over 12 in.

62

Most of our staff, particularly the cat lovers, couldn't keep their hands off this cute little rascal. But, diminutive delights aside, we wouldn't recommend it for use with anything bigger than a 35mm SLR *without* winder or motor drive attached. The ridged rubber-like platform will hold an unencumbered camera firmly enough and can be panned or tilted via the regular, conventional locking control arm. The head, alas, cannot be flipped over, so if you crave a vertical shot you have to reorient your camera 90° and then tilt the head forward.

One question remains unanswered, however. Were we to add water to the 300G, or fry it in deep fat, would it then balloon up to the more familiar proportions of more conventional tripods?

A New Twist To The Old Wrist Watch Camera

What does an accountant do for fun in his spare time? He tinkers. No, not with figures, but with a miniature lathe. Bernard A. Seckendorf, CPA, of New York City, has created a new version of an old camera. It is so innovative that he has received a patent.

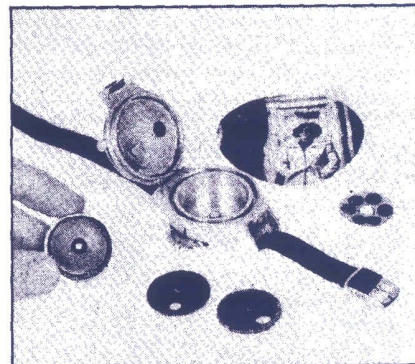
He stopped by our offices recently wearing what looks very much like a wrist watch. It won't tell you if you're late for lunch, but it will take six pictures that can be developed without a darkroom.

Here's what makes it click. A disc of black-and-white or color film is con-

tained in a light-tight cartridge. You pop the cartridge into the camera, spin a small gear to position the film, aim through a viewfinder and slide a small button to make the exposure.

“How could he get a patent on a wrist camera?” inquired our ever-vigilant camera collector Jason Schneider. Delving into his treasure-trove of trivia, Schneider reminded us that the Expo was a pocket watch camera using roll film patented in 1904. In the 50's, he continued authoritatively, a deluxe adjustable wrist camera called the Steineck ABC was available for \$150.

So what did Seckendorf have to say for himself? He calmly pulled out a prototype of the shutter mechanism and operated it. Consisting of only two moving parts, it appeared quite rugged.



The works that work: Here's all the parts that make the wristwatch click. Disk at right shows six-shot negatives.

How does it work? As you slide the shutter button, two tiny permanent magnets are juxtaposed. The force generated by the repelling magnets causes the blade of the shutter to move over a fixed aperture behind a fixed glass lens, and the exposure is made.

The patent was based on this and on the film cartridge, which lets liquids enter and leave while remaining light-tight. The cartridge can be plunked into conventional chemistry in daylight, thereby doubling as a miniature processing tank.

In each cartridge, a 24mm-diameter film disc is used to make six circular exposures, each 7mm in diameter. We saw some 2½-in.-diameter enlargements, and their quality was comparable to 3 x 5 enlargements from 110 negatives.

The inventive accountant has applied for foreign patents, and is currently negotiating to have the camera mass-produced and to market the necessary film cartridges. The bottom line is that he plans to sell the thing for \$15 to \$20!



Inventor Seckendorf thought the time was ripe for a new version of an old idea.



FIG.1 TWO DIFFERENT MODELS OF THE EXPO CAMERA. THE EARLIER MODEL, RIGHT, HAS A LEVER ON THE BOTTOM FOR OPENING THE CAMERA CASE.

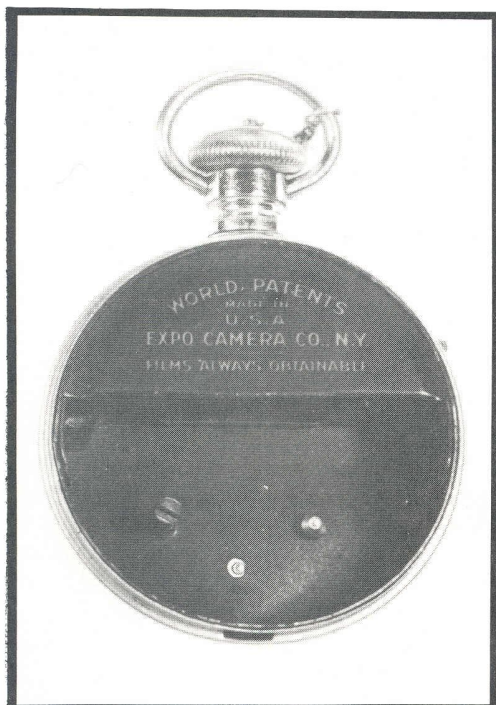


FIG.2
INTERIOR OF THE LATER MODEL OF THE EXPO. THE AREA WHERE THE FILM CASSETTE IS HELD CAN BE SEEN.

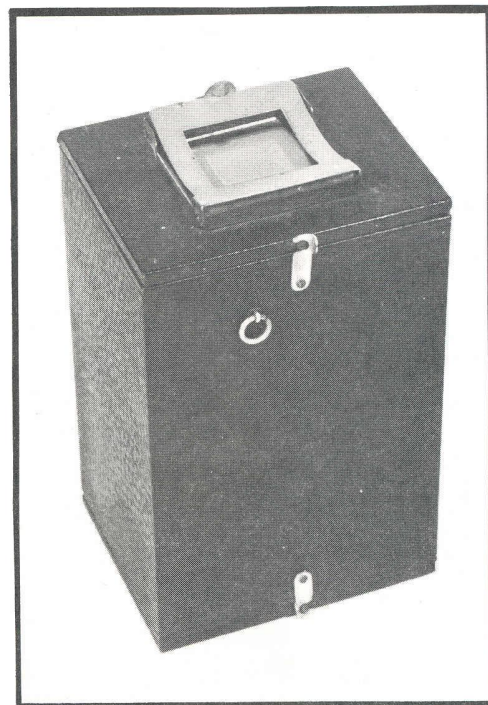
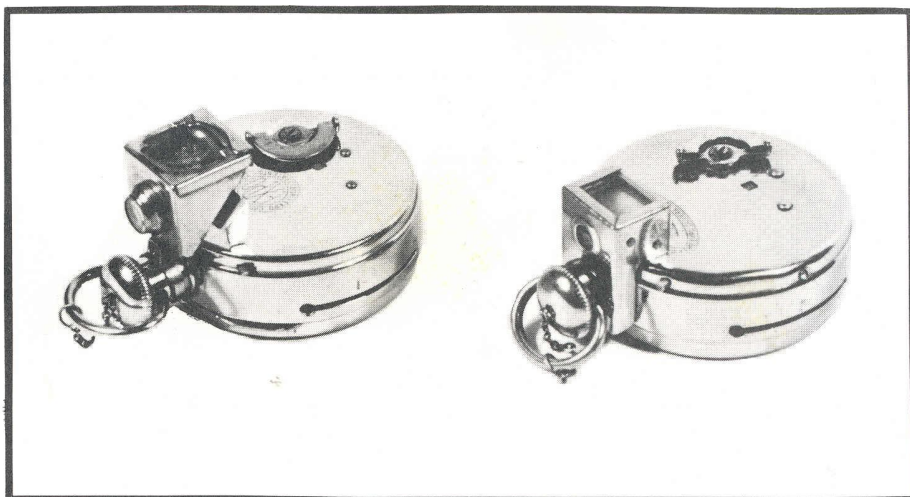


FIG.3
THE EXPO ENLARGER. EXPOSURES WERE MADE BY PULLING THE RING WHICH MOVED A PIN AND ADMITTED LIGHT TO THE PRINTING PAPER.

FIG.4 AT LEAST THREE DIFFERENT VIEW FINDERS WERE PRODUCED FOR THE EXPO. TWO OF THE MODELS ARE SHOWN HERE. THE EARLIER MODEL IS THE ONE ON THE RIGHT.

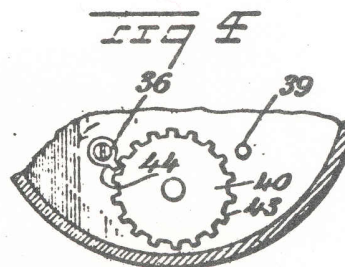
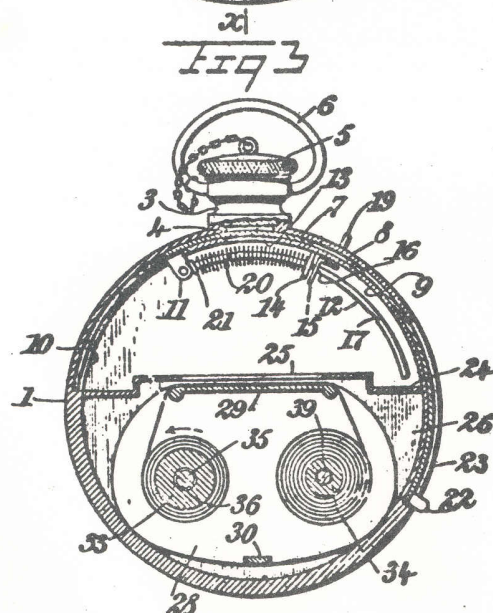
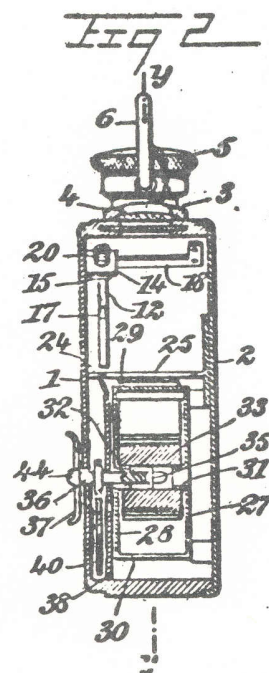
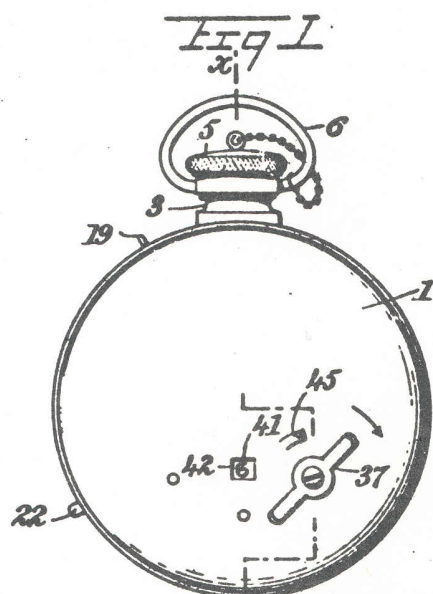


No. 769,310

PATENTED SEPT 6, 1904.

M. NIÉLL.
 PHOTOGRAPHIC CAMERA.
 APPLICATION FILED OCT. 14, 1903.

NO MODEL



WITNESSES:

H. Walker
C. R. Ferguson

INVENTOR

Magnus Niell

BY

Mumford
 ATTORNEYS

Instructions for Using the ENSIGN MIDGET CAMERA

Size of picture 4x3 cm.

Spool E 10.

The compactness of the ENSIGN MIDGET is rendered possible by the careful design of its working adjustments, and it is worth while for the user to study them in order to obtain the fullest value in results from such a unique camera.

Hold the camera by the two ends in the thumb and fingers of one hand, grasp the centre portion with the other and pull out. (Fig. 1). The front locks in the ends of the four struts.

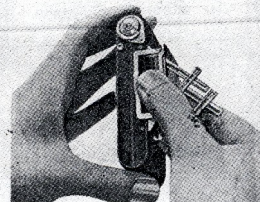


Fig. 1.

The BRILLIANT VIEW FINDER is in position ready for an upright picture; (view between the corners thus) —



Fig. 2.

If a horizontal picture is required it can be swung out on its bracket (Fig. 2) and the view will then be between the corners thus:



The DIRECT-VISION VIEW FINDER is a frame folded down on to the lens front, and a back sight on the camera back. Lift up the top half of the folded frame and continue to lift until the second section rises (Fig. 3) and both click into the upright position. Swing up the back-sight against its stop.

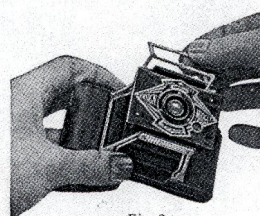


Fig. 3.

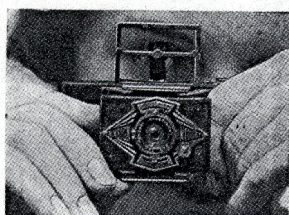


Fig. 4.

Viewing the subject through the back-sight (Fig. 4) gives an eye-level perspective, and the amount included in the front frame will be taken on the film. The No. 1 CAMERA is furnished with an Optical System of novel construction (Patent No. 271186). The two stops are marked "small" for use with brilliant light or sunshine, and "large" for use when conditions are dull or cloudy.

The Camera produces sharp pictures at all distances from 3 feet to Infinity without any adjustment of the lens position. The No. 2 CAMERA is fitted with the "Ensign" Anastigmat Lens F/6.3, and stops for Iris diaphragm values of F/8, F/11, F/16 and F/22 are provided. This model is furnished with a focussing adjustment, the front cell of the lens being turned until the pin projecting from it faces either of the five positions marked in red; Inf., 12, 8, 5 and 3 feet. (Fig. 5).



Fig. 5.



Fig. 6.

Objects between these distances may be provided for by intermediate positions of the pin, thus half-way between 12 and 8 will be correct for 9 to 10 feet, etc. Both Cameras have the same shutter with settings for three Instantaneous speeds, 1/25th, 1/50th and 1/100th second (approximately), also Bulb and Time. The trigger is just behind the lens front on the right side (opposite the view-finder) where it is well protected from accidental operation. Here is situated also the leg for standing the camera erect when taking an upright picture (Fig. 6). Before closing the Camera the Brilliant View-finder must be returned to its original vertical position.

WHEN CLOSING THE CAMERA care is necessary in order to avoid pressing the bellows folds in; hold the four struts with the thumbs and second fingers of each hand, thus leaving the fore-fingers free to press on the front, whilst a slight outward

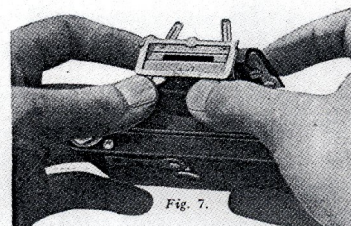


Fig. 7.



Fig. 8.

pressure is given to the struts (Fig. 7) until the front is free.

TO OPEN THE BACK, slide the top catch, as indicated by arrow, and lift off back by grasping it just below the winder, where a small stud furnishes a grip. The back unhooks at the lower end (Fig. 8).

WHEN REPLACING THE BACK it is important that the two hook projections on the back fit into two corresponding recesses in the body. It is easier to do this if the camera is held with the bottom end uppermost (Fig. 9). For convenience in loading the films both carriers are made to swing out from the spool chambers, but they are permanently attached and cannot be lost. The upper one must, before attempting to swing out, be freed by withdrawing the winder; the lower one is free to swing.

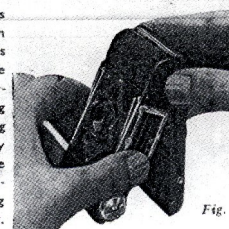


Fig. 9.

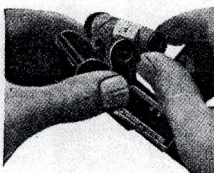


Fig. 10.

TO LOAD, swing out lower spool carrier, slide the moving end outwards, and insert new spool (Fig. 10); break the seal, press carrier back into chamber, and lead paper over the rollers to the receiving spool in the top chamber. Give the winder one or two turns to draw paper tight, then replace back.

Note—Unless the winder is fully engaged (Fig. 11) the back cannot be put on.

Continue winding the film until the figure 1 appears in the red window at the back of the camera. The film is now in position for the first exposure.

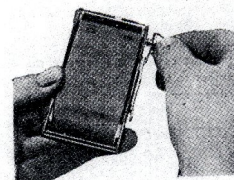


Fig. 11.

After completing the sixth exposure, wind film completely off, then remove the back and seal film with the "EXPOSED" label before removing it from the carrier, otherwise it may slacken and become fogged. Withdraw winder, swing out carrier and remove the spool, transfer empty bobbin from bottom chamber to top (it may be placed in chamber either way round) and the camera is ready for re-loading.

CAUTION. Do not wind spool with the Camera closed: there is a risk of scratching the film on the back of the bellows.

ENSIGN, LIMITED

LONDON, W.C.1

Printed in England.

ENSIGN
LUKOS
THE FULL-SPEED FILM
FOR CLEARER PICTURES

*"No!-it's not a Watch
it's EXPO"*

ALL ORDERS SHOULD BE ADDRESSED TO
JOHNSON SMITH & CO.
Distributors, 54 WEST LAKE ST., CHICAGO



CYCLOPE

DIXIÈME ANNÉE

ISSN 1145-9387

L'AMATEUR D'APPAREILS PHOTOGRAPHIQUES



KINÉTOGRAPHE de BETS, Minox "FI", Phototimbrophiles, LEMASSON, ENSIGN-MIDGET, Club Cyclope, Calendrier, Etc.

If It Isn't a Watch What is EXPO?

EXPO is the new model of that wonderfully efficient little camera, the Watch Camera.

This little camera looks so much like a watch that passersby will never suspect you



Front view. Two-thirds actual size

are taking pictures, but rather that you are observing the time on your watch.

To the camera world EXPO Watch Camera needs no introduction, as it has been on the market of this country and Europe long enough to prove its value to thousands of users.

IMPORTANT!!

All that is said in this booklet of the 10 exposure Watch Camera—now not made—can be said with added force of the latest model Watch Camera—the 20 exposure.

PRICE CHANGES

Practically all prices in the body of this booklet are to be disregarded, the new prices being as follows:

Watch Camera—new model	3.50
Film for same	\$5.00
Brilliant Finder for same	.25 30
Enlarger for same (2x3 pictures)	.85
Leather carrying case for same	3.00
Developing Tank for same	.50
	3.50

Police Camera

Police Camera with carrying case	8.00
Police Camera without carrying case	\$7.00
Film for same, 12 exposures	4.00 7.00
Enlarger for same, post card size	.25 30
	4.00

Developing and Printing

Developing	\$ 10
Printing, per doz.	.20
Enlargements, 2x3	.12
Enlargements, 3x4	.15

EXPO CAMERA CO.

Now at 241-43 W. 23rd Street

New York, U. S. A.

Every tick a photograph

By Adrian Richmond

It had always been the dream of Swedish engineer Magnus Niell, to design a practical camera smaller than any previous design. Niell is famous for producing several highly successful designs for miniature cameras such as the Ensignette and later the Midget. His first success however came when he patented a design for a pocket watch camera later to become known as the Ticka.

AROUND the turn of the 20th Century disguised cameras were very popular. Pocket watch cameras had already been around for some years. The Photoret had been launched by the Magic Introduction Company of New York around 1894, and James Lancaster & Sons of Birmingham had introduced a folding Watch camera in 1886. This camera had a complicated construction and cost £1 11s 6d. The Ticka was intended to cater for this market, but Niell intended to use mass production techniques to make it a more affordable product.

Niell was not only a clever designer - he was also a shrewd businessman. He first patented his design in October of 1903 in the US, licensing the manufacture of the camera to the Expo Camera Co. of New York.

They took manufacturing rights for America and sold the camera under the name "Expo". In October of 1904 Niell applied for a British patent, and when that was granted he approached Houghtons Ltd. They took it up and began selling the camera in 1906 as the "Ticka". It was also around this time that Ueda Shashinki Ten (Ueda Photographic Shop) in Japan began selling a version of the camera, which they called the "Moment".

Houghtons began mass-production of the Ticka, all of the metal parts being made in house at their factory in Walthamstow. The precision parts necessary for the Ticka were so small that the company soon found because they were quicker and more efficient, it was best to employ teenage girls for the hand assembly of the camera. Houghtons employed some 700 staff at their Walthamstow factory at this time.

The Ticka was an immediate success not only because it was a very good replica of a gentleman's pocket watch but also because it produced good quality photographs, no mean feat when you consider its size and the tiny negatives it produced. The camera used a daylight loading film cartridge made of cardboard. The film was just 17.5mm wide and allowed the user to take 25 pictures. The negatives according to Houghtons' catalogue for 1914 were, 'The size of an ordinary penny postage stamp.' In today's terms this is a negative of 16mm x 22mm.

Houghtons offered a complete service for developing and printing Ticka films. Developing a roll of 25 exposures cost 6d. Contact prints were 9d a set, and a dozen 3 1/4 x 2 1/4-inch enlargements cost 3 shillings.

The Camera

The Ticka was very attractively designed. One side of the camera body is engraved with the name "Ticka" in the form of a decorative monogram, and is

Far left: This advert from the BJA 1895, shows Lancaster & Son's Watch Pocket camera. You can see how expensive it was compared to the later mass-produced Ticka.

420 THE BRITISH JOURNAL ALMANAC ADVERTISEMENTS.

J. LANCASTER & SON, Opticians.

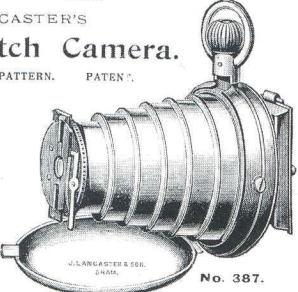
LANCASTER'S
1894 Watch Camera.

IMPROVED PATERN. PATEN.

POCKET SIZE.

TAKING
2 x 1 1/2-in. PLATES.

FOLDING INTO
SIZE OF GOLD
LEVER.



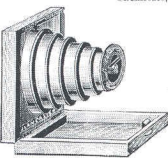
No. 387.

LANCASTER'S Patent Watch Camera is a new departure in Cameras. The Camera when closed is exactly like an ordinary watch. The Camera is opened in an instant by rotating button, when a series of about half-a-dozen tubes instantly shoot out into position, and by means of another spring, an instantaneous exposure is made. The Lens is a very rapid one, and can be adjusted for taking portraits, groups, or views, &c. Extra Plate Holders may be had to carry Sensitised Plates.

PRICES:

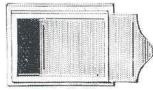
WATCH CAMERA, easily carried in waistcoat pocket, taking Photos 2 x 1 1/2 in. with Three Slides, £1 11 6

Extra Slides, 1/6 each. Instantaneous Plates, 6d. doz. Set of Plates, Dishes, Chemicals, &c., 3/6. Printing Set, 3/6



No. 388.

Hand Detective Camera, with 3 Slides, 2 x 1 1/2, folding up to carry in waistcoat pocket. £1 11 6



Extra Slides, 1/6 each.

The above Cameras take really good pictures, and pack into the smallest possible compass. The Watch Camera is 2 1/2 in. diameter, and only 3-in. in depth.

COLMORE ROW, BIRMINGHAM.

Right: Watch-Face Ticka. This model had an enamel face and bevelled watch glass.

(Photo - Christie's South Kensington.)

Far right: This advert shows both the Watch-Face Ticka and the focal Plane version. Note the difference in price between the two.



294

New "Ticka" Cameras. THE WATCH-FACE "TICKA."

The illustration of this new model speaks for itself. It is an ordinary "Ticka" with an enamelled watch dial on the back instead of the monogram. This dial is covered with a bevel-edge watch-glass and the hands point permanently at seven minutes past ten. This is done so that a finder may be dispensed with by users of the Watch-Face "Ticka". The two hands indicate the limits of the view included by the lens and render an ordinary finder unnecessary.

In every other respect this new model is like the ordinary "Ticka."

Price of the Watch-Face "Ticka," 10/6.

THE FOCAL PLANE "TICKA." A Watch Pocket Camera with a "Cooke" Anastigmat.

Here is a picture of the "Ticka," fitted with a Focal Plane Shutter and a "Cooke" Anastigmat Lens working at F/6.5. The large aperture of the lens makes the camera usable in almost any weather, and there is no need for the bright sunshine wanted for full snapshot exposures with the ordinary "Ticka."

The Focal Plane "Ticka" possesses a shutter with five different speeds. It has an adjustment for Time or Instantaneous pictures, an indicator registering 25 exposures, winding key and a "Cooke" F/6.5 Anastigmat lens in a focussing mount, by means of which the lens can be focussed for any distance from one yard to infinity.

The Focal Plane Shutter is set by turning the fan-shaped plate on the top of the camera until it engages the catch on the release bar. Different catches are provided for Time and Instantaneous exposures.

The five different speeds at which the Shutter works are
No. 1 approximately 1/70 second. No. 3 approximately 1/150 second
No. 2 approximately 1/100 second. No. 4 approximately 1/200 second
No. 5 approximately 1/400 second.

and are controlled by the circular cogged-edge plate, on which is engraved the numbers 1 to 5 to correspond with these speeds. The camera is loaded and the films are changed in exactly the same way as the other models of the "Ticka."

This camera will interest those who require a "Ticka" with a first-class lens.
Price of the Focal Plane "Ticka" 50/-.



HOUGHTONS LTD. 88 HIGH HOLBORN, W.C.

angle of acceptance for the lens. To the passer-by it would appear that the photographer was just checking the time of day, whereas he was in fact framing the next shot. Houghtons' own advertising described it thus:

'It is an ordinary Ticka with an enamelled watch dial on the back instead of the monogram. This dial is covered with a bevel-edge watch-glass and the hands point permanently at seven minutes past ten. This is done so that a finder may be dispensed with by users of the Watch-Face "Ticka". The two hands indicate the limits of the view included by the lens and render an ordinary finder unnecessary.'

Another introduction for 1908 was the Focal Plane Ticka. This model is easily distinguished from other Ticka cameras because the workings of the shutter are visible on the outside of the camera. It had a focussing Cooke f/6.5 Anastigmat lens, which Houghtons claimed could focus down to 1 yard. The shutter offered five speeds, 1/75, 1/100 1/150 1/200

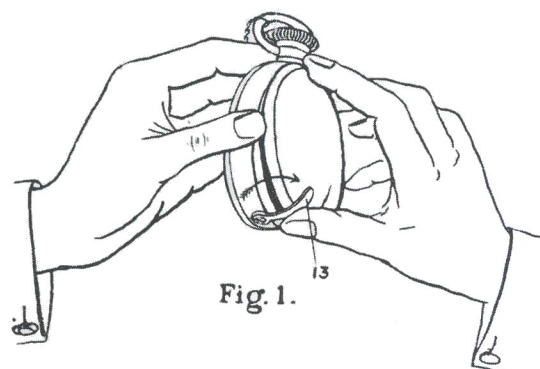
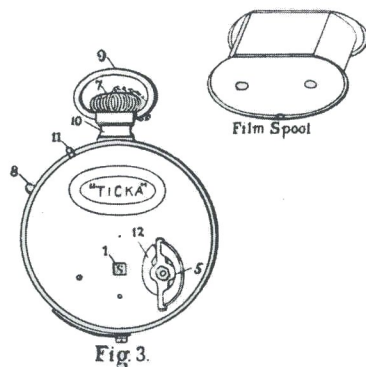
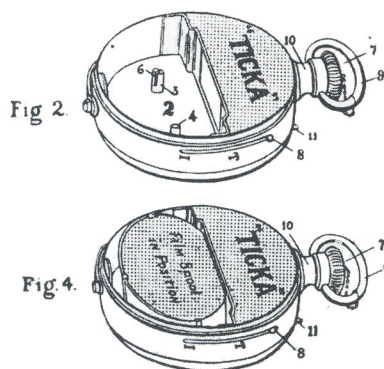
and 1/400 of a second plus a setting for Time exposures. It cost fifty shillings, making it the most expensive in the range. Perhaps because of this very few seem to have been made and the camera appears to have been dropped by Houghtons after only a short time in production. Naturally this makes it one of the rarest Ticka cameras today and highly sought after by collectors.

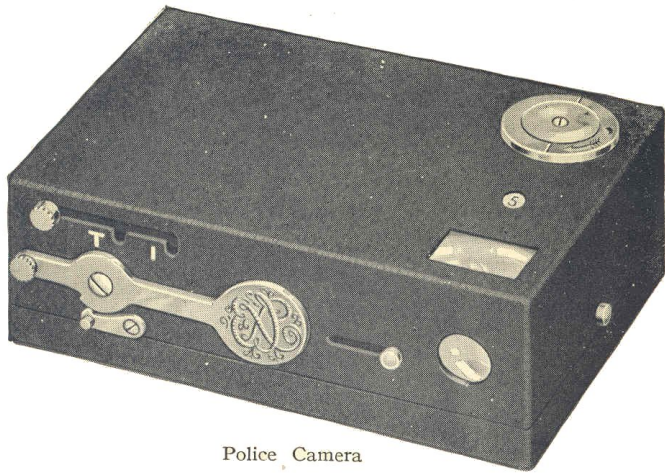
It is not clear if Niell himself was involved in the development of the new types of camera but I think it probable that Houghtons' own people came up with these later adaptations of Niell's original design.

Other versions of the Ticka continued in production for a few more years but the outbreak of the Great War in 1914 saw even these models finally disappear from the Houghtons catalogue. This was due, in all probability, to the increasing pressure on British industry to concentrate on the production of items needed for the war effort. By 1915 Houghtons were having difficulty supplying photographic apparatus as

Below left: This diagram from the instruction booklet shows how the film spool fits inside the camera.

Below right: Figure 1 here from the Ticka's instructions shows how to open the camera using the lever at the bottom.





Police Camera

be taken from the pocket-and-operated instantly without attracting the slightest attention.

The Police Camera has a good achromatic lens, a focal plane or curtain shutter and a twin-spool film holder that makes loading a delight.

Police Camera negatives are remarkably sharp and it is difficult to tell its post-card size enlargement from a contact print.

Best negatives may be enlarged to 5 x 7 and even larger.

Actual Size

Motion pictures



Expo pictures



be combined with a watch, the lens being mounted in the face of the watch. Other modifications and variations will be obvious to those skilled in the art and it is intended that such modifications and variations be included within the scope of the invention as defined by the appended claims.

What is claimed is:

1. A wrist camera comprising a casing of diameter substantially no greater than the diameter of the wearer's wrist and having a cylindrical interior defined by a cylindrical side wall and circular end walls, a wrist band for snugly securing the casing to the wrist, a cylindrical chamber formed in the casing, a cylindrical photographic film cassette received in the chamber coaxially with the chamber, a disc of photographic film coaxially received in the cassette and having an aperture at the center thereof, means for rotating the cassette about its axis from outside the casing, a lens mounted in an end wall of the casing, a shutter for admitting the passage of light from the lens to the film disc when open and blocking the passage of light from the lens to the film disc when closed, the axis of the lens being substantially parallel to and spaced from the axis of rotation of the film cassette and intersecting the film disc, whereby successive sectors of the film disc can be exposed by alternately actuating the shutter to expose a sector of the film disc and rotating the cassette to bring another sector of the film disc into intersecting relationship with the axis of the lens, the film cassette comprising a cylindrical container having a circular bottom, means fixed to the container and adapted to be engaged by said rotating means for rotating the container, a first circular cover for the cassette, the first cover being in insufficient frictional engagement with the container that it rotates with the container, a second circular cover overlying the first cover, respective apertures formed through the first and second covers, means mounting the second cover for rotation relative to and coaxially with the first cover, the axis of each of the apertures being spaced from the axis of rotation of the film cassette the same distance as the spacing of the lens axis from said axis of rotation, means for maintaining the covers in axially spaced relation from each other whereby there is not such frictional engagement between the two covers as to cause the second cover to rotate with the first cover, means for holding the film disc in spaced relation from the first cover and from the bottom of the cassette, whereby the film is developable in the cassette with the apertures in the covers out of registry and without the benefit of darkroom facilities, the film disc in the cassette then being inaccessible to light but fully accessible to developing liquid.

2. A wrist camera according to claim 1, in which said means fixed to the cassette comprises a first gear fixed to the underside of the container bottom, a slot is formed through the side wall of the casing and the means for rotating the cassette comprises a second gear rotatably mounted in the slot with part of the second gear extending into the casing and meshing with the first gear and part of the second gear projecting from the casing, whereby the second gear can be manually rotated from outside the casing thereby to rotate the container.

3. A wrist camera according to claim 2, further comprising means for holding the apertures of the covers in mutual alignment when the container is rotated in one direction and for holding the apertures of the covers out of alignment with each other when the container is rotated in the opposite direction.

4. A wrist camera according to claim 3, in which the means for holding the apertures of the covers in alignment with each other when the container is rotated in one direction and for holding the apertures of the covers out of alignment with each other when the covers are rotated in the opposite direction comprises on the face of each of the covers facing the other cover a pair of diametrically opposed protrusions.

5. A wrist camera according to claim 4, in which said shutter is housed in said casing adjacent to said wall in which said lens is mounted and the camera further comprises a disc shaped member rotationally fixedly mounted in the casing to form together with the casing wall in which the lens is mounted and the side walls of the casing a cylindrical compartment enclosing the shutter and separating the shutter from the cassette, an aperture in the disc shaped member having an axis coincident with the axis of the lens and means for holding the apertures of the covers in alignment also with the aperture of the disc when the container is rotated in said one direction.

6. A wrist camera according to claim 5, in which said means for holding the apertures of the covers in alignment with the aperture of the disc when the container is rotated in said one direction comprises on each of the face of the second cover and the face of the disc shaped member facing each other a respective protrusion.

7. A wrist camera according to claim 1, in which the shutter comprises a single member, at least a portion of the member being a permanent magnet.

8. A wrist camera according to claim 7, further comprising means pivotally mounting the shutter with one pole of the magnet adjacent the periphery of the casing and the other pole remote from the periphery of the casing.

9. A wrist camera according to claim 8, further comprising magnetic means for actuating the shutter.

10. A wrist camera according to claim 9, in which the magnetic means for actuating the shutter comprises a permanent magnet and means for holding the shutter actuating magnet in an orientation with one of its poles adjacent the periphery of the casing and the other of its poles remote from the periphery of the casing and for permitting the shutter actuating magnet to be displaced from a position remote from the shutter magnet to a position adjacent the shutter magnet, the pole of the shutter actuating magnet adjacent the periphery of the casing and the pole of the shutter magnet adjacent the periphery of the casing being like poles whereby the shutter is actuated by magnetic repulsion when the shutter actuating magnet is displaced toward the shutter magnet.

11. A wrist camera according to claim 10, in which the means for permitting the shutter actuating magnet to be displaced comprises means for guiding the shutter actuating magnet along an arcuate path concentric with the casing and limited to substantially less than a semi-circle, the shutter actuating magnet being in a rest position at either limit of its path and being radially oriented, the pivotal mounting of the shutter is concentric with the casing, the shutter magnet being radially oriented, the camera further comprises stop means limiting the pivoting of the shutter to an arcuate path of the shutter magnet of lesser sweep than the limits of the arcuate path of the shutter actuating magnet, the strengths of the magnetic fields of the magnets are selected and the stop means are positioned relative to the limits of the shutter actuating magnet arcuate path so that the shut-

Striking Features of EXPO

Besides its marked efficiency and its novel watch shape, EXPO has many other striking features, among which are its shooting (making exposures) out of watch stem, its unique daylight-loading arrangement and its simplicity of construction and operation.

Not only does its watch resemblance enable one to take a picture without anyone else being the wiser, but EXPO is so small that it can be held in the closed hand with only the stem projecting and the picture be taken.



Film cartridge and EXPO ready to receive it

When reckoned with the small cost of EXPO film, our low cost of enlargement makes photographic costs with the EXPO very reasonable.

We make an Enlarging Box with which enlargements, 2 x 3 size only, may be made direct from EXPO negatives.

These Enlargers must be loaded and unloaded in a regular dark room, and are for daylight exposure only.

Price.....\$2.00

We also make a special daylight developing tank for Watch Camera film.

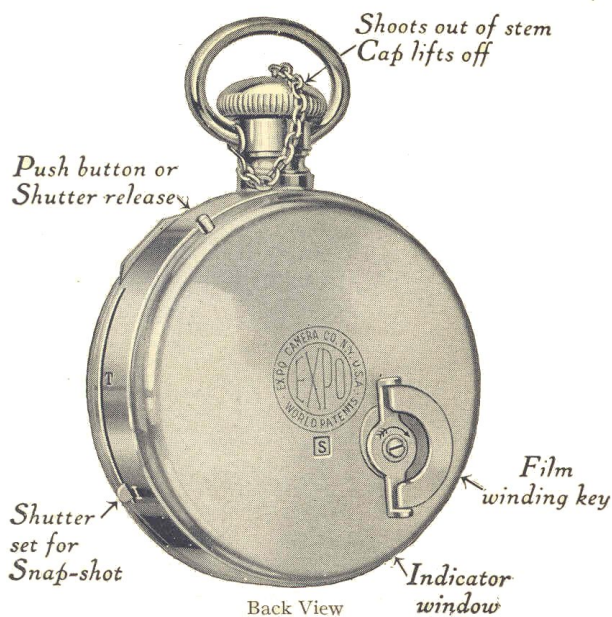
Made of metal throughout and highly finished.

Price.....\$2.00

The EXPO Police Camera

EXPO Police Camera, a small no-bellows pocket camera, 2 x 3 x 1 inch thick, is also made by the manufacturers of the Watch Camera and it has the advantage over the smallest of the bellows cameras in being as small when taking the picture as when carried in the pocket.

The smallest of the folding or bellows cameras has to be drawn out or extended in taking a picture—with the attention this must attract—while the Police Camera can



The purpose of this booklet is to treat of the new model, 10 exposure EXPO, which has many improvements over the old model.

Guaranteed Practical

EXPO is a beautifully made and guaranteed practical camera with which remarkably sharp negatives (films) may be made that are only a little smaller than the films of regular motion pictures.

See illustration on opposite page showing the size of motion pictures before being enlarged or thrown on the screen, and the size of Watch Camera pictures before enlargement.

Details of Police Camera

Camera, roll-film, in one size only, 2 x 3 x 1 inch thick.

Size of picture, 1 x 1 5/8.

Shutter, focal plane (curtain).

View finder, brilliant; built into camera.

Film Holder, twin spool, 12 exposures.

Instruction Book.

Prices

Camera, complete.....\$5.00

Films, 12 exposures, each..... .25

Police Camera Post Card Enlarger.. 3.00

ALL ORDERS SHOULD BE ADDRESSED TO
JOHNSON SMITH & CO.
 Distributors, 54 WEST LAKE ST., CHICAGO

the demand from various government departments increased. Recruitment for the war also hampered production as it depleted staff levels.

In America the Expo Camera Company continued production of Niell's design until the mid 1930's. Particularly interesting to collectors are the coloured versions of the Expo, which they made in Red, Blue and Black, with an unusual crackle paint finish.

Company chronology covering this period

1904: Houghtons Ltd.

1915: British Photographic Industries set up by Houghtons and W. Butcher & Sons Ltd. with joint manufacturing. Both companies traded under their original names until 1926.

1926: Houghton-Butcher (GB) Ltd.

1930: Ensign Ltd was floated, the manufacture of cameras continued at the old H.B.M. Co. Ltd. works in Walthamstow. Ensign cameras were sold from the old Houghtons premises in High Holborn, London.

Houghtons Ltd.

81

THE "TICKA" OUTFIT. (L.) PATENT.

Watch Camera.

This includes a "Ticka" and all the necessary apparatus described in the foregoing pages. It is packed in a neat Box and is specially recommended for export or for presentation.



The Outfit consists of:

"Ticka" Camera, complete with Lens, Shutter, Indicator, etc.

"B" Pattern Brilliant View Finder.

"Ticka" Printing Box for making enlarged pictures, $3\frac{1}{2} \times 2\frac{1}{4}$ from "Ticka" negatives.

"Ticka" Developing and Printing Outfit, with Dish, Measure, Frame, Ruby Lamp, Printing-out Paper and

"Ticka" Printing Box Outfit, for making and finishing enlarged prints, $3\frac{1}{2} \times 2\frac{1}{4}$, includes Dish, Bromide Paper, Chemicals and Mounts and Book of Instructions.

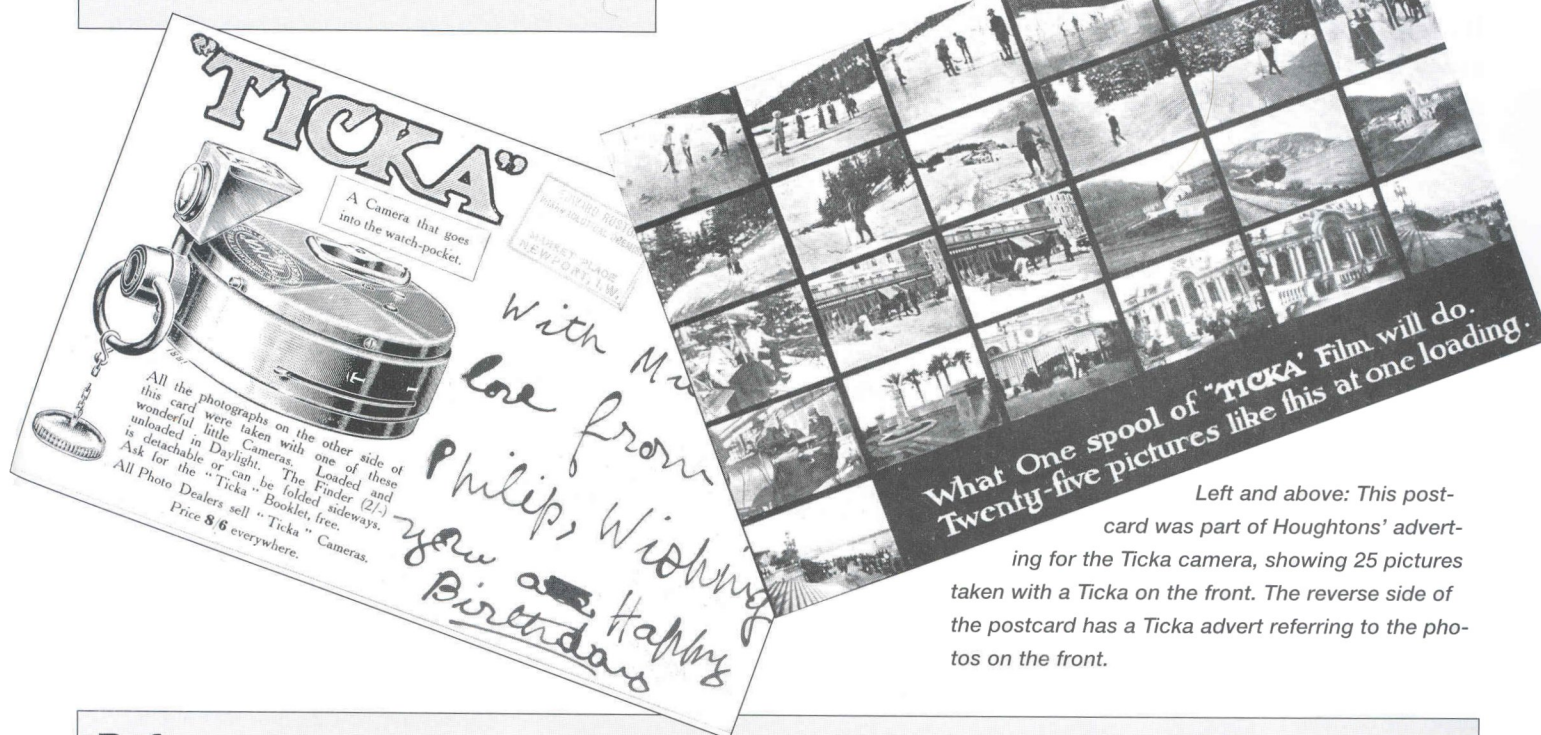
Complete "Ticka" Outfit with Spool of 25 Exposures .. **21/-**

THE SILVER "TICKA." (L.)

The "Ticka" is also made in Silver and sold complete with a finder in a leather-covered case as illustrated. Beautifully finished and hall-marked. The Silver "Ticka" is especially suitable for presentation.

Silver "Ticka" in case with "B" Model Finder,

42/-



Left and above: This postcard was part of Houghtons' advertising for the Ticka camera, showing 25 pictures taken with a Ticka on the front. The reverse side of the postcard has a Ticka advert referring to the photos on the front.

References:

British Journal Photographic Almanac - various dates.

Houghtons Ltd catalogues - various dates.

Niell's original patent, No. 21295, 1904. British Patent Office, London.

Focus Magazine March 1908. Industrial supplement.

Select Bibliography (A few sources of further information)

Auer, Michel, 'The Illustrated History of the Camera' publisher New York Graphic Society, 1975. P. 99.

Coe Brian, 'Cameras' publisher Marshall Cavendish, 1978. P. 61.

Permutt, Cyril, 'Collecting Old Cameras' publisher Angus & Robertson, 1976. P.134-135.

Christie's South Kensington, Catalogue of 'Spy' Subminiature and Detective Cameras sale, Dec. 1991. P. 42-45. (A particularly good reference for those interested in subminiature cameras)

I would like to offer my thanks to Michael Pritchard of Christie's, South Kensington for his help with locating photographs of some of the rarer items illustrated in this article.

and what looks like the winding knob is in fact the lens cap, giving the camera a very realistic appearance. The cap is also a very important part of the design - as the shutter is not self-capping the lens must be covered before cocking the shutter ready for the next exposure.

The sequence for taking a picture with the Ticka was this:

1. Open the camera by removing the cover in subdued light.
2. Set the film counter to S.
3. Load the film cartridge
4. Replace the cover ensuring a snug fit.
5. Wind the film on about 8 turns until the number 1 appears in the counter window.
6. Making sure the cap is on the lens cock the shutter by sliding the lever halfway for 'Time' fully for 'Instantaneous' exposures.
7. Remove the cap.
8. Press the shutter release making sure to hold the camera steady.
9. Finally replace the cap and repeat the process.

The entire camera was given a high quality nickel-plating to give it the appearance of a gentleman's pocket watch and at 8/6d it was quite reasonably priced compared to its contemporaries. This combination of elegance and functionality meant it sold extremely well.

The success of the camera prompted Houghtons to add further models to the Ticka range. They soon introduced a hallmarked silver model, sold with a viewfinder in a morocco leather covered case. The 1907 Houghtons Ltd. catalogue described it thus, 'Beautifully finished and hallmarked. The Silver "Ticka" is especially suitable for presentation.' and at 31/6d this was definitely a camera for a special occasion.

Houghtons began to capitalise on the camera's popularity and in an advert in the British Journal of Photography Almanac for 1908 they boasted, 'Her Majesty the Queen uses a "Ticka" camera and has

What to look for when buying a Ticka

As these are pretty cameras they tend to have been looked after by their owners. A bright finish to the nickel plating is essential for a good display model so look out for any dings or dents where the camera has been dropped and avoid badly scratched or tarnished cameras. Condition is paramount with cameras like the Ticka, as its appeal owes much to its cosmetic appearance.

If you can find one in its original box this can add to its value. It should have the instructions, viewfinder, cap and its chamois leather pouch to be complete. Boxed sets complete with film are very desirable as they make a superb display. Although the camera was produced and sold in very large numbers, Ticka accessories such as the tripod are very hard to find. Finally, check that any so-called Silver models have a hallmark and the Watch Face Ticka should have an enamelled face with a bevelled watch glass.

The focal plane model is a real find. However more often than not these are in very poor condition and are incomplete which drops their value considerably.

If you are very lucky and find a special presentation model you can hit the jackpot. In 1991, Queen Alexandra's personally monogrammed Silver Ticka mentioned earlier was sold at Christie's of South Kensington in a special sale of 'Spy Cameras' for a hammer price of £17,500.

written to say she is pleased with the pictures she has taken with it.' The advert referred to Queen Alexandra.

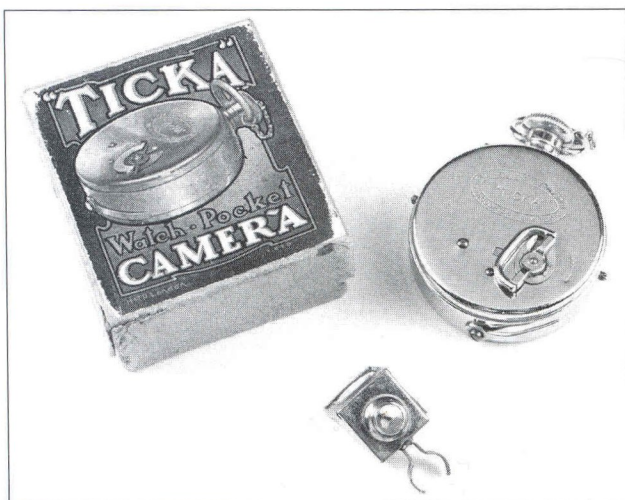
Houghtons produced a range of accessories for the Ticka. There were two types of clip-on viewfinder that slid over the neck of the winder stem. A special Ticka tripod, a Ticka printing box for making 3 1/4 x 2 1/4 enlargements, one for postcard enlargements and several boxed outfits.

In 1908 the range was supplemented by the introduction of a very attractive model with an enamelled watch dial. Dubbed the "Watch-Face Ticka", this model was only two shillings more expensive than the ordinary model, selling for 10s 6d. The hands on the dial point to about 7 minutes past 10 and indicate the

*Below left:
Camera, box and
rotating finder.*

*Below right:
Although very
similar to the
normal Ticka, the
hallmarks show
this to be a Silver
Ticka.*

(Photo - Christie's
South Kensington)



Right: This drawing shows all the key points we associate with the Ticka camera, including the new paper film spool designed by Niell for the Ticka.

Far right top: The Ticka monogram on the lid of the camera. Here you can also clearly see the lens cap attached to the camera by a small chain.

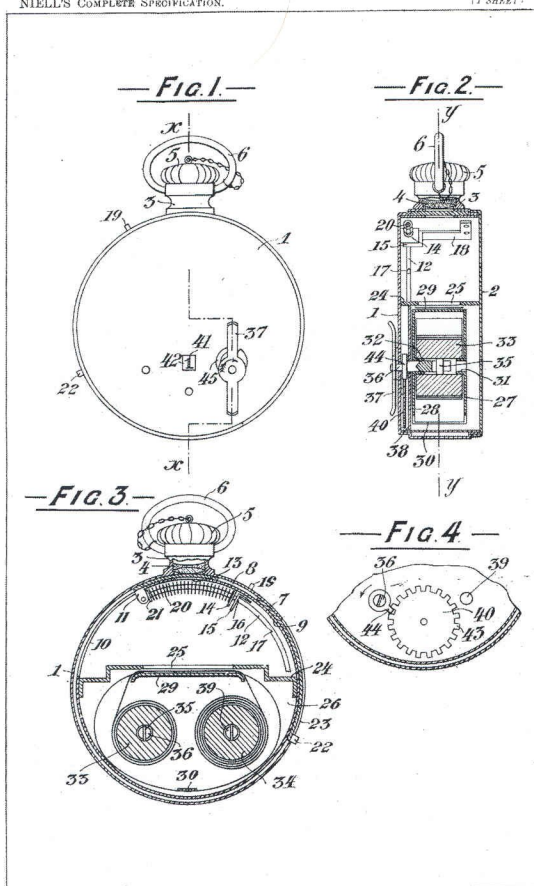
Far right centre: The reverse side of the camera, showing winder and film counter. It is also possible to see the lever that prises open the camera for loading.

Far right bottom: The film chamber of the Ticka

Below: When what looks like the winder of the watch is removed, it reveals the Ticka's tiny lens hidden in the winder stem.

A.D. 1904. OCT. 4. N° 21,293.
NIELL'S COMPLETE SPECIFICATION.

(1) SHEET

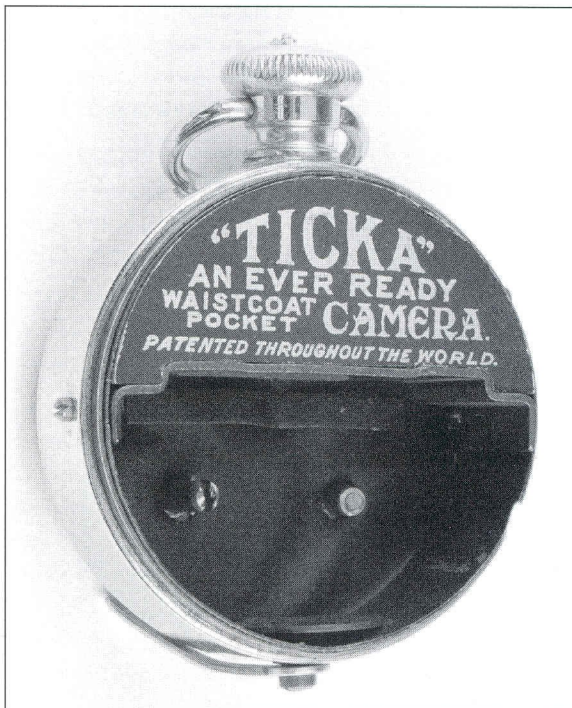


[This drawing is a reproduction of the Original on a reduced scale]

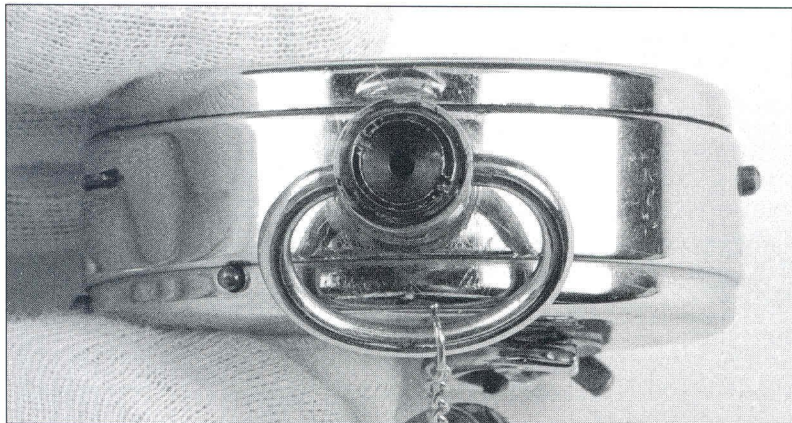
Mally & Sons Photo-Litho.

removed to allow the user access to the film chamber. However, like any tightly sealed tin, such as shoe polish, it would be very hard to open without some sort of opener. To enable the camera to be opened easily Niell provided a lever at the bottom of the camera connected to a cam inside. When the lever was turned the cam rotated inside the casing levering up this cover allowing the user to open and either remove or load the film cartridge. This was a rather basic method of sealing a camera and although the cover is a very tight fit and the inside is painted black, some cameras have been found to suffer from light leakage.

On the reverse side of the Ticka is the winding knob for advancing the film and a small film counter. The film counter only indicates every second exposure so is marked 1-3-5 etc. up to 25. Turning the film advance lever one half turn produces a click to tell you that you have advanced the film ready for the next exposure.



The design of the Ticka made it easy to use. It has a simple guillotine style shutter, which is cocked using a lever on the side of the camera. Pulling this lever half way set the shutter for timed exposures, and pulling it all the way sets it for instantaneous exposures. The shutter is fired by depressing a small button located next to this lever. The lens is housed in what looks like the winder stem of the pocket watch,



have two finders, sold separately, that may be attached.

A, a ground glass finder at 50c., postpaid, and

B, a brilliant reversible finder at 75c., postpaid.

Enlargements, Etc.

To demonstrate the practicability of EXPO we have the best enlarging equipment obtainable, and if a photo supply dealer is not convenient or is not equipped to do this work, send us a trial order for developing, printing or enlarging and we shall prove to your satisfaction EXPO possibilities.

We will develop EXPO films sent through the mail and pay return charges for

Per spool..... 10c.

Print the small pictures, $\frac{5}{8} \times \frac{7}{8}$,
per dozen prints..... 10c.

Make enlargements, 2 x 3 each..... 7c.

Enlargements, 3 x 4, each..... 10c.

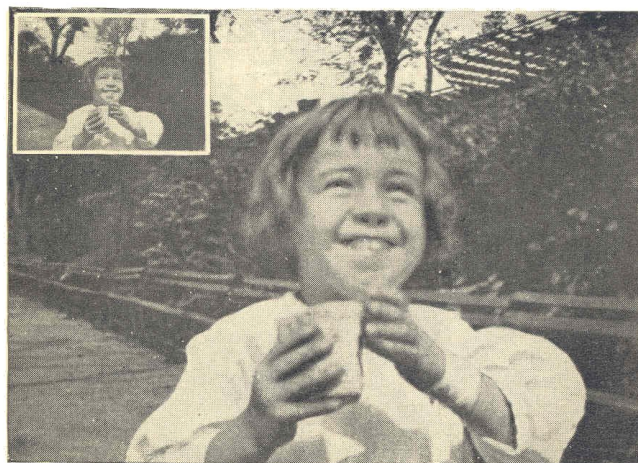
(Not less than three enlargements to an order.)

Only the best negatives should be sent for enlargement, as poor negatives from any camera cannot be enlarged successfully.

Cash should accompany all orders for developing, printing or enlarging.

The lens of EXPO is in the imitation watch stem, and after the shutter is set and the stem-cap is lifted off—operations a child can understand—the camera is ready for instant use.

As our testimonials from the big newspapers show, many reporters have availed



EXPO picture enlarged to 2 x 3

themselves of this unseen and rapid use of EXPO to secure news and picture "beats" when no other camera could be used.

Loads in Daylight—I. and T. Exposure

EXPO loads in daylight, its twin-spool film-holder slipping into the camera as easily as a cartridge into a pistol.

There is no leading over of paper strip on empty spool, as with EXPO this is done in the twin-spool film-holder when film is put up.

EXPO has instantaneous and time (I. and T.) exposure and in fact nearly everything a big and more expensive camera has, except those exclusive traits of the big camera—clumsiness and the unpleasant faculty of drawing a crowd every time a picture is taken.

Pictures Easily Enlarged

EXPO has a clean-cut meniscus lens and when exposures (pictures) are properly made, it is gratifying—as our illustrations show—to see the interesting enlarged pictures, 2 x 3 inches, and, with best negatives, 3 x 4, that may be made.

Read our offer under head of "Enlargements," on page 18.

If I Only Had a Camera!

Who, on a pleasure trip or even on a walk through city or village, and some interesting or amusing incident occurring, has not heard the expression, "If I only had a camera!"

Expo getting evidence in "The Society Scheme"



seats, but he made no objection to the Watch Camera, so the Examiner photographer with Lubben and Johnson and the basket of pigeons nestled close to the ropes.

Every interesting feature of the fight was caught by the Watch Camera and in the one-minute intervals between the rounds the photographer deftly made the transfer of films from Camera to carrier pigeons.

"It was a very remarkable flight," said Dr. Kempe, the owner of the carrier pigeons, "and I am very sorry that your special train made such good time, because of the success that attended the film-loaded bird's trip. At any rate it is about the biggest thing I've heard of a newspaper doing and I'm glad I was able to contribute to it."

A New York World item sent out from Chicago follows:



Police to Use, Not Billies, But Cameras

(Special to The World)

CHICAGO, Sept. 30.—The police at Evanston have taken the advice of John Burroughs and cameras, not billies or guns, will be their weapons.

Every policeman is to be furnished with one of these tiny machines, scarcely larger than an old-fashioned watch, and will be expected to produce documentary evidence of every crime with which he charges his victims.

The system has been tried with success in London and is being investigated by the Chicago police.

What the Newspapers Say

As is shown in the following, Expo helped the Toledo Blade beat all its rivals in securing pictures of the yacht races on Lake Erie, and they gave the little camera credit in their big front page write-up under the head of "Marvelous Stunt in Marine Photography." Extracts from the write-up follow:

The city editor also sent us a gratifying testimonial letter which we print.

The Blade is the Only English Evening Newspaper in Toledo Receiving the Associated Press News Dispatches

TOLEDO BLADE.

Marvelous Stunt in Marine Photography

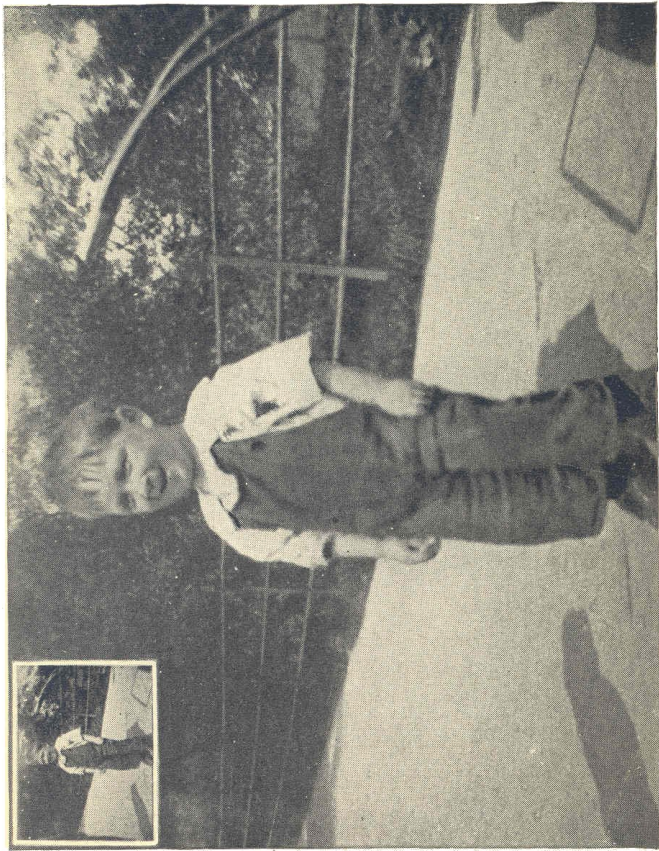
Yacht Race Pictures Taken Forty Miles Away
Reproduced by the BLADE
In Four Hours

Never until the stunt was accomplished to-day by the *Blade* photographer, a carrier pigeon, an artist, an engraver and a fleet-mounted messenger, have pictures of the Inter-lake yacht races at Put-In Bay been published on the day of the races.

Two photographs of the start of to-day's races were snapped from a launch off Rattlesnake Island this morning at 8:40 by the *Blade* photographer. Aboard the launch he developed the films and dried them in exactly eighteen minutes. The tiny films bearing the images to be enlarged by another photographer in Toledo, were attached to the leg of a swift and carefully trained carrier pigeon two minutes later. At exactly 9 o'clock the bird was released.

Willing hands were waiting here to receive the bird and take from his leg the capsule carrying the film. A messenger was hurried to the Franklin Printing and Engraving Co. where the prints were *enlarged from postage stamp size to that of a two-column cut in the newspaper.*

A chartered launch took Mr. Van Horn, the *Blade* photographer, to the scene of the start and *the photographs were taken with the small camera of*



An Expo boy, 3x4 enlargement

EXPO in an African Game Hunt

James L. Clark, the well-known New York big game hunter, lecturer and sculptor-taxidermist, at whose studios the animal mounting for the Smithsonian Institute and the Metropolitan Museum of Natural History is done, and who has been in Africa with Paul Rainey and others of the big game hunters, carried EXPO on one of his trips. He not only secured with it good negatives of wild animals, but at a lecture before the Explorers Club of New York, by using lantern slides made from EXPO negatives, threw on the screen life-size pictures of a number of African wild animals.

Mr. Clark gave full credit to EXPO in his lecture, and said that without its use he could not have obtained the pictures shown.

EXPO is a friend Mr. Clark now takes on all his trips.

A book of many pages might be filled with the testimonials of those who have had keen enjoyment from the use of EXPO, but the testimony offered in our limited space should be sufficient to convince the most skeptical of the merits of this little camera.

Approved
BLZ.821.031 TO-LU

CAMERA F 21 T
Technical and handling
manual
BLZ.821.031 TO

1975

EXPO in the Motion Pictures

Thousands of people who have seen the photo-play, "The Society Schemer," put out by the well-known photo-play producers, the Kalem Company, will, no doubt, recall how the Watch Camera, EXPO, is there featured in the role of getting important evidence.

Herewith is reproduced a scene from "The Society Schemer."

EXPO Popular Priced

In order to insure a great sale, the price of EXPO has been made a popular one, and the camera, in beautiful nickel finish and put up in a neat box with full instructions, is sold at \$2.50 postpaid in United States or Canada.

In heavy silver-plate finish, \$3.50.

The films, 10 Exposures, are sold separately for 15 cents each, postpaid.

The lens in EXPO is of wide angle and no trouble will be found in getting the range or view, after a little careful practice, but for those who wish to attach a finder, we



EXPO picture enlarged to 3x4

EXPO takes the *if* out of this expression, for it can be carried always, taking but a mite of space in pocket or hand-bag and weighing but three ounces.

2.DESIGNATION

F-2IT is a subminiature camera designed for operation in tropical climate conditions and temperate climate conditions.

3. TECHNICAL DATA

Lens	- OF-28T
Focal distance, mm	- 28
Maximum aperture ratio	- 1:2,8
Angle of field of view, in degrees	- 56

Resolution capability of a camera at maximum aperture ratio while taking shots from a distance of 5 meters on A-2 film:

In the center of a frame	- 47 lines per mm
At the edge of a frame	-20 lines per mm
Used film	-non perforated 21mm
Frame size in mm	- 18 x 24
Cassette is designed for	- 14-15 shots
Shutter	- leaf
Nominal shutter speeds, in seconds	- 1/10, 1/30, 1/100
	-A manual shutter speed
	“B” is also available
Lens aperture	- iris
Drive	- built-in spring motor
Time lapse to drive a film for 1 frame, in seconds	- 0,7
Release button movement	- not more than 2mm

A camera ensures 10 000 cycles at all range of shutter speeds without any failure.

Dimensions:

Length, in mm	- 77,2
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the size of a gentleman's watch. Pictures taken by this camera are about as large as a postage stamp, but distinct in outline.

EDITORIAL ROOMS
THE TOLEDO BLADE
TOLEDO, OHIO.

TOLEDO, OHIO.

May 25, 1909

The Expo Camera Company,

140 West 23rd St., New York.

Dear sirs:-

On behalf of the Toledo Blade, permit me to express our appreciation of the remarkable results we were able to accomplish with the Expo Camera in reporting the Inter-Lake Yacht races.

The Blade is an afternoon newspaper and we were able to print pictures made from actual photographs taken of the racing yachts on the same day. These races were sailed in the middle of lake Erie off Put-in-Bay island, forty miles from Toledo, so that I believe we were the first to accomplish such a feat, and of course we are glad to give credit to the little watch camera with which we could take such small pictures and enlarge them so effectively. These photographs were taken from a launch while the races were in progress, and the films were developed in the open air in eighteen minutes. Six films were then placed in a small capsule, fastened to the leg of a carrier pigeon, which was immediately released. When the pigeon arrived at the Blade office, the pictures were enlarged, printed, and half-tone cuts were made and laid down in the Blade composing room by one o'clock. The time from exposure to the finishing of the cuts in the Blade office was a little less than four hours.

Very truly yours,

Blacque Wilson.
City Editor

The following extracts from a front-page write-up in the San Francisco Examiner speak for themselves.

The Examiner in exploiting its own enterprise in sending Expo negatives 190 miles by carrier pigeon, of necessity had to give credit to Expo for the part it played in the exploit.

As in the case of the Toledo Blade, the manufacturers of Expo did not know that this feat was to be attempted, nor even that the Examiner's reporters were equipped with the Watch Camera.

San Francisco Examiner

Monarch of the Dailies

Film-Loaded Birds Journey 190 Miles

When the Examiner made arrangements to hurry graphic photographs of the Jeffries-Johnson fistic contest at Reno, Nevada, to this city in time for reproduction in yesterday morning's issue of this newspaper, the record speed which attended the trip of the Examiner special train was not anticipated, and in consideration of other methods of guaranteeing pictures of the battle to Examiner readers on the morning following the contest, the striking and original plan of sending snapshots by carrier pigeons was conceived.

CAMERA—WATCH SIZE

At the ringside at Reno an Examiner photographer was equipped with a small camera shaped like a watch and but a trifle larger. Inside was a roll of films. Four poses of Johnson were taken and then the ingenious photographer, using a rubber sleeve protector as a dark-room, removed the roll and cut off the four exposed films from the rest of the strip. The films he fitted into an aluminum capsule about three-fourths of an inch long and one-fourth of an inch in diameter, around which circled a band. To this was fastened a metal clip which closed over the pigeon's right leg.

The miniature camera provoked a smile from Johnson and he commented on its size.

PICTURES AT JEFFRIES' QUARTERS

Watch Camera Pictures Were Made at Jeffries' Training Quarters and Another Carrier Pigeon Sent Away With Them

Tex Rickard announced that the camera men with their big machines would not be allowed in ringside

1.INTRODUCTION

Technical and handling manual is intended for studies of technical design of a camera F 21T and its handling instructions. It contains a description of a camera design and its operational and technical data, as well as information necessary for correct handling of a camera.

Paragraphs 1-7 of the content are related to a technical manual of a camera, paragraphs 8-11 – to a handling manual.

A test pattern included into an Attachment is used while performing tests and prophylactic checks of a camera.

Height, in mm	- 55
Width together with lens, in mm	- 40,5
Weight	- 180 grams

A shutter release is carried out by pressing a shutter release button. Film transportation and cocking of a shutter are performed automatically when a shutter button is released.

A cassette allows to load a camera at a daylight without a film rewind.

Side protrusions allow a camera to be attached on other systems and devises.

F 21T camera can function at a temperature range from minus 20°C to +55°C

At that moment a lever 1 turns clockwise and releases a pin of a cam 8.

A cam rotates in the direction shown by an arrow until a pin 7 rests on a spring of a sector 10. Exposure of 1/100 of a second is attained at free rotation of a cam 8 by action of a spring 10.

Exposures of 1/30 and 1/10 are attained by means of slowing down of a cam movement by a speed air governor 14, which is engaged into a shutter operation via a lever 6 and a spring 11 on which a pin of full shutter opening runs against.

When a shutter speed lever set on manual exposure "B", depressing of a shutter release button 19 causes a lever 3 to turn clockwise, then after opening of shutter leaves a pin 7 of a cam 8 runs against a protrusion "a" of a lever 3, and it rests in this position until the moment when button is released.

The purpose of drive mechanism (please see fig. 4;5 and 6) is to transport a film, operate a frame counter and to cock a shutter.

A mechanism consists of two spring cylinders with a winding head 36, connected in tandem, and gearing 33 and 34 transferring the motion to a taking-up cassette via a fork "6" of a gear 34, cocking a spring of a shutter 9 (see fig. 2) via conical gearing 29, 12 and inertia speed governor 30, which is driven via a worm gear 23 and a worm 32. Spring cylinders have a stop of a winding momentum, positioned inside a head 36, which eliminates the possibilities of overloading and spring breaking while they are being wound.

A full winding of spring cylinders ensures 14-15 shots of a camera.

When spring cylinders are wound, a drive mechanism is held in locked position by a spring 26, which is stopping a pin 27 of a governor disk 28.

4. COMPOSITION

A camera set is presented in table 1

Table 1

Description	Denomination	Quantity in pieces
1. F-21T camera	BLZ821.031 Sp	1
2. Spare part set:		
cassette	BLZ.930.138 Sp	2
metal case	BLZ.106.012 Sp	1
3. Case	BLZ.877.021 Sp	1
4. Packing box	BL4.171.076 Sp	1 for 10 cameras
5. Passport	BLZ.821.031 P or BLZ.821.031-01P	1
6. Technical and handling manual	BLZ.821.031 TO	1 for 10 cameras

Note: A technical manual will be sent to a customer separately.

5. DESIGN AND OPERATION

A camera consists of the following main parts and mechanisms:

- a) lens;
- b) camera;
- c) cassette;
- d) shutter mechanism;
- e) drive mechanism.

A lens is focused for a constant distance of 5 meters. It has an iris aperture. An aperture setting is performed by rotation of a ring fixed on a lens body. A choice of resolution depth at aperture readings 2.8; 4; 5.6; 8; 16 may be done according to the table 2 of present handling manual.

Shutter	- two leaf design
Exposure settings, in seconds	- 1/100; 1/30; 1/10
	There is also available a manual exposure "B".

Operational principle of a shutter is represented by a kinematic diagram shown on figs.2 and 4, and its design – on figs.3 and 5.

A choice of exposure setting is done by a lever 37, which has fixed positions at all exposure settings. In order to set a manual exposure "B" it is necessary to lift a handle 38, positioned on a lever.

Leaves of a shutter 13 are put in action by means of a cam 8 via lever 2.

One of its arms has form of a fork, inside of which a cam rotates. Opening and closing of leaves take place at the time of one revolution of a cam. The cam rotation is performed by action of a spring 9, which is positioned on one axle with conical gear 12.

When a film is transported, spring is wound for one revolution via gearing 12 and 29.

When a shutter release button 19 is depressed (see fig.4), there takes place a releasing of a shutter mechanism by lever 4, which is connected with a shutter release lever 1.

A driving mechanism is activated at the moment when a shutter button 19 is released. When a shutter button stays not pressed, a protrusion "B" of a lever 25 rests against side surface of a bushing 17, pressed to a bushing 18 by a spring 16.

When a shutter button is depressed the protrusion of a lever passes from a bushing 17 to a side surface of a bushing 18, having slightly less diameter. For this reason at the moment of releasing the button when its rod moves upwards the protrusion "B" of a lever 25 is pressed against the edge of the bushing 17 and holds it from underneath.

During further raising of a button the protrusion of the lever comes off from the side surface of the bushing 18 and gets onto an axle 15. A lever 25 turns around its axis by the force of a spring and pulls a lever 20, which end comes out of a slot of a disk 21, and a spring 26 moves away from the disk 28 and releases a pin 27.

The driving mechanism gets into action, transports a film and cocks the shutter. After a full revolution of the disk 21, the end of the lever 20 falls back into the slot of the disk 21, the spring 26 locks the governor and driving mechanism stops its operation. Before it has happened a pin 22, passing by the lever 25, deflects it. That give the possibility to a bushing 17 to be raised by the force of a spring 16 and to come into initial position.

If the button is not fully depressed then only a film transporting mechanism snaps into action, but shutter mechanism will not be cocked, and due to this reason the next depression of the button will not lead to the shutter release. That is why it is necessary to depress the button 19 or a cable release (trigger) to a full stop while making shots by the camera.

When it happens that a film not fully transported (it may be caused when spring cylinders are not wound, or in case of premature depression of the shutter release button when a film transporting process has not been fully fulfilled), then the shutter release becomes impossible due to the reason that the protrusion of the lever 20 is positioned under a lever 4 and it does not allow it to move lower and to release

a shutter release lever 1.

While a film is being transported for one frame, a gear 34 makes one not full revolution, which gives the possibility to count a number of frames taken on the scale 24. An arrow-pointer is connected with the gear by means of a friction clutch.

Setting a pointer to a zero position is done by a head 35 located on the top cover of a camera. The head has a corrugated face. When a release button is depressed, the meshing of two gears take place, and after this action has happened the pointer is set on zero position on the scale 24 by means of turning the head with corrugated face.

A cassette is shown on fig.7.

The feeding 44 and taking-up 42 parts of the cassettes are connected together by means of a clamp 45. When shells 48 and 50 are turned in the directions shown by arrows, slots of the cassettes close.

In closed position of a cassette the protrusion of the shell is locked by the spring 43, thus guarding it against accidental opening. In order to open a cassette for film reloading it is necessary to press pins 46 and to turn shells using for this purpose pins 47. There are rivets installed inside a taking-up spool 51, which serve for coupling the spool with the fork "6" of a camera drive (see fig.4).

6. ACCESSORIES

Camera accessories include:

a) cable release (trigger) (having a length of 300, 506 and 750 mm)

BL4.022.012 Sp;

b) film cutter

BLZ.990.005 Sp;

c) developing tank

BL2.968.013 Sp;

Note. Camera accessories are not included in set of a camera, but they are supplied per special order.

If a camera is used with a cable release (trigger) (see fig.8) then its release is performed by means applying pressure upon a lever end 56 (pedal) of the cable release. The other end of the cable release is attached by means of a nut 52 on the threaded bushing of the shutter release button. When it is done the cable 53 may be led in any direction in respect to the camera, however it should be positioned with as less twists as possible.

A range of the cable release lever travel is adjusted by a threaded bushing 54 and then fixed by a lock-nut 55.

The head of a cable release (trigger) is enclosed in a leather case in order to protect the mechanism of a cable tension control from getting into it of foreign objects.

A film cutter (see fig.9) is intended for cutting 21 mm wide film cut out of a standard 35mm perforated film in darkness. The film end is inserted into an inlet slot of the film cutter and then it is pushed forward up to the stop. If the film intertwines, then its concave side should face downwards. The film is cut by means of turning a handle 57 until its end gets out of the film cutter from the side where the transversal knife 61 is positioned. Continuing the handle rotation, the latter is set in the lowest position, and then by means of pressing upon the lever 60 the film end, which gets out of the film cutter, is cut off.

Then the lever is set free and a nut 59 is turned in the clockwise direction together with a sprocket 58 until they reach a complete stop. During the further film cutting procedure by means of turning the handle in the clockwise direction the latter is locked by a sprocket 58, designed for provision of a film length of 600+10mm.

By means of pressing upon the lever 60 a film is cut and the sprocket disengages from the handle; after it happens the film cutting process may continue. In case of necessity to have a film of other length, it is necessary to remove the sprocket from the film cutter, and in this case the length of a film is determined by a number of the handle revolutions. By making one revolution a film of 76mm in length is cut. In order to process 21mm wide film having in length 600mm it is necessary to use a developing tank, shown on fig. 10.

A film end of 5 mm in length is bent to an emulsion side and then it is inserted under a cover piece 66 attached to an internal part of a bushing 65; by tightening a film its bent end should set against a bent part of a cover piece. The film is wound upon a spiral of a disk 68 in such a manner that its emulsion side should face outside, directing it under a small angle to the spiral plane.

By tightening the film in such a manner that its emulsion side is not touching the spiral coils the clamp is set upon a disk 67. Then a reel with loaded film is put into a bowl of the tank 69 and is closed by a lid 67. After it is done a film can be processed in daylight.

A tank needs 0.25 liter of liquid to fill it.

7. MARKING OF A CAMERA SERIAL NUMBER..

A camera has 5 digits serial number prefixed with a letter "T", which is entered into a passport.

8. GENERAL GUIDELINE

F 21T camera is a complex and precision instrument demanding a very careful study and cautious handling. It should be guarded against jerks, impacts, and rain, dust and sun radiation exposure. Especially it is necessary to protect the objective lenses from getting soiled with dust and finger prints.

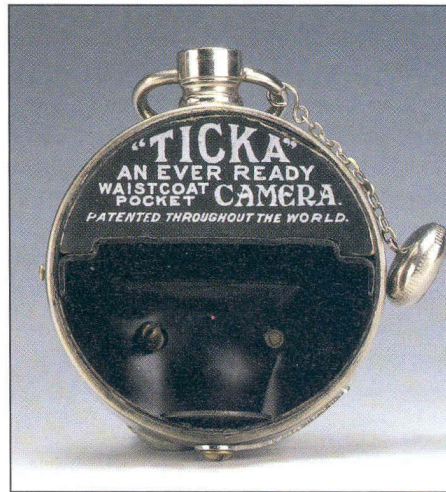
Persons, who are subject to high sweating (higher than 3 points), are not allowed to work with F 21T camera, or they should work with it in thin linen gloves, otherwise a corrosion resistance of the camera will be reduced and its operational life will be decreased.

Movement of all moving elements of the camera should be done without applying an excessive force.

A cassette loading and unloading should be done in the dark. It is not recommended to leave the camera in cocked condition during long term recesses of work.

All procedures of camera loading and unloading should be done in a dim light only.

While making shots a cable release or a shutter release button should be pressed upon up to the full stop.



Ein Blick in die geöffnete Kamera offenbart ein simples Innenleben (links). Das Objektiv der Taschenuhrkamera befindet sich in der Krone der „Uhr“. Wichtig ist, dass der Objektivdeckel während des Filmtransports aufgesetzt ist, da sonst der Film belichtet wird.

der Gehäusedeckel nach oben gedrückt wird. Maximal 25 Aufnahmen im Format 16x22 mm sind möglich, das wurde in der Werbung häufig verglichen mit der Größe einer Briefmarke. Der Transportknopf, zunächst war ein einfacher Schlüssel und später ein zur Seite wegklappbar Knopf eingebaut, transportiert durch eine Rechtsdrehung den Film weiter. Eine Zählwerkanzeige links daneben gibt die bisher vorgenommenen Aufnahmen in Zweierschritten an. Nachweislich waren neben der üblichen chromglänzenden Ausführung der

Als europäisches Gegenstück der Expo findet man bei uns eher die Ticka, sie trägt die Bezeichnung „Watch Pocket Camera“ bzw. „Taschen-Uhr Camera“. Die Minikamera ist mit der amerikanischen Parallelversion fast baugleich, wurde 1906 in England herausgebracht und bis Beginn des I. Weltkrieges vom weltbekannten Kamerahersteller Houghtons Ltd. (London und Glasgow) produziert. Als Zubehör war u.a. ein aufsteckbarer Sucher erhältlich, darüber hinaus ein aufschiebbarer Zeitverschluss für Belichtungszeiten von 1/2 Se-

Wert und dient sozusagen als Sucherersatz. Außerdem sind sogar Modelle mit Schlitzverschluss und einstellbaren Zeiten zwischen 1/75 und 1/400 Sekunde bekannt. Selbst versilberte Ausführungen soll es gegeben haben.

Der Sammlerwert für die Lancaster ist inzwischen auf über 10.000 € gestiegen, der einer Photoret kommt schon nah an die 1.000 €. Die Expo und Ticka, von denen weitaus mehr als 10.000 Exemplare verkauft wurden, liegen mit 350 bzw. 300 €

The "TICKA" Watch Pocket Camera.

The "Ticka" is a small camera that produces results equal in every way to those obtained by a camera, at twice or three times the price and of two or twelve times the size.

As far as outward appearance is concerned, the "Ticka" looks like a silver watch, and yet it is a perfect pocket camera.

It is fitted with a time and instantaneous shutter. There is an indicator showing number of exposures made, so you can see at a glance how many you have left, and how many you have used.

The "Ticka" takes 25 pictures at one loading on a self-contained roll of film. There is no threading in and no duplicate exposure required. You merely slip the complete cartridge into the "Ticka", and it is ready for immediate use. The operation does not take five seconds.

The actual negatives produced in the "Ticka" are the size of an ordinary penny postage stamp, but in order that the popularity of the "Ticka" may become an established fact, we are issuing in conjunction with it a piece of apparatus which we call the "Ticka" Printing Box.

The Printing Box provides the user with a means of producing enlarged pictures 3 1/2 by 2 1/2, and so simple in use that anyone can use it. It is a perfect printing frame.

The price of the "Ticka" is £8.6s. and a 25-exposure roll of film costs 10s. Write to us today for the prospectus illustrating "Ticka" booklet and particulars of the various accessories.

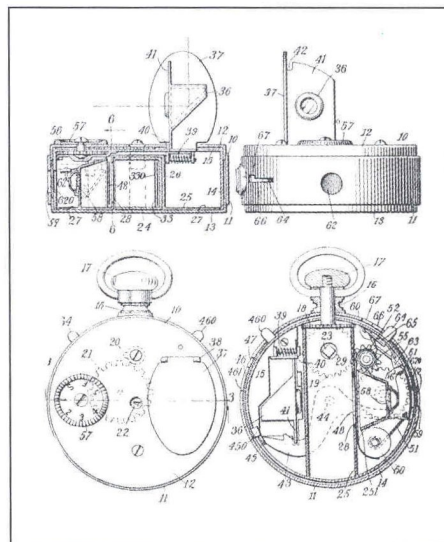
Everyone who has seen the camera and the results produced by it is amazed at not only the excellence of the pictures but the almost unobtrusive cleverness and simplicity of the whole piece of apparatus.

We are making "Tickas" fitted with Cooke lenses and focal plane shutters which we shall put on the market later on in the season. This shows you that the "Ticka" is not a mere toy. It is built like a watch and may be carried upon it every day. The "Ticka" is British made throughout. It is made in our own factories by our own staff, and it is not imported.

HOUGHTONS LTD

Manufacturers and Wholesalers of "Tickas" 85/86 High Holborn, London, W.C., and Glasgow.

Every Dealer in Photographic Materials can sell you a "Ticka". If your Dealer has none in stock, write us and we will tell you the address of the nearest Dealer who is selling them.



"Ticka" Time Shutter.

The scope of the "Ticka" is considerably enlarged by the addition of the detachable Time Shutter. Made entirely of metal and nickelled to match the camera, this shutter fits on to the lens barrel, and is kept in position by a milled head screw.

Short time exposures of 1/4th second and 1/8th second can easily be made, even with the camera held in the hand, for the action of the shutter is so perfect that the camera does not oscillate in the slightest.

For exposures of 1/2 second and upwards, the new Time Shutter is invaluable. There is no necessity to use the lens cap or to cover the lens opening with the ball of the finger.

The slightest pressure on the exposing lever uncovers the lens, and the spring cover automatically closes again, directly the pressure is relaxed.

Another point worthy of notice is that if the shutter is worked slowly, a longer exposure can be given to the foreground than to the sky.

Die Taschenuhrkamera wurde über mehrere Jahrzehnte von verschiedenen Anbietern in leicht abgewandelter Ausführung vertrieben, die Modelle variieren beispielsweise in der Form des Filmtransportschlüssels. Der Zeitauslöser ist ein extrem seltenes Zubehöriteil, der Langzeitbelichtungen mit der Ticka ermöglicht.

Expo in geringer Stückzahl auch rote, blaue und schwarze Modellvariationen im Handel. Als Zubehör gab es einen aufsetzbaren Brillantsucher, für die Vergrößerung der Fotoaufnahmen wurde ein passendes Gerät angeboten, mit dem Formate bis ca. 6x9 cm ohne weiteres möglich waren. Der genannte Hersteller ist übrigens auch bekannt geworden wegen seiner boxähnlichen Expo Police Camera, die zumindest dem Namen nach für den Einsatz bei der Polizei geschaffen wurde.

kunde und länger, außerdem ein Spezialstativ (an der Kamera ist allerdings kein übliches Stativgewinde vorhanden!), ein passender Vergrößerungsrahmen und eine Negativbox. Erwähnt werden sollte in diesem Zusammenhang natürlich auch die Watch-Face Ticka, sie besitzt ein emailliertes Uhrenzifferblatt auf der Rückseite. Die beiden Zeiger sind so eingestellt, dass sie den ungefähren Aufnahmewinkel des Kameraobjektives von knapp 90° wiedergeben. Dies hat einen durchaus praktischen

nicht allzu fern auseinander. Seltene Varianten können aber auch hier mehrere 1.000 € kosten. Aber da unterscheiden sich die Preise kaum von den „richtigen“ Taschenuhren, die als mechanische Meisterstücke schon viel länger höchste Wertschätzung bei Technikliebhabern erfahren haben, nur dass man nicht damit verdeckt fotografieren kann.

Hubert E. Heckmann

9. PROCEDURES OF CAMERA HANDLING

A cassette loading

(fig. 7)

In order to load the cassette it is necessary to have a film of 600mm in length.

One end of the film should be cut under the angle to the length of 20mm in such a manner that the middle part of the film at the end is not bigger than 10mm. The uncut end of a film should be inserted in the slot of the feeding spool 49 and then the film should be wound onto the spool with emulsion side facing inside.

During the film winding please hold it by the edges, not touching the emulsion side. When the film is wound on the reel, leave the free film end of 30-50mm long. Then insert the reel with a wound film into a cylinder 48 in such a way that when the film is pulled out of the cylinder the reel rotates counterclockwise, if seen from the side of the opened edge of the cassette cylinder.

Please insert the loaded cylinder into the left cassette cylinder and turn it counterclockwise until the click of the locking spring.

Loading of taking-up spool 51 can be done in daylight. Lead the cut end of the film under the cover plate of taking-up spool and bend it upwards. Wind the film with emulsion side facing inwards for 0.5-1 turn. After this is done, insert the reel into the cylinder 50 in such a way that when the film is pulled out the reel is rotating in the clockwise direction. Then insert the cylinder in the right cylinder of the cassette and turn in clockwise direction until latching of spring 43.

The cassette is loaded.

9. 2. Camera loading (fig.5,6)

The camera can be loaded in light. Before loading, the back cover 39 should be removed from the camera. In order to remove it the lock shackles 40,41 should be turned to the full stop in the direction opposite to one shown by the pointer (arrow) with inscription "Locked". The spring drive should be wound up by means of turning a head 36 until actuation of a limit stop of winding torque.

The loaded cassette is inserted into the camera. If it cannot be inserted due to nonalignment of the rivet of the taking-up spool with the slot of the clamp, it is necessary to depress and then to release a shutter release button 19 of the camera and simultaneously to press slightly upon the cassette.

Install the back cover 39 onto the camera. In order to do this first of all is necessary to lock the latch 41 which does not have an inspection hole in it, to depress and then to release the shutter release button 19 of the camera, after that to lock the latch 40 having an inspection hole, and again depress and release the button 19. For these two cycles of camera functioning an exposed part of the film will be driven in.

The inspection hole in the camera latch allows to observe rotation of the feeding reel edge.

This method of film loading into the camera allows to eliminate the cases of drawing out the film end from under the cover plate of the taking-up spool as well as film deformation.

9.3. Shooting with a camera.

The choice of an aperture and a shutter speed setting for shooting is done in an ordinary manner with taking into account the conditions for taking-up pictures.

The table below shows the resolution depth of a lens at diameter of unsharpness circle of 0.03mm.

DIESEN FOTOGRAFEN SCHLÄGT KEINE STUNDE

Verdeckter Einsatz: Taschenuhrkamas

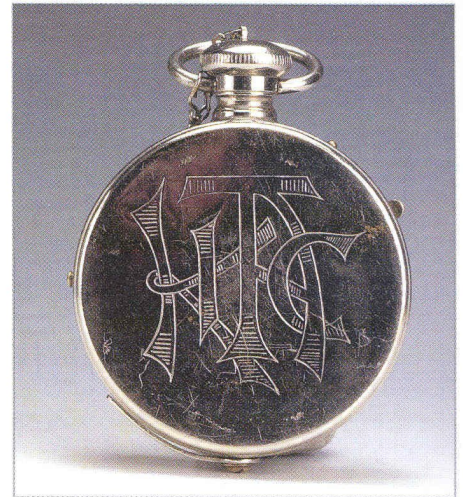
Bei dem Entwurf von kleinen und handlichen Geheimkamas waren die Konstrukteure durchaus erfinderisch. Da ließen sich oftmals Gegenstände des täglichen Bedarfs einbeziehen, in die funktionsfähige Kamas von außen schwer erkennbar perfekt eingebaut wurden. So muss man sich kaum darüber wundern, dass auch Fotogeräte im Laufe der Jahrzehnte auf den Markt kamen, die nicht von einer üblichen Taschenuhr zu unterscheiden waren. Ohne ein Uhrwerk im Innern verfügen sie meist sogar über kein richtiges Zifferblatt. Eine entsprechende Zeitanzeige wird hier eigentlich nur zur bloßen Nebensache, denn bei einer vorgetäuschten Überprüfung der genauen Uhrzeit ließen sich mit der im runden Gehäuse verborgenen Kamera sicher leichter unbemerkte Aufnahmen machen.



Mit der Lancaster's Patent Watch Camera wurde bereits 1886 eine erste Kleinstkamera in Uhrenform angeboten. Die Firma James Lancaster & Son aus Birmingham hatte diesen heute sehr seltenen Fotoapparat hergestellt. Drückt man auf die Krone, springt durch Federkraft aus dem geöffneten Gehäuse teleskopartig ein Metalltubus mit einem einfachen Objektiv heraus. Die recht spartanisch ausgestattete Kamera besitzt einen Guillotineverschluss, der während der längeren Produktionsperiode wiederholt technische Änderungen erfuhr. Das Aufnahme-motiv wird auf einer ca. 4x5 cm großen fotografischen Platte (large size) dauerhaft festgehalten, es gab jedoch auch ein et-

was kleineres Kameramodell für die Dame (ladies size, etwa 3x4 cm große Trockenplatte) mit einem Rotationsverschluss. Bei der Lancaster lassen sich außerdem hinsichtlich der Ausführung in Qualität und Material unterschiedliche Modellvariationen unterscheiden.

In New York brachte 1893 die Magic Introduction Co. die „magische“ Schnappschusskamera Photoret heraus. Sie macht sechs hexagonale 12x12 mm große Aufnahmen auf einer Platte von 45 mm Durchmesser. Diese kam lichtgeschützt in einem kreisrunden „Filmmagazin“ verpackt. Zur Aufnahme durch das auf der flachen Vorderseite eingelassene Objektiv braucht die Photoret im Gegensatz zur Lancaster nicht mehr geöffnet zu werden, die Kamera war



Filigranarbeit: rückseitige Gravur der Ticka, die unten mit Originalverpackung und dem aufgesteckten Spiegelsucher zu sehen ist.

damit ideal einsetzbar zur unbemerkten Fotografie. Oben am Aufzugsknopf wird lediglich gespannt, durch Drücken desselben löst der Verschluss auf 1/10 Sekunde aus. Die ursprünglich in einem repräsentativen Holzkästchen bis Anfang 1900 gelieferte Kamera ist heute ebenfalls recht schwer zu finden.

Schüsse aus der Hüfte

Bei der Expo Watch Camera, die ab 1904 von der Expo Camera Corp. New York (Brooklyn) gefertigt wurde und bis 1939 erhältlich war, handelt es sich um die meistproduzierte Detektivkamera in der Form einer Taschenuhr. Das runde 80 g leichte Metallgehäuse hat einen Durchmesser von gerade mal 5,5 cm, die Breite beträgt knapp 2 cm. Das Aufnahmeobjektiv (1:16/25 mm, Meniskus und Fixfokus) befindet sich nun erstmals in der Krone. Ein als solche getarnter geriffelter Objektiveckel dient gleichzeitig als Schutz und wird an einem dünnen Kettchen gehalten. Der Deckel muss beim Spannen des Verschlusses stets fest aufsitzen, da sonst der Film bereits zu diesem Zeitpunkt Licht abbekommt. Langzeitbelichtungen sind bei der Spannhebelstellung T möglich, die einzig verfügbare Kurzzeit beträgt etwa 1/25 Sekunde. Verwendung finden Kassetten mit 17,5 mm breitem Rollfilm, dieser lässt sich sogar bei Tageslicht in die geöffnete Kamera einsetzen, indem vorher über einen am unteren Ende befindlichen Hebel

In case of necessity the camera should be sent to a special repair shop for a close check or repair. It is necessary to look after objective lenses thoroughly.

When outer surfaces of the front and rear objective lenses got contaminated, they should be cleaned in the following manner:

- Dust from the lens surfaces is removed by a squirrel or Siberian weasel brush or by jet of air from a rubber blower;
- wiping of the lenses is performed with a tampon made of degreased cotton tightly wound on a wooden stick and wetted in a mixture consisting of 80-90% of petroleum ether and 20-10% of rectified alcohol. When ether is not available a pure alcohol may be used. The cleaning is done by repeating wiping of the lens by circle movements directed from a center to a rim.

Each cleaning step is done by a fresh tampon.

It is not allowed to wet a tampon abundantly with a cleaning mixture, as an excess of liquid flowing down from a tampon on the lens will create at drying the ring-shaped marks and also can get through between the lens and the rim, affect lens pasting and create a residue on the inner lens surface.

N o t e. As an exception lens cleaning is allowed to be done by a washed cambric napkin. It is necessary to take into account that the coated surface of the lens does not allow frequent wiping.

After a camera has been worked with in cold conditions it may get misted over when brought indoors. In such cases it is not necessary to wipe the lens. Misting over will disappear by itself after the camera is kept during some period of time at a room temperature. It is not advisable to put the misted over camera in the case until it dries completely.

It is recommended to carry out a test photographing of the test pattern and determination of a resolution ratio of the camera at each preventive inspection in order to check a lens condition and precision of its adjustment. For this purpose a test pattern had to be positioned in 5 meters from the camera and highlighted as evenly as possible and without flares. The camera had to be directed at the test pattern in such a manner that its image stays in the center of a picture area

In order to avoid displacements of the camera it should be rigidly secured. Shooting is made on a film A-2 at aperture 1:2.8. An exposure time is chosen in accordance with illumination of the pattern and a film sensitivity. The received negative of the test pattern should be inspected via microscope having 20-30 times enlargement. Then it is necessary to determine an element of a test pattern in which hachures are discerned in all directions.

The figure, which is positioned in the center of a square shows the obtained resolution ratio of the camera in lines per 1 mm. It should not be less than 40 lines per 1 mm. When the attained resolution ratio is less, the camera should be sent to a repair shop.

In ambient conditions of tropical climate it is necessary to inspect the camera once in every 6 months in a special shop with partial disassembling (detachment of the top cover and the shutter mechanism from the drive mechanism) in order to:

12. LIST OF ILLUSTRATIONS

Fig. 1. Camera set

Fig. 2. Shutter kinematic scheme

Fig. 3. Shutter

Fig. 4. Drive mechanism kinematic scheme

Fig. 5. Camera

Fig. 6. Drive mechanism

Fig. 7. Cassette

Fig. 8. Cable release (trigger)

Fig. 9. Film cutter

Fig. 10. Film developing tank

Table 2

Aperture	Distance to a lens in m.
2,8	3,27 – 10,77
4	2,85 – 21,48
5,6	2,44 – ∞
8	2,00 – ∞
16	1,27 – ∞

9. 4. Camera unloading

(fig.5)

Before camera unloading it is necessary to wind all film on the take-up spool in order to preserve the last taken shots from being light-stricken. For this purpose the shutter release button should be depressed and released until a film rewind indicator stops turning. If torquing action of the winding springs is not enough to pull the film end out of the feeding spool then it is necessary to wind additionally the springs by turning the head 36. Then latches 40 and 45 are turned in the direction opposite to the pointer "Locked" and the back cover is removed. Now the cassette can be taken out of the camera.

10. CHECKING-IN OF THE CAMERA TECHNICAL CONDITION.

In order avoid malfunction of the camera operation it is necessary to carry out routine inspections of the camera and its accessories periodically once in every 1.5-2 months in order to check an operating condition of their parts.

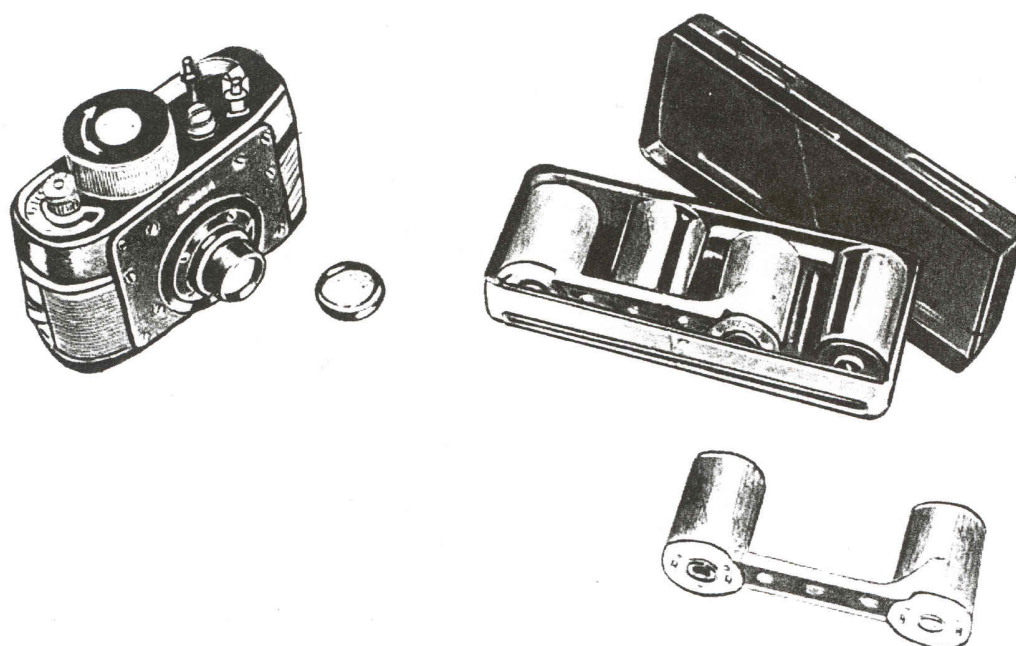


Fig.1. Camera set

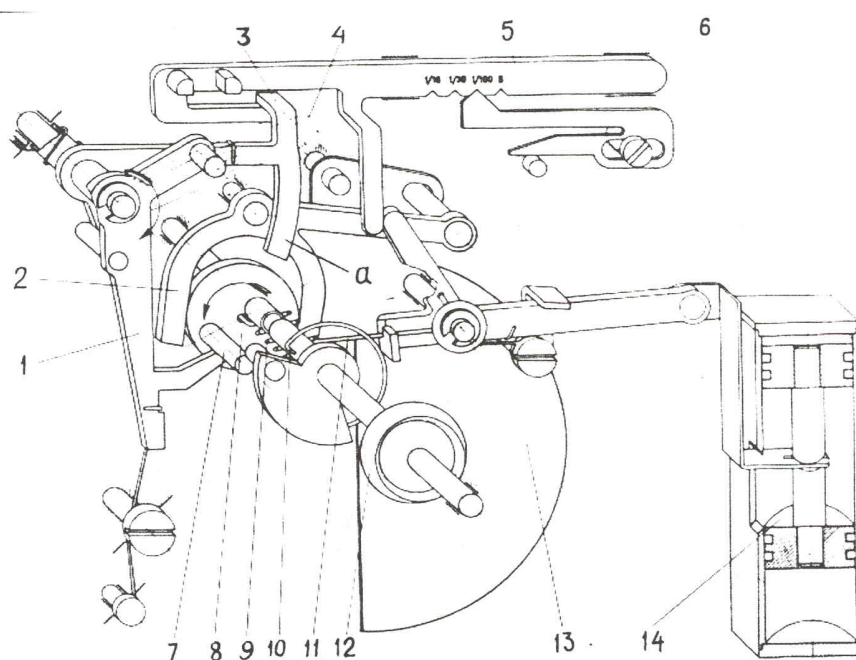


Рис.2. Shutter kinematic scheme

- Determine whether there are spots effected by corrosion;
- Determine possible infection by fungus; irregularity of forms and sizes of camera parts which may cause in its operation;
- Determine faults of cosmetic condition of the camera etc.

In case when spots of corrosion, deposits and stains and so on are found on the camera, these spots should be rubbed with gauze tampon slightly wetted with grease OKB-122-7 GOST 18179-72.

II. RULES OF STORAGE AND TRANSPORTATION

F 21T camera should be kept in dry facilities with temperatures not lower than $+5^{\circ}\text{C}$ and not close to heating systems, preliminary placing it in a packing box.

During storage of the camera for a long period of time or intervals in work for over two-three weeks the camera should be transported and kept in a box sealed with scotch.

A moisture eliminator – granulated selica gel ShSM GOST 3956-54 should be placed in the box. Then the box should be placed in a vinyl bag which is then sealed.

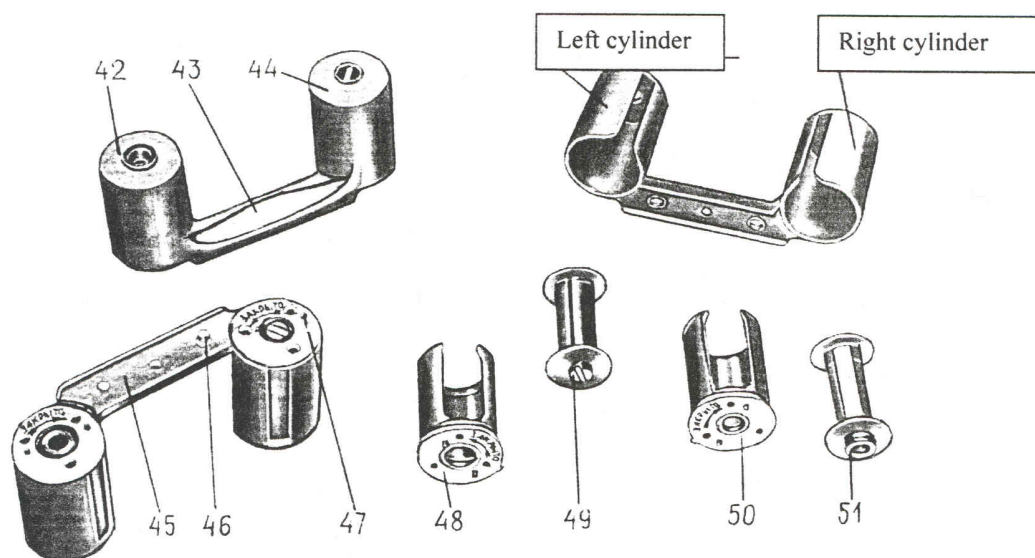


Fig.7. Cassette

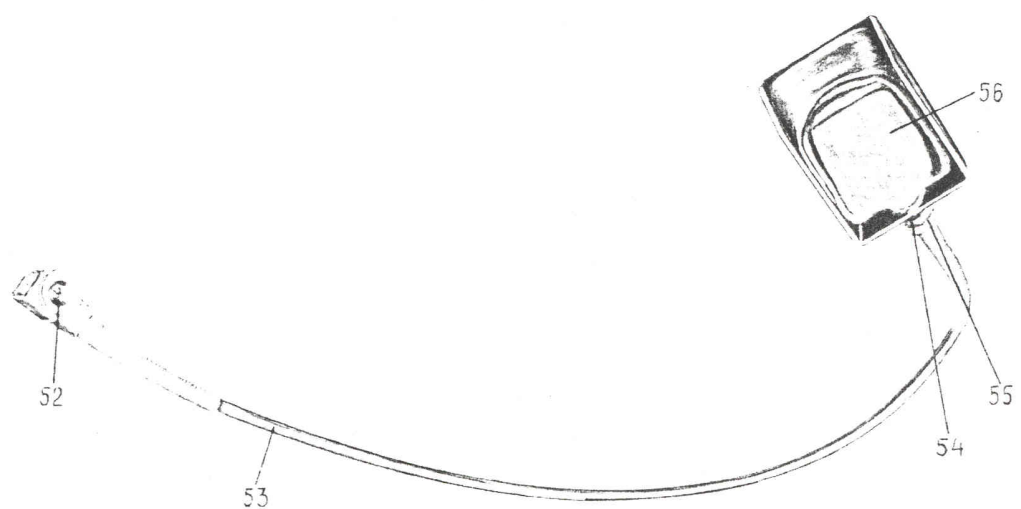


Fig.8.Cable release (trigger)

Change.	Number of sheets (pages)				Total number of sheets (pages) in a document	# of a document	Incoming # of accompanying document and its date	Signature	Date
	Changed	Substituted	new	Withdrawn					
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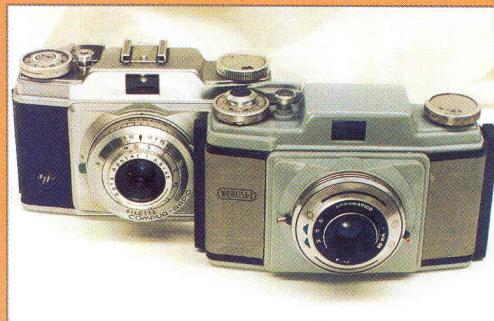


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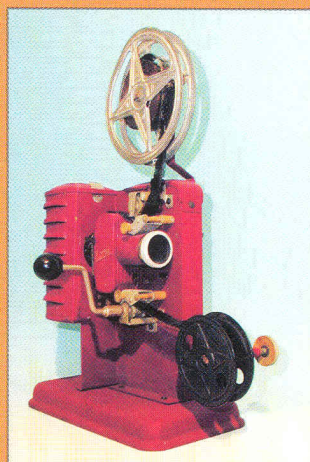
Erste Spiegelreflexkamera mit Motorantrieb



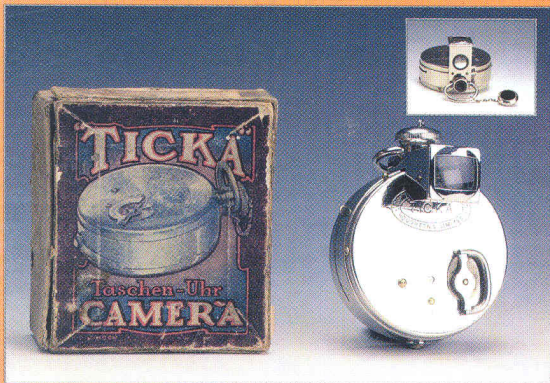
Werlisa – Kameras aus Spanien



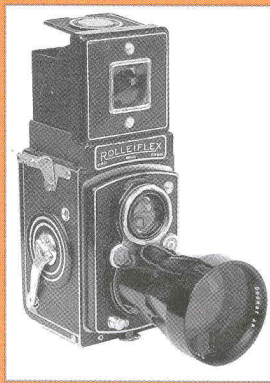
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Die SLR-Ansätze Panflex und Flektoskop**



**Heimkino statt Fernsehen
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**Verdeckter Einsatz
Taschenuhrkameras**



**Eine solide Einheit als Erfolgsrezept
Das starre Prinzip der zweiäugigen Rolleiflex**



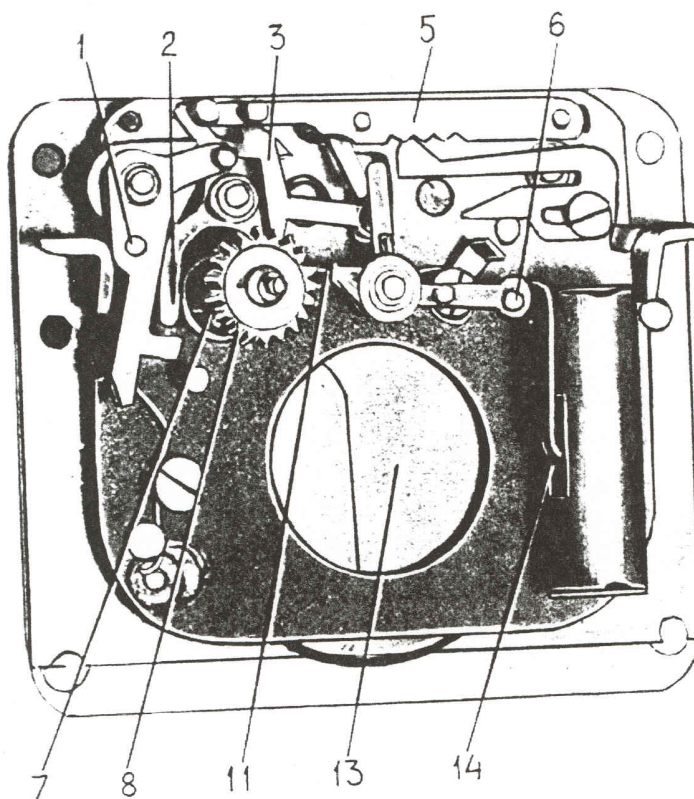


Fig.3. Shutter

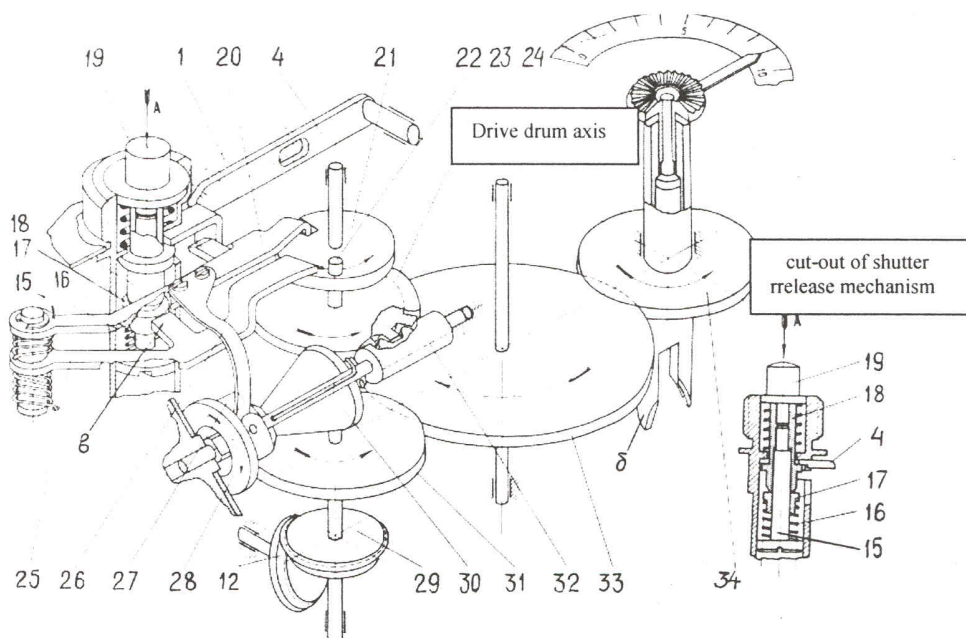


Fig.4. Drive mechanism kinematic scheme

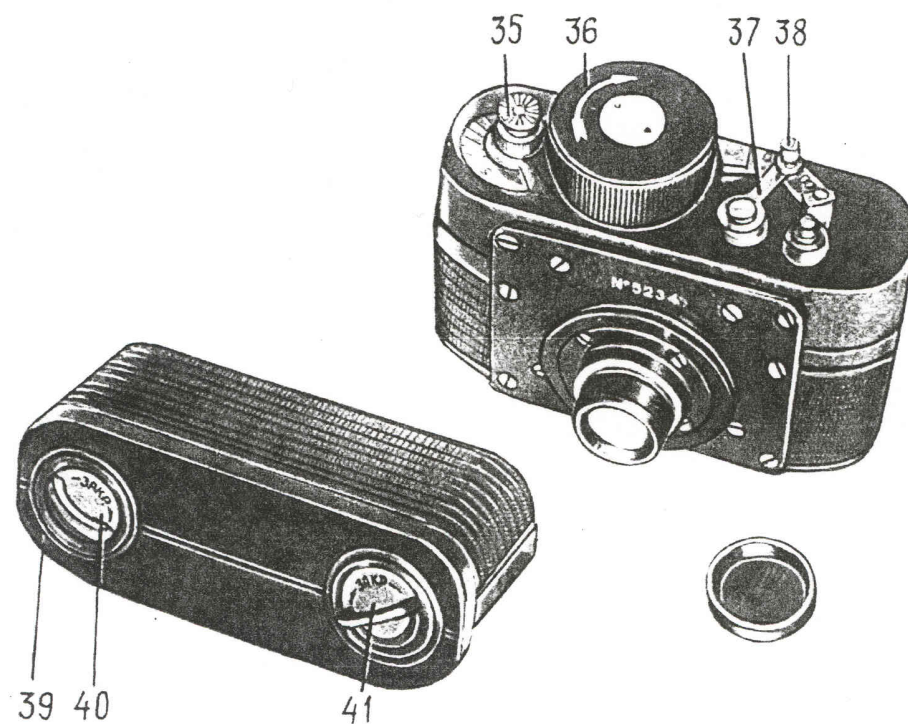


Fig. 5. Camera

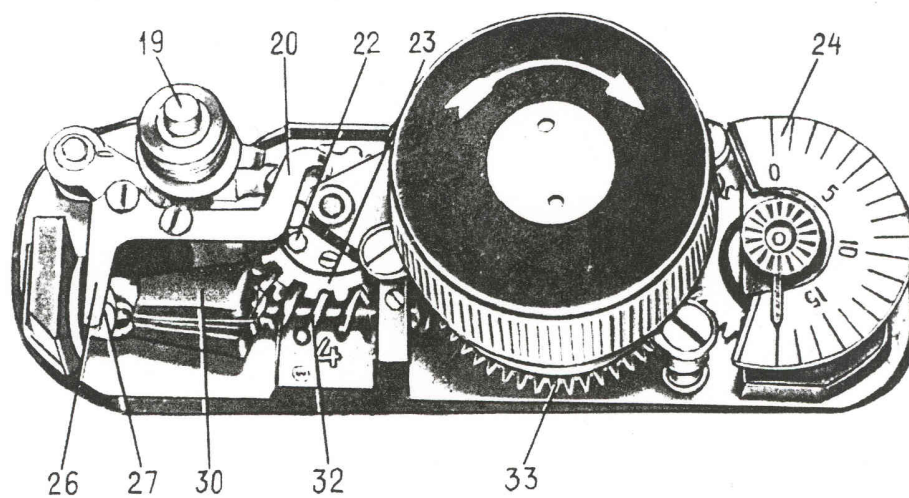


Fig. 6 Drive mechanism

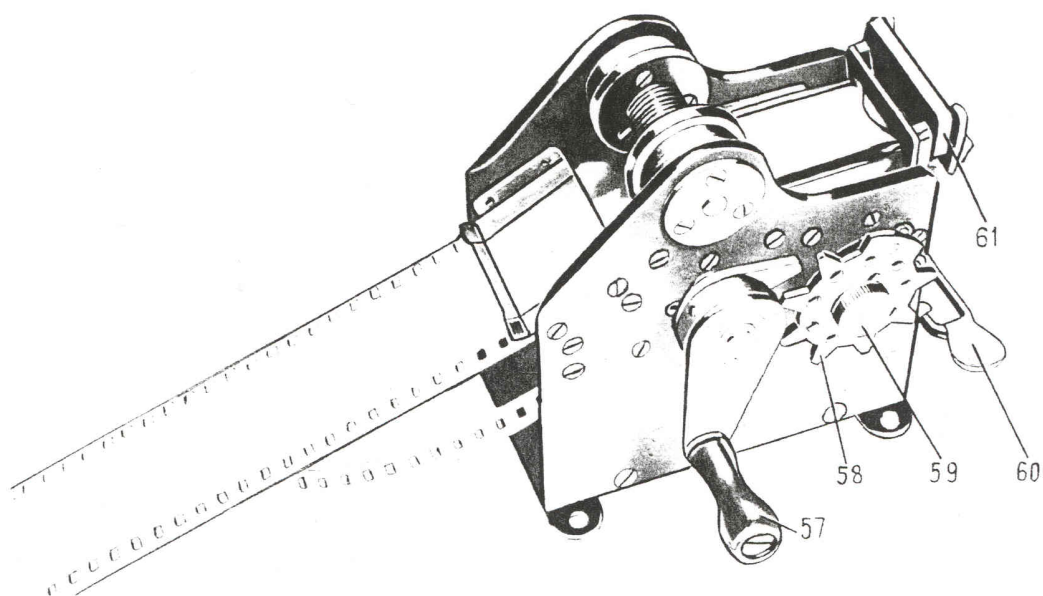


Fig.9.Film cutter

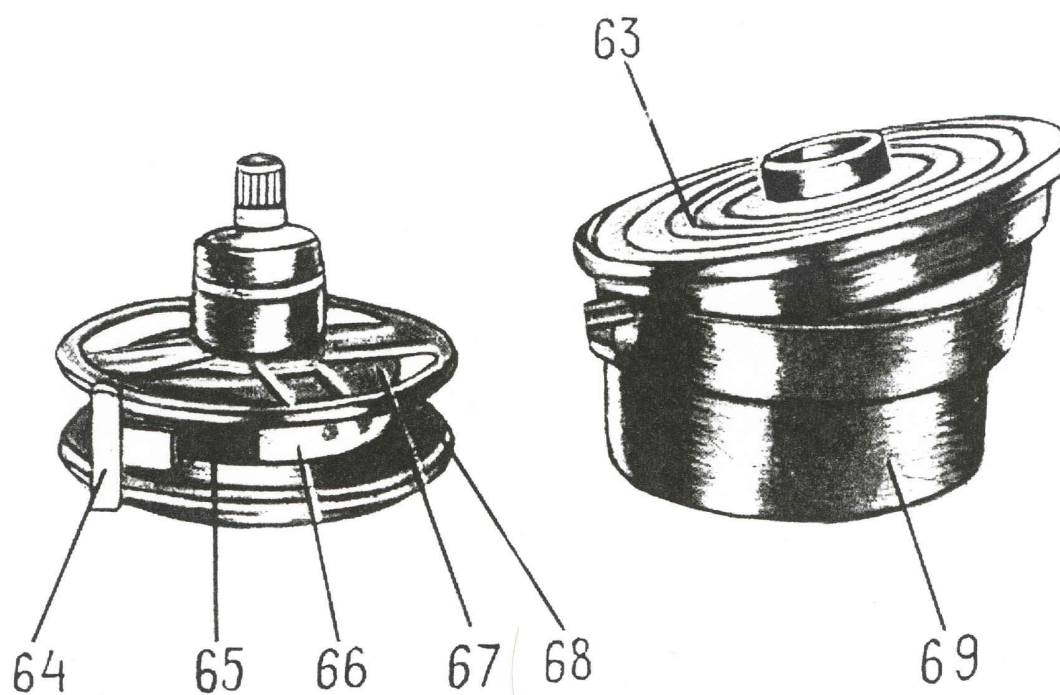


Fig. 10. Film developing tank

Passport
For the lens OF-28 № 05284

F=28.0mm, relative aperture ratio 1:2.8

Photographic resolution capacity

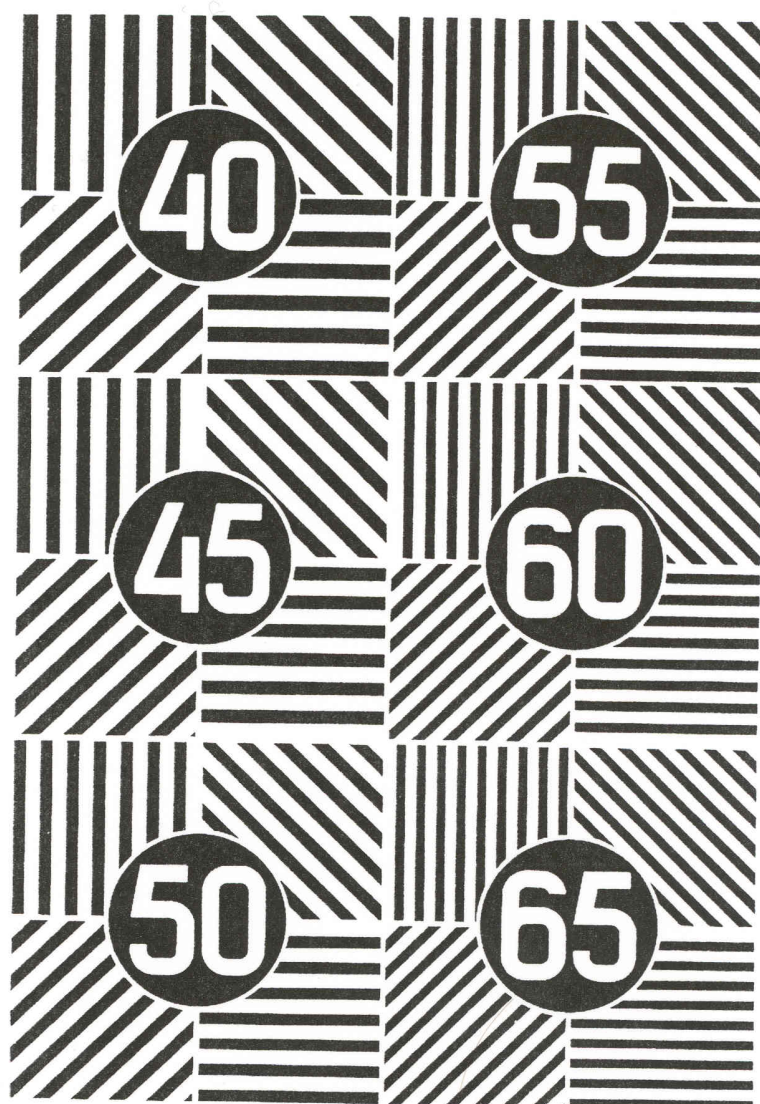
In center of a frame - 52

Across field of a frame 22

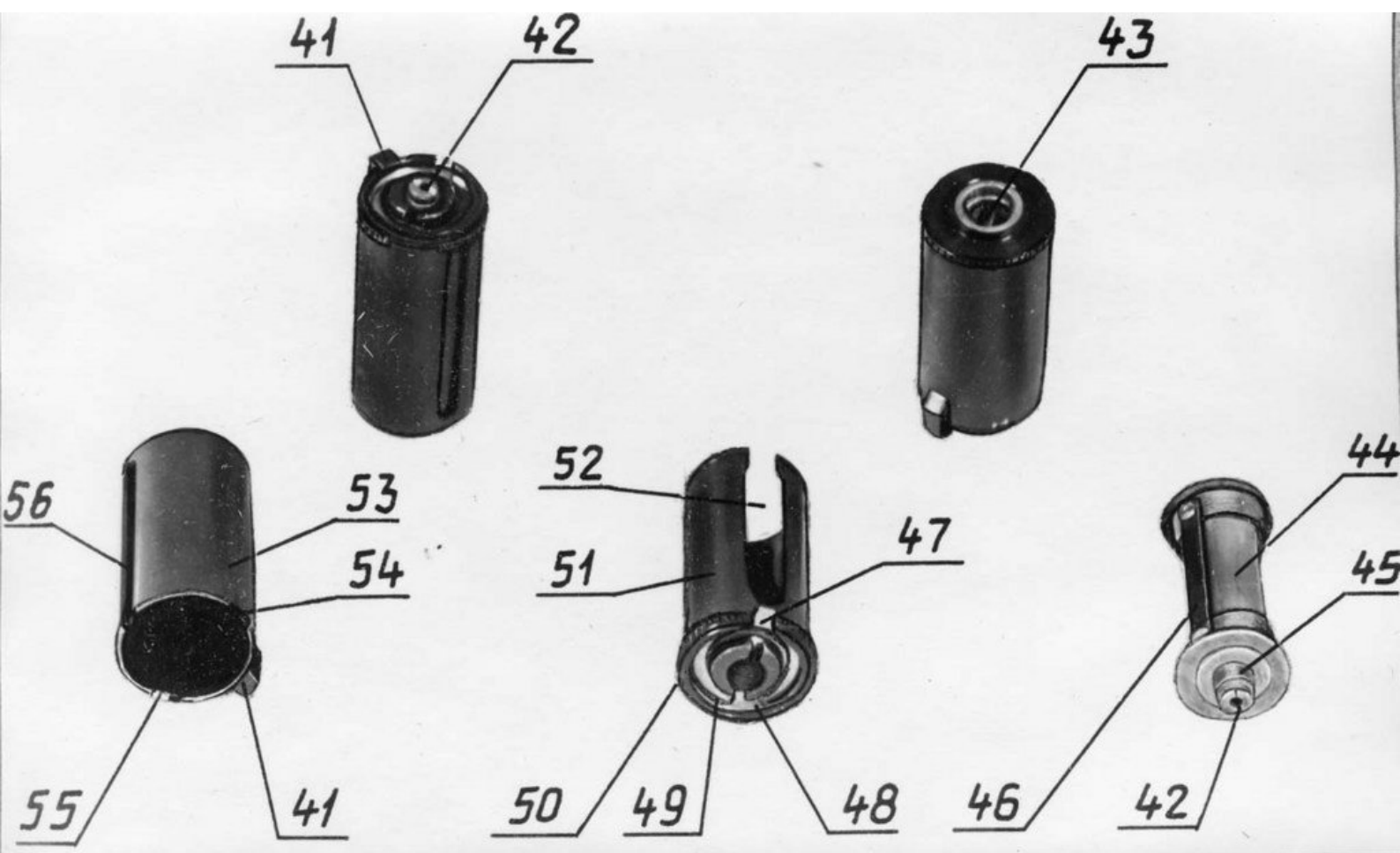
Working distance 23.41 D=5m

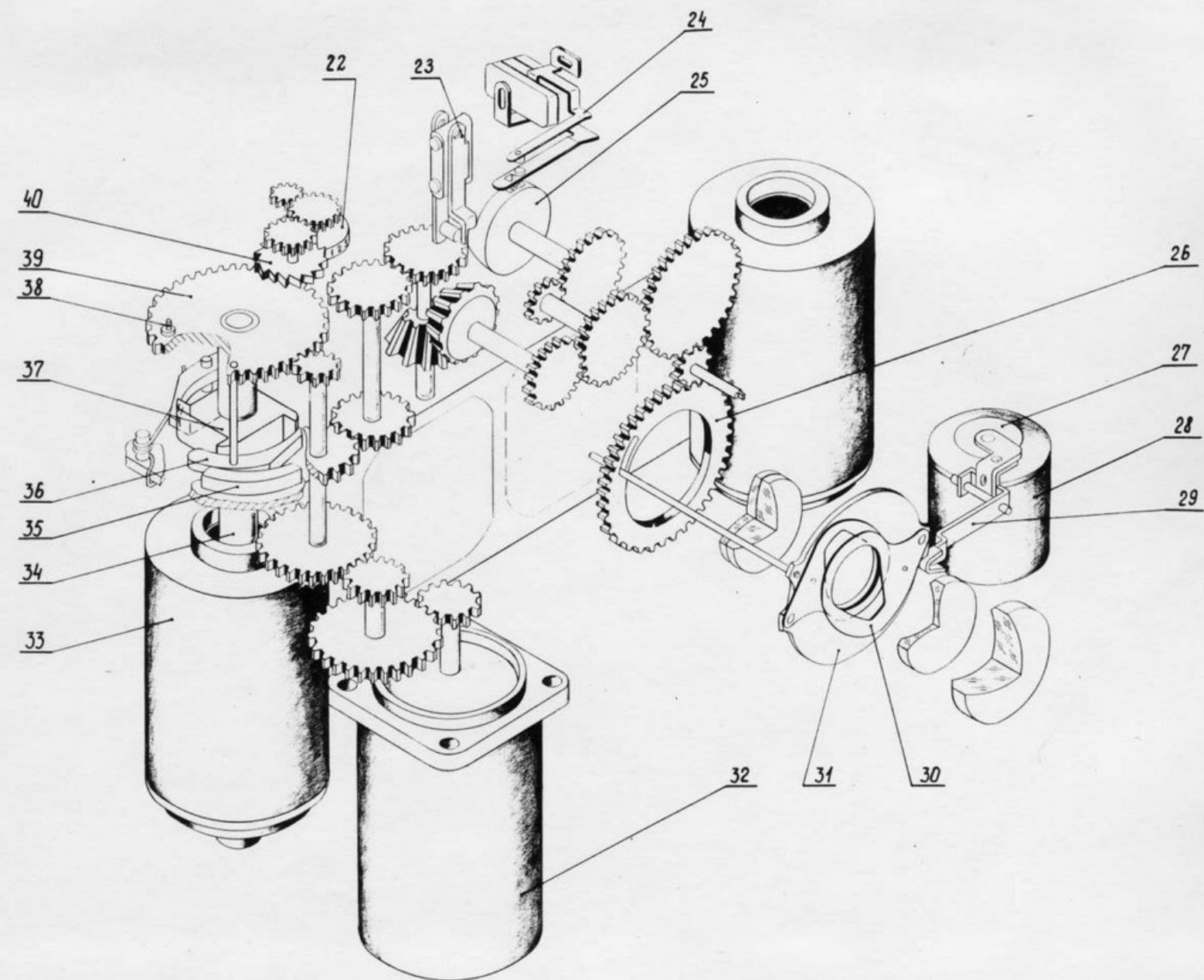
Laboratory signature

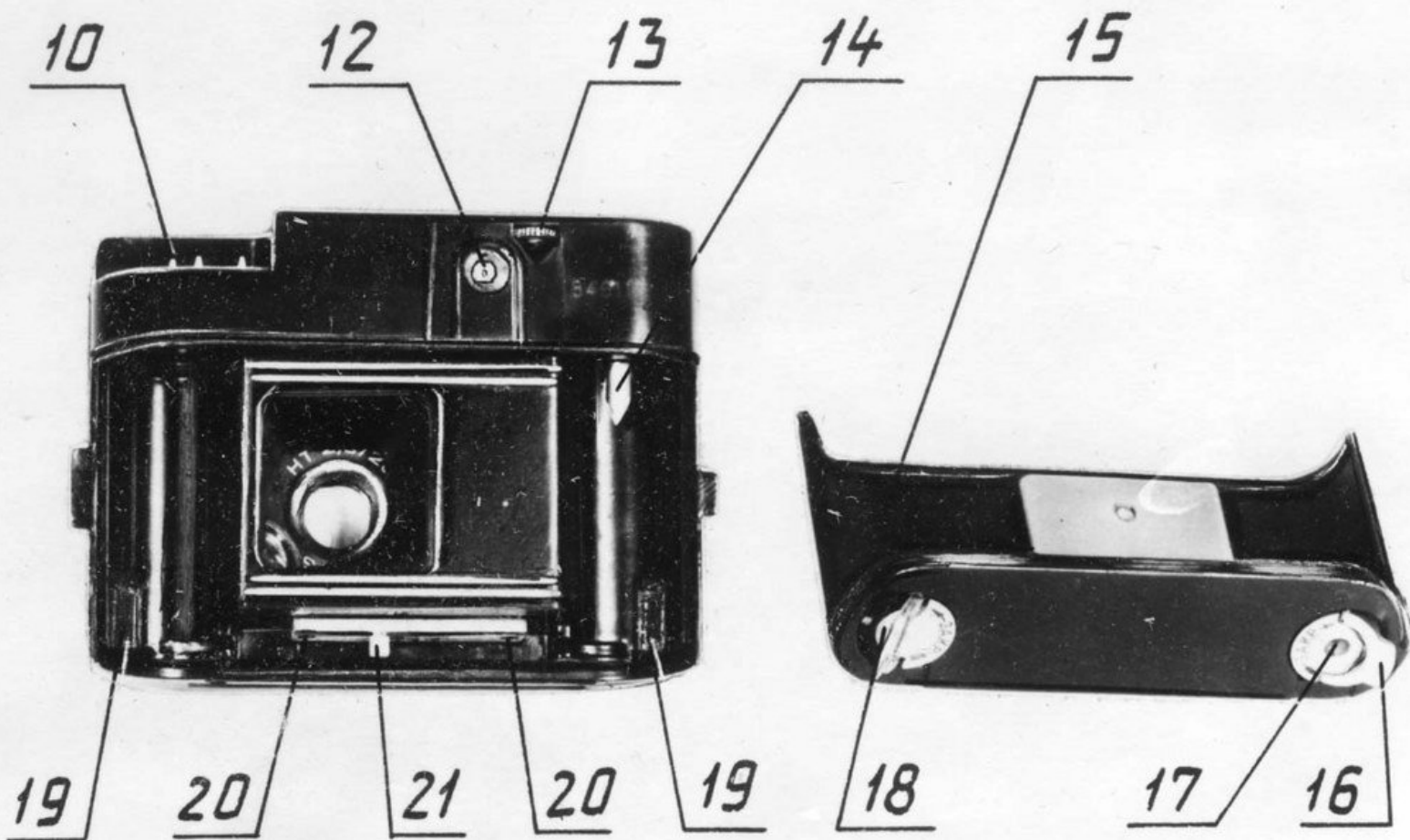
26.09.1962 Section of Technical Inspection
signature

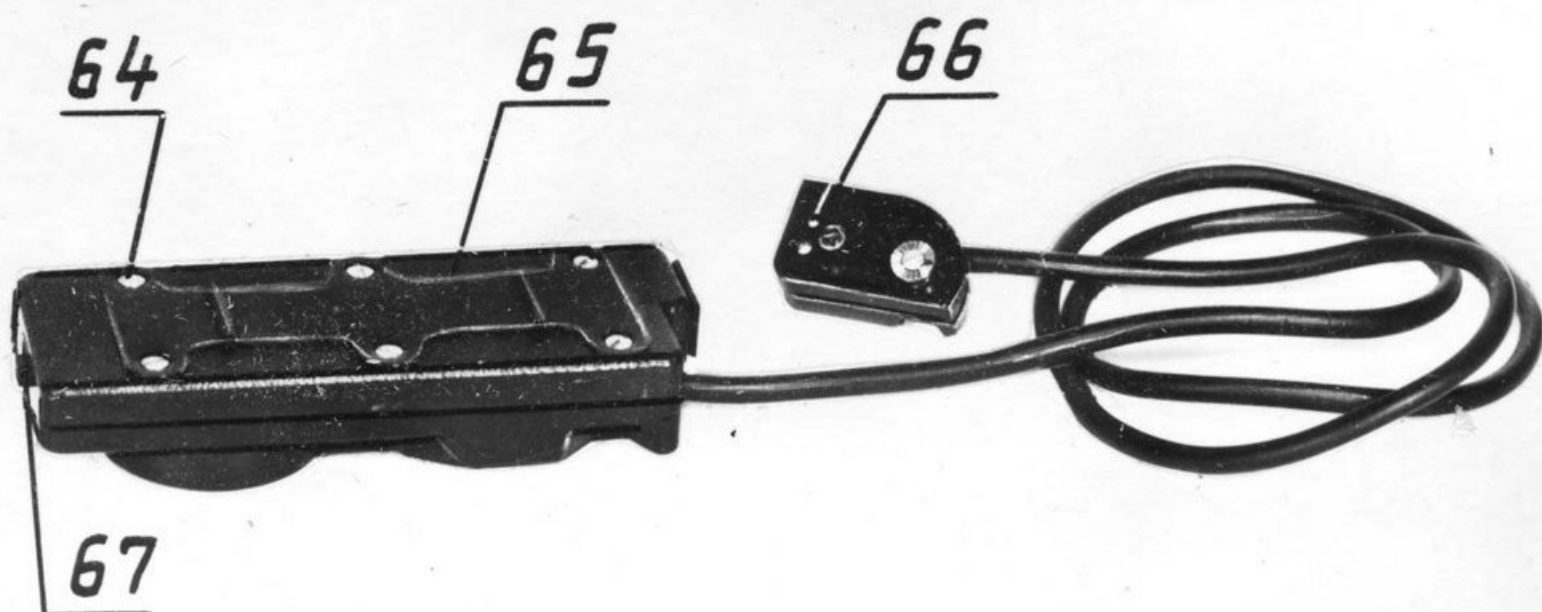
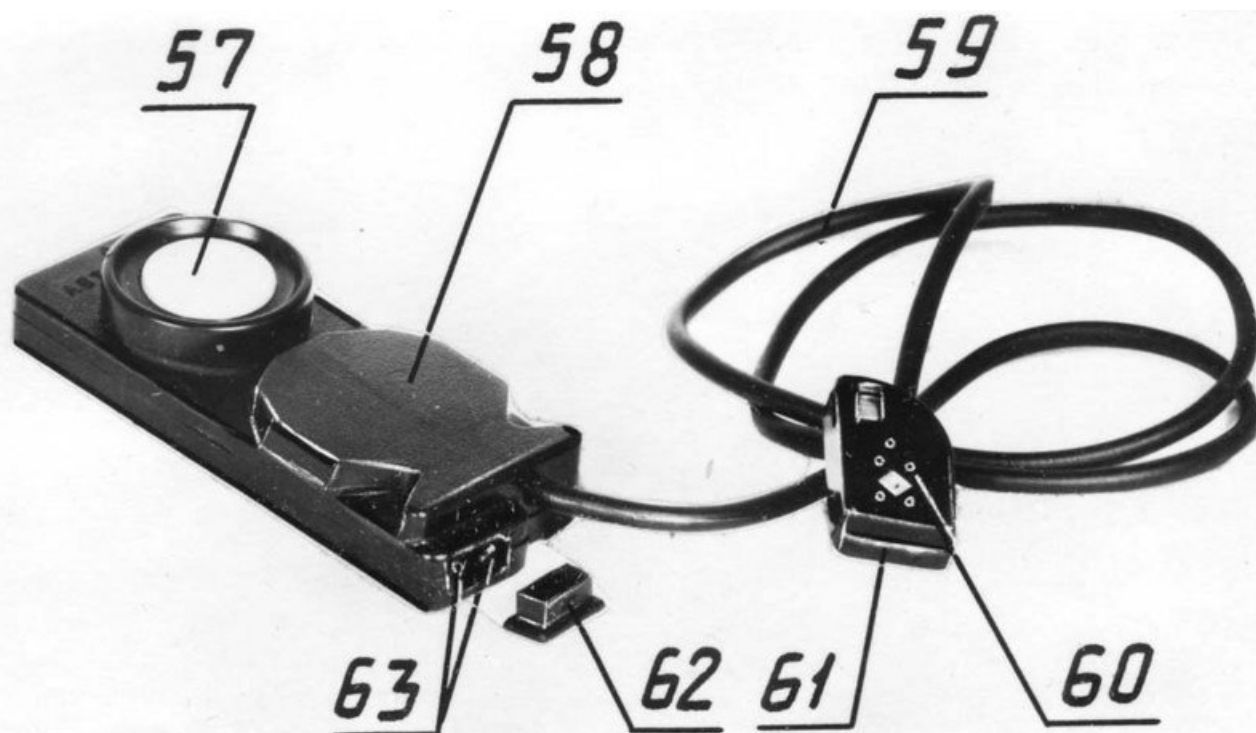


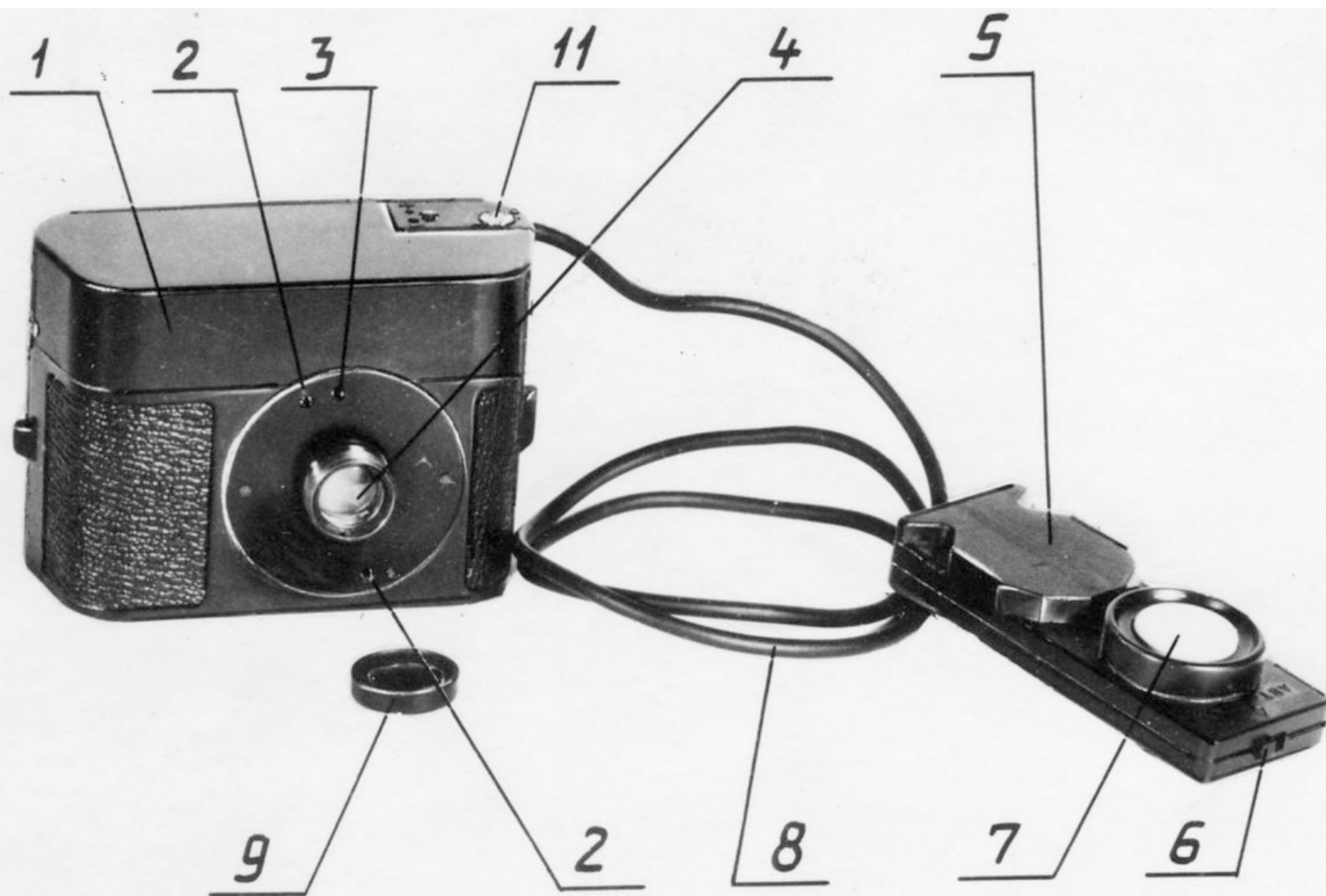
Test pattern











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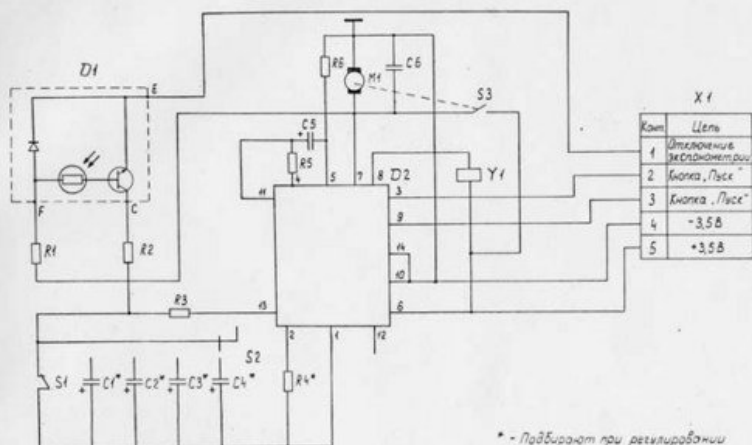
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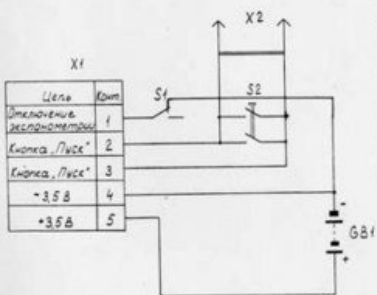


* - Подбирают при регулировании
Камера. Схема электрическая принципиальная.

Поз. обозначение	Наименование	Кол.	Примечание
Резисторы С2-33 ОХ2 487.0237У			
R1	C2-33-0.125-33 кОм ±5%	1	
R2	C2-33-0.125-1 кОм ±5%	1	
R3	C2-33-0.125-100 кОм ±5%	1	
R4*	C2-33-0.125-2 кОм ±5%	1	500 Ом, 150 Ом, 15 кОм
R5	C2-33-0.125-150 кОм ±5%	1	
R6	C2-33-0.125-330 кОм ±5%	1	
С1			
S1	Реле контактная БЛБ 620.224	1	
S2	Переключатель БЛБ 618.383	1	
S3	Реле контактная БЛБ 620.223	1	
X1			
Y1	Электромотор БЛБ 354.059	1	

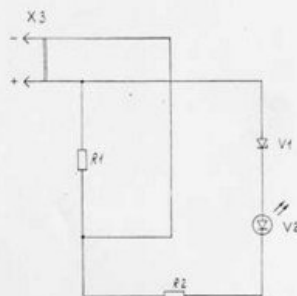
Поз. обозначение	Наименование	Кол.	Примечание
Конденсаторы			
C1*	К10-17-12-М1500-4000 пФ ±10%-Б	1	500 пФ, 150 пФ, 1500 пФ
C2*	К10-17-12-М1500-4000 пФ ±10%-Б	1	2200 пФ, 5500 пФ
C3*	К10-17-12-М1500-4000 пФ ±10%-Б	1	6800 пФ
C4*	К10-17-12-М1500-4000 пФ ±10%-Б	1	10000 пФ, 20000 пФ
C5	К50-18-12-М1500-4000 пФ ±10%-Б	1	0.01 мкФ
C6	К10-17-12-М1500-4000 пФ ±10%-Б	1	0.01 мкФ
D1			
D2	Микролампа 2ЦХ1-003	1	
M1			
	Электродвигатель БЛБ М	1	

Примечание. Допускается замена конденсаторов типа К10-17 ОХ2 487.0237У на конденсаторы типа КМ ОХ2 487.1617У.



Пульт выносной.
Схема электрическая принципиальная.

Поз. обозначение	Наименование	Кол.	Примечание
G81	Аккумулятор А-0.02	1	
S1	Переключатель выключатель ПД 9-2	1	
S2	Кнопка БЛБ 618.383	1	
X1	Реле БЛБ 620.224	1	
X2	Выключатель БЛБ 620.223	1	



Блок контроля питания.
Схема электрическая принципиальная.

Поз. обозначение	Наименование	Кол.	Примечание
Резисторы			
R1	C2-33-1-100 Ом ±5%	1	ОХ2 487.0237У
R2	C2-33-0.125-1000 Ом ±5%	1	ОХ2 487.0237У
V1			
V2	Стабилизатор 2С1492	1	
V3	Дiode светодиодный 2С1078М	1	
X3	Выключатель БЛБ 620.223	1	

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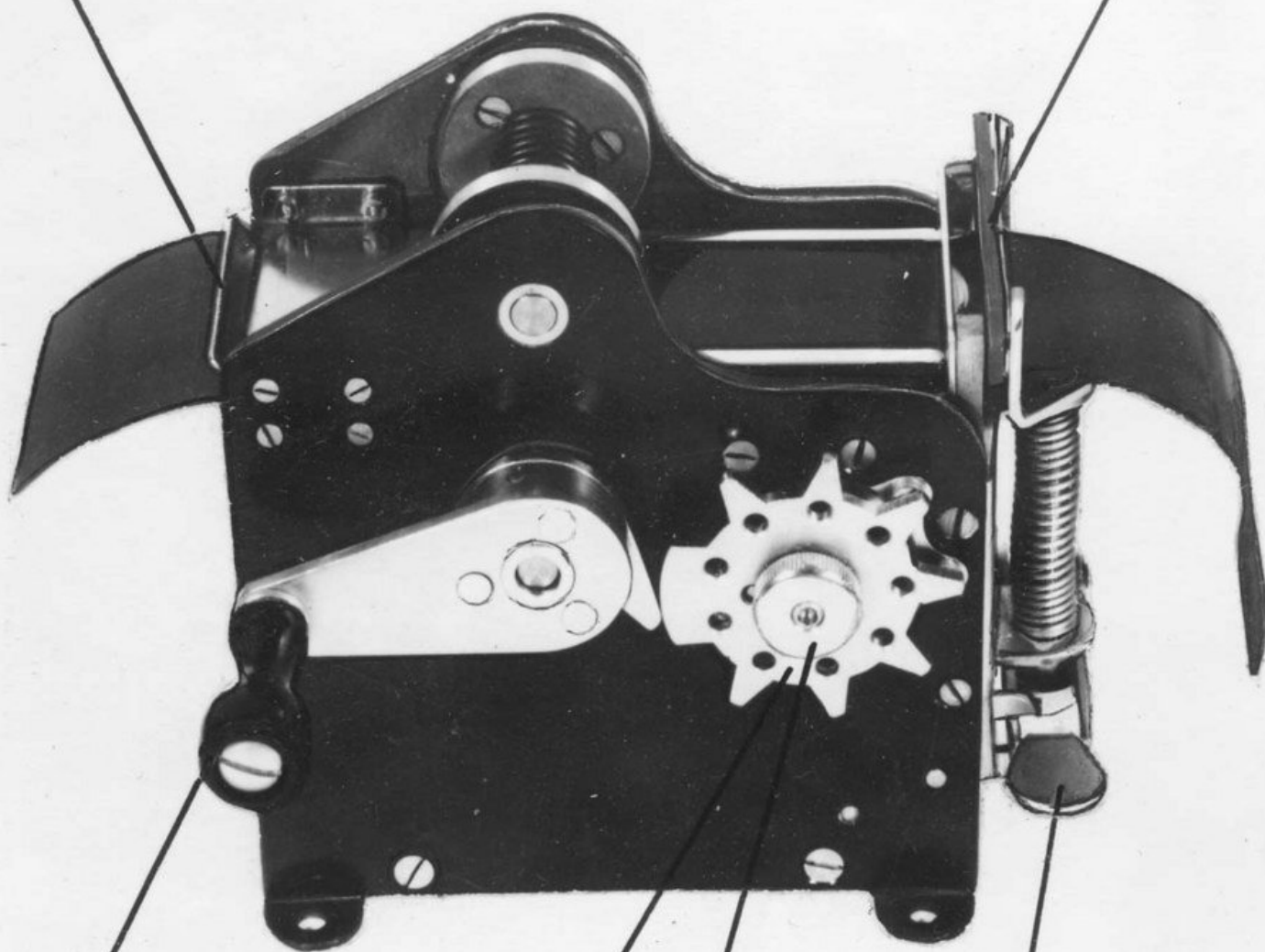
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БЛЗ.821.058 ТО

ИЗДЕЛИЕ "НЕОЛИТ"

Техническое описание и
инструкция по эксплуата-
ции

Лит.	Лист	Листов
01	2	36

Изм.	Лист	№ докум.	Подп.	Дата
Разработ.	Девятков	22/1	23.5.87	
Проверил	Павлов	22/1	23.5.87	
Н. контр.	Шавякова	22/1	23.5.87	
Утвердил				

БЛЗ.821.058

542568 Ф.1 00983

Passport of the camera F21
№ 77917

Main technical data

- | | |
|---------------------------------------|----------------------|
| 1. Frame size - | 18x24mm |
| 2. Nominal shutter speeds (in sec.) - | B, 1/10, 1/30, 1/100 |
| 3. Lens OF-28 №06296 | |
| a) focusing distance | F=28mm |
| b) relative aperture ratio | 1:2.8 |
| c) lens optics are coated | |

The camera outfit consists of:

- | | |
|---|--------|
| 1) The camera with the lens OF-28 and the cassette | 1 set |
| 2) The metal box for cassettes with 2 cassettes in it | 1 set |
| 3) Case | 1 item |
| 4) The passport of the camera | 1 item |
| 5) The passport of the lens | 1 item |

The passport was signed by a representative of military acceptance with a handwritten wording on its reverse that the camera corresponds to the technical requirements.

Signed: Representative of Military Detachment №1 128; Signature and Name. Round seal with wording: Military Detachment №1 128.

The meaning of this is the following: all manufacturing plants in the USSR, producing equipment for military purposes, had military inspectors assigned to those plants. They were called "Voenpredy" – military representatives. They were on the budget of Ministry of Defense. The purpose to have them – it was thought that they can do the inspection work better because they did not belong to staff of a plant and their salary would not depend on the production of a plant and denial to accept the equipment.

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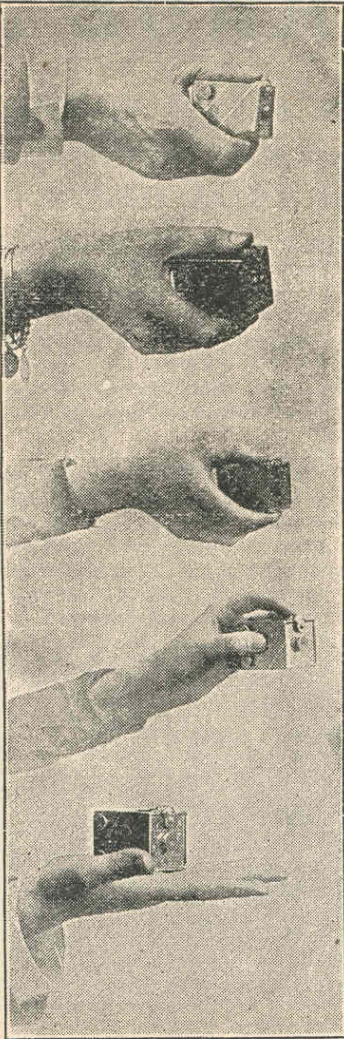
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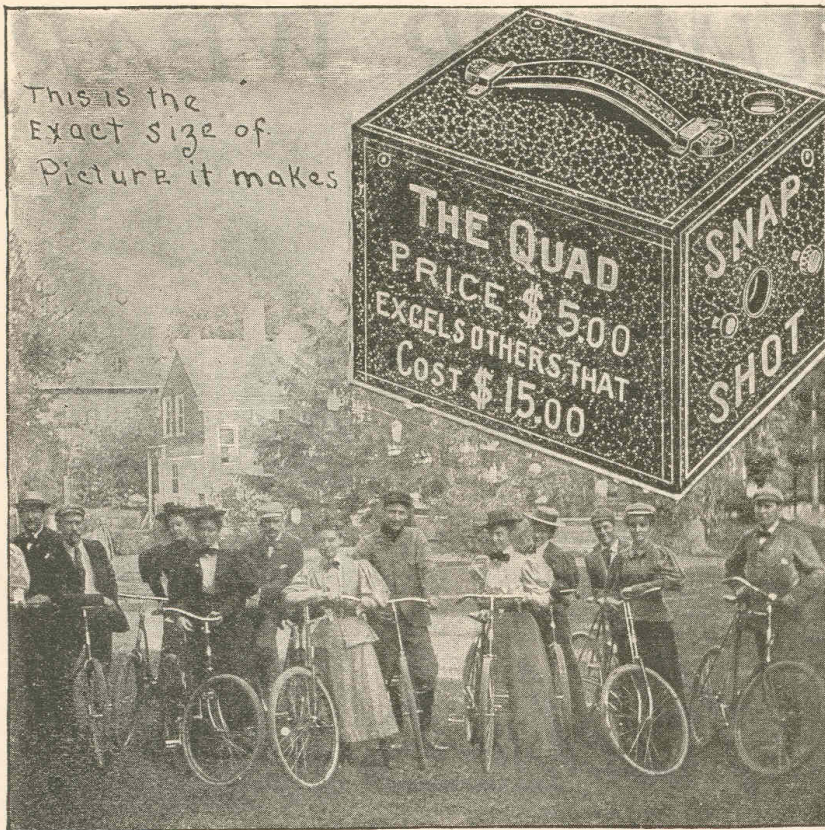
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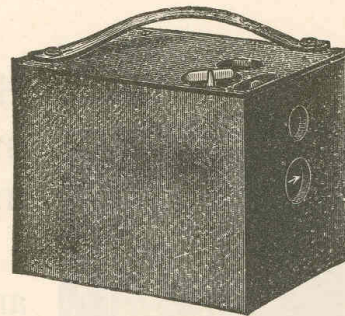
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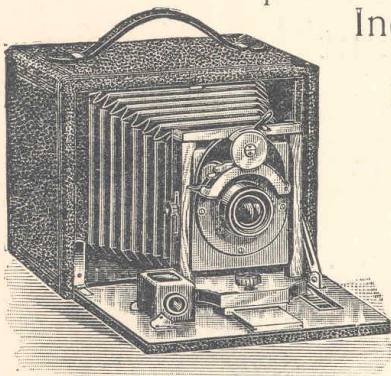
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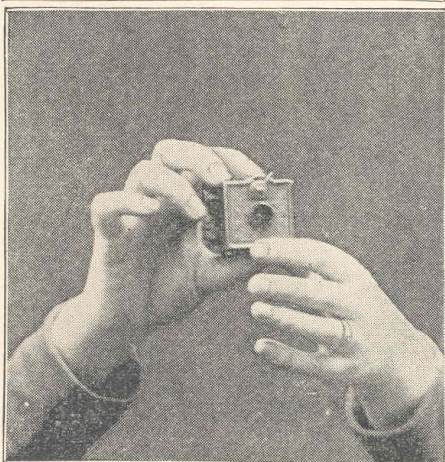
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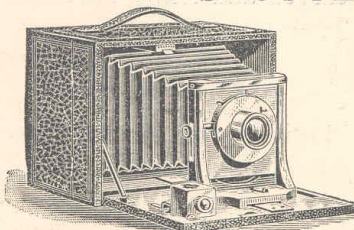


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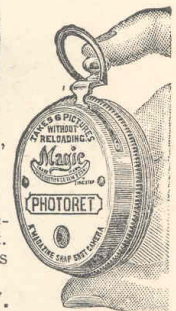
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7194

(No Model.)

W. V. ESMOND.

COMBINED CAMERA AND PHOTOGRAPH EXHIBITOR.

No. 488,331.

Patented Dec. 20, 1892.

Fig. 1.

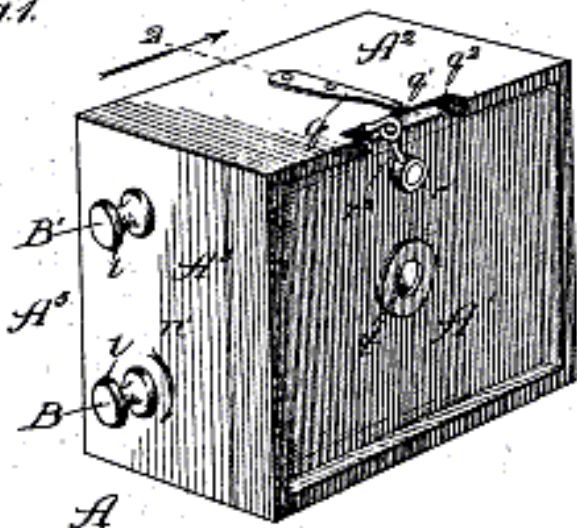


Fig. 5.



Fig. 2.

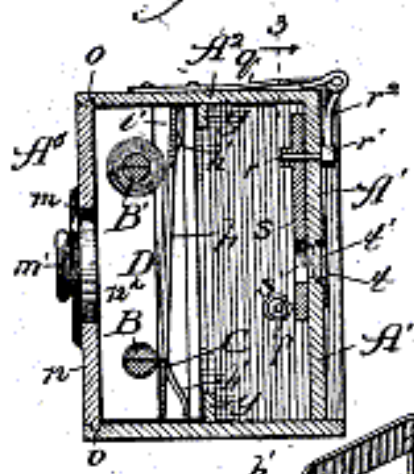


Fig. 3.

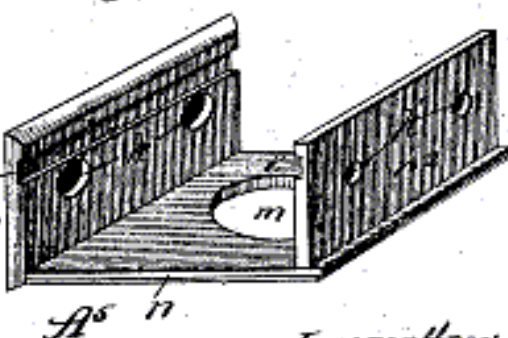
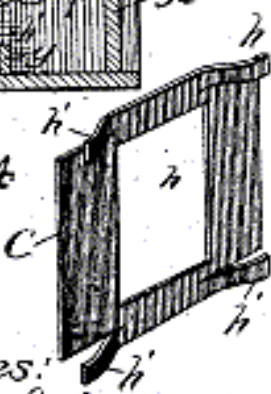


Fig. 4.



Witnesses:
Charles C. Dayland
Clifford White

Inventor:
 William V. Esmond.
 By *Dyrenforth & Dyrenforth*
Attys.

ЗЕНИТ-МФ-1

ZENIT-MF-1

Фотоаппарат «Зенит-МФ-1» предназначен для фотографирования на дистанциях от 3 м до ∞ на неперфорированную пленку шириной 21 мм, толщиной до 0,16 мм. Кассета позволяет перезаряжать фотопленку на свету. Перемотка пленки и взвод затвора осуществляется автоматически.

The ZENIT-MF-1 camera is intended to take pictures at distances from 3 m to infinity on a perforated film 21 mm in width and 0.16 mm in thickness. The cassette allows to reload the film in light. Film rewinding and shutter cocking are carried out automatically.

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

Фокусное расстояние, мм	28
Относительное отверстие	1:2,8
Размер кадра, мм	18×24
Емкость кассеты, кадр	14
Выдержки, с	1/10, 1/30, 1/100
Привод	пружинный
Габаритные размеры, мм	77×41×55
Масса, кг	0,180

Климатические условия эксплуатации

Рабочий диапазон температур, °C	от -20 до +55
Допустимая относительная влажность воздуха при 35°C, %	100

SPECIFICATIONS

Focal length, mm	28
Aperture	f/2.8
Frame size, mm	18×24
Cassette capacity, frames	14
Shutter speeds, s	1/10, 1/30, 1/100
Spring drive	
Overall dimensions, mm	77×41×55
Weight, kg	0.180

Environmental conditions

Operating temperature range, °C	from -20 to +55
Allowed air relative humidity at 35°C, %	100

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UNITED STATES PATENT OFFICE.

WILLIAM V. ESMOND, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
ALFRED C. KEMPER, OF SAME PLACE.

COMBINED CAMERA AND PHOTOGRAPH-EXHIBITOR.

SPECIFICATION forming part of Letters Patent No. 488,331, dated December 20, 1892.

Application filed July 6, 1892. Serial No. 432,970. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM V. ESMOND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in a Combined Camera and Photograph-Exhibitor, of which the following is a specification.

My object is to provide, as a novelty, a construction of convertible camera and photograph exhibitor, by means of which negatives may be taken and the pictures, after being printed on suitable material, such as sensitized film, to produce transparencies, reinserted into the camera and viewed under transmitted light, in the camera, through a lens in the camera case.

Referring to the accompanying drawings—Figure 1 is a perspective view of my improved device; Fig. 2, a section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow; Fig. 3, a perspective view of the removable roll-holder which forms the back and part of one side of the case; Fig. 4, a perspective view of a self-adjusting mat, which screens the sensitized film, about the surface which receives the negative, from the light when the exposure is made; and Fig. 5, a view in elevation of one of the rollers, showing a strip of sensitized film or translucent material attached thereto.

A is the inclosing case provided, at the center of its front side A', with an opening ℓ , which contains a lens ℓ' . On the inner side of the front A' is a swinging shutter having an opening through it, which registers with the lens when the shutter is in one position.

While a shutter is required in connection with my device to regulate the time in making exposures, any construction of shutter may be employed which can, when desired, be removed from the device or be caused to register with the opening ℓ and remain there when the device is to be employed as a photograph exhibitor, as hereinafter described. The shutter I prefer to employ is that shown in the drawings and parts thereof and of its operating mechanism are indicated by the reference letters $s, s', r, r', r^2, q, q', q^2$. I

make no claim to the construction of the shutter shown in the present connection.

A² is a roll-holder comprising a strip n and two strips n', n^2 integral with the strip n and extending at right angles therefrom. The strip n , when in position, forms the back of the inclosing case, and the strip n' a part of the side A². While the strip n' , as shown in the drawings, forms the greater part of the side A², of course the exact relative width of the strip is immaterial so long as it is sufficiently wide to perform its function in the roll-holder. The end of the strip n adjacent to the strip n^2 extends beyond the latter, as shown in Fig. 3, and the said end and side edges of the strip n are rabbeted, as shown, to enter grooves o in the top, bottom and one side of the case. When the roll-holder A² is in position, the strip n is in contact with the inner surface of one side of the case, and the strip n' forms a part of the opposite side, the meeting edges of the parts fitting closely together to render the joints light-tight. At the center of the strip n is an opening m closed by a removable plug m' . The edges of the plug overlap the outer surface of the strip n to render the joint light tight when the plug is in place. Band B' are rollers, each provided with a head l at one end and reduced in diameter at the opposite end, as shown at l' in Fig. 5. In the strip n' are openings k, k' just large enough to receive the rollers, and in the strip n^2 are openings k^2 just large enough to receive the reduced end-portions l' of the rollers. The rollers B, B' are split centrally and longitudinally from their reduced ends l' to or nearly to their head-portions l .

When the device is to be used for taking a negative, the rollers B, B' are withdrawn a short distance through the openings k, k' to free the reduced ends from the openings k^2 . The splits in the rollers afford openings into which the opposite ends of a strip of sensitized film D are inserted. The rollers are then moved longitudinally inward to cause the ends l' to enter the openings k' . When the rollers are thus pressed into position, the inner surfaces of their heads l are in contact with the outer surface of the strip n' , so that

when the shutter closes the opening t and the part A^2 is slid into place the casing A is light tight throughout. In the strips n' , n'' , at the forward side of the openings k , k' , are coincident grooves i , i' .

C is a mat having a central opening h . The mat C is stamped out of a sheet of springy metal and its four corners are cut and bent forward, as shown in Fig. 4, to produce the corner springs h' . When the roll-holder A^2 is out of the case, the mat C may be slipped into the grooves i , i' , to extend at its rear side against the film on the rollers. The corner-springs h' extend into the grooves i , i' and operate, by bearing against the stops formed by the sides of the grooves, to maintain the mat always in contact with the film to prevent the passage of light to the part of the film which is not to receive the exposure. Extending along the upper and lower sides of the case are cleats g , which prevent the passage of light around the upper and lower edges of the mat C , just as the grooves i , i' afford shields for the lateral edges of the mat.

When the rollers with the sensitized film upon them are placed in the case and the shutter is opened, a negative picture will be produced upon that part of the film, which stretches between the rollers B , B' , of the opening h in the mat. The bulk of the roll of film being wound initially upon the roller B' , as indicated in Fig. 2, after each exposure the roller B will be turned to wind up a length of the film equal to the distance between the rolls for a new exposure; and as the roll B increases in diameter the mat C at that side will be pressed forward against the resistance of the springs h' . As the roll B' diminishes, the resilience of the springs h' at that side will cause the mat there to be pressed in the backward direction. There is thus always a light tight joint around the edges of the opening h ; and, as the mat is clamped against the rolls, it operates as a tensioner for the film to keep it flat and smooth for the exposure.

A strip D of sensitized film of any desired length may be employed and be covered from one end to the other with negatives. This film is taken from the case and developed in the usual way, and then placed over a similar strip of translucent material, which may also be sensitized film; and the photographs are printed thereon from the negatives. The strip of translucent material carrying the photographs is then inserted at one of its ends into one of the rollers B or B' , and at its opposite end into the other roller and wound upon one in the same way as when adjusting a strip of sensitized film for the production of negatives. The plug m' in the back of the case is then removed, to admit light behind the adjusted strip, and the shutter opened to leave the lens unobstructed. On then placing the eye to the opening t the photographs may be

inspected through the lens t' by turning the rollers to bring them successively into the field of vision.

As will be understood from the foregoing description, while my improved device is a convertible camera and photograph exhibitor, its exhibiting function is essentially that of presenting to view the picture as a transparency inside the camera case through a lens with the aid of transmitted light. Hence, as will be readily apparent, the lens employed must, of necessity, be of a kind which will enable the view in the camera case to be clearly seen through it (and preferably also magnified) from without the case.

My device constructed as described affords a very good camera and means for magnifying and inspecting the finished photographs; and it is preferably made so small as to be conveniently carried in the pocket.

What I claim as new and desire to secure by Letters Patent is:—

1. A convertible camera and photograph exhibitor, comprising in combination, a light-tight inclosing-case having an opening t in the front side, an opening m in the line of vision through the opening t , a lens t' and a shutter at the opening t , a removable light-tight cover for the opening m , and rollers in the case, at opposite sides of the plane of the opening t , adapted to hold a strip of sensitized material for the taking of negatives, or a strip provided with transparencies to supplant the sensitized strip, and operative to move the strip across the field of view, substantially as described.

2. In a camera, the combination with the inclosing case and film-carrying rolls, of a resilient self-adjusting mat in the case, having an opening through it, and pressing at opposite sides of its opening normally against the rolls, whereby as the film is unrolled from one roll upon the other the mat by self-adjustment will maintain contact with each roll, substantially as and for the purpose set forth.

3. In a camera, the combination with the inclosing-case and film carrying rolls, of grooves i , i' in the case adjacent to the rolls, and a mat C in the grooves provided with springs h' operating to maintain the mat in contact with the rolls, substantially as and for the purpose set forth.

4. In a roll holder for cameras the combination with the roll-holder frame, and rolls supported therein, of stops in the frame and a mat and springs confined in the frame between the said stops and rolls, the springs operating to press the mat normally against the rolls, substantially as described.

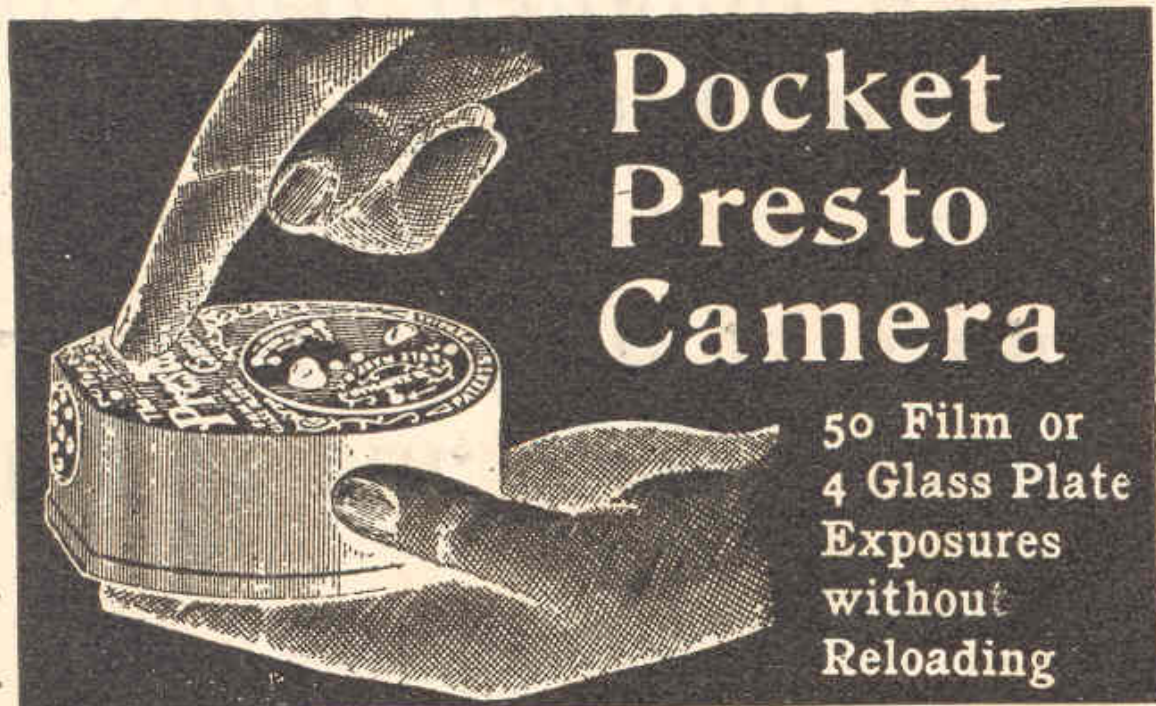
WILLIAM V. ESMOND.

In presence of—

J. M. HANSOM,

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A Photographic Wonder.



Pocket Presto Camera

50 Film or
4 Glass Plate
Exposures
without
Reloading

Photo Size, $1\frac{1}{4} \times 1\frac{1}{4}$. Snap-shot or time exposures. **A real** Pocket Camera, rounded corners, containing all latest improvements in photography.

A Midget in Size. A Giant in Capacity.
So Simple a Child Can Operate It.

Price complete, with film and glass plate magazines, loaded for 25 exposures, and instruction primer,

\$2.50

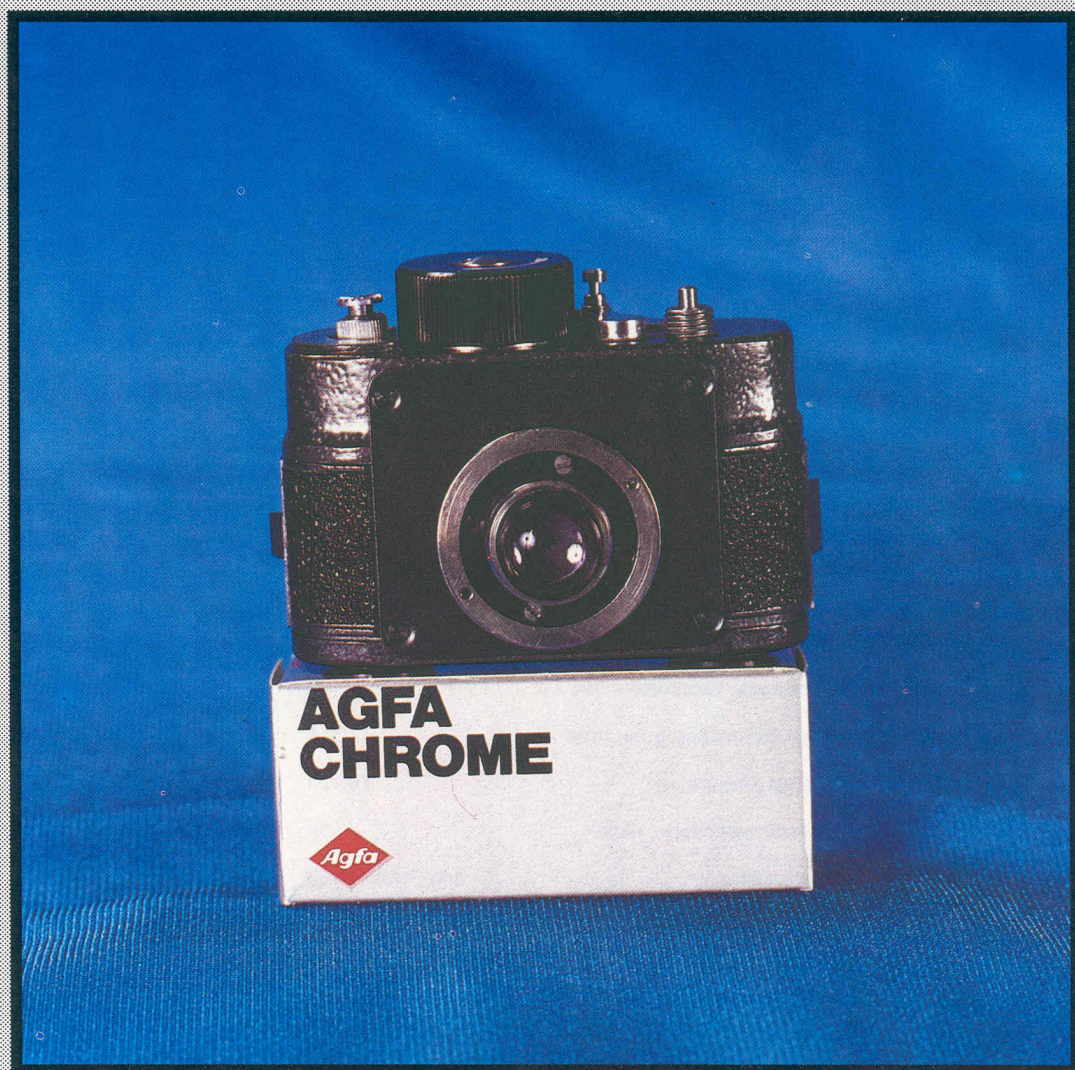
Illustrated booklet and sample photo on receipt of stamp, if you mention this publication.

AGENTS WANTED.

E. B. KOOPMAN,

33 Union Square, = New York.

Красногорский механический завод
Krasnogorsky mechanical plant



ЗЕНИТ-МФ-1



ZENIT-MF-1

UNITED OPTICAL INSTRUMENTS

Instructions For Operating the 'MERLIN' Camera

TO LOAD CAMERA:

Slide off film chamber cover. Holding full film spool firmly between thumb and finger break gummed seal of film. Remove spring clip from film chamber and slide over spool (Fig. 1). Take care not to tear protective paper. This clip is to prevent film from loosening when loading camera. Wind out about 2 inches of

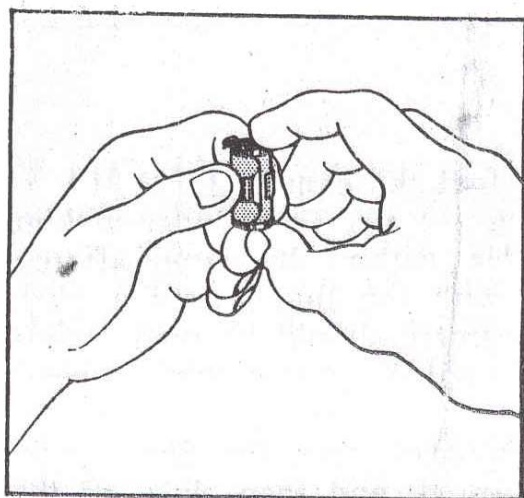


FIG. 1

protective paper. Remove empty spool from winding chamber and hold with slotted end downwards, then insert edge of protective paper evenly through the wider slit and give spool two or three turns inwards to ensure that paper is held securely. Using both hands insert full spool in film chamber fitting tongue of clip into nick provided (Figs. 2 and 3) and empty spool in the other film chamber with protective paper to the back of camera. This should be done in one operation.

To make certain that key in top film chamber is engaged in spool slot, press down spool with forefinger and twist as if to wind film until the slot has been felt to "click" on to the pin (Fig. 4). Replace film chamber cover which must fit tightly against bottom of camera to avoid any light reaching film (Fig. 5). Watch red window closely and *turn knob slowly*. first the warning hand and then the figure 1 will appear in the centre of red window. Film is now in position for first snap.

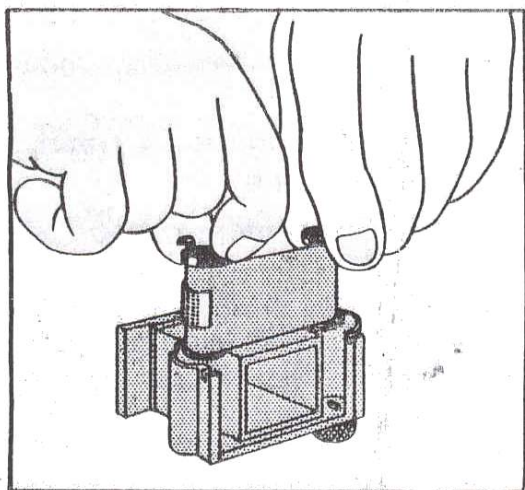


FIG. 2

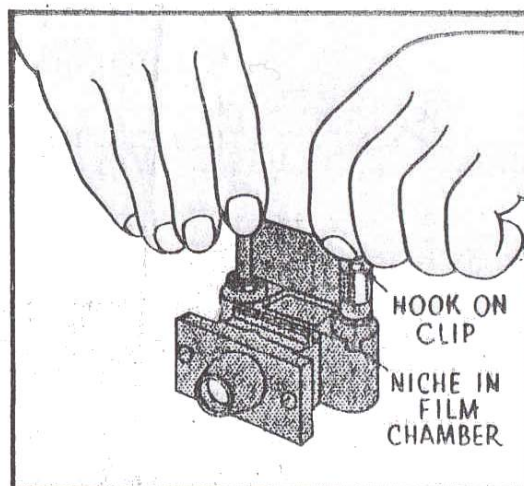


FIG. 3

use Kodak 828 Plus X film. For Winter or indoors use Kodak Super XX film. Use photoflood lights when indoors (ask dealer for instructions). Pictures taken with "Sceenex" Candid Camera can be enlarged. Ask your dealer.

IMPORTANT — If film sticks after eighth picture has been taken, **DO NOT FORCE THE KNOB** — because the end of the film may be caught on the spool. Take the Camera into Dark Room, remove the back and wind remaining film by hand.

NOTE: Do not move shutter lever more than once for each picture. One stroke, either up or down, will take the picture.

GUARANTEE

This camera is guaranteed for one year. In the event it is returned to us for repairs, please include **25c** in coin for handling and postage.

USE 828 KODAK FILM
ON SALE AT ALL DRUG STORES

NOTE — If your dealer does not stock 828 Film, advise us.

EARL PRODUCTS CO.
701 N. SANGAMON ST.
CHICAGO 22, ILL.

A SUGGESTION

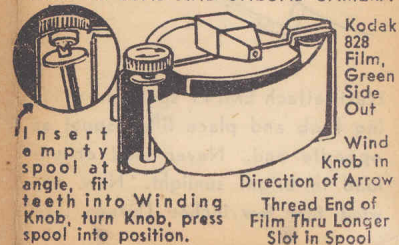
When you have your film developed ask for

OVERSIZE PRINTS

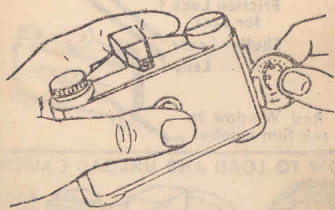
INSTRUCTIONS
FOR USING
SCENEX
CANDID CAMERA



HOW TO LOAD AND UNLOAD CAMERA

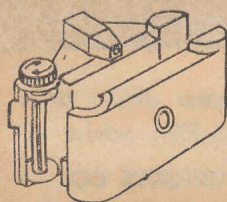


To open camera, pull front and back apart by pressing tabs in opposite directions with thumb and first finger—or use a coin as a wedge between the tabs.



Next, attach EMPTY spool to winding knob and place filled spool at opposite end. Never load or unload in bright sunlight. Now, unwind film few inches (Green side

out), threading end into longer slot on empty spool. Turn knob slightly to tighten film. To close camera, snap front and back together. Be sure that camera is tightly closed on all sides.



Next, slowly turn knob in direction of arrow until the first figure No. 1 appears in green window on back. Each picture is numbered three times (111, 222, 333, etc.). Camera is now ready to take pictures.

IMPORTANT: After each snapshot, turn winding knob until first figure of next number appears in green

window. When eight pictures have been taken, turn knob until complete roll is wound on empty spool, and then remove from camera. After the eighth picture is taken, if there is any difficulty in winding the rest of the paper to the end of the spool, simply lift the cover and finish winding by hand.

To take pictures, hold camera steady, close to eye, resting it against the cheek to avoid movement, and sight through View Finder.



Slowly press Shutter Lever. It takes a picture on either the up or down movement. For sharp clear pictures, keep main part

of subject (heads, etc.) in center of picture as seen through View Finder. Be sure that lens is clean. Pictures you take will show more of the subject than you see in view finder. For best results take pictures at distances of 4 to 12 feet, with sun behind you or on either side of you, in back of camera. Subjects should be in sunlight. Excellent close-ups of faces and other subjects can be obtained at 4 to 6 feet. **DO NOT TAKE PICTURES ON DULL, CLOUDY DAYS OR IN SHADE.** Sun or strong reflection shining into lens will fog pictures.

FILM SUGGESTIONS: For Summer in bright sunlight use Kodak 828 Panatomic or Panatomic X film. For Spring and Fall on bright days

Petite Suite en Accessoires Majeurs

The KOMBI

PAR JACQUES JACOB

Après l'article publié dans Cyclope n° 34, je pensais ne pas pouvoir en dire plus sur ce petit appareil. Il n'en est rien. Lors d'une discussion avec Mr André LEBLANC collectionneur averti, celui-ci me confia qu'il possédait un Kombi et une grande boîte avec des accessoires pour le tirage des photos. Ne me souvenant pas avoir vu ou lu la moindre publicité ou article sur ce genre de matériel et curieux de nature, je voulais en savoir plus et lui suggérais d'écrire un article avec photos à l'appui.

Une vue de l'ensemble permet de se rendre compte de l'échelle respective de chaque accessoire:

1 boîte en bois blanc - 435 x 120 x 100mm.

A l'intérieur du couvercle une très belle étiquette.

Son contenu:

1 cône Agrandisseur 6 x 6 avec sa notice d'emploi.

1 châssis-presse en bois - 325x60x15mm - fenêtre: 295x30mm.

1 pochette en papier noir - 345x59mm avec une étiquette KOMBI.

(10) Bandes papier SOLIO sensibilisé.

(INSTRUCTIONS à l'intérieur):

Les indications () ont été barrées à l'encre noire, et la pochette n'a jamais été ouverte.

25 cartons blanc crème - 60x45mm - dorés sur tranche biseautée.

4 cartons blanc crème avec marge - 68x68mm - pour épreuve 36x36mm maxi.

20 cartons blanc avec marge - 84 x 72.5mm - pour épreuves 53 x 42mm maxi

1 viseur optique

Enfin:

1 appareil «The Kombi» n°364, avec bouchon/diaphragme, cache pour vue ronde 28mm, film souple en nitrate de cellulose enroulé sur les bobines.

La boîte d'origine.

Certains détails différencient ce modèle de celui décrit dans l'article du n° 34 de Cyclope, nous verrons cela plus loin.

Quelques remarques:

Les dimensions relevées sont des valeurs rondes du système décimal, l'appareil est désigné «Kombi» au lieu de «The Kombi», cela peut laisser supposer que ces accessoires sont de fabrication française, peut être à l'initiative d'un dépositaire de la marque en France.

Revenons en arrière pour examiner de plus près le contenu de la boîte, et pour débiter le cône agrandisseur.

C'est l'objectif de l'appareil qui est utilisé pour l'agrandissement, n'étant pas démontable, c'est donc la partie avant du Kombi qui est intégrée dans l'agrandisseur.

La lecture de la notice nous informe de l'essentiel des opérations à suivre.

CÔNE

Agrandisseur Kombi 6 x 6 - INSTRUCTIONS

1- Placer une feuille au gélatino-bromure sous la plaque de verre dans le châssis-boîte du fond (n° 2), le côté sensible en dessus; retirer toute la partie arrière du Kombi, c'est à dire celle munie des 2 boutons, puis entrer dans le trou carré la partie du Kombi munie de son chapeau de pose, l'obturateur fermé de façon à ce que l'objectif se trouve en l'air. Cette opération doit se faire dans le laboratoire.

2- Placer la partie de la pellicule ou cliché que l'on veut agrandir entre les 2 verres maintenus par les caoutchoucs, puis entrer sur le Kombi la partie du cône n°1 de façon à ce que l'encoche soit en face de l'obturateur.

3- Placer le tout à la lumière du jour de manière à ce qu'elle tombe d'aplomb sur le cliché à agrandir, puis mettre l'obturateur du Kombi sur le cran de pose que l'on refermera lorsqu'on jugera le temps d'exposition suffisant.

4- Rentrer dans le laboratoire, retirer le papier sensible et développer.

Le temps de pose est variable; en belle saison, pour un cliché faible, il sera d'environ 15 secondes; pour un cliché fort, le double; en hiver, il faudra en tripler la durée.

Prix de vente du cône: 5 francs.

LE CHÂSSIS-PRESSE

Hormis ses dimensions peu habituelles, il est de conception tout ce qu'il y a de classique.

La fenêtre mesurant 295mm de long, 10 vues de 28mm plus les intervalles, cela donne un pas de 29.5mm.

Le compte semble bon. Dans mon premier article, j'avais estimé (après de savants calculs!) le pas à 30.15mm. Avouez que je ne suis pas tombé loin.

LE PAPIER SENSIBLE

La pochette est close, je pense qu'il faut quand on le peut, laisser le matériel dans son «jus».

De plus cela ne m'appartient pas. On ne saura donc pas ce qu'il y a dedans.

L'épaisseur et le poids de la pochette laissent penser qu'il n'y a pas les 10 feuilles indiquées (mais barrées).

La différence d'épaisseur entre la pochette seule 0.4/0.5mm, et la pochette plus le papier 0.8/1mm, donne 0.3/0.6 pour l'épaisseur du papier selon l'endroit mesuré.

FIG. 4

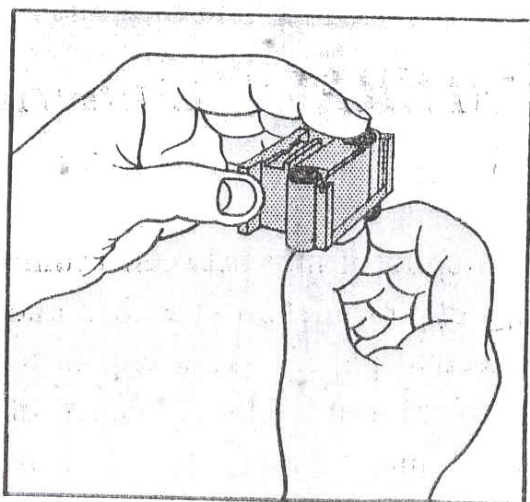
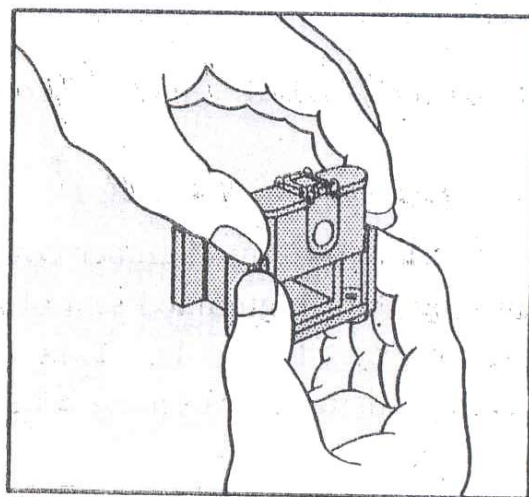


FIG. 5



TAKING THE PHOTOGRAPH

Photos can be taken from 4ft. to infinity. Hold the camera **FIRMLY**, raise to eye level and look through the small aperture of the view finder making sure that the person or object to be photographed is within the larger frame. Gently pull the trigger which operates the Shutter with the finger until a click is heard. The exposure has then been made. The camera should be made ready for the next "snap" by turning the knurled knob until the next number appears in the red window.

After you have made the full number of exposures turn the film winder until the backing paper is fully wound on to the spool, and then slide off the film chamber cover. Place finger on to the wound spool to prevent it unwinding and carefully remove from the chamber. Moisten edge of gummed paper and seal down. Transfer empty spool to the top chamber for the next loading of the camera.

IMPORTANT:

PLEASE READ THIS VERY CAREFULLY.

Do not load or unload the Camera in bright sunlight. Keep the Camera level when taking snapshots. Pull the shutter trigger slowly and evenly so as not to jerk the camera.

Brush the lens occasionally with fine camel hair brush. **DUST IS THE PHOTOGRAPHER'S ENEMY.**

STAND so that the sun is behind you and the object to be photographed is in full sunlight.

DO NOT TRY TO TAKE PHOTOGRAPHS IN A POOR LIGHT. BRIGHT SUNLIGHT WILL GIVE YOU PERFECT RESULTS.

Do not treat the camera as a toy. It is a precision instrument capable of extremely good results.

Load the film into the camera with great care. Careless handling at this stage might spoil your later efforts. **ABOVE ALL MAKE QUITE SURE THE SPRING CLIP FITS INTO THE NICK IN SIDE OF THE FILM CHAMBER.**

**UNITED OPTICAL INSTRUMENTS, 162 HIGH STREET,
SOUTHEND-ON-SEA : ESSEX : ENGLAND**

Zum Photographieren gibt es zwei Möglichkeiten:

1. Die Momentaufnahme:

Bei hellem Tageslicht stellt man den Schieber der sich bei dem mit T — M bezeichneten Pfeil befindet, auf **M** (Moment). Das heißt, man drückt den Schieber so weit als möglich in das Kameragehäuse hinein. Der seitlich angeordnete Hebel (Auslösehebel) wird bei der Momentaufnahme einmal entweder nach oben oder nach unten bewegt. Hierdurch wird der Film etwa $\frac{1}{25}$ Sekunde belichtet. Die Aufnahme ist erfolgt.

Anmerkung:

Bei Momentaufnahmen hält man die „Sida-Kamera“ zweckmäßig senkrecht, wodurch man sie während der Aufnahme leicht auf Stirn und Nase auflegen kann. Der Apparat bekommt dadurch eine Stütze. Wenn der Apparat während der Aufnahme nicht ganz ruhig gehalten wird, besteht die Gefahr, daß die Bilder „verwackeln“ d. h. unscharf werden.

2. Die Zeitaufnahme:

Bei dunklem Wetter, oder bei Aufnahmen in Innenräumen, zieht man den Schieber so weit als möglich heraus. Das heißt man stellt ihn auf **T** (Zeit).

Durch einmaliges Bewegen des Auslösehebels wird der Verschuß geöffnet. Er bleibt dann solange offen, als zur Belichtung (siehe Belichtungstabelle) erforderlich ist. Sodann wird der Auslösehebel nochmals bewegt, wodurch sich der Verschuß wieder schließt. Die Aufnahme ist gemacht.

Also bei Zeitaufnahmen für die Zeitdauer der Aufnahme, Hebel **z w e i m a l** bewegen!

Innenraum (Kirchen usw.) hell 5 Sekunden
Die gleichen Innenräume dunkel 10—15 Sekunden
Diese Belichtungszeiten gelten für Super-Isodux-Film.

Nachtaufnahmen möglichst nur auf Super-Isodux-Film.

Entfernte Objekte 30 Minuten
Im Licht einer Straßenlaterne usw. 20 Minuten
Hell beleuchtete Straße 10 Minuten
Sehr hell beleucht. Straße m. Lichtreklame 5 Minuten
Festbeleuchtung 3 Minuten

Preise der Filme für Sida-Kameras:

Isodux-Film Empf. 26° Scheiner ... RM. 0,50 8 Aufn.

Super Isodux-Film 29° Scheiner RM. 0,65 8 Aufn.

Preis des optischen Sida-Suchers
einzeln RM. 0,50

Die wichtigsten Fehler, ihre Ursache und Abhilfe.

1. Doppelte Linien. Ursache: 1. bei freihändigen Aufnahmen nicht ruhig genug gehalten, 2. Verwacklung bei unsicherer Auflagefläche, 3. zu lange belichtet bei Zeitaufnahmen von bewegten Objekten.
2. Doppelaufnahmen (zwei Bilder auf einem Bildfeld). Ursache: Film nicht nach jeder Aufnahme weitergedreht. Abhilfe: Film nach jeder Aufnahme weiterdrehen.
3. Negative sind dunkel ohne Kontraste. Ursache: Überbelichtung. Abhilfe: Kürzer belichten oder auf hartem Papier kopieren.
4. Dünne Negative. Ursache: Unterbelichtung. Abhilfe: Höchstempfindliche Super-Isodux-Film 29° Scheiner verwenden oder bei Zeitaufnahmen länger belichten.
5. Film ist vollkommen schwarz. Ursache:
1. Kamera nicht richtig geschlossen, 2. der Film hat

Haltung der Kamera.

Kamera möglichst immer in der Höhe des Aufnahmeobjektes halten! Soll ein Kind oder Hund usw. geknipst werden, so halte man den Apparat niedrig, d. h. in Höhe des Aufnahmeobjektes. Man geht immer so nahe als möglich an das Aufnahmeobjekt heran. Kopf- und Brustbilder lassen sich infolge der Güte und Eigenart der Sida-Optik schon auf eine Entfernung von 1 Meter an machen, ohne daß sich dadurch die Schärfe des Hintergrundes ändert.

Achtung!

Man trage die „Sida-Kamera“ nur im Lederbeutel oder in dem Sida-Leder-Etui bei sich, da sich sonst Stoffteile und Staub in den Verschluss setzen und sein Arbeiten beeinträchtigt werden könnte.

Genau passende Lederbeutel und Etuis sind zu dem niedrigen Preise von 50 bzw. 75 Pfg. in den Sida-Verkaufsstellen erhältlich.

Belichtungstabelle für Sida-Kameras.

Momentaufnahmen sind zulässig bei Sonne auf dem Isodux-Film für „Sida-Kameras“, Empfindlichkeit 26° Scheiner. Für Aufnahmen während der dunklen Jahreszeit (Winter) wird jedoch der Super-Isodux-Film für „Sida-Kameras“ 29° Scheiner Empfindlichkeit empfohlen.

Belichtung bei Zeitaufnahmen in sonnenhellen Innenräumen:

Pers. d. Fenster 1 Sekunde
Pers. 1 Meter v. Fenster entfernt ... 3 Sekunden

Anmerkung:

Bei Zeitaufnahmen muß die „Sida-Kamera“ wacker auf einer festen Unterlage ruhen, sonst „verwackelt“, selbst bei der ruhigsten Handhaltung, die Aufnahme. Die Kamera ist so auf eine Tisch- oder Stuhlkante etc. zu stellen, daß der vordere Teil des Apparates über die betreffende Kante hinausragt, so, daß man dann ungehindert den Auslösehebel betätigen kann. Zeitaufnahmen werden mit dem wacker gestellten Apparat gemacht, weil er sich in dieser Lage fest aufstellen läßt. Während der Zeitaufnahme ist der Apparat mit einer Hand festzuhalten, und mit der anderen Hand der Auslösehebel von unten zu betätigen. Nach Beendigung der Zeitaufnahmen ist der Verschlussschieber hineinzudrücken. Der Film ist dadurch vor fremdem Lichte gesichert.

Erst nachdem man sich mehrmals mit der Handhabung der ungeladenen Kamera vertraut gemacht hat, beginnt man mit dem Einlegen des Filmes.

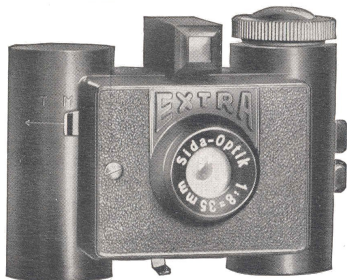
Rollfilme für die Sida-Kamera sind Qualitätserzeugnisse.

Sie sind hochempfindlich und eigens für die „Sida-Kamera“ geschaffen. Um Mißerfolge infolge eines ungeeigneten Filmmaterials zu vermeiden, wurde eine gesetzlich geschützte Spezialfilmrolle geschaffen. Nur diese Sida-Filmspule mit dem Spezial-Film läßt sich in der Kamera verwenden. Die Kamera wird bei Tageslicht geladen oder entladen. Das Einsetzen und Herausnehmen des Filmes soll jedoch möglichst bei gedämpftem Licht, niemals in greller Sonne erfolgen.

Das Öffnen der Kamera.

Wenn sich die Kamera schwer öffnen läßt, steckt man ein Geldstück zwischen die beiden Zapfen und dreht, bis sie sich öffnet. Dann lege man die Filmspule ohne den Klebestreifen zu öffnen in die untere leere Kammer,

SIDA
EXTRA



SONDERAUSFÜHRUNG:

Elegantes, extra leichtes Preßstoffgehäuse,
vernickelte Metallteile, mit optischem Sucher

Gewicht nur 65 Gramm

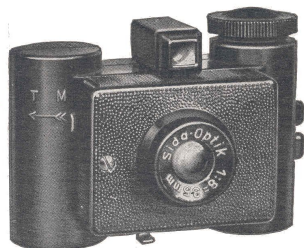
Ihre Vorzüge:

- Kleinstes Ausmaß
(Für die Westentasche oder die Handtasche der Dame)
- Optischer Sucher
- Stabiler Zeit- und Momentverschuß
- Gestochen scharfe Bilder 25x25 mm
- Lichtstarke Optik F 1:8
- Kinderleichte Bedienung

2.50

SIDA

Das Photowunder für Jung und Alt



**Gleiche Vorzüge wie die Sida-Extra
jedoch Metallgehäuse.**

Sie ist der ständige Begleiter beim Wandern, Bergsteigen, Rudern,
bei Aufmärschen und Festen.

Sie gehört in die Hand jedes Soldaten
SA- und SS-Mannes, Hitlerjungen, B.d.M.-
Mädels, Sportlers, Studenten, Arbeiters,
Polizei-Beamten und Schülers.

Sie ist die ideale Kleinkamera für Urlaub
und Reise, für Auto- und Motorradfahrer -
für alle Gelegenheiten!

Sie kostet nur

mit dem optischen Sucher.

1.50

SIDA

PHOTO - AUSSTATTUNG

**Das schöne Geschenk
von bleibendem Wert.**

Sida-Extra-Photo-Ausstattung
im Geschenkkarton RM 5.-

enthält: 1 Sida-Extra-Kamera,
1 Herzog-Isodux-Film 26",
1 Ledertasche, 1 Tischstativ,
1 Stativ-Übergangsschraube

Sida-Photo-Ausstattung
im Geschenkkarton RM 4.-

enthält: 1 Sida-
Kamera mit op-
tischem Sucher, 1
Herzog-Isodux-
Film 26", 1 Leder-
tasche, 1 Tischsta-
tiv, 1 Stativ-Über-
gangsschraube

**Kleine SIDA
große Freude**



vor dem Einlegen in die Kamera oder beim Entwickeln Licht bekommen. Abhilfe: Film vor falschem Licht schützen und wegen der hohen Empfindlichkeit nur bei dunkelrotem Licht entwickeln.

6. Schwarze Ränder am Negativ. Ursache: Film bei zu hellem Licht in die Kamera eingelegt. Abhilfe: Film nur im Schatten oder bei gedämpftem Licht einlegen.

7. Negativ verschleiert. Ursache: Film hat beim Entwickeln zuviel Licht bekommen. Vorsicht — wegen der hohen Empfindlichkeit des Filmes.

8. Flecke im Film. Ursache: 1. Fingerabdrücke. Abhilfe: der Film darf stets nur an den Rändern berührt werden. 2. Runde, helle Flecke. Ursache: Luftblasen im Entwickler. Abhilfe: Film beim Entwickeln bewegen.

Sollte ein Film Fehler aufweisen, so rühren diese ausnahmslos von einer unsachgemäßen Behandlung her.

Wer selbst entwickeln oder kopieren will und noch keine genügende Erfahrung hat, kaufe sich ein ausführliches Lehrbuch. Wer seinen Film nicht selbst entwickeln, kopieren und vergrößern will, gibt ihn nur in ein Fachgeschäft, welches die richtige Behandlung gewährleistet.

Alleinhersteller:

SIDA

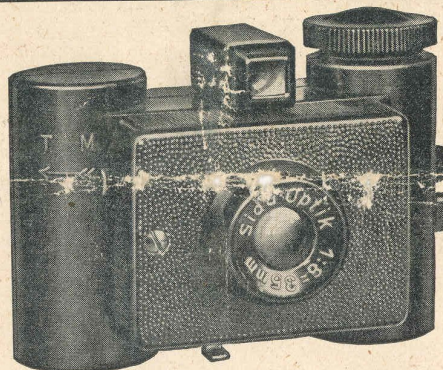
G. m. b. H.

Berlin-Charlottenburg 4

Achtung! Vor dem Gebrauch der „Sida-Kamera“ lesen!

SIDA

Das Photowunder für Jung und Alt

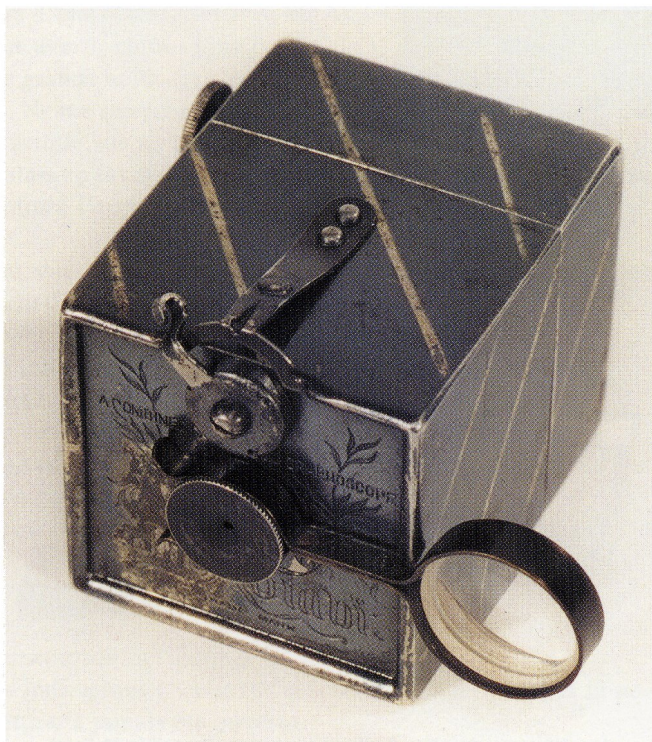


D. R. P. ang. / D. R. G. M. / D. R. W. F. / Auslandspatente ang.

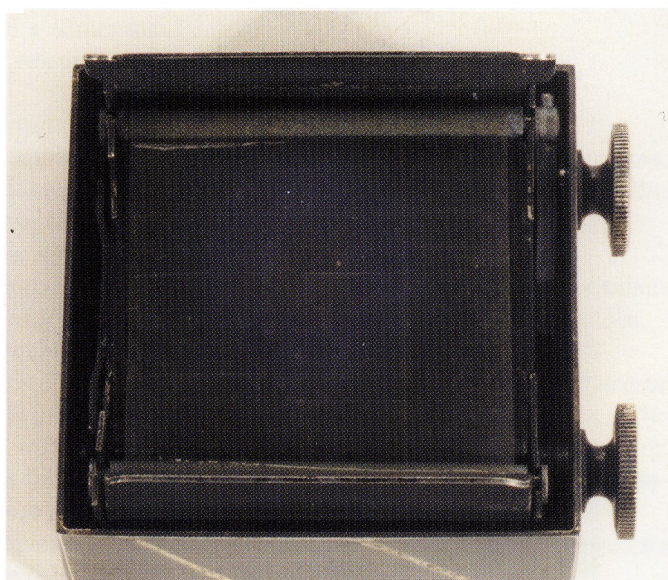
Mit der „Sida-Kamera“ ist ein photographischer Apparat geschaffen worden, der bei größter Billigkeit, einfachster Handhabung und geschmackvollster Ausstattung den weitgehendsten Anforderungen des Photo-Amateurs entspricht, die man bisher nur an wesentlich teurere Apparate stellen konnte. Nun liegt es am Amateur, die Möglichkeiten der kleinen „Sida-Kamera“ dadurch voll auszunutzen, daß er den Photoapparat richtig handhabt.



Le viseur. Notez la petite échancrure près de la lentille, elle empêchera le viseur de pivoter vers le bas



«The Kombi» avec le viseur



Le dos du magasin, sans le cache.
(Vue à comparer avec celles de Cyclope n° 34)

LA BOÎTE

Le plus intéressant en est l'étiquette collée dans le couvercle. J'aurais bien voulu savoir où se trouve «ICI»!

Cette indication «En vente ici» signifie peut-être que la boîte était placée dans un rayon ou dans la vitrine d'un magasin. Elle aurait pu aussi appartenir à un représentant en matériel photographique.

A noter les prix de vente du Kombi: 19 francs, franco: 19.50francs.

L'APPAREIL

Quelques petites différences entre les 2 appareils:

N°364: Les 2 rouleaux ont une surface rugueuse sans anneaux striés.

L'ergot qui soulève la lamelle vibrante est une petite tige insérée dans l'un des rouleaux, l'extrémité de cette tige est arrondie.

Le cache est pour une vue ronde.

Il n'y a pas de marque d'origine.

N°30103: L'un des rouleaux (avec ergot) a 4 anneaux striés, l'autre a une surface entièrement lisse.

L'ergot a son extrémité en pointe triangulaire.

Le cache est pour une vue carrée.

L'indication «made in USA» figure sur l'une des faces de la partie emboîtable du boîtier.

L'inventaire s'arrête là.

Malheureusement il n'y a ni produit chimique, ni matériel pour le traitement du film.

J'en reste donc à mon hypothèse: le renvoi au laboratoire de l'appareil avec le film exposé.

Il y a quelques années, j'ai vu un Kombi avec un magasin supplémentaire (partie arrière de l'appareil contenant les bobines, film, et cache). Ce dernier était muni d'un capot au dessin assorti à l'appareil, donc d'origine. Cet ensemble était peut-être le meilleur moyen d'envoyer un film à développer tout en conservant l'usage de l'appareil.

POUR CONCLURE:

L'appareil «The Kombi» n'est pas rare, il en aurait été fabriqué plus de 50000 la première année, et qui ont été vendus dans le monde entier. Par contre des accessoires tels que ceux décrits sont certainement beaucoup plus difficiles à trouver, et encore faudrait-il les connaître. Par exemple, prenez le cône sans sa notice, il n'y a peu d'indices pour établir le lien avec le Kombi. Il en est de même pour le viseur.

Il y a certainement parmi les lecteurs de CYCLOPE des collectionneurs susceptibles de compléter cet article, ou à même d'en corriger les éventuelles inexactitudes.

Alors à vos plumes, et merci d'avance.

Un grand merci surtout à **André LEBLANC** qui a volontiers accepté de me confier son matériel.

DOCUMENTS DE RÉFÉRENCE:

Collecting Old Camera, Cyril Permutt.

Price Guide To Antique Caméras 1997/98, Mc Keown's.

Collection A. Leblanc.

TEXTE ET PHOTOS J. JACOB

Novembre 1999

halte die Spule mit einer Hand im Spulenbett und öffne den Klebestreifen des Filmes. Durch Druck auf die Filmspule verhindert man, daß sich dieselbe lockert, sonst erfolgt Schadhastwerden des Filmes durch Lichteinfall. Das Ende des roten Schutzpapiers wird in den dafür vorgesehenen Schlitze der leeren Filmspule eingeführt. Filmtransportknopf etwas andrehen, bis das rote Papier gerade und stramm liegt, dann sofort Kamera durch Auflegen des Deckels schließen. Der Apparat ist erst richtig geschlossen, wenn der Deckel hörbar einschnappt. Solange den Transportknopf drehen, bis im roten Fenster der Rückwand die Nummer 1 erscheint. Jetzt liegt der erste Film zur Aufnahme bereit.

Achtung! Nicht vergessen den Film nach jeder Aufnahme bis zur nächsten Nummer weiterzudrehen.

Nach erfolgten 8 Aufnahmen noch einige Umdrehungen am Transportknopf vornehmen, damit sich das rote Schutzpapier um den belichteten Film dreht und dann Kamera wieder öffnen. Film, während er noch im Apparat liegt, mittels des beigegebenen gummiferten Verschlussstreifens fest zukleben und herausnehmen.

Achtung!

Der Film läßt sich nur herausnehmen und einsetzen, wenn die Spulenkerbe senkrecht steht. Zweckmäßig dreht man den Apparat herum, bis die zugeklebte Filmspule von selbst in die Handfläche fällt. Die nunmehr leergewordene untere Filmspule wird zur Bereitschaft für den nächsten Film in die andere Kammer eingesetzt, die sich am Schaltknopf befindet. Die neue Filmspule wird, wie bereits vorher beschrieben, in den Apparat eingelegt.

An Fehlaufnahmen ist wahrscheinlich niemals die Kamera schuld, sondern es ist diese Gebrauchsanweisung nicht genau beachtet worden.

Unschärfe Aufnahmen entstehen nur, wenn der Apparat während der Aufnahme, auch unbewußt, nicht ruhig genug gehalten wurde. Übung macht auch hier den Meister!

Betrifft Sucher.

Die „Sida-Kamera“ Modell 1 ist nur mit einem behelfsmäßigen Rahmensucher (log. Ikonometer) ausgestattet. Derjenige Teil des Bildes, der durch den Rahmensucher sichtbar ist, erscheint ungefähr auf dem Film. Wer jedoch Wert auf genaue Aufnahmen legt und den Bildausschnitt vor der Aufnahme genau prüfen will, der kauft die „Sida-Kamera“ Modell 2 mit dem optischen Sucher oder kauft den optischen Sida-Sucher sofort nach.

Der optische Sida-Sucher läßt sich nachträglich von jedem Laien auf die „Sida-Kameras“ Modell 1 aufsetzen.

Der optische Sucher kann nur eingesetzt werden, wenn die Kamera-Rückwand abgenommen ist. Man schiebt den Sucher in die am oberen Kamerateil ausgesparte Führung so ein, daß die abgeschrägten Flächen des Suchers nach vorn zeigen. Dann setzt man die Kamerarückwand auf und preßt durch Andrücken der Rückwand den Sucher bis zum Anschlag hinein.

Der Sucher kann jederzeit nachgekauft werden. Der Sida-Sucher, nach dem umgekehrten Prinzip des Galiläischen Fernrohrs gebaut, ist zugleich als ziemlich stark vergrößerndes Fernrohr zu benutzen, wenn man ihn mit der umgekehrten Schaulöffnung verwendet.

Das Entwickeln der Filme besorgt jedes Fachgeschäft. Der Film wird zweckmäßig kräftig durchentwickelt. Zum Kopieren der kleinen Bilder nehme man hartes Papier, da hierdurch die Einzelheiten am besten hervortreten. Vergrößerungen von besonders gut gelungenen Aufnahmen fertigt jedes Fachgeschäft an.



Prepared by
GEVAERT

for
UNIVERSAL CAMERA CORPORATION
NEW-YORK U.S.A.

Univex

ULTRACHROME
Nº 00 Film Roll

PATENTED IN U.S.A.
PAT. Nº 2029474

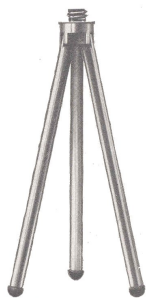
ALSO PATENTED IN
FOREIGN COUNTRIES
MADE IN BELGIUM

6 EXPOSURES

MUST BE DEVELOPED BEFORE JAN. 1942

SIDA

ZUBEHÖRE:



SIDA-TISCH-STATIV
Nicht größer als ein Bleistift

Herzog-Isodux-Film 26°, 8 Aufn.	RM 0.50
Herzog-Super-Isodux-Feinkorn-Film S. F., 29°, 8 Aufnahmen	RM 0.65
Herzog-Super-Isodux-Film 29°, 10 Aufnahmen	RM 0.75
Sida-Lederbeutel mit Bügel	RM 0.50
Sida-Ledertasche	RM 0.75
Sida-Bereitschaftstasche	RM 1.—
Sida-Gelbfilter	RM 0.75
Sida-Tischstativ m. Stativschraube für Sida-Kamera	RM 1.25
Sida-Tischstativ mit Normalgewinde	RM 1.—
Sida-Stativschraube	RM 0.25

SIDA

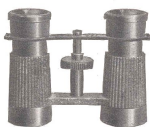
FERNGLAS

für Sport, Theater und Reise

3fache Vergrößerung

achromatische
verkittete Linsen

6.50



Sida-Fernglasbeutel mit Bügel	RM 0.75
Sida-Fernglasbeutel mit Reißverschluß	RM 1.50
Sida-Fernglastype mit Riemen	RM 1.80

Die SIDA-Artikel leisten bedeutend mehr als die Preise versprechen! Das beweisen die zahlreich eingehenden begeisterten Anerkennungen:

Herr Adalbert Rother, Liegnitz, schreibt:

Im Dezember v. J. kaufte ich mir einen „SIDA“-Apparat, mit dessen Leistung ich recht zufrieden bin. Ich benutze ihn fast ständig, obwohl ich noch einen anderen Apparat Größe 6x9, seit Jahren besitze. — Die Handhabung Ihrer Kamera ist so einfach, die Unterbringung bequem und kann ich für jede Aufnahme garantieren, sodaß mir das Fotografieren mit dem kleinen Apparat fast mehr Freude macht, als mit meinem größeren . . .

Herr Ottokar Eisermann, Osnabrück, schreibt:

Durch Zufall wird mir Ihre Klein-Kamera bekannt. Ich muß sagen, daß hier eine Leistung von geradezu überwältigenden Ausmaße vollbracht wurde, denn wer möchte es für möglich halten, schon für RM 1,50 einen brauchbaren Klein-Foto-Apparat zu erhalten.

Frau H. Gentzen, Berlin, schreibt:

Ich glaube nicht, was Sie in Ihren Inseraten im „Schwarzen Korps“ versprochen und kaufte in einer hiesigen Fotohandlung Ihre SIDA-Extra-Kamera und einige S. F. Super-Isodux-Feinkorn-Filme 29 Grad nur, weil der Versuch nicht viel kostet. Ich bin aber erstent, daß solche Leistungen bei einem so niedrigen Preise möglich sind! Ohne Ausnahme erstklassige, randscharfe Bilder! Auch die Vergrößerungen wurden fabelhaft. Die SIDA wird auf allen Ausflügen in meiner Handtasche mein ständiger Begleiter bleiben. — Ich habe Ihre Kamera in meinem Bekanntenkreise weiter empfohlen und habe auch dort überall nur beste Anerkennungen gehört.

Herr K. Markwort, Darmstadt, schreibt:

Ich bin glücklicher Besitzer Ihrer „SIDA“-Kamera und bin ganz begeistert von der Leistungsfähigkeit des Apparates. Ich habe im Januar bei Sonne Momentaufnahmen gemacht, die ganz richtig belichtet und wunderbar zum Vergrößern wurden.

Herr Karl Hildebrandt, Oberschöneweide, schreibt:

Vor ca. 14 Tagen kaufte ich mir Ihre „SIDA“-Kamera und muß Ihnen meine Anerkennung zollen. Die SIDA ist wirklich ein Foto-Wunder im Preis und im Arbeiten. Ich habe sehr schöne scharfe Bilder damit erzielt.

Herr Reinhard Arend, Berlin, schreibt:

In der Anlage übersende ich Ihnen eine von mir mit der SIDA gemachte Aufnahme. Ich freue mich, Ihnen für die Güte Ihres Fabrikats meine volle Anerkennung aussprechen zu können. Es ist dies nicht die einzige Aufnahme, die mir mit der kleinen billigen „SIDA“ so gelungen ist, wie man es bei weit teureren Apparaten auch nicht hätte besser verlangen können.

Frau Margarete Arnold, Charlottenburg 9 . . .

Ich selbst habe bis jetzt noch nie fotografiert, wagte mich aber Mitte Juli daran, angeregt durch die Sida. Ich erwartete wenig davon und war überrascht, welche Freude mir der kleine Reisebegleiter bis jetzt schon bereitet hat. Die beigelegten drei Bilder sind nur ein Bruchteil meiner Sammlung von reizvollen architektonischen Ausschnitten meiner verschiedenen Autofahrten, die mir durch die Erfolge mit der Sida nun eine bleibende Erinnerung sein werden.

Herr W. D. von Thümen, Greifswald . . .

Mit Ihrem Apparat bin ich sehr zufrieden. Besonders entspricht mir der optische Sucher und das Objektiv, das die Bilder bis zum Rand scharf zeichnet. Eine Vergrößerung 9x12 cm gelang sehr gut. Ich dachte nicht, daß für RM 1,50 so ein Apparat hergestellt werden kann. Als vollständiger Laie mache ich Aufnahmen, von denen jede gelungen ist.

Verbesserungen und Veränderungen unserer Modelle vorbehalten.

DIE 100000fach bewährte KAMERA



Originalgröße der
SIDA-Aufnahme

Das Photowunder für Jung und Alt

SIDA

Patent angem. DRGM DRWZ
Auslandspatente

Sida G.m.b.H. / Berlin - Charlottenburg 4



La boîte et son contenu

Question: Trouvez le nombre de feuilles de papier!
Une petite consolation toutefois: la glace du châssis-presse mesure 300x36mm, ce qui donne une indication sur les dimensions possibles de la bande de papier.
Etant donné le format, ce papier est destiné au tirage contact des négatifs et non à l'agrandissement.

LE VISEUR

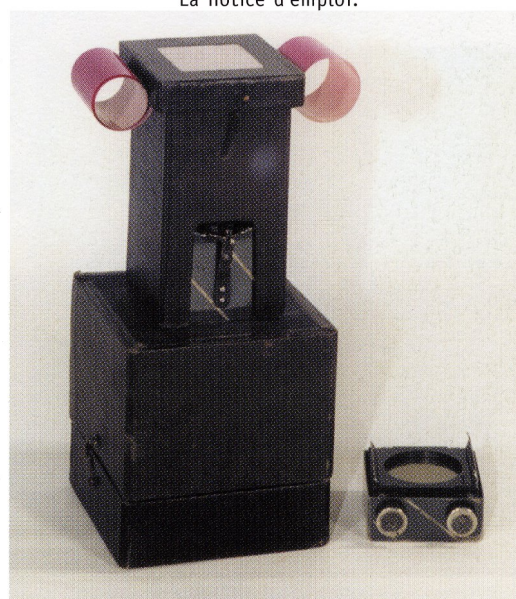
Une lentille biconcave $d = 18\text{mm}$ cerclée de métal et avec une sorte de fourche-ressort, se fixe sur le bouchon/diaphragme de l'objectif.
Le fait qu'il soit rond doit le destiner aux appareils ayant le cache pour une vue ronde (raison simpliste).
Le cache pour une vue carrée était-il possible lors du lancement de l'appareil ou avait-on le choix?
L'appareil de l'ami Leblanc (cache rond) porte le n°364, le mien (cache carré) a la n°30103.
Ceci expliquant peut-être cela.



Les éléments du cône: Le fond avec papier sensible et verre.
La partie basse (N° 2) du cône, on distingue l'ouverture carrée qui recevra l'appareil Kombi. La partie haute (N° 1) du cône avec la glace inférieure du passe-vue, et la glace supérieure que l'on emboîte, puis fixe avec les élastiques, l'ouverture permet de manœuvrer l'obturateur.
La notice d'emploi.



L'étiquette collée
à l'intérieur du couvercle de la boîte .



Le cône assemblé,
prêt à opérer avec un film (factice) en place.

UNIVEX ULTRACHROME ROLLFILM

UNIVEX ULTRACHROME ROLLFILM possesses extreme speed as well as high sensitivity to relatively weak light, which makes it possible to take good pictures in the early morning or late evening. YET, your UNIVEX negatives will not be over-exposed when made under strong noon-day brilliance.

THE HIGHEST DEGREE OF ULTRACHROMATISM gives it the property of rendering colors according to their true relative importance to your eyes.

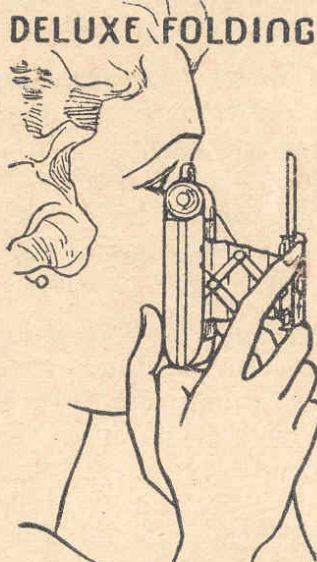
THE EXTREMELY FINE GRAIN AND CLEAR BASE OF UNIVEX Ultrachrome Rollfilm make it possible to obtain beautiful enlargements of your UNIVEX pictures up to 8 in. x 10 in.

UNIVEX ULTRACHROME ROLLFILM is a product of exceptional quality in every respect. PURCHASE IT AT YOUR DEALER'S AT TEN CENTS (10c) PER ROLL OR SEND US THIRTY CENTS (30c) IN STAMPS FOR THREE ROLLS (postage prepaid by us anywhere in the U. S. A.). CAUTION: Do not send coins as we cannot be responsible for coins stolen or lost in the mails.

UNIVERSAL CAMERA CORPORATION
32-46 West 23rd Street New York, U.S.A.

Printed in U.S.A.

Instructions FOR PICTURE-TAKING WITH MODEL AF *Univex* DELUXE FOLDING CAMERA



UNIVERSAL CAMERA CORPORATION

GENERAL OFFICES
32-46 W. 23RD STREET
NEW YORK, N.Y. U.S.A.

Foreword

THE Model AF Univex Camera is constructed with all the care and painstaking application to every detail that one would expect to find in far more expensive cameras.

Universal Camera Corporation manufactures more cameras per year than any other company in the world. It is only the enormous production facilities behind this camera which make its high quality and amazingly low price possible.

While it possesses many obvious advantages over conventional type cameras, such as compactness and light weight, the real secret of its unparalleled popularity is economy and simplicity of operation. Univex Ultrachrome Rollfilm costs but 10¢ per roll of 6 shots—and they enlarge beautifully. The amateur Photographer can shoot pictures with it all day long and, at nominal cost, have those of unusual interest enlarged up to as large as 8" x 10".

feet, use two bulbs. Never use Photoflash bulbs without reflectors. Further details will be found on the wrapper of each bulb.

After taking time exposures, be sure that the time-stop is returned to "SNAP" position before closing the camera or making snapshots. The camera cannot be completely collapsed unless this is done.

REMOVING THE FILM: After the last film has been exposed, turn the winding knob until the end of the protective paper passes the red window. Then give several additional turns



Figure 16

to make sure that all of the protective paper is wound around the spool. Remove back cover and, WITHOUT REMOVING SPOOL FROM CRADLE, moisten gummed seal on end of protective paper and give winding knob several additional turns to make sure that protective paper is sealed by gummed seal. Then turn winding knob until *narrow* end of SPOOL HEAD ROTATING GROOVE is in center of cradle and outward (Fig. 16).

Now, pull back spring grip and remove spool from camera, being careful immediately to wrap same carefully for protection. It is now ready for development. This may be done by a photo-finisher or by yourself. Films should be developed at earliest possible moment after removal from camera. The quality of the image on all sensitized products is retained by prompt development after exposure.

BEFORE REPLACING BACK COVER OF CAMERA the empty spool should be transferred to opposite cradle to be in position for next loading of camera. It is a good plan to reload the camera as soon as an exposed film roll has been removed, to be ready for the next pictures. Load the Camera with UNIVEX No. 00 Ultrachrome Rollfilm.

THE 39¢ CAMERA THAT THRILLED THE WORLD

Any UniveX A-F user can afford a spare camera when the price is as low as this . . . a camera for the children . . . a camera to have around home when the folding camera is off on a trip . . . a camera that takes crystal clear pictures in anyone's hands.

The UniveX Model "A" Camera is made of G. E. Textolite, with a fine hand polished lens and quality construction throughout. All parts are rust proof, the camera is fool proof and simple to operate.

Because of their outstanding value, UniveX Model "A" Cameras sell out quickly and you may find your dealer out-of-stock. If so, send 39c **IN STAMPS** or money order direct to us. **CAUTION:** Do not send cash to us through the mails for it is often stolen and, as this is beyond our control, we cannot be responsible for losses of this kind.

**USES THE SAME FILM
AS UNIVEX MODEL A-F**

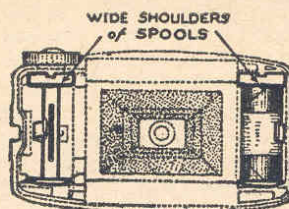


Figure 3
This camera can be loaded or unloaded in daylight. However, this should always be done in a subdued light, not in direct sunlight. **WITHOUT BREAKING GUMMED SEAL ON THE PROTECTIVE PAPER** (Fig. 3) insert film spool in empty cradle under the spring grip, with the wide slotted shoulder of the spool at same end of cradle as the wide shoulder appears on the empty spool in opposite cradle (Fig. 3).

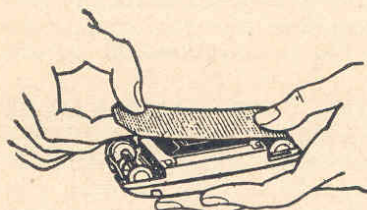


Figure 4

HOLDING SPOOL IN CRADLE WITH ONE HAND (Fig. 4) break gummed seal on full spool and draw out end of protective paper until it reaches spool in opposite cradle with about $\frac{1}{2}$ inch to spare. (Red side of protective paper must be to the back of camera.)

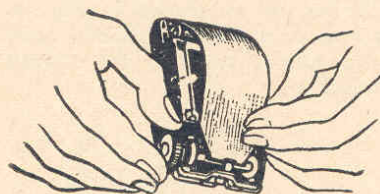


Figure 5

Thread end of protective paper through the slit in the empty spool (Fig. 5) as far as it will go. Care must be exercised when this is being done so that the protective paper is started straight on the winding spool. **DO NOT UNROLL TOO MUCH PROTECTIVE PAPER FROM THE FULL SPOOL OR THE FILM WILL BE FOGGED AND SPOILED.** Give the winding knob two or three forward turns (Fig. 5) to bind paper securely on the spool. Then, securely replace back cover of camera, making sure that the button on the bottom (inside) of the back cover fits securely into the recess on the camera body (Fig. 2), and then close the latch (Fig. 1).

(Continued from Page Eleven)

INDOOR PHOTOFLOOD PHOTOGRAPHY:

To aid you in obtaining the best results from time exposures indoors with a MODEL AF UNIVEX, the following exposure table has been compiled. It is based on the use of photoflood bulbs in reflectors.

Distance of Lamps From Subject	NUMBER OF LAMPS				
	1	2	3	4	
5 ft.	4 sec.	2 sec.	2 sec.	1 sec.	
10 ft.	16 sec.	8 sec.	6 sec.	4 sec.	
15 ft.	36 sec.	18 sec.	14 sec.	9 sec.	

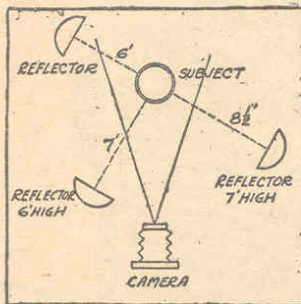


Figure 15

FOR MORE DETAILED INSTRUCTIONS ON INDOOR PHOTOFLOOD AND PHOTOFLASH PHOTOGRAPHY, see your local photo-supply or Photoflood lamp dealer, who will be glad to give you instruction pamphlets on this subject free of charge. Photoflood lamps are sold by all dealers at 25c each.

To begin the time exposure, press the exposure lever in one direction, as far as it will go. To end the exposure, return the exposure lever to its original position.

EXPOSURES WITH PHOTOFLASH BULBS: If it is desired to use Photoflash Bulbs, the shutter of the camera must be operated exactly as for a time exposure. Open the shutter, set off the flash, and close the shutter. The three operations should follow each other in as rapid succession as possible. Ordinary room lights may be left burning during a flash exposure, so long as no light shines directly into the lens of the camera.

For portraits or small groups up to twelve feet from the camera, we recommend the use of one No. 20 Photoflash Bulb. For distances between twelve and twenty

If reflectors are not used with the photoflood bulbs, the exposure time given in the table must be multiplied by three, or else three times the number of lamps must be used. Fig. 15 may be followed in arranging the lights, camera, and subject, to get good results.

The ultimate cost of his successful pictures is thus reduced to a fraction of what it would otherwise be.

Univex Cameras are regularly used in a wide range of mercantile, scientific, professional and other fields. They are official equipment of Metropolitan Police Forces, Explorers, Newspaper Reporters, Staff Photographers, Commercial Photographers and Youth Organizations throughout the world.

Univex has never side-stepped the responsibility of its leadership in the miniature camera field nor has it ever missed an opportunity to blaze new trails of enjoyment in the idea which it created and pioneered, that of "PERFECT PHOTOGRAPHY AT A NEW LOW COST".

This DELUXE FOLDING CAMERA represents a culmination of all our vast experience in bringing fine photography within the reach of all. American conceived, it is American designed. And likewise, it is manufactured in America with American capital and labor under the N.R.A.



IMPORTANT

To get good, sharp, crystal-clear pictures with your UNIVEX, the lens must be kept clean. It is an excellent practice to wipe it carefully each time it is removed from the pocket, and before taking pictures. Any specks of dust on the lens will show on the picture, particularly if the picture is greatly enlarged.

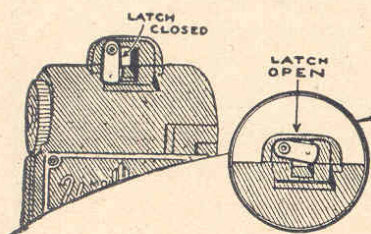


Figure 1

these instructions before taking any pictures with your camera and before loading it with film. For even with this simple, fool-proof camera, certain precautions and general rules of photography must be observed. Particular attention and study should be given to the paragraphs on **LOADING THE CAMERA** and **REMOVING THE FILM**. If the negatives are light-struck along the edges it is because light has been permitted to penetrate between the edges of the film-roll and the spool flanges in loading or removing the rollfilm from the camera. If the instructions are carefully studied and followed, this trouble will be completely avoided.

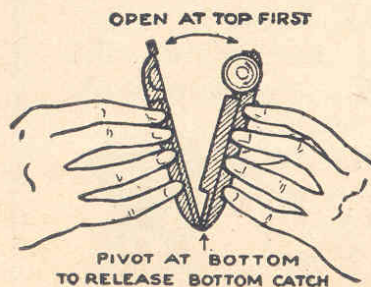


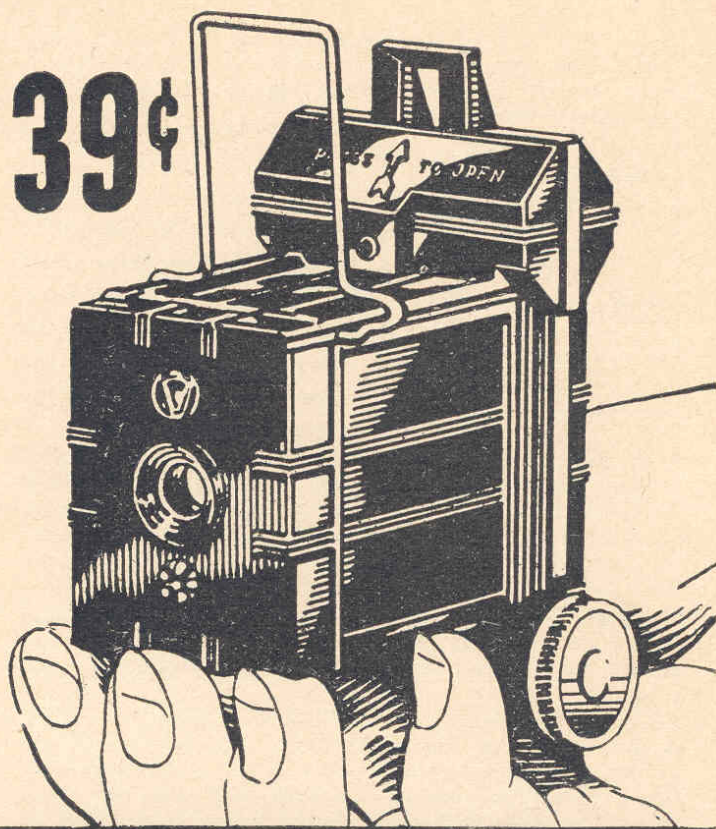
Figure 2

YOUR MODEL AF UNIVEX IS AN EXCELLENT AND THOROUGHLY COMPLETE PHOTOGRAPHIC INSTRUMENT. It will give you consistently and marvelously good pictures if you will but digest

TO LOAD: Use UNIVEX No. 00 Ultrachrome Rollfilm. Remove back cover by opening the latch (Fig. 1), and swinging back the rear cover (Fig. 2) until it can be lifted free of the camera body.

Univex MODEL A

39¢



**GET A SPARE CAMERA
AT SMALL EXPENSE**

TAKING PHOTOGRAPHS

Both Time and Snapshot Pictures can be taken. When Camera is loaded and not in use, it is a good plan to keep it locked. This is done by placing SPRING (B) in slot directly above letter "L" on LENS DISC (G).

The square opening between WINDING KNOB (F) and LOCKING DEVICE (C) is the FINDER (J). Finished pictures will not contain more than can be seen through the FINDER. Do not take any pictures closer than four feet.

When a snapshot picture is desired, SPRING (B) should be in slot directly above letter "S" on LENS DISC (G). Look through FINDER (J) at person or object to be photographed and push LEVER (A) down as far as it will go, then remove finger. This makes the exposure. Be sure to hold Camera steady. Keep fingers of left hand clear of moving SHUTTER PART (N). For snapshots, the subject should be in the sunlight, but the Camera should not—with the sun coming from behind the Camera.

In taking time pictures, to obtain the best results, Camera should be on table or other flat surface which will hold it steady and prevent blurring. On this Camera, it is not necessary to operate lever twice as is done on many Cameras when taking time pictures. For time exposures, SPRING (B) should be in slot directly above letter "T" on LENS DISC (G). Look through FINDER (J) at subject, push LEVER (A) down slowly as far as it will go, holding it down for the number of seconds you wish the exposure to be, then release. Make sure Camera is not moved. Keep fingers of left hand clear of moving SHUTTER PART (N).

Remember, successful exposures of moving objects cannot be made when Camera is adjusted for time exposure, nor can Camera be moving. It must be rested on a firm object and held perfectly still. Pictures can be taken of persons walking or when the subject is moving at a slow rate of speed. For all such pictures, Camera should be adjusted for snapshots, as described above, the Camera being moved as little as possible. Pictures should not be attempted when the subject is moving rapidly.

In both snapshots and time exposures, particularly on time pictures, make sure the Camera is not allowed to move until after LEVER (A) is pressed.

After your first exposure, turn WINDING KNOB (F) slowly until the figure "2" appears in RED WINDOW (H) on back of Camera. Camera is now ready for another picture.

After the 8 exposures have been made, slowly turn WINDING KNOB (F) until marking "+" appears in RED WINDOW (H). Open up Camera in subdued light and continue turning knob until entire film is wrapped on receiving spool, all the while keeping tension on unwound part of film. This insures tight wrapping. Fold FILM along last line near end of roll and seal with gummed strip. Then remove roll from Camera and wrap it for protection. The film is now ready for developing.

In taking off the closure cap, on which the lens disc is fastened, be sure to have the Camera adjusted for snapshots, (S). Only remove closure cap to clean inside of lens. Outside of lens may get dirty from handling. Wipe it occasionally.

PRINTING AND ENLARGEMENTS

We recommend that pictures be printed on glossy paper. The same applies to enlargements. You will find that excellent enlargements can be made from your pictures. If you wish, you can probably have enlargements made from the film without first having the small prints made.

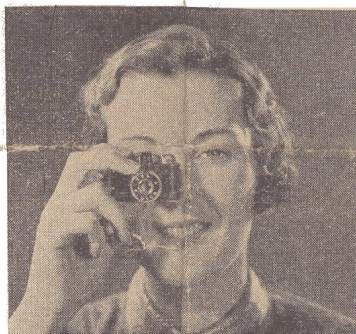
Films (8 exposures to the roll) 10c. If not obtainable at your local dealer, we will mail prepaid 5 rolls upon receipt of 50c (stamps will do).

DIRECTIONS

For Best Results in Using

ULCA

The Worlds Smallest Fine Camera
Pat. 1989449



ULCA

CAMERA CORPORATION

1200 Western Avenue
PITTSBURGH, PENNA.

(Continued from Page Seven)

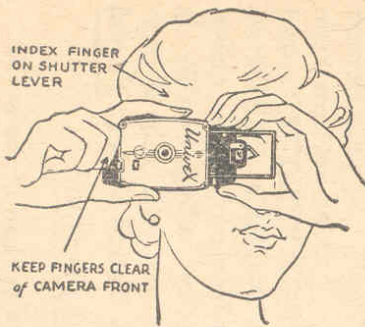


Figure 12

to face in horizontal position (as in Fig. 12), instead of vertical.

BEST RESULTS ARE HAD BY KEEPING THE CAMERA ON THE SAME LEVEL AS THE SUBJECT. Thus, if a picture of a child or a dog is desired, the operator should assume a kneeling position to bring the camera to the same level as the subject, or place the

subject on an elevation to the same level as the camera.

MAKING PORTRAITS: This camera makes beautiful "Close-Up" portraits which in turn afford excellent enlargements. It is also excellent for making "Close-Ups" of flowers and similar subjects. No special portrait attachment of any kind, such as is necessary for "Close-Ups" with other cameras, is required. Simply frame subject in wire field-finder, as in Fig. 10, and snap.

FOR HEAD AND SHOULDER PORTRAITS THE SUBJECT SHOULD BE APPROXIMATELY 30 INCHES FROM THE LENS. Due to the special design of the UNIVEX lens the background of your portrait "Close-Ups" will also be in sharp focus. Thus it is possible to select a picturesque or scenic background for your portrait subject, and thereby greatly enhance the beauty of your picture.

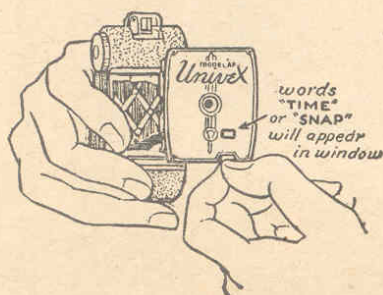


Figure 13

TAKING TIME EXPOSURES:

To take time exposures, pull down the time-stop which will be found to the right at the bottom of the front-plate (Fig. 13), until the word "TIME" appears in window (See Arrow, Fig. 13) in the front of the camera.

With rear peep-sight to the eye, BRACE BACK OF CAMERA AGAINST YOUR FACE (Fig. 10) in order to steady camera at moment of snapping picture.

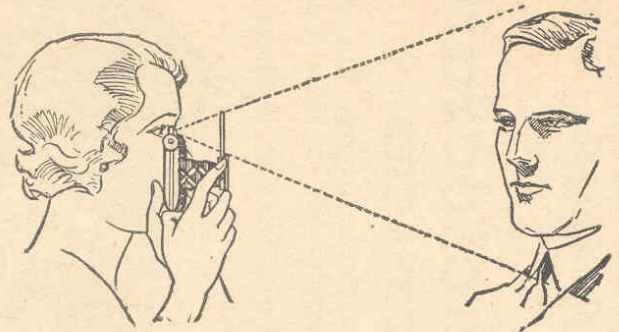


Figure 10

LOOKING THROUGH REAR PEEP-SIGHT place your subject or field inside of wire field-finder (Fig. 10). Then, holding CAMERA PERFECTLY STEADY AGAINST THE FACE and holding the breath for the instant, press lever on side of camera in one direction only to make the exposure. Fingers must be kept away from light opening in front of camera. In looking through peep-sight, whatever appears inside of wire field-finder or frame will be on picture as in Figure 10 above.

Move closer to or farther from your subject until it is perfectly framed in wire field-finder, just as you wish it to appear on the picture. Be careful to brace camera steadily against your face at moment of exposure, otherwise camera may move and blur picture.



Figure 11

TO MAKE PICTURES WITH LONG DIMENSION OF PICTURE HORIZONTAL (Fig. 11), simply follow above instructions, holding camera

(Continued on Page Ten)

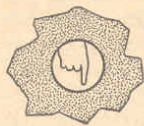


Figure 6

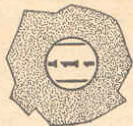


Figure 7

WATCHING THE RED WINDOW, turn the winding knob until the warning hand appears through the red window (Fig. 6), then turn the knob very slowly until the figure 1 appears in center of the window (Fig. 7). **THE**

FILM IS NOW IN POSITION FOR THE FIRST PICTURE. After each exposure be sure to wind the film, bringing the next number into position. This insures against making two pictures in the same section of film.

The UNIVEX Model AF takes both snapshots and time exposures. This feature lengthens your photographic day to 24 hours, and enables you to take beautiful pictures indoors.

TAKING SNAPSHOTS: THE SAME RULES WHICH GOVERN SNAPSHOT PHOTOGRAPHY WITH ANY OTHER CAMERA SHOULD BE FOLLOWED. The subject should be in broad open sunlight but the camera must not. The sun must be behind your back or over your shoulder.



Figure 8

Open the camera by pressing the release button as shown in Fig. 8. The camera will automatically open to the proper position for taking pictures.

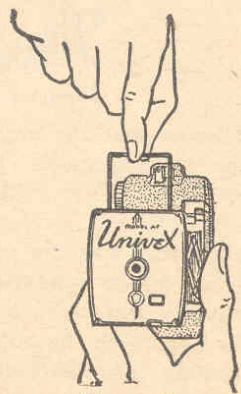


Figure 9

Now raise the wire field-finder, which rests behind the front-plate (Fig. 9), as far as it will go. Be sure that the shutter is set for snapshots. The window (See Arrow, Fig. 13) will read "SNAP" when shutter is properly set for snapshots.

When taking time exposures, the camera **MUST** be held steady on a table or other firm support. In order to stand the camera firmly on any solid base, a leg has been provided.

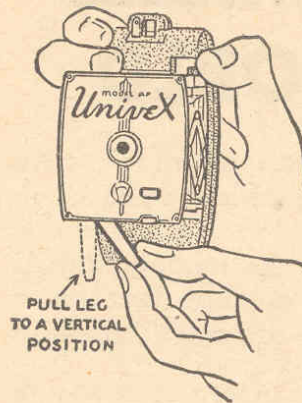


Figure 14

The leg is located behind the front-plate at the left. Swing the leg down until it is fully extended (Fig. 14) and place the camera on a solid base, holding the camera down firmly with the left hand. This will leave the right hand free to operate the exposure lever. The camera is now ready to take time exposures.

If you prefer to use a tripod, the special UNIVEX Tripod Clip must be used to attach the camera to the tripod.

UNIVEX Tripod Clip can be obtained from your UNIVEX Dealer. If your dealer cannot supply you, write to us for full details. However, no matter what method is used for steadying the camera, **THE CAMERA MUST BE HELD ABSOLUTELY STILL WHILE THE SHUTTER IS OPEN, OTHERWISE A BLURRED PICTURE WILL BE THE RESULT.**

TIMING THE TIME EXPOSURE (Outdoors). Due to the unusual speed of the UniveX lens and film, relatively short timing is required. Otherwise your pictures will be over-exposed. The amateur photographer will never encounter any outdoor lighting conditions which will require more than one second for his Time Exposures. However, with a little experimentation with the camera he will quickly learn the required time intervals for various light conditions. **IN OPERATING THE EXPOSURE LEVER FOR TIME EXPOSURES,** the lever is operated first in one direction to open the shutter and then in the reverse direction to close it.

(Continued on Page Fourteen)

CAUTION: Do not carry this camera in your pocket unless it is carefully wrapped or in a carrying case. Otherwise lint and dirt from the pocket will get into the shutter mechanism and put it out of order.



Fig. 1

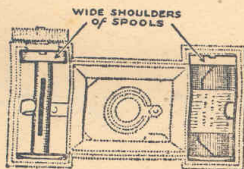


Fig. 2

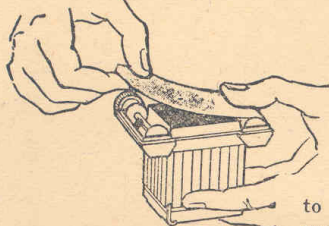


Fig. 3

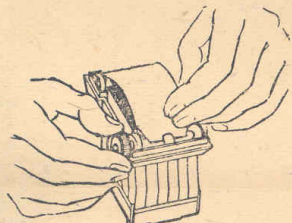


Fig. 4



Fig. 5



Fig. 6

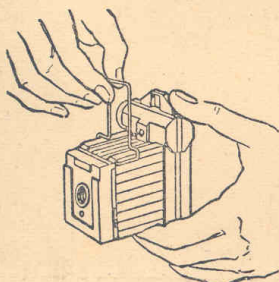


Fig. 7

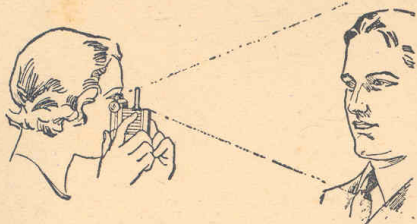


Fig. 8

field-finder (Fig. 8) then, holding CAMERA PERFECTLY STEADY AGAINST THE FACE and holding the breath for the instant, press lever on side of camera in one direction only to make the exposure. Fingers must be kept away from light opening in front of camera. In looking through peep-sight, whatever appears inside of wire field-finder or frame will be on picture as in Figure 8 above.

Move closer or farther from your subject until it is perfectly framed in wire field-finder, just as you wish it to appear on the picture. Be careful to brace camera steadily against your face at moment of exposure, otherwise camera may move and blur picture.

YOUR UNIVEX IS AN EXCELLENT AND THOROUGHLY COMPLETE PICTURE TAKING MACHINE. It will give you consistently and marvelously good pictures if you will but digest these instructions before taking any pictures with your camera and before loading it with film.

TO LOAD: Use UNIVEX No. 00 Ultrachrome Rollfilm. Remove back cover by pressing at point indicated by arrow (Fig. 1).

This camera can be loaded or unloaded in daylight. However, this should always be done in a subdued light, not in direct sunlight. WITHOUT BREAKING GUMMED SEAL ON THE PROTECTIVE PAPER (Fig. 2), insert film spool in empty cradle under the spring grip, with the wide slotted shoulder of the spool at same end of cradle as the wide-shoulder appears on the empty spool in opposite cradle (Fig. 2).

HOLDING SPOOL IN CRADLE WITH ONE HAND (Fig. 3), break gummed seal on full spool and draw out end of protective paper until it reaches spool in opposite cradle with about $\frac{1}{2}$ inch to spare.

(Red side of protective paper must be to the back of camera.) Thread end of protective paper through the slit in the empty spool (Fig. 4) as far as it will go. Care must be exercised when this is being done so that the protective paper is started straight on the rewinding spool. Do not unroll too much protective paper from the full spool or the film will be fogged and spoiled. Give the winding knob two or three forward turns (Fig. 4) to bind paper securely on the spool. Then, securely replace back cover of camera.

WATCHING THE RED WINDOW, turn the winding knob until the warning hand appears through the red window (Fig. 5), then, turn knob very slowly until the figure 1 appears in center of window (Fig. 6). THE FILM IS NOW IN POSITION FOR THE FIRST PICTURE. After each exposure be sure to wind the film, bringing the next number into position. This insures against making two pictures in the same section of film.

MAKING THE SNAPSHOT: UNIVEX (Model A) is strictly a snapshot camera.

THE SAME RULES WHICH GOVERN SNAPSHOT PHOTOGRAPHY WITH ANY OTHER CAMERA SHOULD BE FOLLOWED. The subject should be in broad open sunlight but the camera must not. The sun must be behind your back or over your shoulder.

OPEN THE WIRE FIELD-FINDER which rests in front cover until it rests on top of camera in a perpendicular position (Fig. 7).

With rear peep-sight to the eye, BRACE BACK OF CAMERA AGAINST YOUR FACE (Fig. 8) in order to steady camera at moment of snapping picture.

LOOKING THROUGH REAR PEEP-SIGHT, place your subject or field inside of wire



UNIVEX Model "A" is constructed with all the care and painstaking application to every detail that one would expect to find in an expensive camera. It is only the enormous production facilities behind it which make its amazingly low price possible.



Fig. 9

TO MAKE PICTURES WITH LONG DIMENSION OF PICTURE HORIZONTAL (Fig. 9), simply follow above instructions, holding camera to face in horizontal position instead of vertical as in Figure 10 above.

BEST RESULTS ARE HAD BY KEEPING THE CAMERA ON THE SAME LEVEL AS THE SUBJECT, thus if a picture of a child or a dog is desired, the operator should assume a kneeling position to bring the camera to the same level as the subject, or place the subject on an elevation to the same level as the camera.

MAKING PORTRAITS: This camera makes beautiful "Close-Up" portraits which in turn afford excellent enlargements. It is also excellent for making "Close-Ups" of flowers and similar subjects. No special portrait attachment of any kind, such as is necessary for "Close-Ups" with other cameras, is required. Simply frame head and shoulders of subject in wire field-finder as in Figure 8 and snap.

FOR HEAD AND SHOULDER PORTRAITS THE SUBJECT SHOULD BE APPROXIMATELY THREE FEET FROM THE LENS. Due to the special design of the UNIVEX lens the background of your portrait "Close-Ups" will also be in sharp focus. Thus it is possible to select a picturesque or scenic background for your portrait subject and thereby greatly enhance the beauty of your picture.

REMOVING THE FILM: After the last film has been exposed, turn the winding knob until the end of the protective paper passes the red window. Then give several additional turns to make sure that all of the protective paper is wound around the spool. Remove back cover and, WITHOUT REMOVING SPOOL FROM CRADLE, moisten gummed seal on end of protective paper and give winding knob several additional turns to make sure that protective paper is sealed by gummed seal. Then turn winding knob until narrow end of SPOOL HEAD ROTATING GROOVE is in center of cradle and outward (Fig. 11).

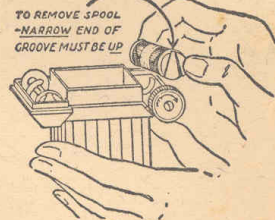


Fig. 11

Now, pull back spring grip and remove spool from camera, being careful immediately to wrap same carefully for protection. It is now ready for development. This may be done by a photo-finisher or by yourself. Films should be developed at earliest possible moment after removal from camera. The quality of the image on all sensitized products is retained by prompt development after exposure.

BEFORE REPLACING BACK COVER OF CAMERA the empty spool should be transferred to opposite cradle to be in position for next loading of camera. It is a good plan to reload the camera as soon as an exposed film roll has been removed, to be ready for the next pictures. Load the Camera with UNIVEX No. 00 Ultrachrome Rollfilm.

UNIVEX ULTRACHROME ROLLFILM

UNIVEX ULTRACHROME ROLLFILM possesses extreme speed as well as high sensitivity to relatively weak light which makes it possible to take good pictures in the early morning or late evening, and, yet, your UNIVEX negatives will not be over-exposed when made under strong noon-day brilliance.

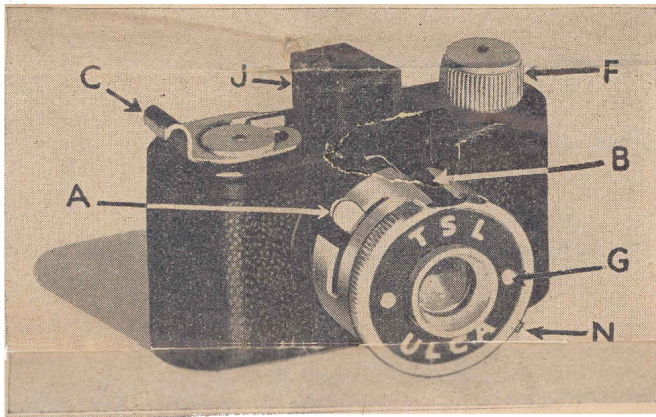
THE HIGHEST DEGREE OF ULTRACHROMATISM gives it the property of rendering colors according to their true relative importance to your eyes.

THE EXTREMELY FINE GRAIN AND CLEAR BASE OF UNIVEX Ultrachrome Rollfilm make it possible to obtain beautiful enlargements of your UNIVEX pictures up to 8 in. x 10 in.

UNIVEX ULTRACHROME ROLLFILM is a product of exceptional quality in every respect. PURCHASE IT AT YOUR DEALER'S AT TEN CENTS (10c) PER ROLL OR SEND THIRTY CENTS (30c) FOR THREE ROLLS (postage prepaid by us anywhere in the U.S.A.) to:

UNIVERSAL CAMERA CORPORATION
32-46 West 23rd Street New York, U.S.A.

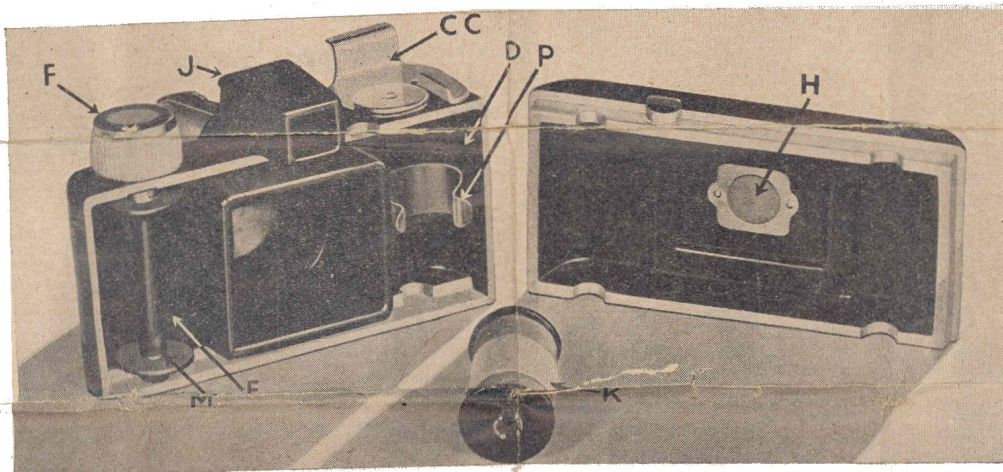
ULCA • *Worlds Smallest Fine Camera*



Identification of Camera Parts

A—Lever	G—Lens Disc
B—Spring	H—Red Window
C—Locking Device (Closed)	J—Finder
CC—Locking Device (Open)	K—Film Roll
D—Chamber	M—Empty Spool
E—Chamber	N—Shutter Parts
F—Winding Knob	

HOW TO INSERT FILM IN CAMERA



1. Never change Film in direct sunlight.
2. Before opening Camera, be sure Shutter is locked. When Shutter is locked, SPRING (B) should be in slot directly above letter "L" on LENS DISC (G). To move SPRING (B) from slot to slot, lift high enough to clear partitions, turning LENS DISC (G) to left or right, as necessary.
3. To open Camera, slide LOCKING DEVICE (C) out and turn to the side. (It should now be in position shown in illustration of Camera opened). Front and back sections can now be separated.
4. Hold section containing lens in one hand and slip SEALED FILM ROLL (K) into CLIP (P) in CHAMBER D, making sure to have slotted end of FILM ROLL toward LOCKING DEVICE (CC). EMPTY SPOOL (M) should be in CHAMBER E, making sure slotted end fits shaft of WINDING KNOB (F). Break and remove the gummed paper band which seals FILM, drawing the FILM over the center of Camera and insert in one of the openings in empty spool shaft. To start FILM ROLL, give WINDING KNOB (F) three turns, being sure to hold each spool securely in its bearing. Be careful that FILM fits evenly into the slot, otherwise it will not wind properly. Camera should now be closed by putting front and back sections together again. Push LOCKING DEVICE (C) into its original position, being certain it is reasonably tight, then slowly turn WINDING KNOB (F) until the figure "1" is visible in RED WINDOW (H) on back of Camera.

(For Instructions on Taking Photos See Back)

For those who wish to enjoy to the utmost the creative thrill and economy of taking and making photographs, Universal Camera Corporation announces

The New Univex Photocrafter

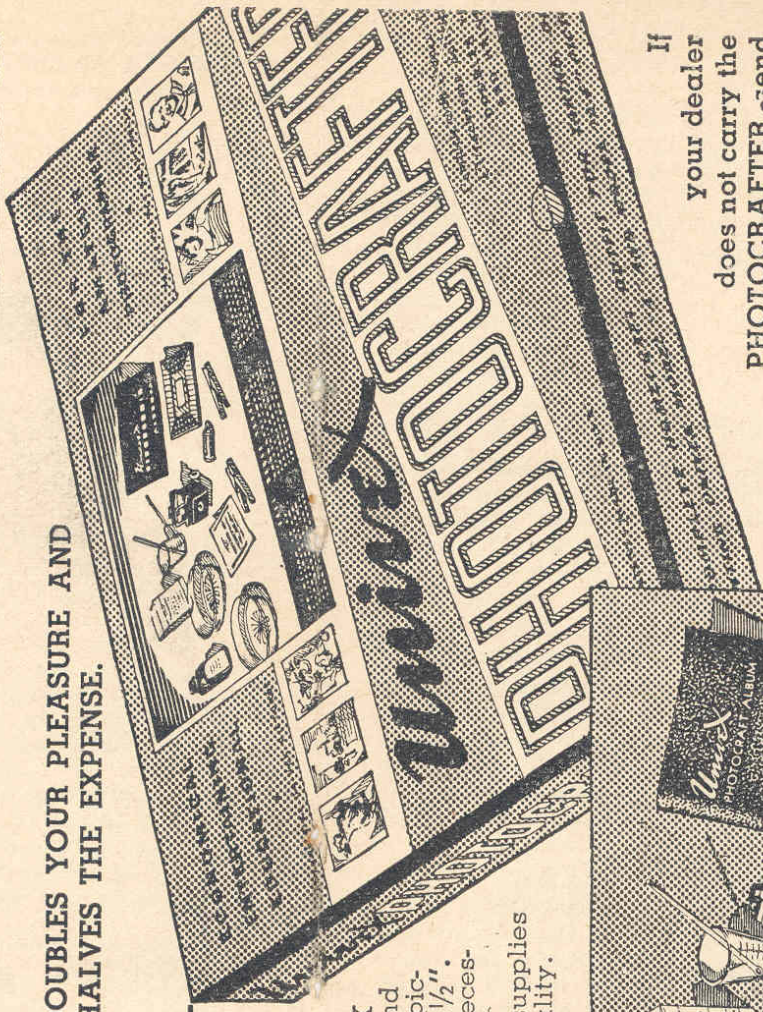
FOR THE AMATEUR PHOTOGRAPHER

No other hobby is so fascinating as that of amateur photography. The PHOTOCRAFTER now offers complete amateur photography at a new low cost.

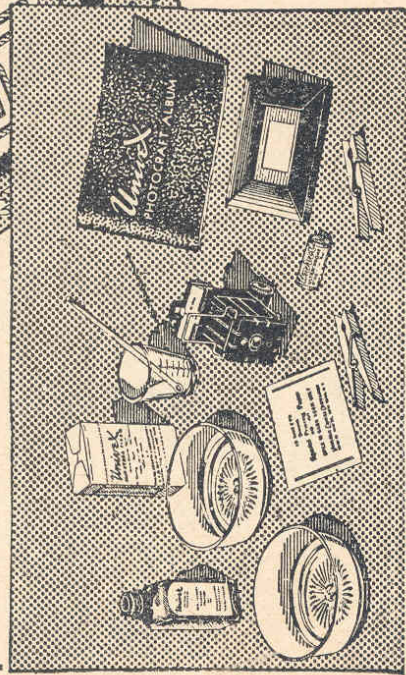
- (No. 1)—Complete with Univex Model "A" Camera and Rollfilm (6 shots) — **\$1.69**
- (No. 2)—Without Camera and Rollfilm — **1.20**

IT DOUBLES YOUR PLEASURE AND
HALVES THE EXPENSE.

A complete Homecraft Outfit for taking, developing and printing Univex Model "A" and Model "A-F" pictures 1 1/8" x 1 1/2". Includes all necessary equipment, chemicals and supplies of highest quality.



If your dealer does not carry the PHOTOCRAFTER, send STAMPS OR MONEY ORDER direct to us, being careful in ordering to specify which outfit is wanted, and we will ship it anywhere in the United States. Parcel Post charges prepaid.



CAUTION: Do not send Coins for we cannot be responsible for loss or theft in the mails.

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60 FF. 9 EUROS

PORTRAITS

This camera makes beautiful "Close-Ups" of persons, flowers, etc., without any special portrait attachment. Excellent enlargements can then be produced. Simply frame the head and shoulders of the subject in the wire field-finder, as in Fig. 10, and snap.

For head and shoulder portraits, the subject should be approximately 30 inches from the lens. The background also will be in sharp focus due to the special design of the UniveX lens. This makes it possible to increase the beauty of your picture with a scenic background.

TAKING TIME EXPOSURES

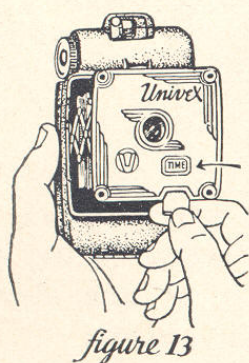


FIG. 13. For time exposures, pull down the plunger at the bottom of the front plate until the word "Time" appears in the window located below and to the right of the lens.

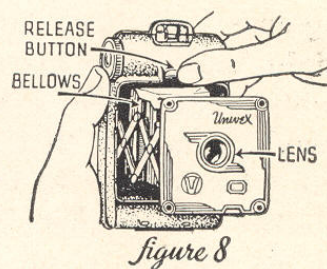
After each exposure, turn the winding knob until the next higher number appears. In this way the camera is always ready for the next shot, and two pictures will not be taken on the same section of film.

The UniveX Model "AF-4" takes both snapshots and time exposures. This lengthens your photographic day to 24 hours and enables you to take beautiful pictures indoors.

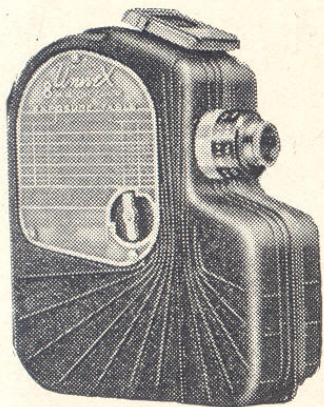
TAKING SNAPSHOTS

Apply the same rules that govern snapshot photography with any other camera. The subject should be in broad open sunlight and the camera must be pointing away from the sun.

FIG. 8. Press the release button as shown. The bellows will automatically open to the proper position for taking pictures.



UNIVEX



CINE "8"

THE LIFETIME
MOVIE
CAMERA

Uses 60¢ Film

The lightest-weight, most compact 8 mm. movie camera—the only one that uses the 30 ft. UniveX 8 mm. Film (equivalent to 60 feet of expensive 16 mm. film). Costs only 60¢ per roll. Takes clear, sharply defined, theatre-quality movies that can be screened 34" x 24" and larger. Simple to operate, quiet in action, and with interchangeable lens equipment. Ideal for a lifetime of movie-making, at less than the cost of ordinary snap-shots. Backed by a written guarantee.

With F:5.6 lens . No. C-56 **\$9⁹⁵**

● **America's Largest Unit Man-**

Commercial Photographers, Youth Organizations, and other fields throughout the world. They are purchased and used by persons who can afford high priced cameras as well as by those who need a good camera and can pay only a few dollars.

UniveX has never side-stepped its responsibility of leadership in the miniature camera field. It has not missed an opportunity to blaze new trails of enjoyment in the idea which it founded and pioneered: "Perfect Photography At New Low Cost."

This de luxe folding camera is a culmination of our vast experience in bringing fine photography within the reach of all.

Important

THE lens must be kept clean in order to get good, sharp, crystal-clear pictures with your UniveX. Wipe the lens carefully, without scratching it, each time the camera is removed from the pocket for taking pictures. Specks of dust on the lens show on the picture, particularly when greatly enlarged.

direction to open the shutter, then in the reverse direction to close it.

Before closing the camera, return the plunger to the "Snap" position and the leg to its horizontal position. Otherwise, the camera will not close.

REMOVING THE FILM

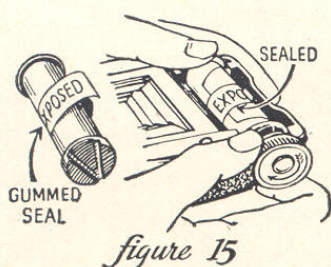


FIG. 15. After the last film has been exposed, turn the winding knob until the end of the protective paper passes the red window. Then

turn the knob several times more to be sure that all of it is wound around the spool. Open the back cover. Without removing the spool from the cradle, tear off the gummed seal. Moisten it and paste one end over about $\frac{1}{2}$ inch of the end of the film roll. Turn the winding knob several times until the roll is sealed. Turn the winding knob again until the narrow end of the "V" shaped notch is pointing straight outward.

Pull back the spring grip, remove the

FIG. 2. Swing the back cover to the rear by pushing on the rear sight with the index finger. Draw it clear back with the fingers of the other hand.

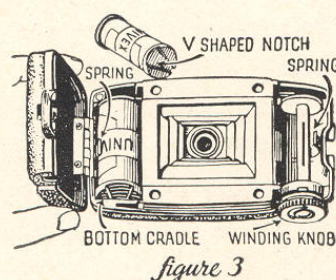
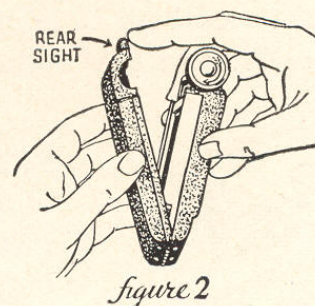
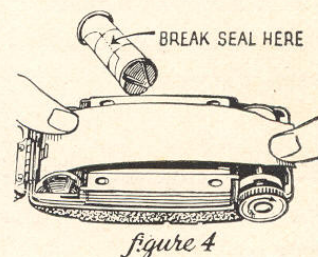


FIG. 3. Use UniveX No. 00 Ultrachrome Rollfilm. It can be loaded or unloaded in daylight. However, it should always be done in

subdued light, not in the direct sun. Place the sealed roll of film under the spring grip in the bottom cradle. Make sure that the flange with the "V" shaped notch is on the same side as the winding knob.

FIG. 4. Place one thumb on the roll of film, break the seal on the protective paper, and



Your Model "AF-4" UniveX is an excellent and thoroughly complete photographic instrument. It will give you consistently and marvelously good pictures if you will read these instructions carefully before taking any pictures, or even loading the camera with film.

Particular attention should be paid to the paragraphs on Loading The Camera and Removing The Film. If the negatives are light-struck along the edges it is because light has penetrated between the edges of the film roll and the spool flanges when loading or removing the roll film. This trouble will be eliminated if the instructions are followed.

TO LOAD

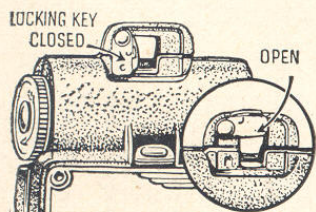


figure 1

FIG. 1. Open the locking key at the side of the rear sight by rotating it upward.

spool from the camera, and wrap it immediately and carefully for protection. The roll of film is now ready for development, which should be done at the earliest possible moment thereafter. This may be done by a photo-finisher or by yourself. The quality of the image on all sensitized products is retained by prompt development after exposure.

Before closing the back cover, transfer the empty spool to the opposite cradle. It is now in position for the camera to be loaded again. It is a good policy to reload as soon as the exposed film roll has been removed in order to be ready for the next group of pictures. Load the camera with Univex No. 00 Ultrachrome Rollfilm.

FOR SERVICE

Camera must be returned *DIRECT* to the *NEAREST* service station with your guarantee attached and 25 cents in stamps to cover handling and postage. For best service mail to the *NEAREST ADDRESS*.

UNIVERSAL CAMERA CORP.
32 West 23rd Street, New York City
223 West Jackson Blvd., Chicago, Ill.
6058 Sunset Blvd., Hollywood, Calif.

Foreword

THE Model "AF-4" UniveX Camera is constructed with the care and painstaking application to details that one expects to find in far more expensive cameras.

Universal Camera Corporation manufactures more cameras per year than any other company in the world. The enormous production facilities behind this camera make possible its high quality and amazingly low price.

Its compactness and light weight give it many advantages over the conventional type of camera. But the real secret of its extensive popularity is economy and simplicity of operation.

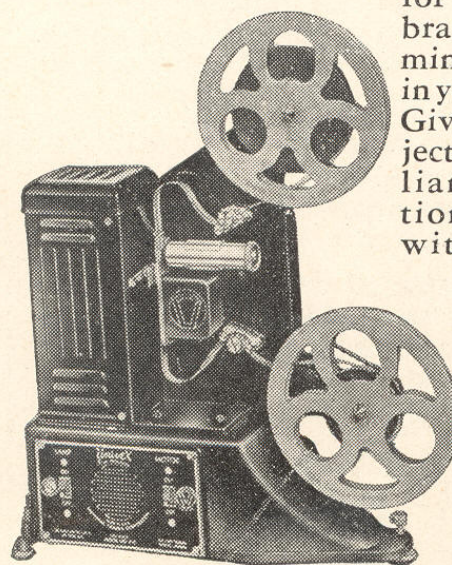
UniveX Ultrachrome Rollfilm is inexpensive, and it enlarges beautifully. The amateur photographer can shoot pictures with it all day long at a nominal cost, then choose those of unusual interest for enlargement up to 8" by 10". This reduces the ultimate cost of successful pictures to a fraction of what it would be otherwise.

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Manufacturers of Movie Cameras

camera

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PROCESSING GUIDE**



October 1965 **2/6**



draw out the end of the paper until it reaches to about $\frac{1}{2}$ inch beyond the empty spool. The red side of the paper is showing.

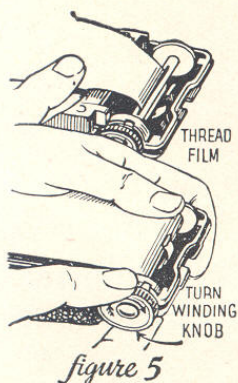


FIG. 5. Thread the end of the protective paper through the slit in the empty spool as far as it will go. Start it straight, hold the spool down, and give the winding knob two or three turns forward, to

bind the paper on the spool. Do not unwind more than this because light might reach the film and fog it. Close the back cover tightly and turn the locking key down.

FIG. 6. Watch the red window on the back cover. Turn the winding knob until the warning hand shows.

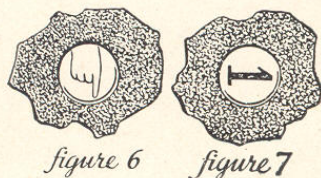
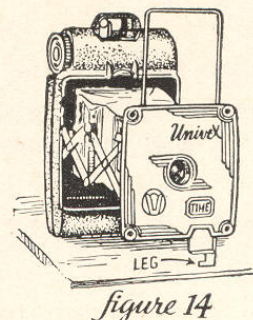


FIG. 7. Turn slowly until the figure (1) appears. The film is now ready for the first picture.

FIG. 14. The most important thing to remember in taking time exposures is to keep the camera steady on a table or other firm support. A leg is pivoted at the right behind the thick part of the front plate to facilitate this.



Swing down the leg to its vertical position. With the left hand hold the camera firmly on the table or other solid base. The right hand is now free to operate the shutter lever, and the camera is prepared.

Timing the Time Exposure (Outdoors)

Relatively short timing is required because of the unusual speed of the Univex lens and film. The amateur photographer will never meet any outdoor lighting conditions needing more than one second for his Time Exposure. He will quickly learn the required time intervals for various light conditions after a little experimenting. In taking pictures, operate the lever first in one

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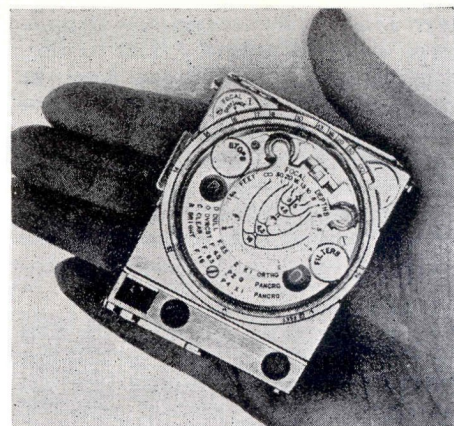
The 1938
AF-4
MODEL



I N S T R U C T I O N S

OLD CAMERAS RE-EXAMINED: COMPASS

The Compass was everything but a success. It had one of the fullest specifications ever incorporated into a miniature camera, it was superbly made to watchmaker's tolerances, yet it was still a failure. Why? George Zygmund gives his opinion and discusses the camera's many features which were years ahead of their time.



Top right: the Compass fitted comfortably into the palm of the hand.
Above: the tiny glass plates came in their own daylight-loading envelopes.

One of the most unusual and feature-packed cameras of all time was the British-designed but Swiss-made Compass, produced in 1938. About half the size of a standard 35mm camera, the Compass produced pictures $24 \times 36\text{mm}$ – either on tiny glass plates, packed in individual daylight-loading envelopes, or on six-exposure roll film. Both film and plates were made for Compass Cameras Ltd by Ilford Ltd.

Measuring $2\frac{3}{4} \times 2\frac{1}{4} \times 1\frac{1}{4}$ in when folded (the roll film holder added another $\frac{1}{4}$ in of thickness), and weighing under 8 oz, the Compass was fitted with a superb $f/3.5$ 35mm Kern wide-angle lens, focusing to $1\frac{1}{2}$ ft by coupled rangefinder. The lens retracted into the body when not in use.

The 22-speed shutter operated over a range from $1/500\text{th}$ to $4\frac{1}{2}$ seconds, speeds

being set on a collar around the lens tube. In design the shutter was different from practically any other – the blades resemble those of a windmill and continue to rotate during the entire exposure, interrupting the light rays several times during longer exposures. A knurled wheel on the edge of the lens panel is turned to wind the shutter. This must be locked once the speed has been set – by turning an adjacent lever – or winding on will gradually reduce the speed setting. There are separate releases for time and instantaneous exposures, both accepting special Compass cable releases.

Also on the front panel are two small dials – one sets the Waterhouse stop lens aperture to $f/3.5$, 4.5 , 6.3 or $f/8$. The other swings one of the three filters – yellow,

green and orange – into position between the lens elements. As if this weren't enough, a tiny lens hood is built-in which can be pulled out into position, and there's a depth-of-field scale on the flip-away lens cap.

Separate windows are fitted for the range-finder and viewfinder – the latter also serves the extinction-type exposure meter which is controlled by pulling out a variable density slide. Another lever slides in a neutral density filter for taking readings in bright light and there's also another lever to adjust the finder for right-angle viewing – complicated, isn't it?

On the bottom of the camera is a click-stopped arm to accurately position the Compass for taking sectional panoramic shots – it also serves as a tripod socket.

FIG. 9. Raise the wire field-finder, behind the front plate, as far as it will go. Be sure that the shutter is set for snapshots. The window below the lens will read "Snap."

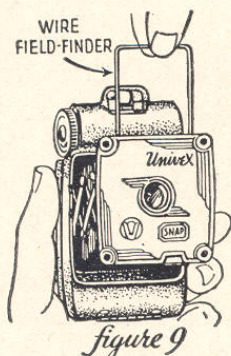


figure 9

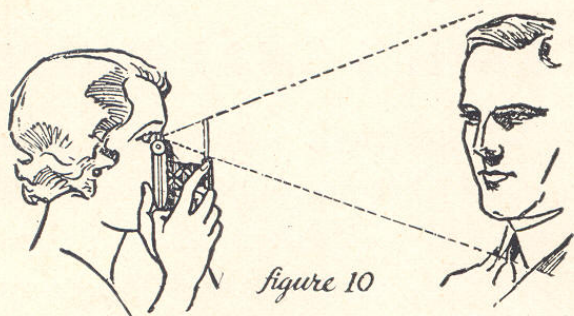


figure 10

FIG. 10. Brace the back of the camera against your face. Look through the rear sight, and locate the subject inside of the wire field-finder. Fingers must be kept away from the lens opening. Now hold your breath for an instant and press the shutter release lever in one direction only. If the camera is moved during the expo-

sure, the picture will be blurred. Turn the film to the next number.

The picture will be what you saw in the finder. Standing farther away will include more of the subject. Standing closer will take in less.

FIG. 11 & FIG. 12. To take pictures with the long dimension horizontal, hold the camera to the face in a horizontal position as shown. This method is particularly effective for landscapes, and other nature subjects.



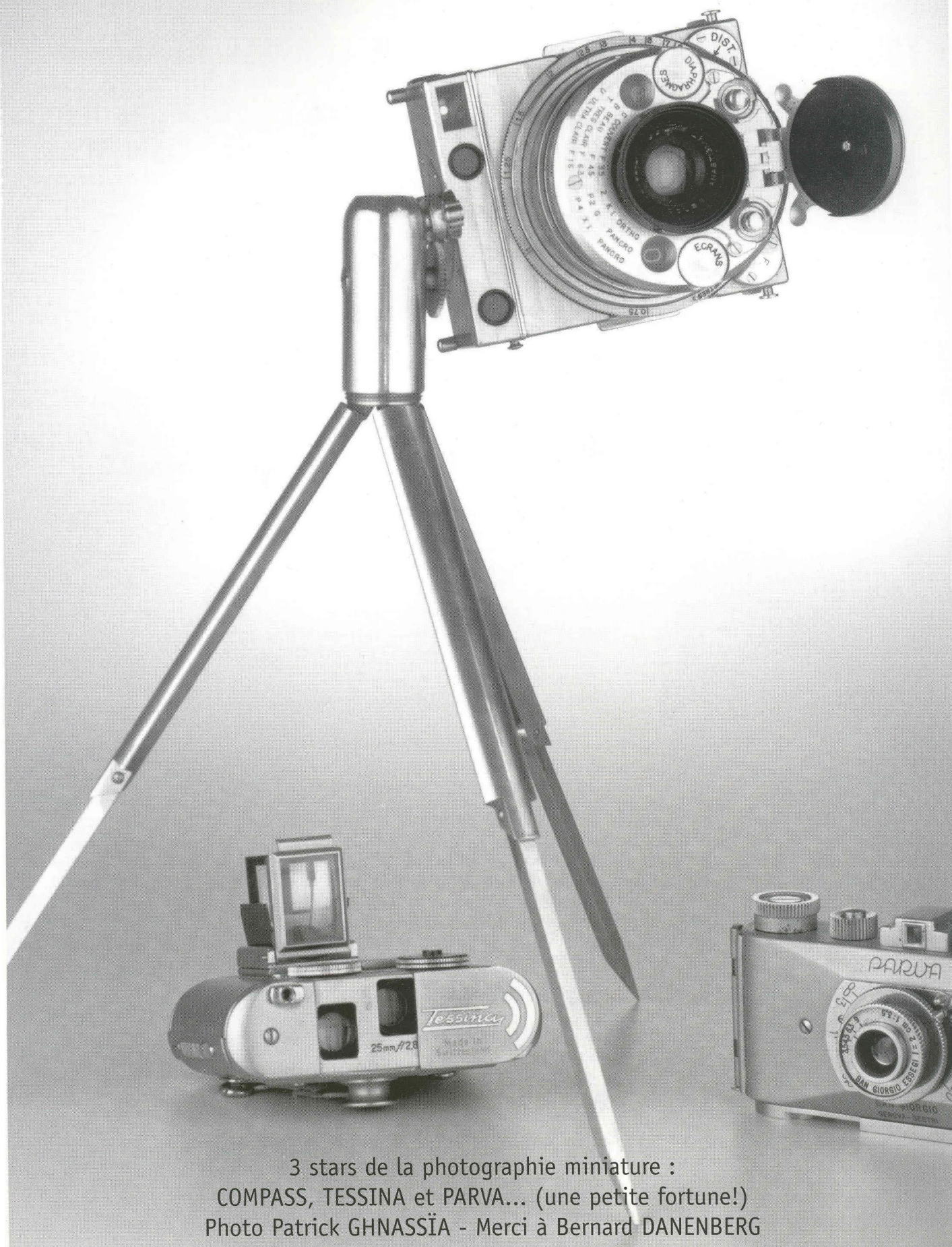
figure 11



figure 12

The camera should be on the same level as the subject for best results. Thus, the operator should kneel when taking pictures of a child or dog, or else elevate them to the height of the camera.

COMPASS



3 stars de la photographie miniature :
COMPASS, TESSINA et PARVA... (une petite fortune!)
Photo Patrick GHNASSIA - Merci à Bernard DANENBERG

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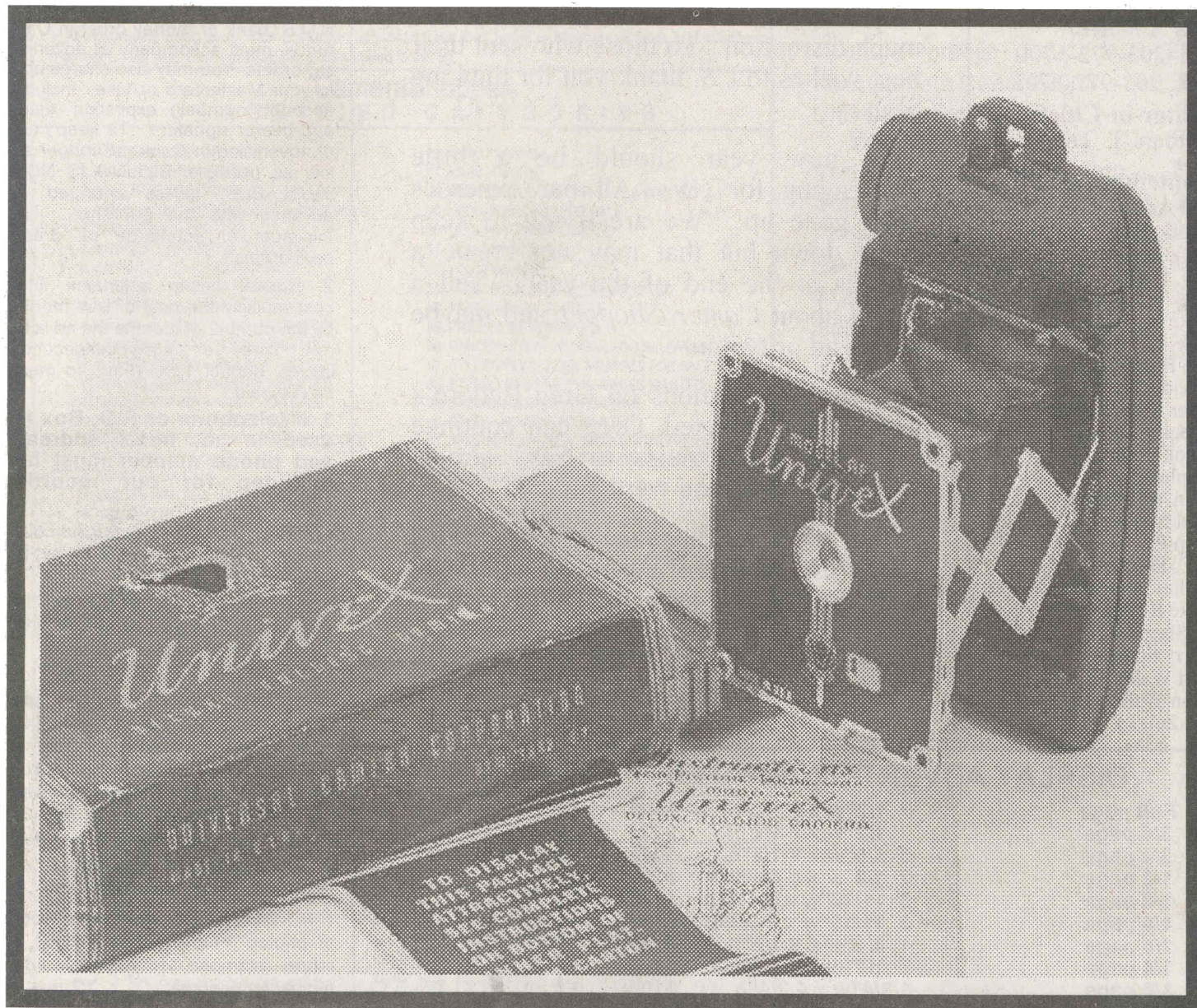


Photo courtesy of Pacific Rim Camera

Univex AF bellows camera

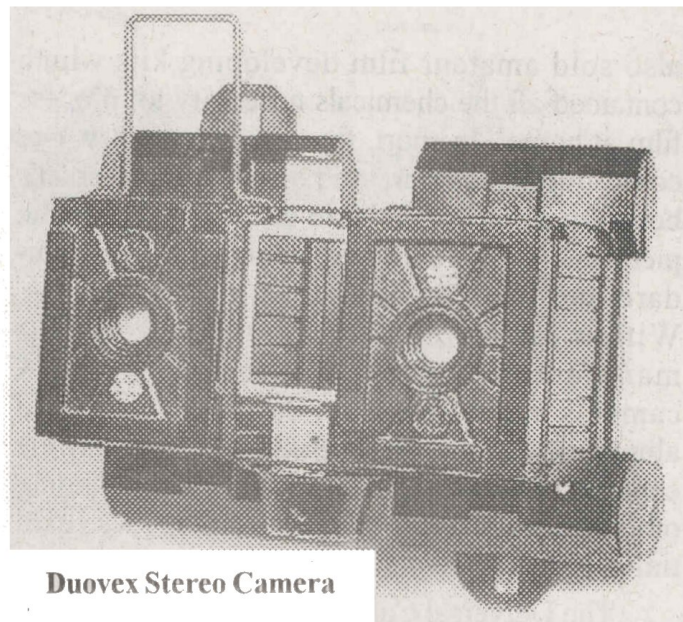
cameras were equipped with one of those 'never fail' shutters and were film still available most Univex camera would still produce respectable small images.

Attempting to capitalize on the basic Univex A, in 1934 the Pacific Coast Merchandising Company introduced the Duovex, essentially two Univex A cameras aligned to produce a stereo effect. This is a strange contraption almost looks like a parody of the original camera, but... it works! Essentially, two Univex cameras, one upside down, are held between a top and bottom plate. The two shutter release levers were removed and replaced with a two position front switch which operated both shutters simultaneously. Pushed down, the bracket fires both shutters once and then pushed up, it fired a second time. The trick to using the camera is to remember to wind both film knobs after each shot. One wire viewfinder was removed and the bottom bracket had a tripod socket.

The contact printed pictures could be fitted into cardboard backing which, in turn, was fit into the front of the viewfinder. And, though the finder is really primitive, the viewer has a sliding adjustable base permitting each viewer to adjust distance for their own eyesight. As primitive as it is, the Duovex works and the outfit will produce perfectly fine small three D images. As a matter of fact, say what you will about poor pictures produced by box cameras, they do look better in 3-D. Hence, if enlarging the negatives usually resulted in fuzzy pictures, simply producing two contact prints for stereo effect made the most of the small image.

Across the Atlantic, a very small bakelite camera based upon either or both the Univex and the Norton also sold well. The French Rower camera, manufactured in 1936 by Société Fabrique d'Appareils Photographiques, seems like a slightly modified Univex A, and was also successful. Of course, were we to pursue this, we might find that someone in France claims to have come up with the original design.

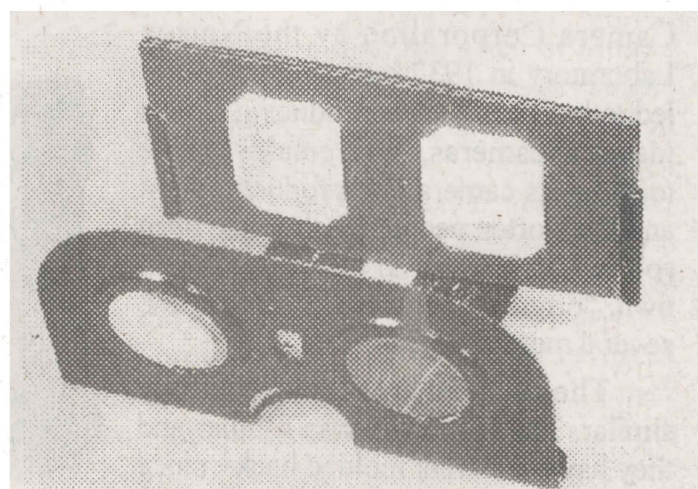
Whether produced by Universal or Norton, the camera design had one problem: it was really ugly. This was not a camera to impart pride of ownership. Many people bought them and were amazed at the decent results but I doubt if it took



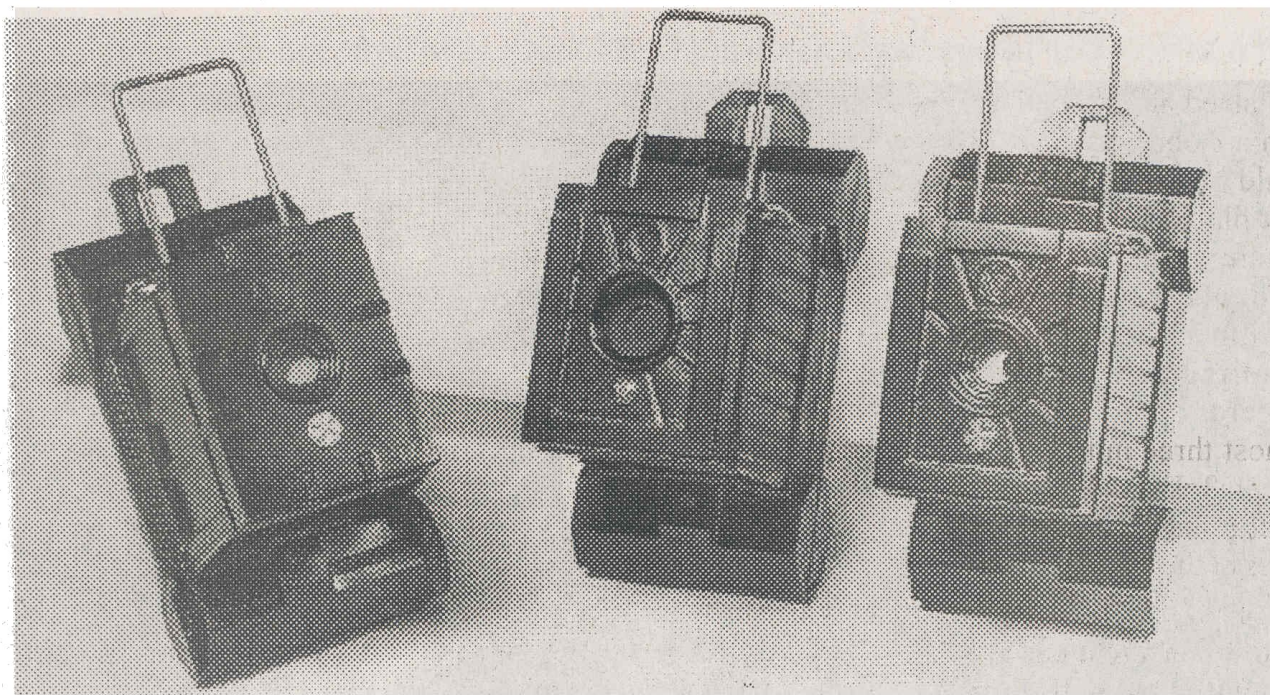
Duovex Stereo Camera

much longer for these same people to realize how ugly the camera was. Unlike Norton or the French Rower companies, Universal actually understood all of this and in 1935 and 1936 followed up on the success of the model A with a series of Univex AF bellows cameras. The AF series was slightly longer but much thinner. More than anything else, the camera was remarkably well made and, some, especially version 2, were actually pretty!

© Jerry Friedman Jerry Friedman can be contacted online at tinycameraco@yahoo.com.



Stereo Viewer for two standard contact prints



L-R: Geometric Univex, two sun-ray versions of the Univex A

Univex/Norton/Duovex and Rower by Jerry Friedman

Cynthia A. Repinski's *The Univex Story* (Grantsburg, WI; Centennial Photo Serv., 1991) is certainly one of the very best books dealing with the manufacture of cameras in the United States. This well-written volume is surely the standard work dealing with the Universal Camera Company and if you do not own a copy of this excellent volume, you owe it to yourself to find one and enjoy the story of one of America's most ingenious camera manufacturers. This company was so successful producing the most inexpensive, and yet capable, cameras that had it been able to find its feet after World War II, its name would be recognized along side that of Kodak and Ansco as a major founder of 20th century American industry. And while Universal made cameras of just about every size and description, nothing exemplifies this amazing camera company's early success than the Univex Model A.

To look at it, the Univex A is NOT an impressive camera. It was small enough, to be sure, only 3 1/2 x 1 7/8 x 2 3/8 inches in size, and was utilitarian to a fault. It was made from inexpensive molded plastic and its two halves simply pulled apart for loading and then snapped

together again. The single speed ever set shutter was inexpensive to build and most continue to function flawlessly over half a century later. Rather than using a brilliant finder, the rear viewfinder was molded into the camera back and each camera had a pull up wire finder in the front of the camera. The meniscus lens was only capable of taking pictures in bright sun light and the Univex A produced a 28x38mm negative, which is about 20% larger than a standard 35mm image. And, best of all, when the camera was first introduced in 1933, it sold for the grand sum of thirty nine cents.

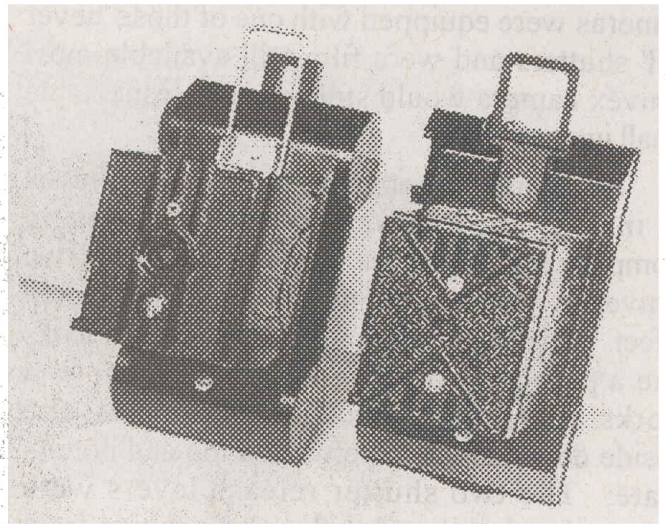
For slightly more than the price of today's first class postage stamp, the device was capable of making wallet sized pictures, the equivalent in quality of cameras costing ten times as much produced in Rochester. Universal, like Kodak, hoped to provide a cheap device which would then use a roll film specially made for it by Geveart in Belgium and marketed only through the Universal Camera Corporation. Only Universal's Univex #00 film had a special v-shaped spool which fit into a v-shaped socket in the camera. Both Ultrachrome Orthochromatic film, for ten cents, and Ultrapan panchromatic film, for fifteen cents, were available in six exposure rolls. Universal

also sold amateur film developing kits which contained all the chemicals necessary to process film at home. In short, for very little money, one could buy the camera and a roll of Universal's best film along with a kit to develop and print the pictures. The camera was a bargain by any standard and the Univex was an instant success. Within just a few months, Universal was manufacturing twenty thousand Univex A cameras a day. Sales for 1934 alone reached almost three million cameras. Who bought the camera? Everyone did, especially people finding other cameras far too expensive during these hard times of the Depression.

The Universal Camera Corporation would go on to other great successes, including a really funny looking half frame camera possessing a rotary shutter which tested to greater reliability than the shutter used on the expensive German 35mm camera and then a really small 8mm movie camera. Universal then went on to produce binoculars and other optical devices during World War Two. But, despite their ingenuity of design and cost effectiveness of manufacture before the war, Universal could not adjust in the post war era and finally closed shop. But no single product typified the company's seat of the pants ability to wing it than the Univex Model A.

A friend of mine who teaches business history told me of an old maxim that behind every great commercial success is an idea stolen from someone else. This may seem cynical but it certainly seems true of the Univex. The camera had been designed for the Universal Camera Corporation by the Norton Laboratory in 1932 but patent disputes led to both companies producing almost identical cameras. Universal was able to bring its camera into production first and the Norton people felt they had been robbed by Universal but rushed their own, "original" version into production several months later.

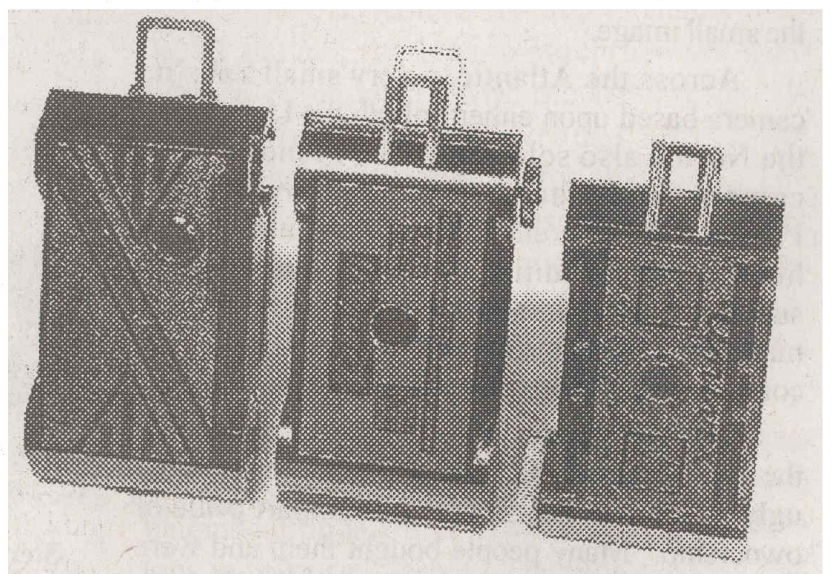
The two cameras look strikingly similar. The Univex A was smaller and they have different molded backs, since each company put its own name on the camera back. It is really not clear whether Universal actually stole the



L-R: Front view, Norton and Rower

1932 patent and pulled a fast one but it is clear that Norton Laboratories did not have Universal's marketing muscle. Nor could they produce a camera for 39 cents; the Norton cost fifty cents. In any event, the Norton camera was less enthusiastically marketed, and soon languished. Repinski presents all the information very wisely but leaves the reader to draw his or her own conclusions.

It seems to me too much of a coincidence that Universal just might have produced the same design as a Norton 1932 design. But, in either case, this was not the end of the story. The Univex A appeared in three slightly different cosmetic variations. In addition to a Univex with a geometric front, similar to the Norton, the Univex also appeared in two "sun ray" versions with one of the latter having a larger lens aperture than the other. Whatever the cosmetic variation, Univex



L-R: Rear view, Norton, Rower, Univex