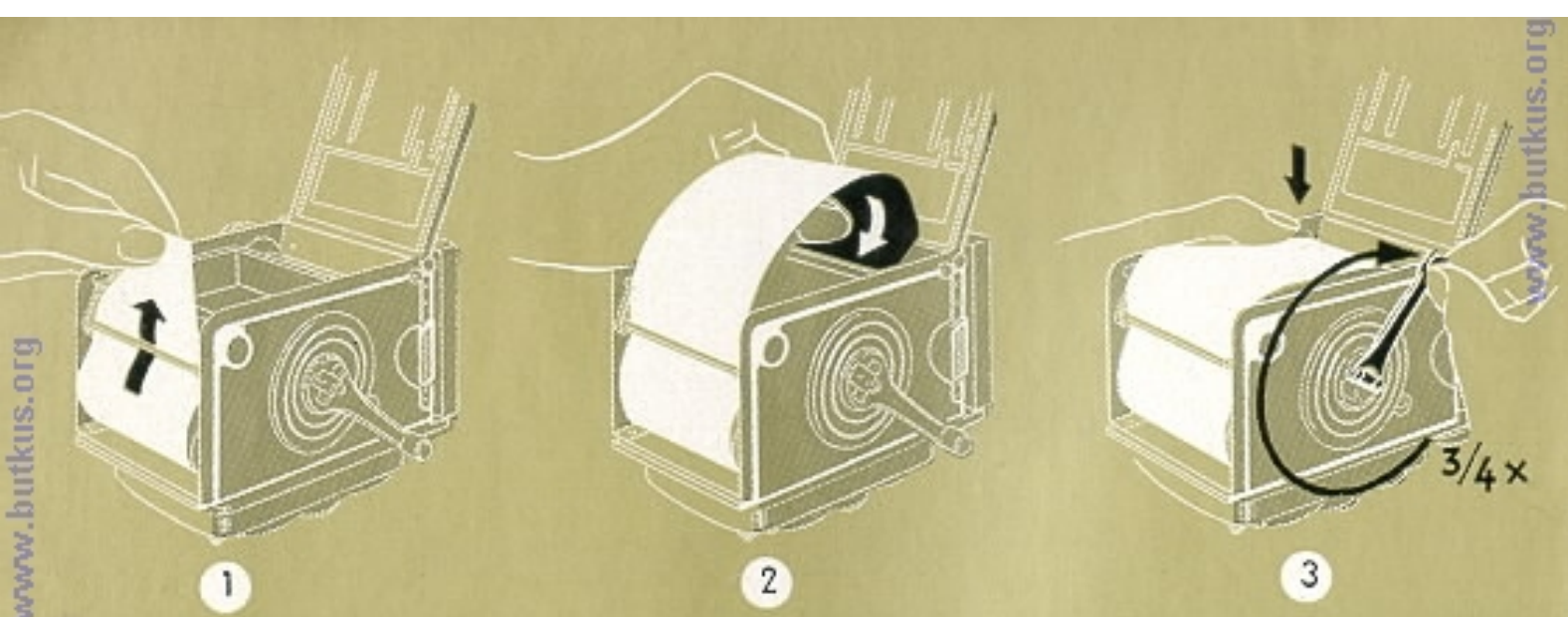






1:11 - 1/10 - Artificial light

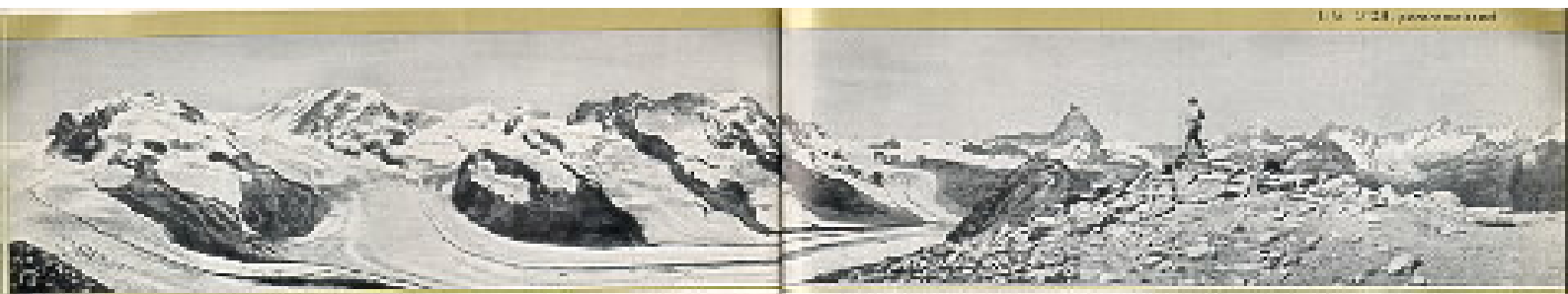




1.5.6 - 1/500



8 • 1/50 • 2 Electronic flash



U.S. 128, panoramic view



Rolleipol





1:2.8 - 1/500



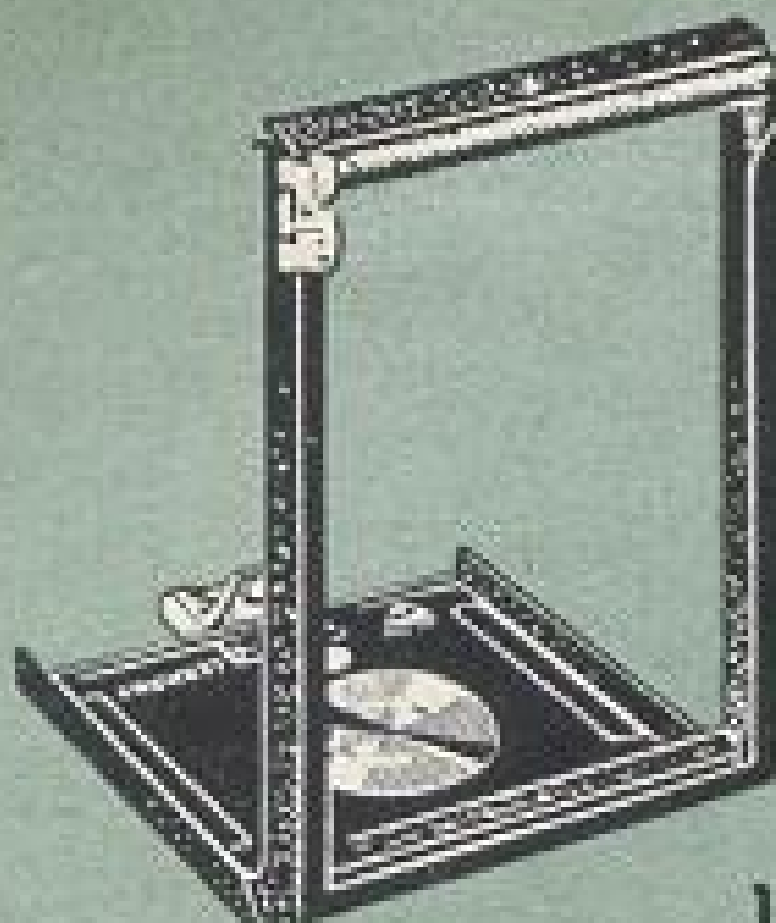


Sun

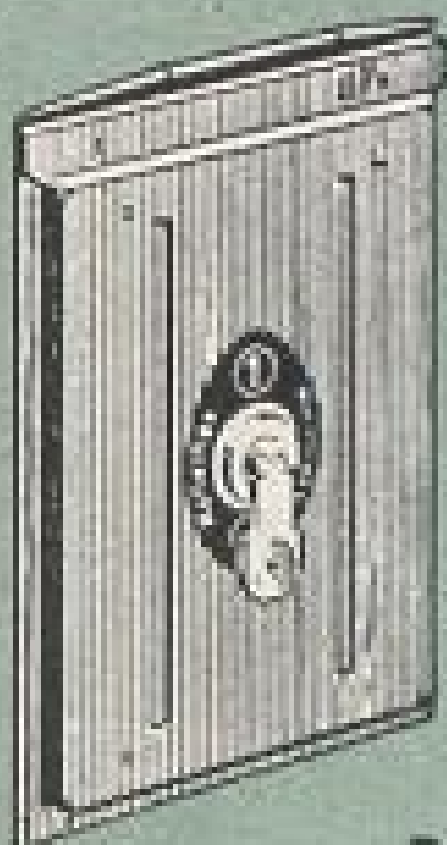


Sun + flash





1



2



3

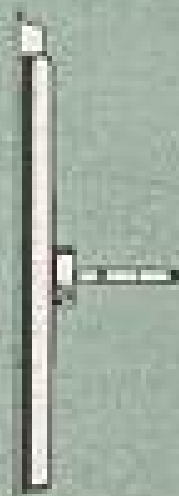
B



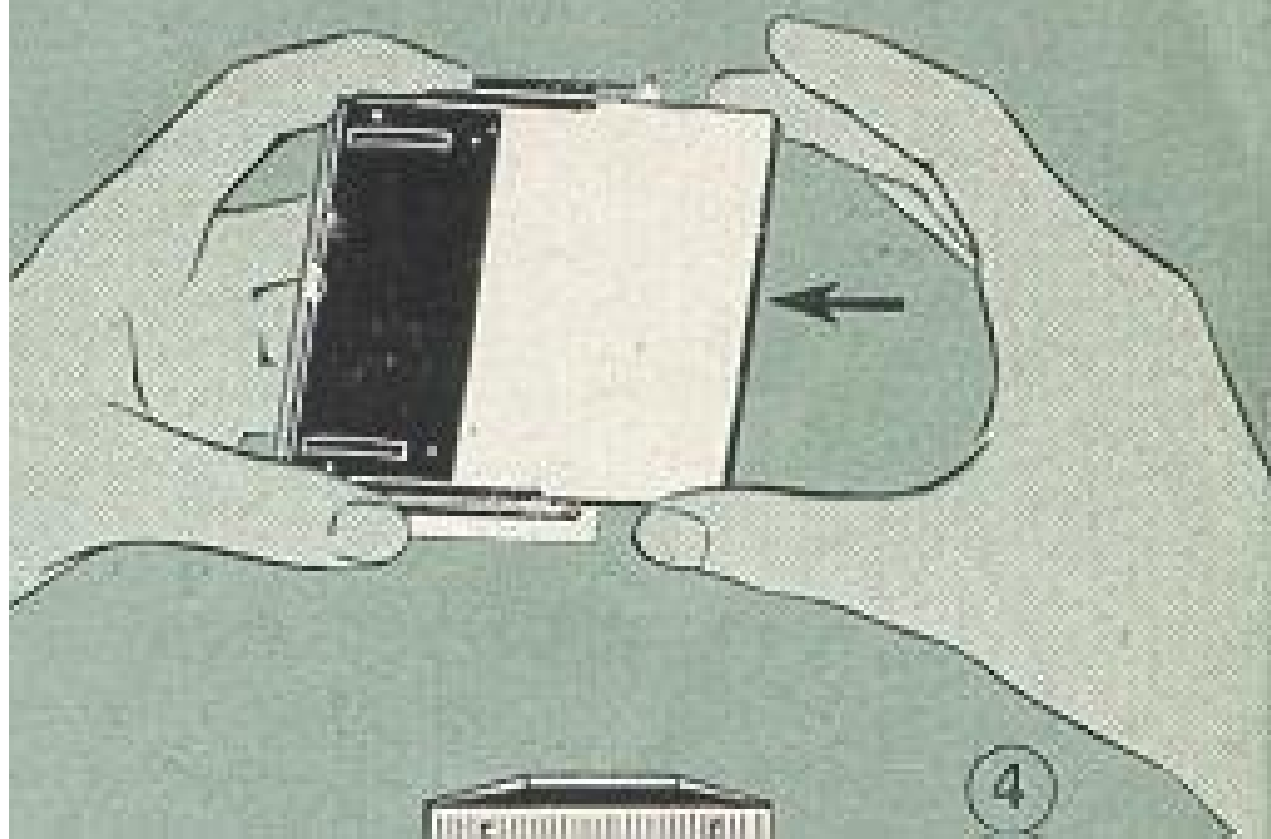
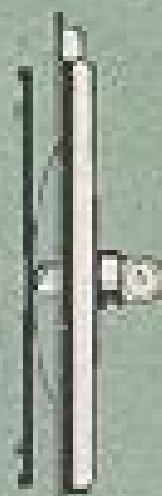
①



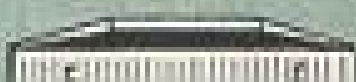
②



③



④



The illustrations indicate filter density and filter combination.

Filter

R 16



-1,5

3+

R 13



-1,5

3+

R 11



-1

2+

R 7



-1

2+

R 5



-0,5

1,5+

R 2



-0,5

1,5+

B 2



-0,5

1,5+

B 5



-1

2+

B 7



-1,5

3+

B 11



-1,5

3+

B 13



-2

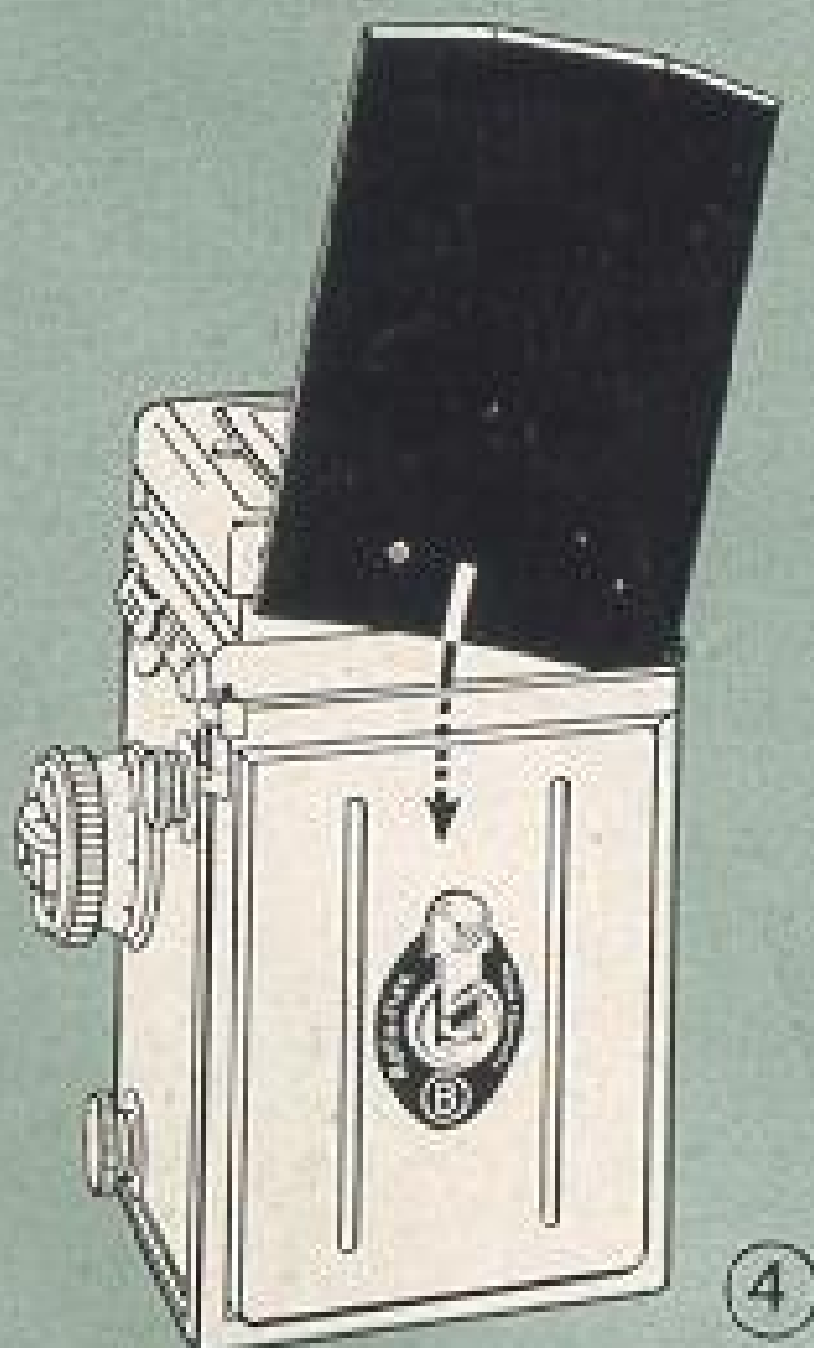
4+

B 16



-2,5

6+

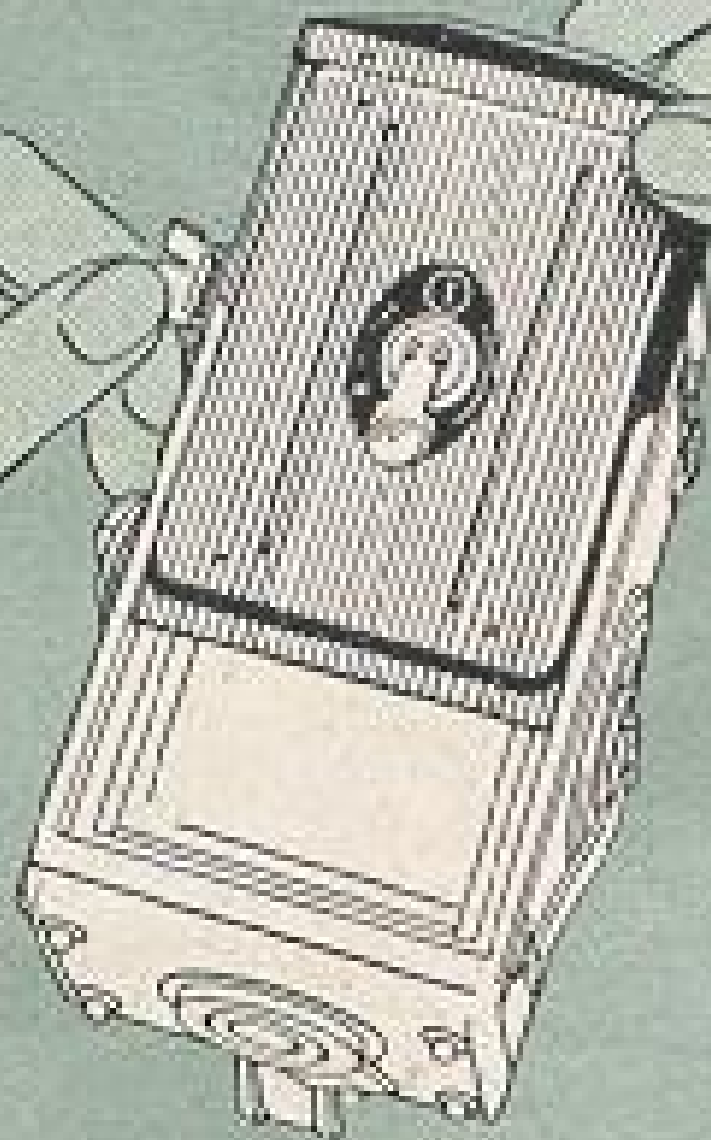




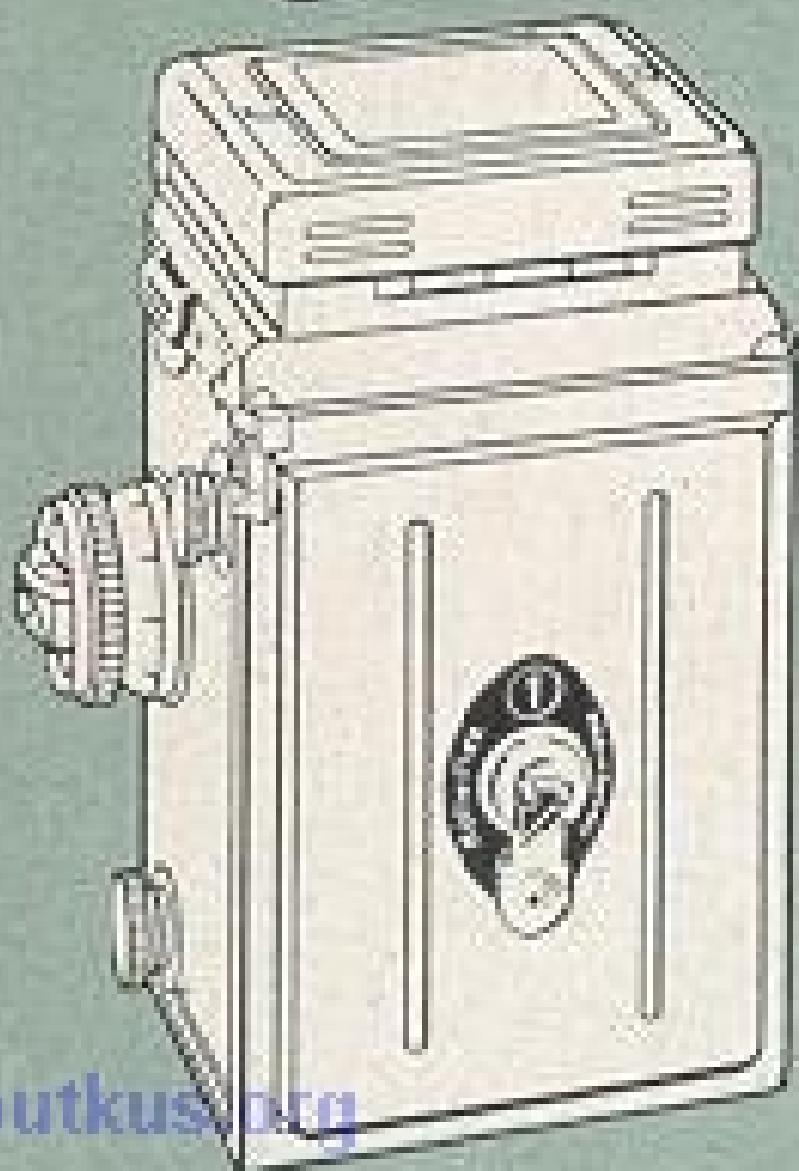
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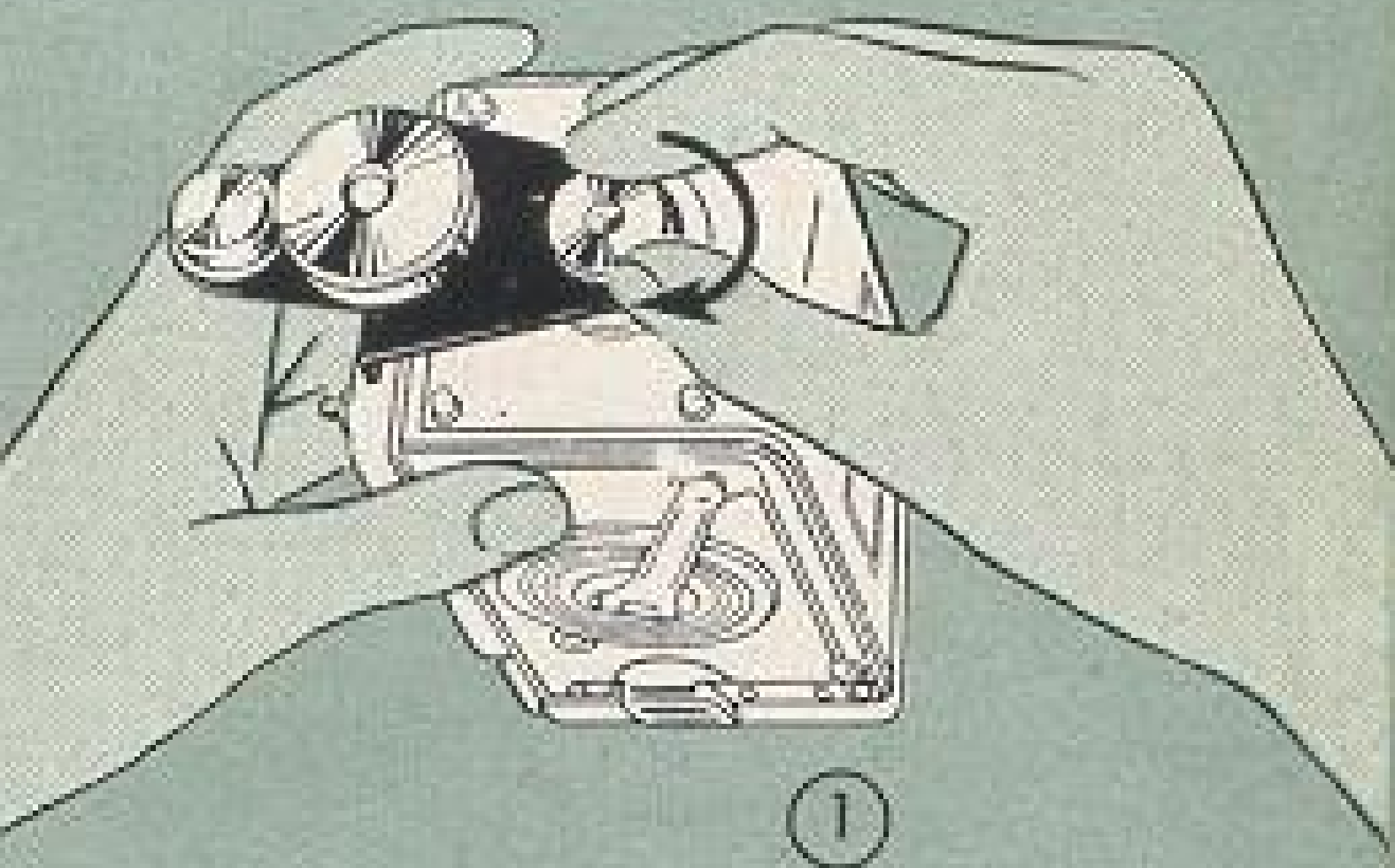
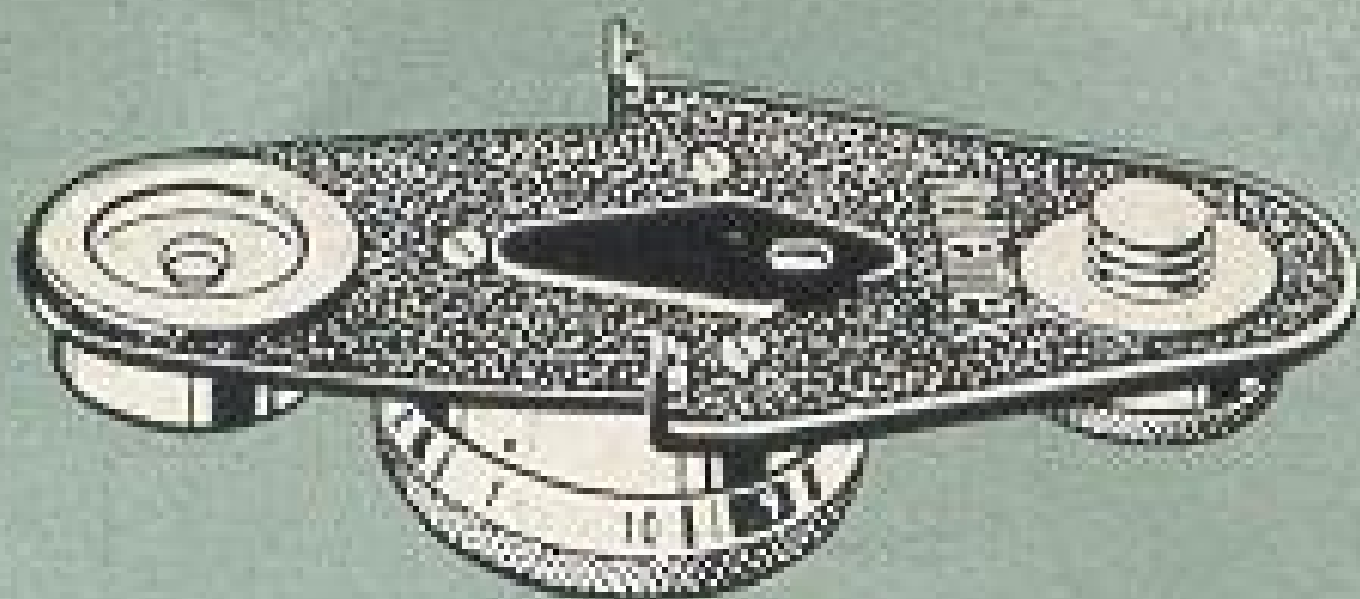
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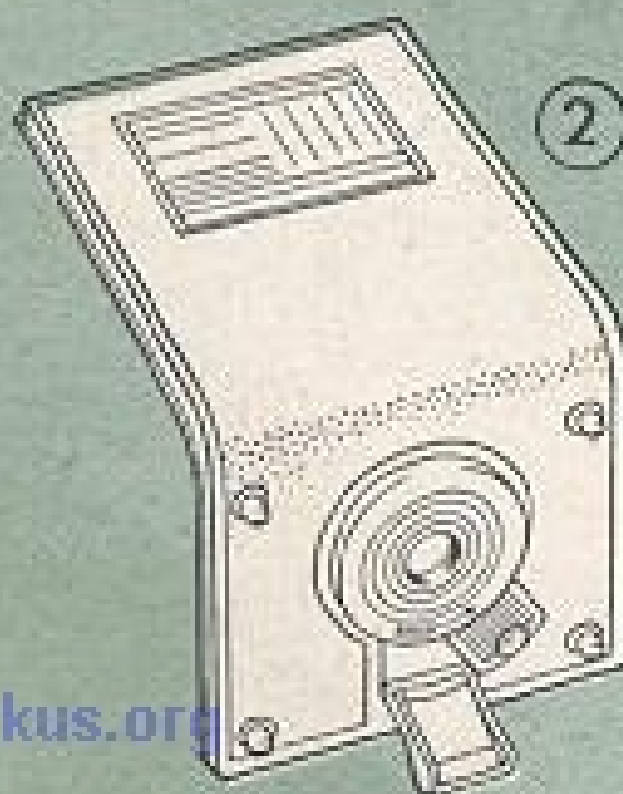
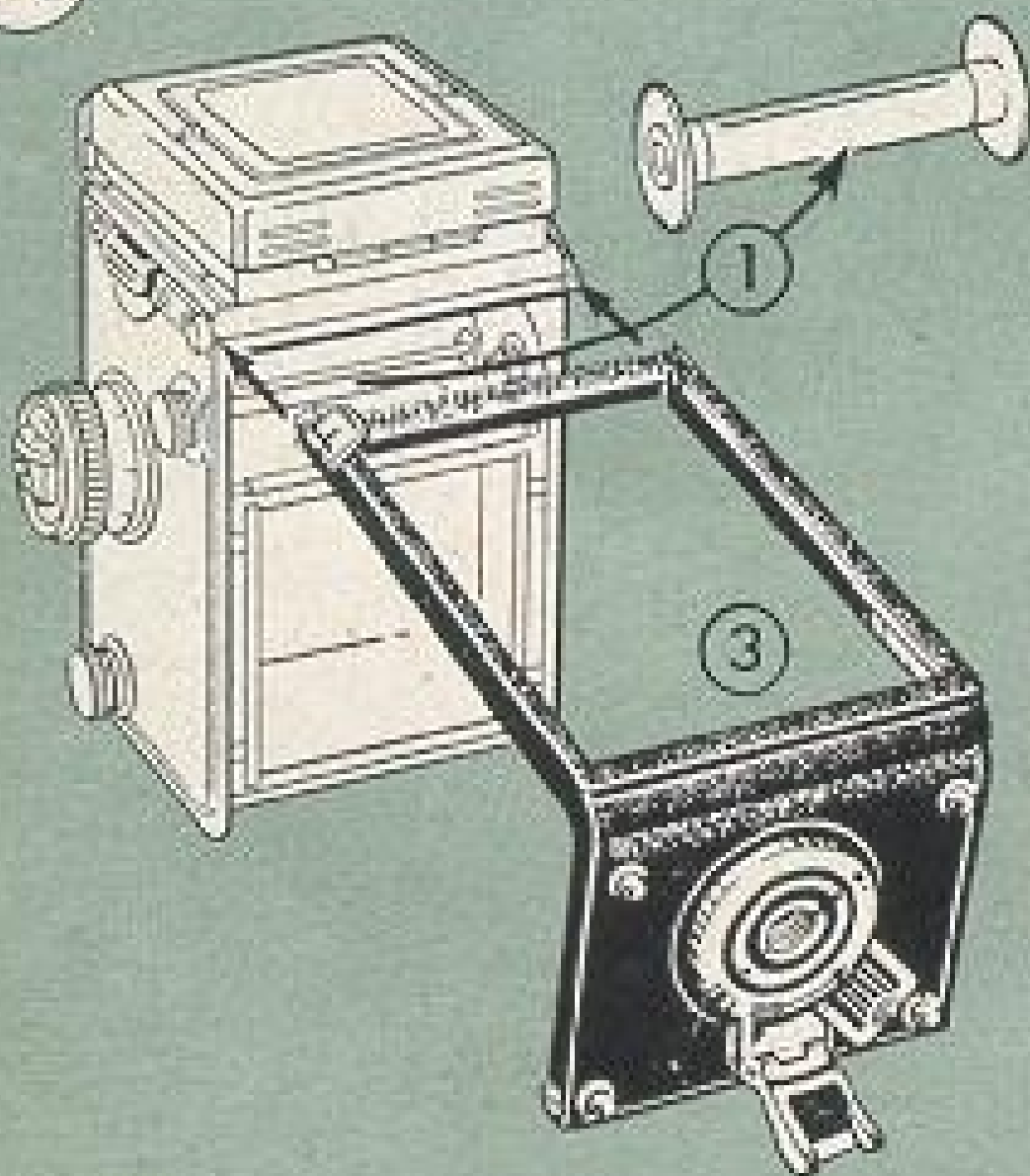
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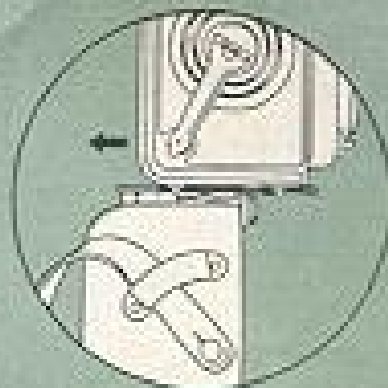


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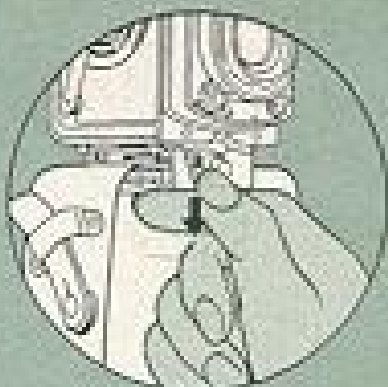


A



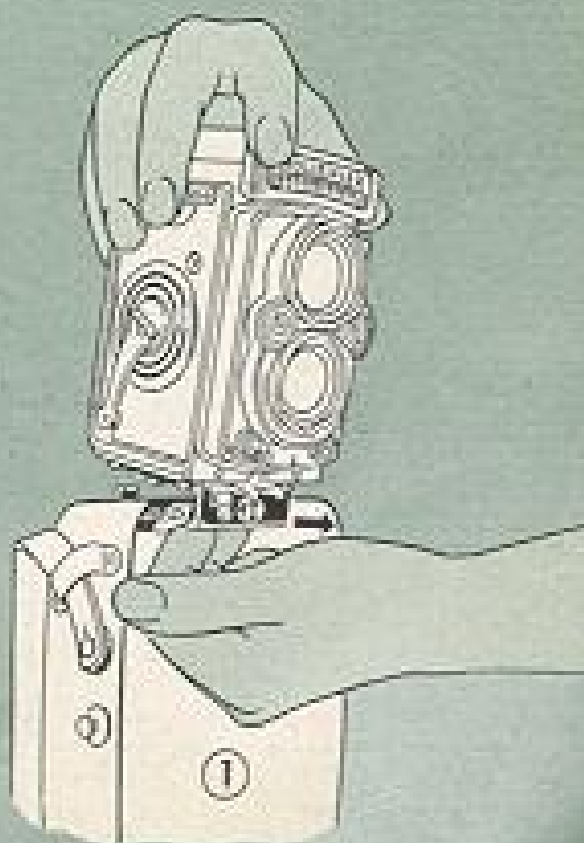


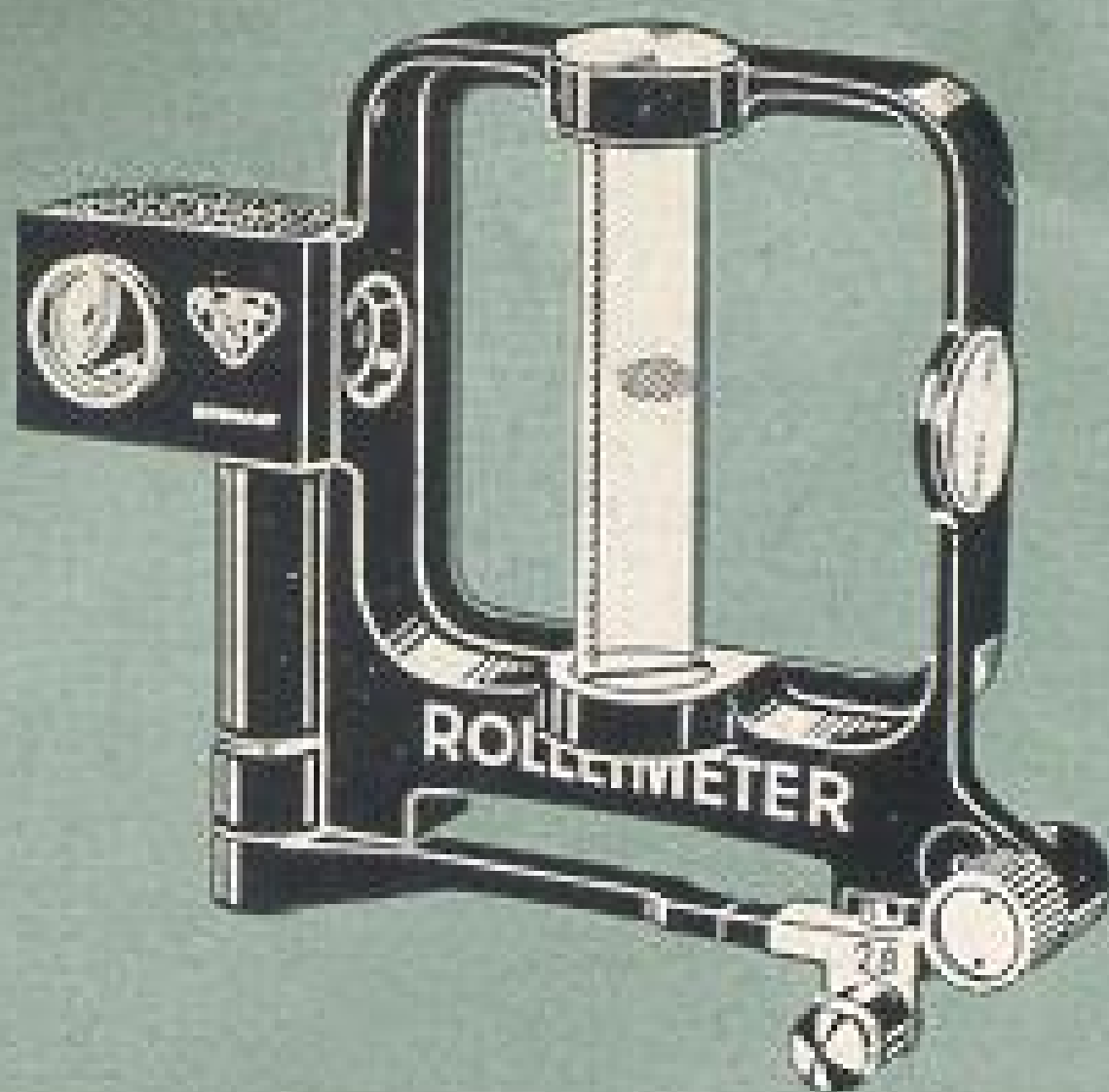
④

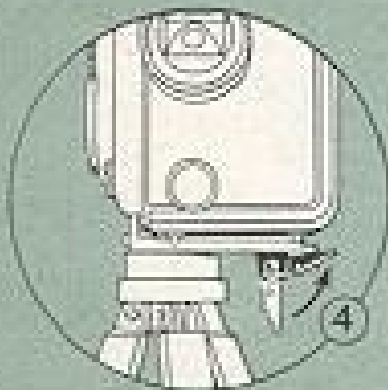
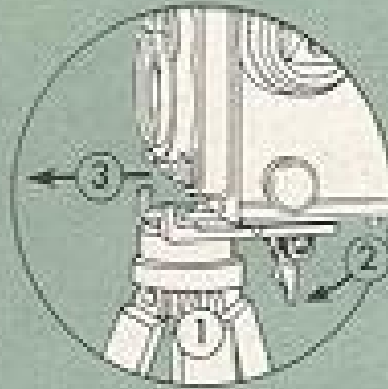


⑤

B

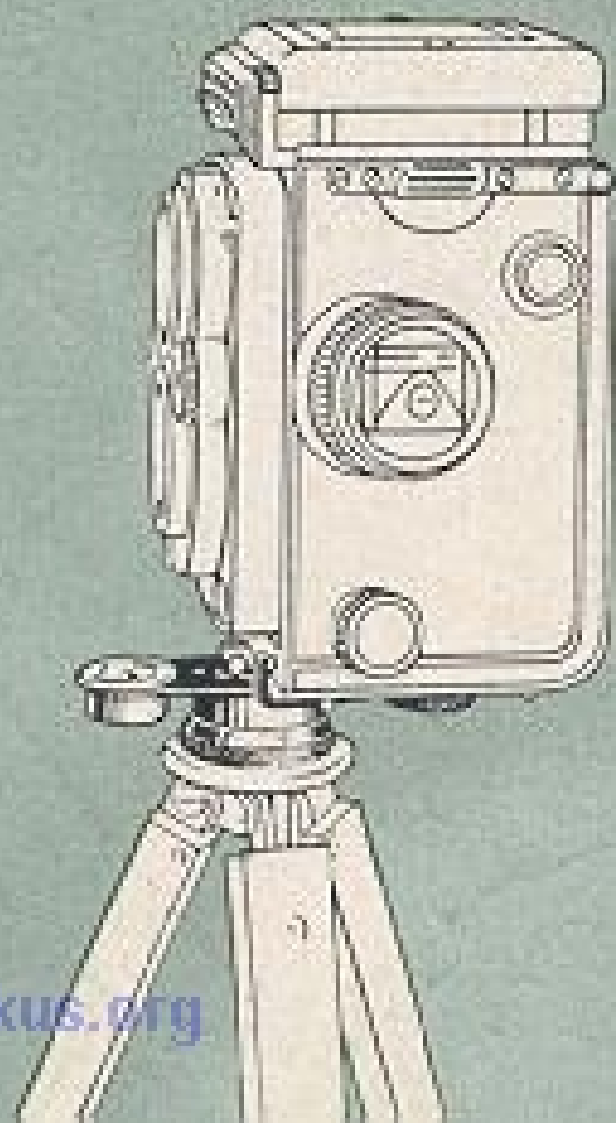


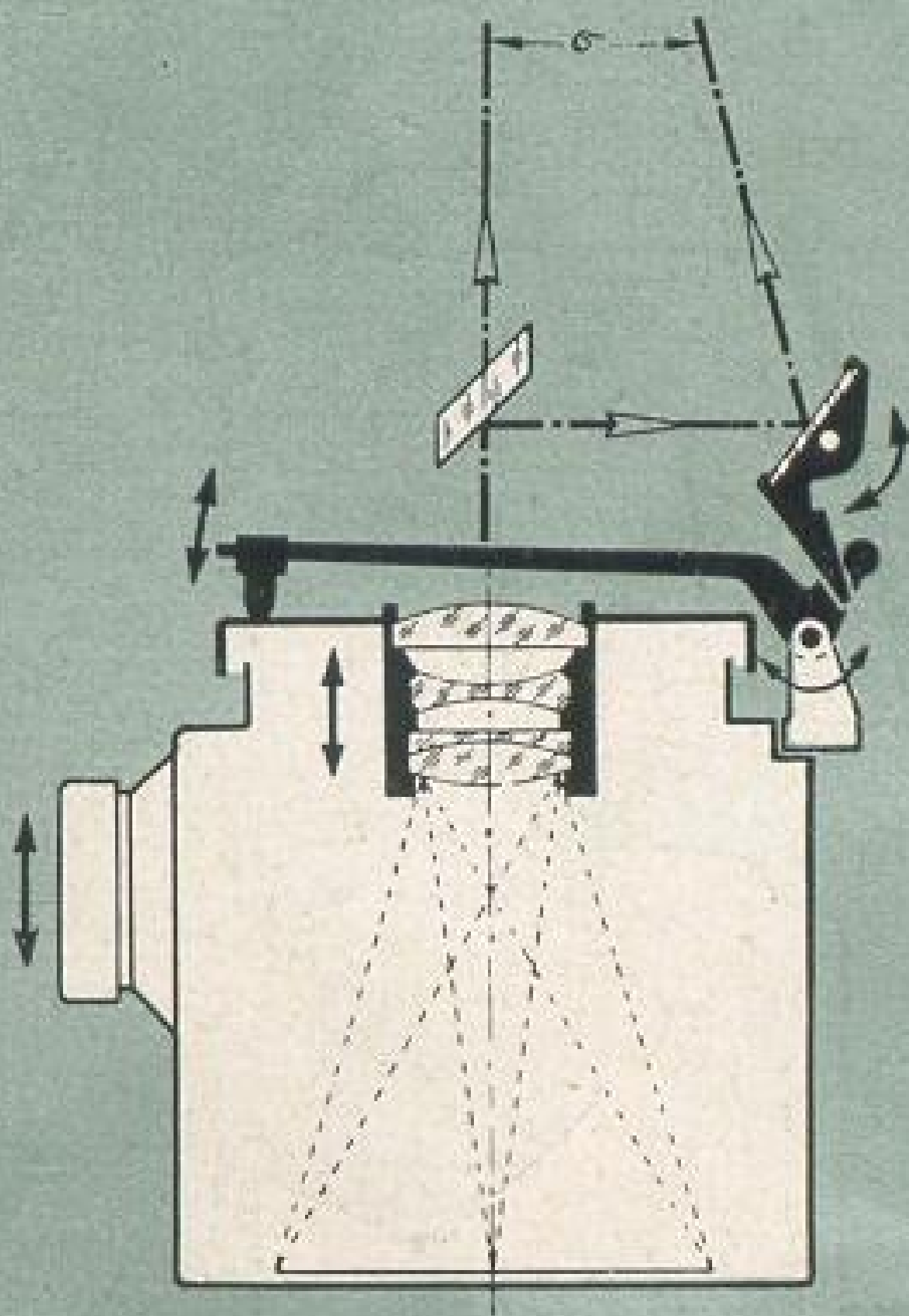




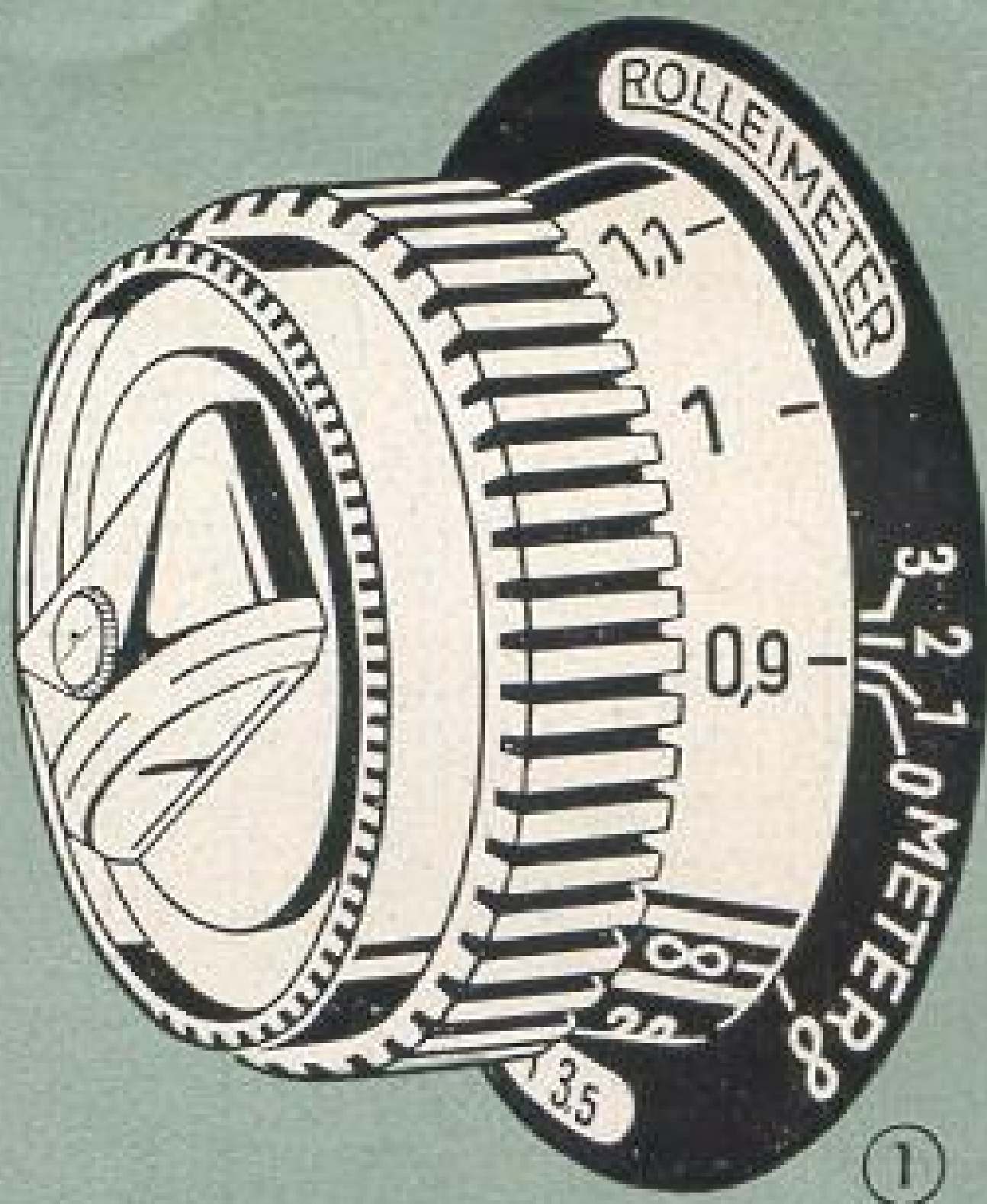
A

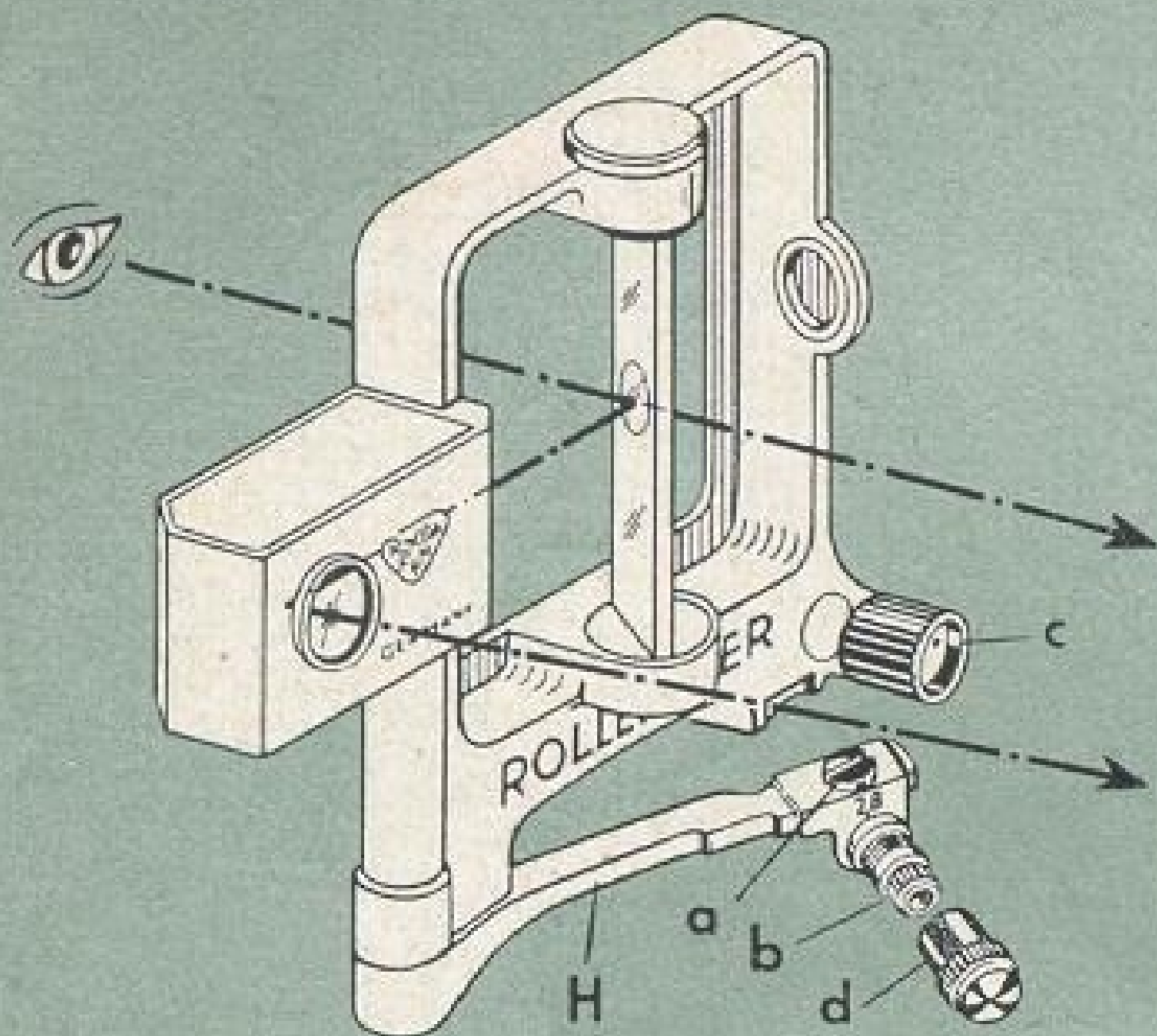




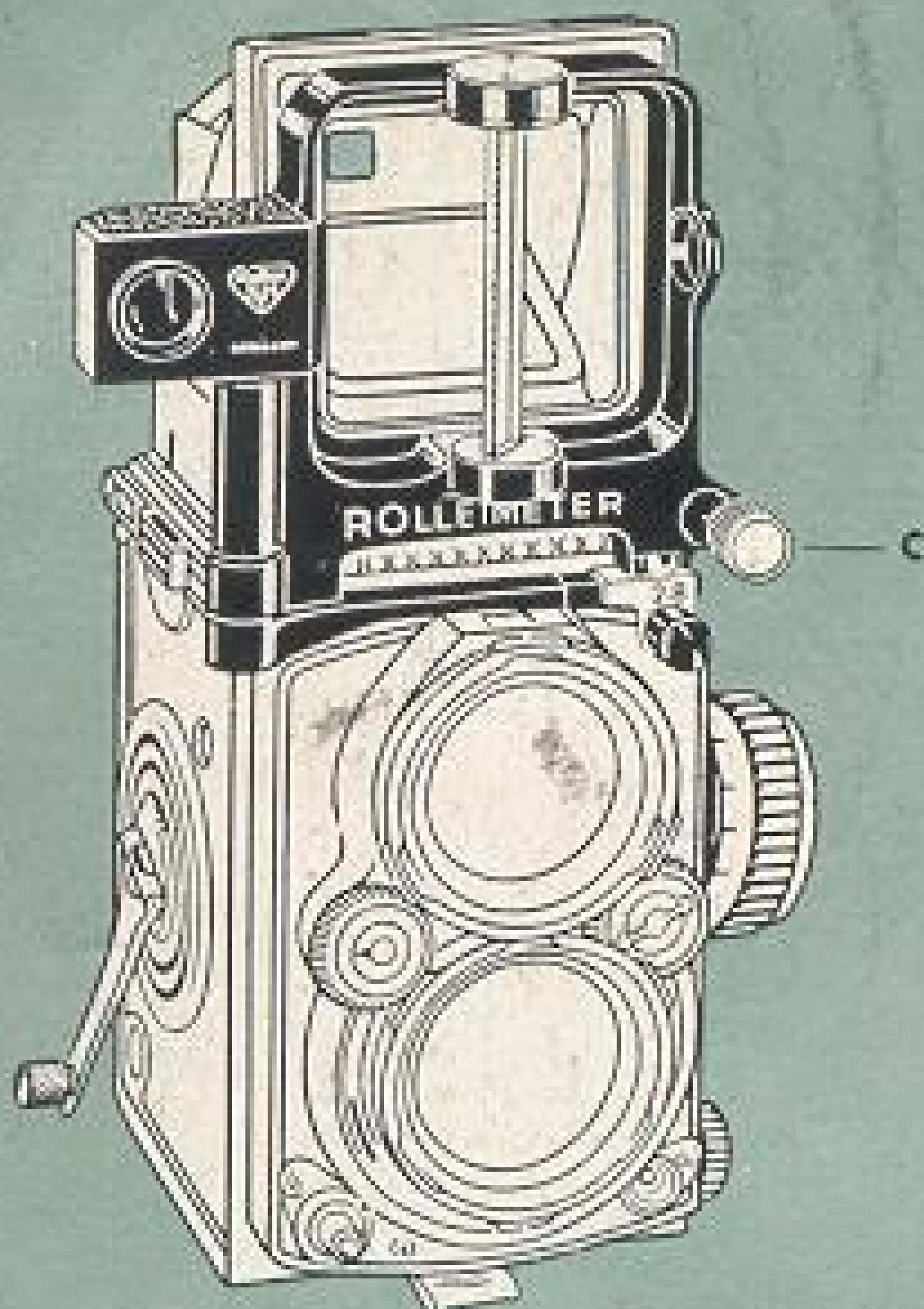


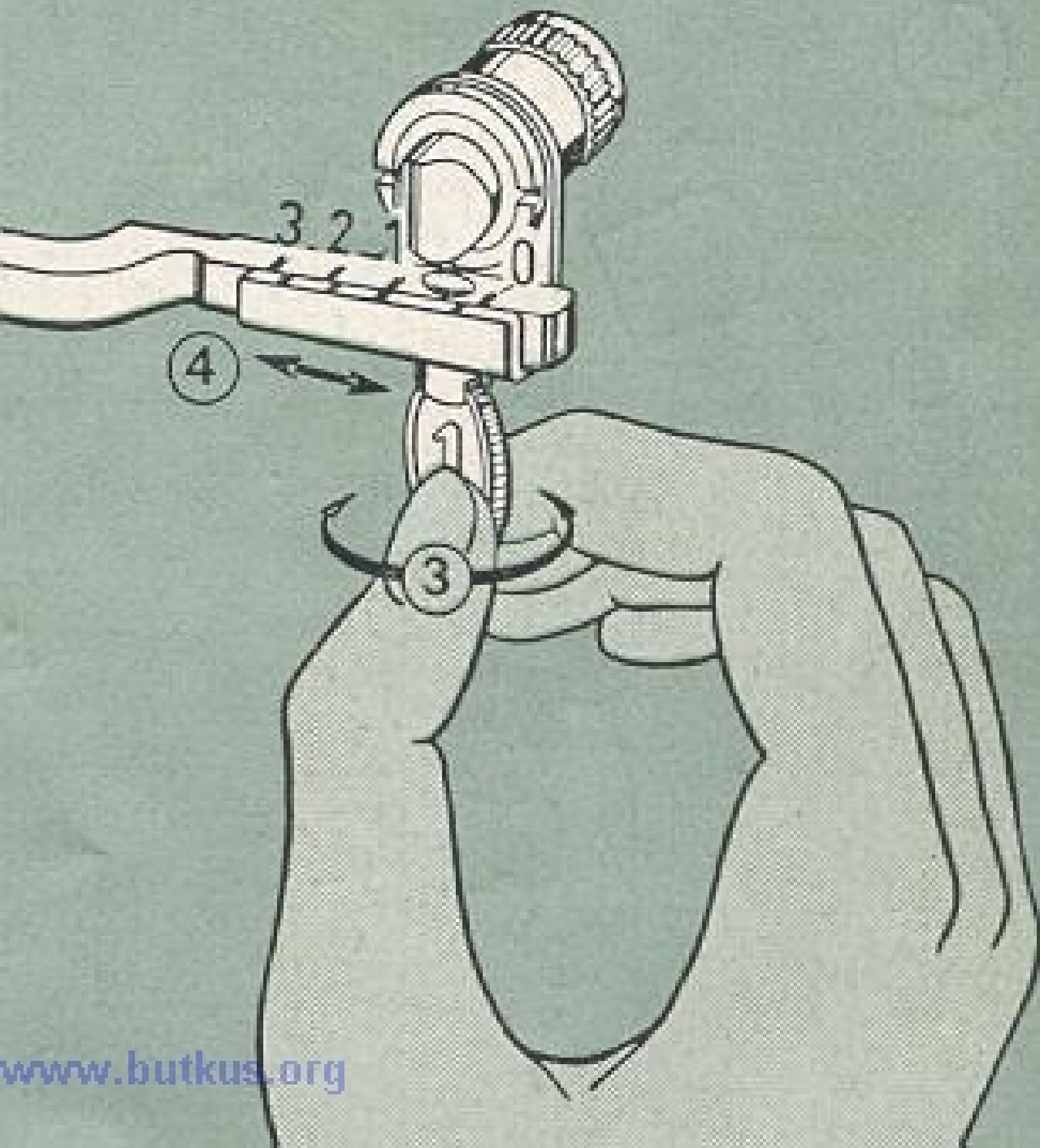
A





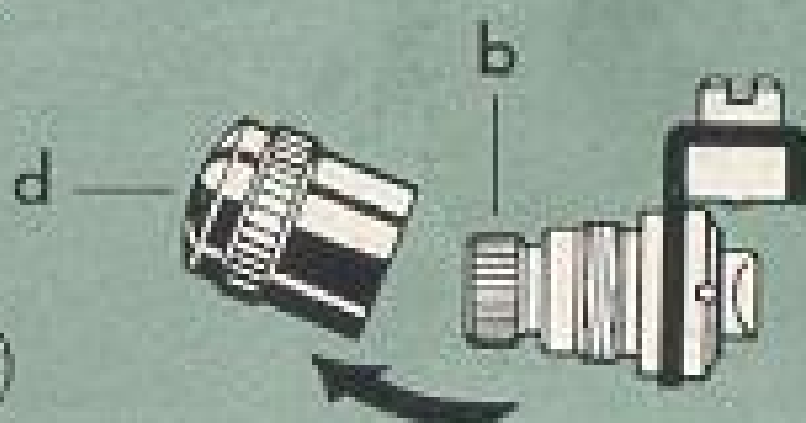
B



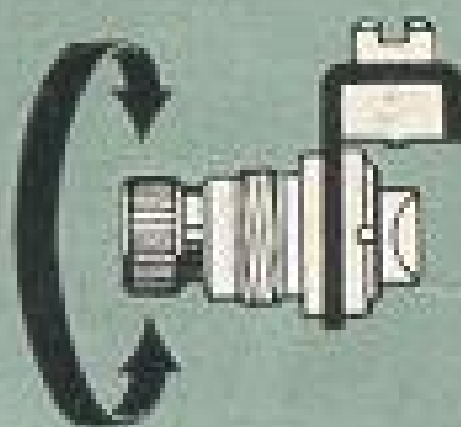


C

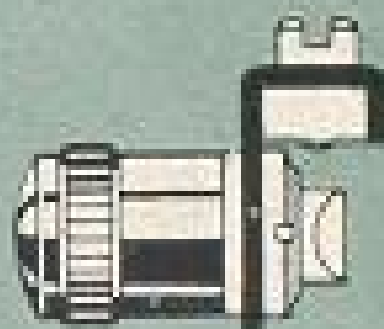
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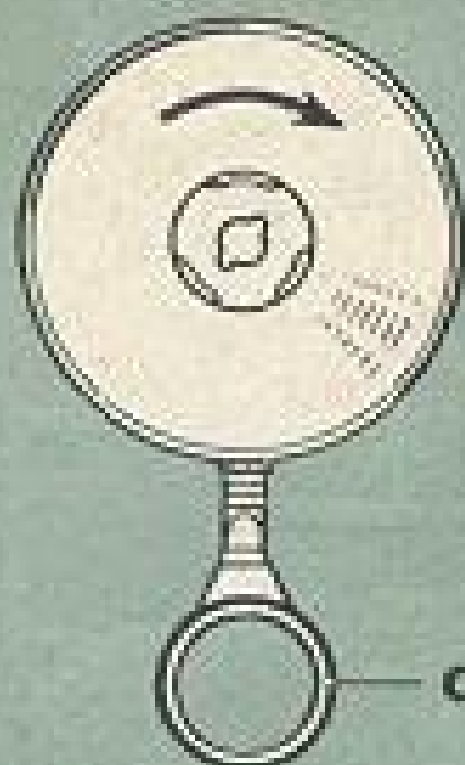
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4



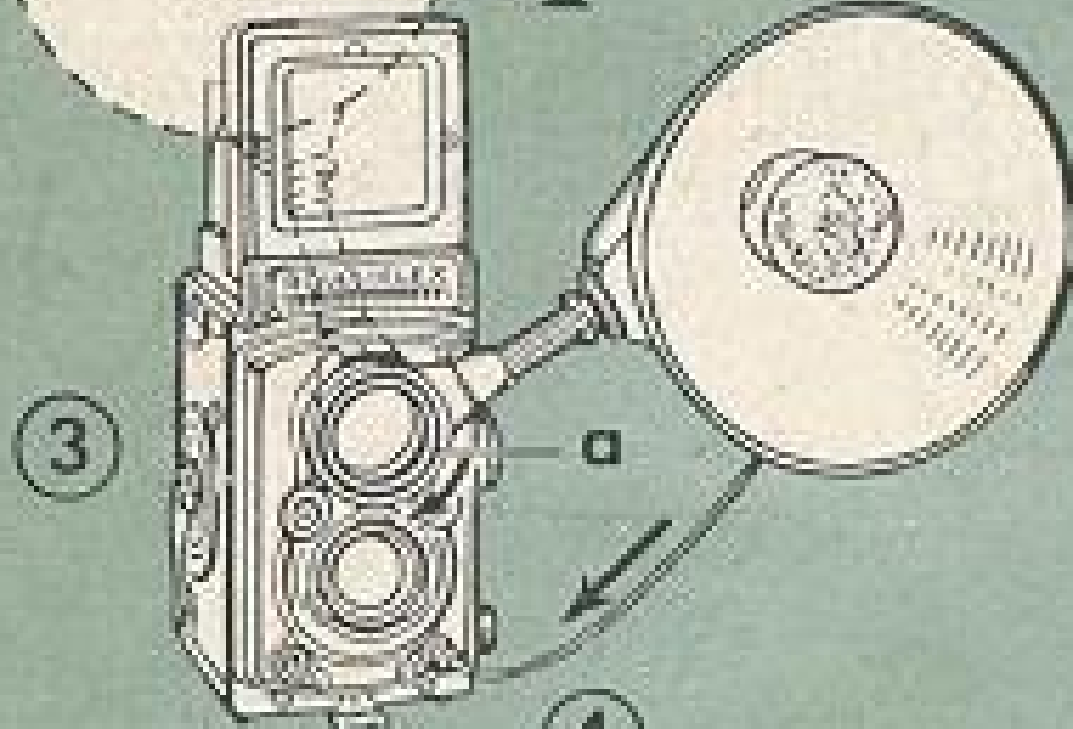
A



1



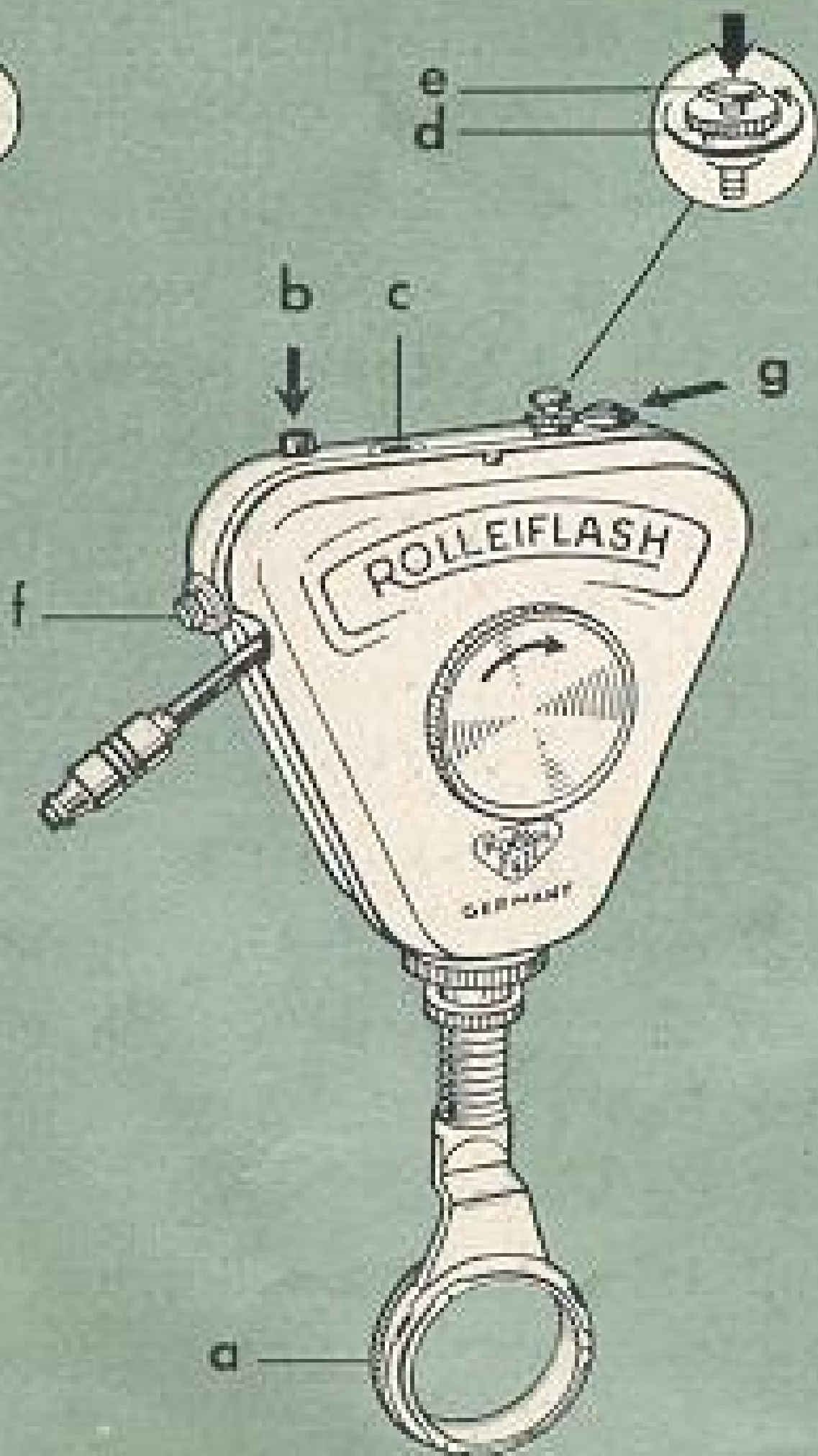
2



3

4

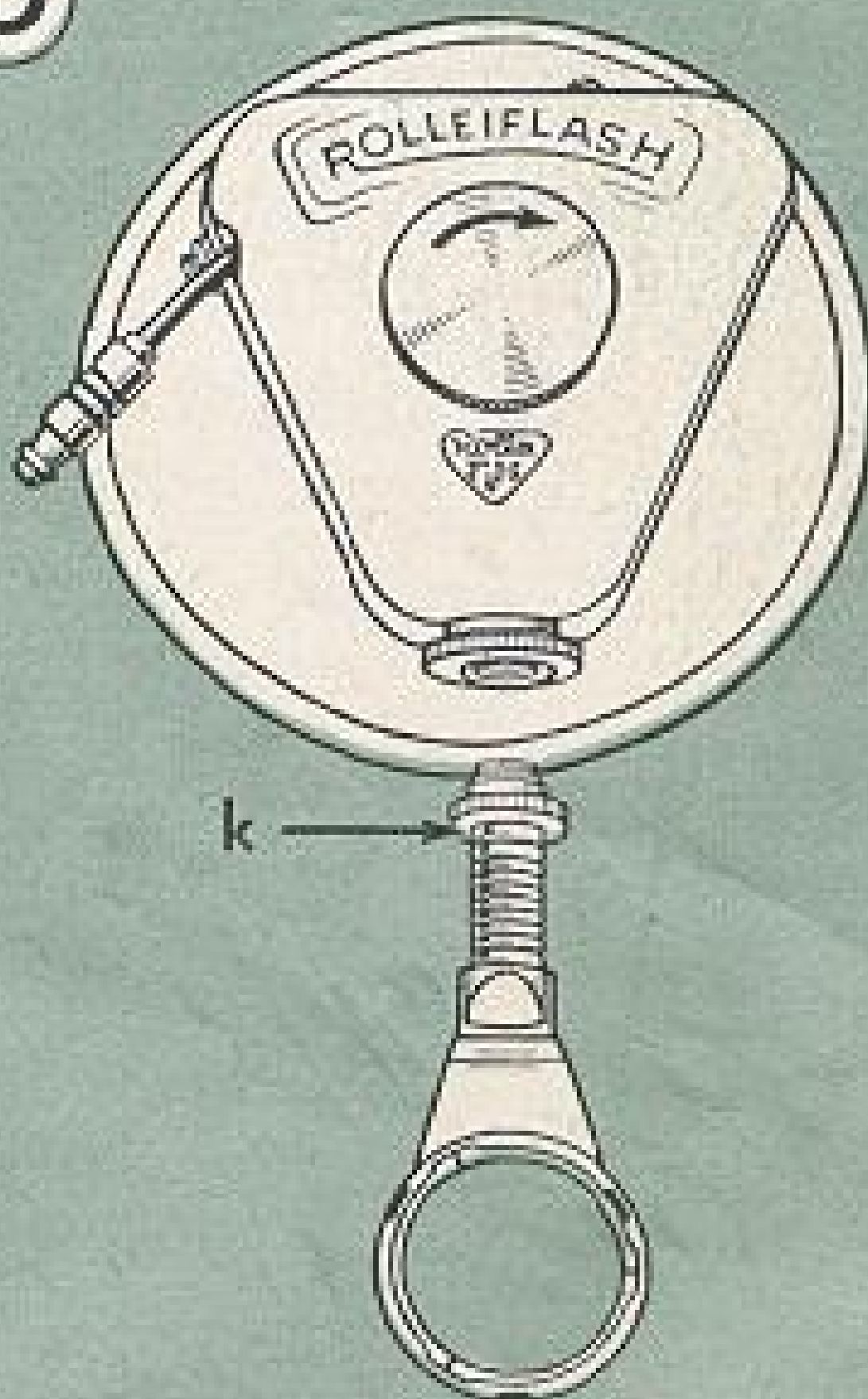
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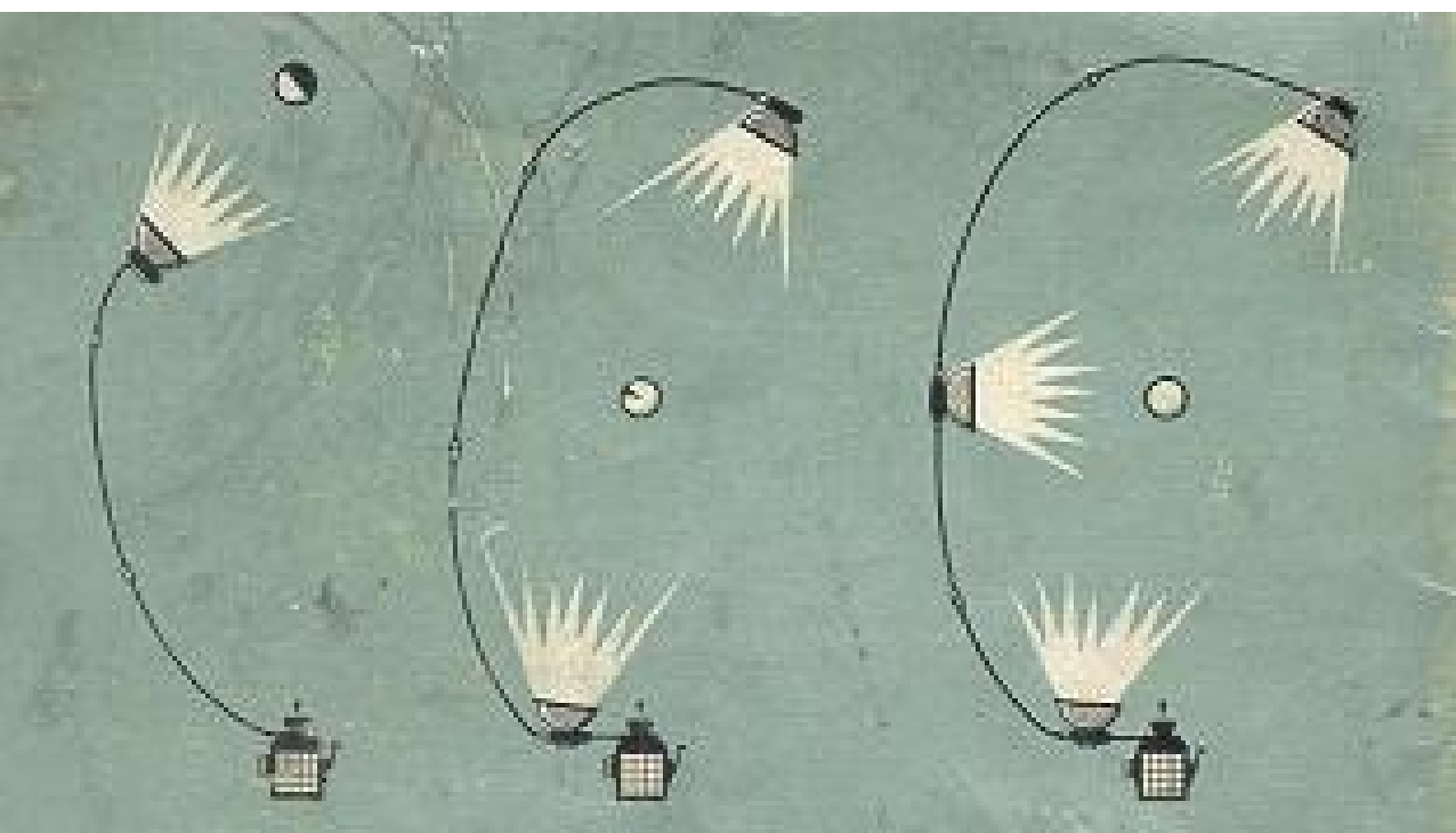


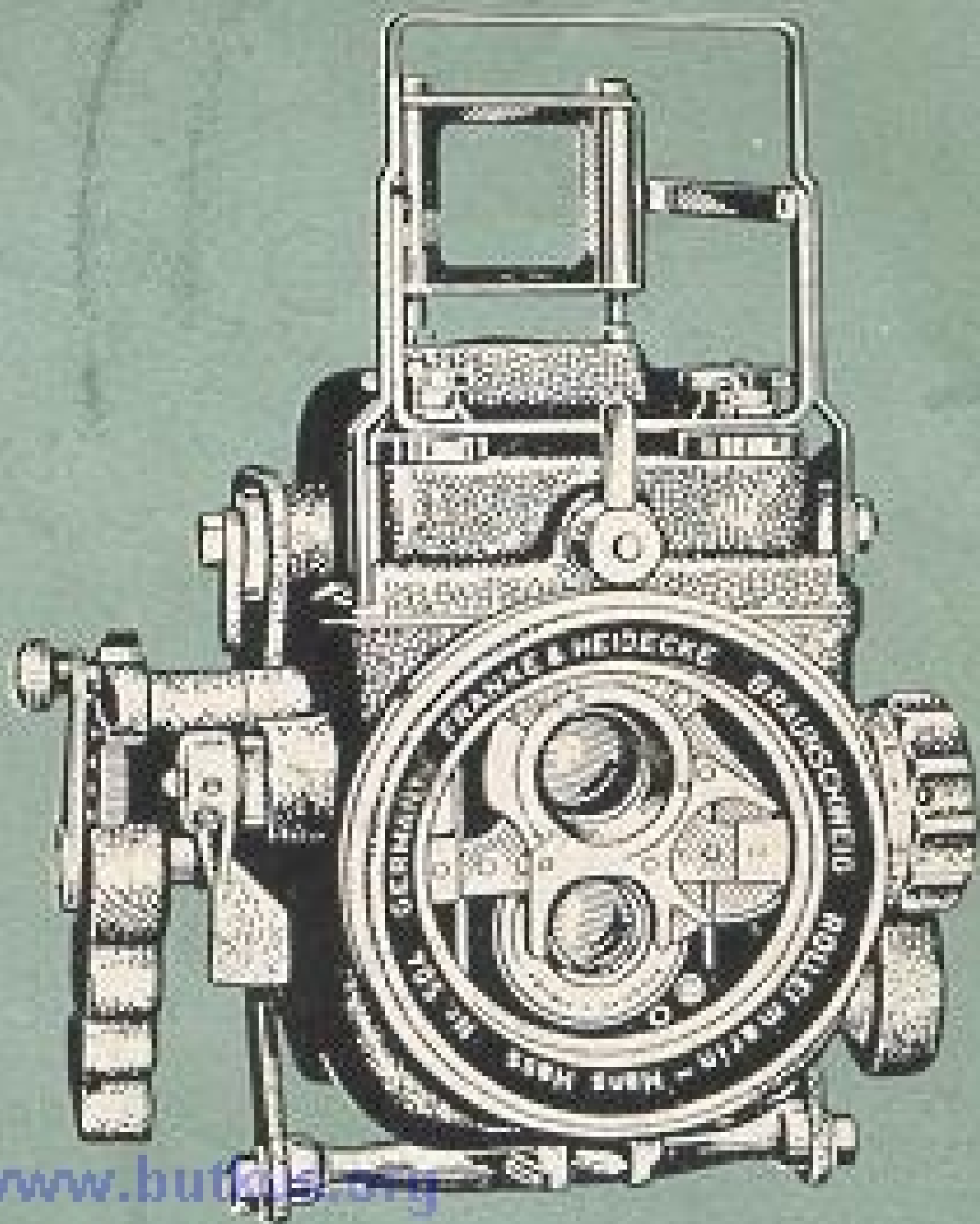
The Diaphragm



D





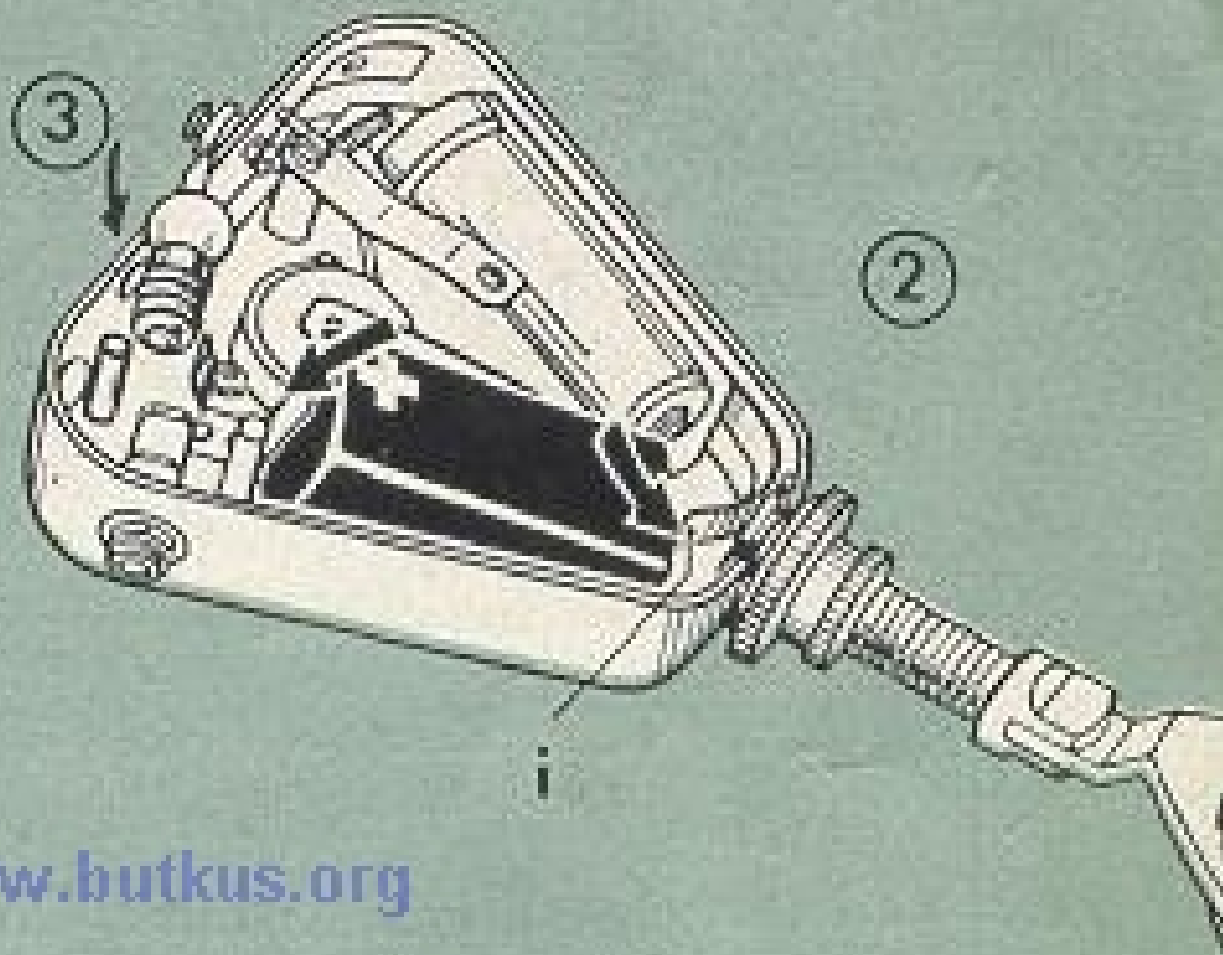
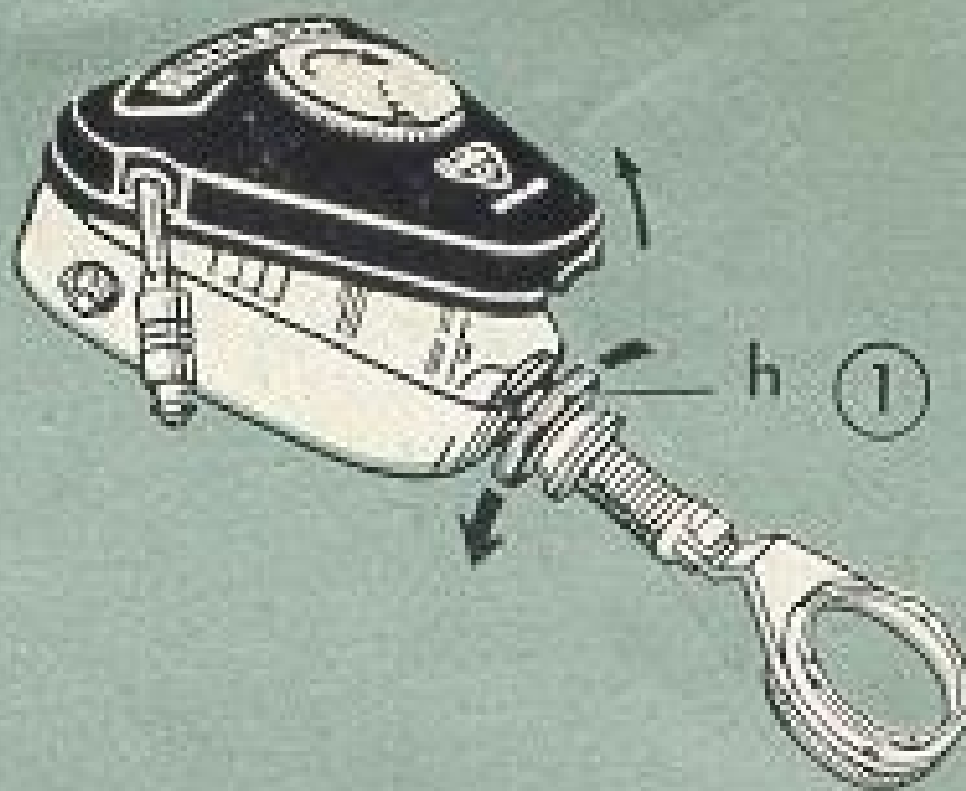


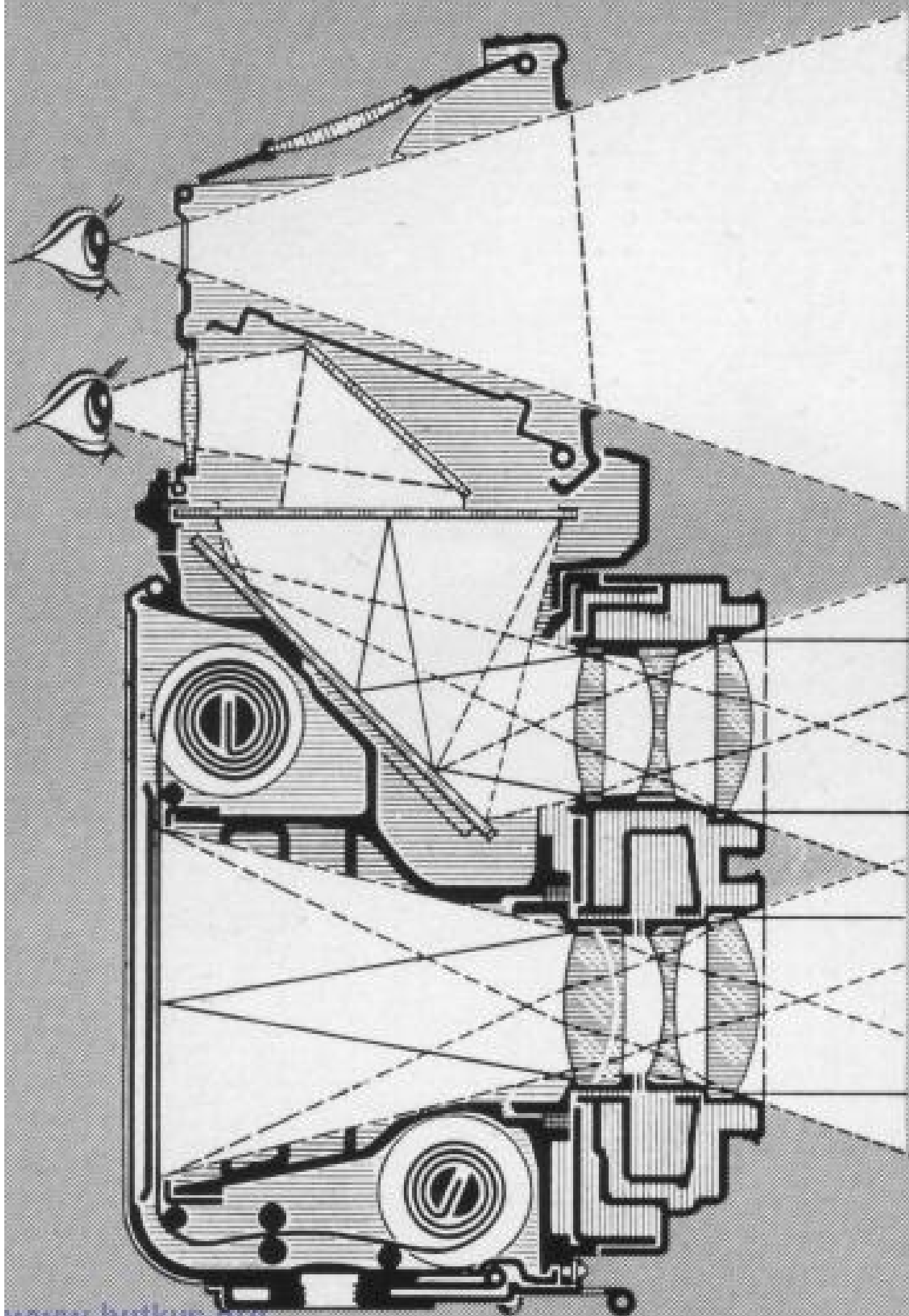
Tripod Pictures:					Hand-Held Pictures:				
Time Exposure	Slow Speeds				Fast Speeds				
www.butkus.org	1	1/2	1/5	1/10	1/25	1/50	1/100	1/250	1/500 sec.

1/500th sec. — set speed first — then
cock shutter!

www.butkus.org

C





Depth of Field



Diaphragm Opening



Brightness



Subject Movement

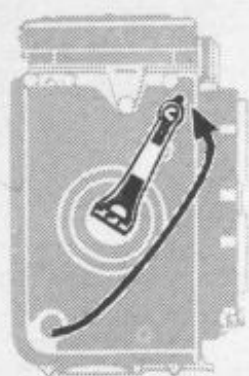


Shutter Speed



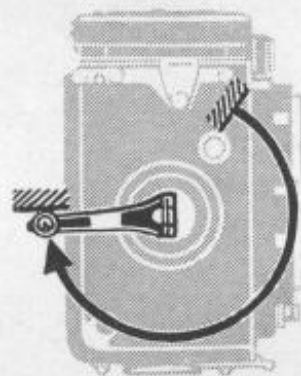
Exposure



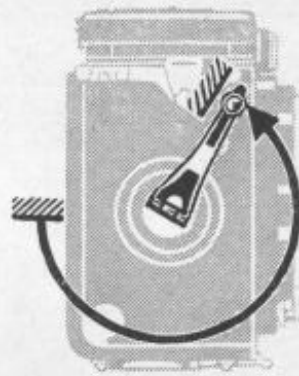


www.butkus.org

4

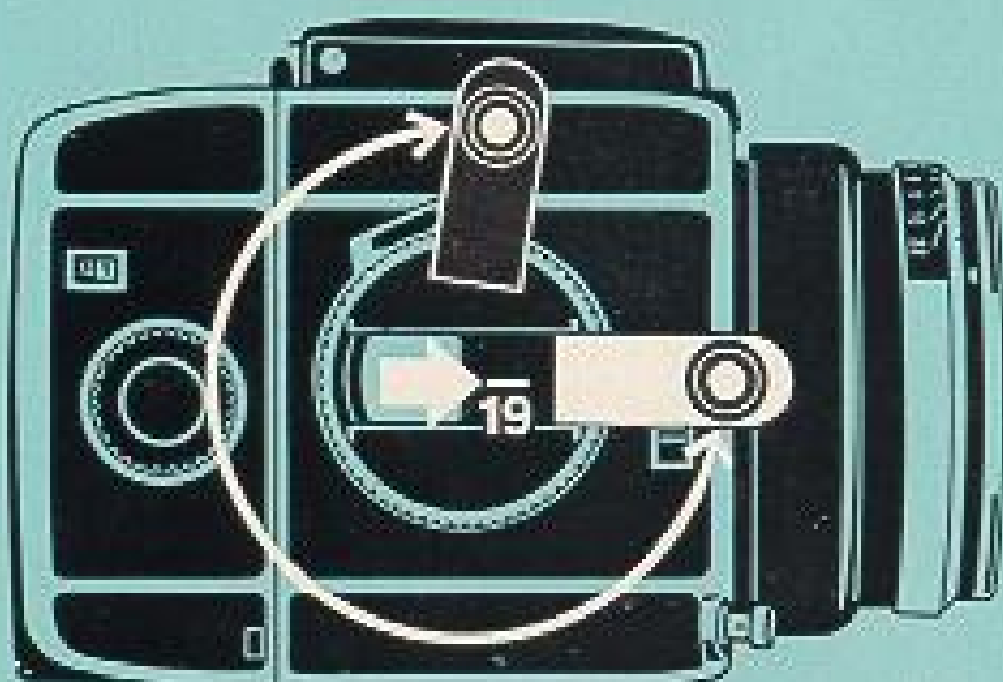
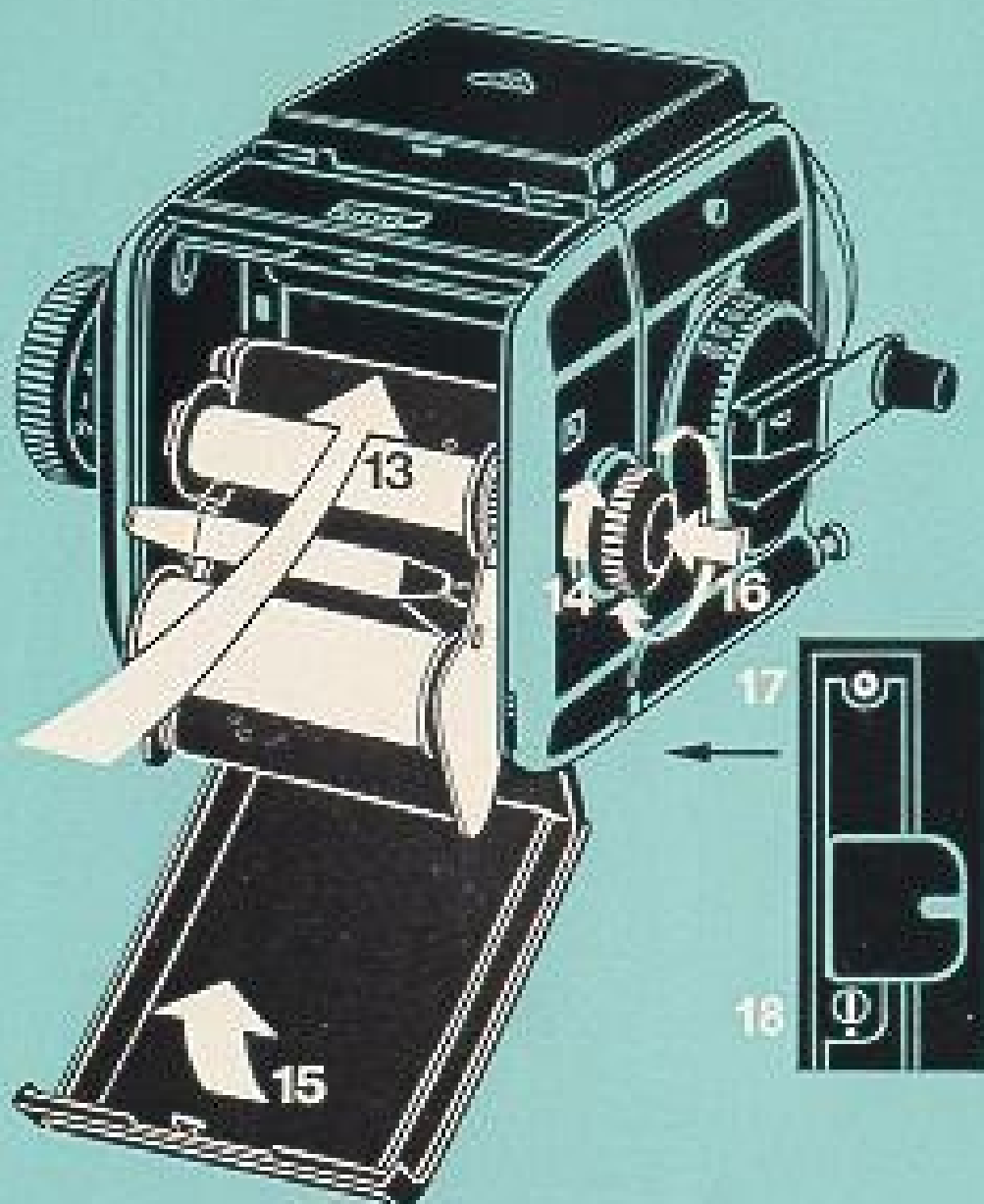


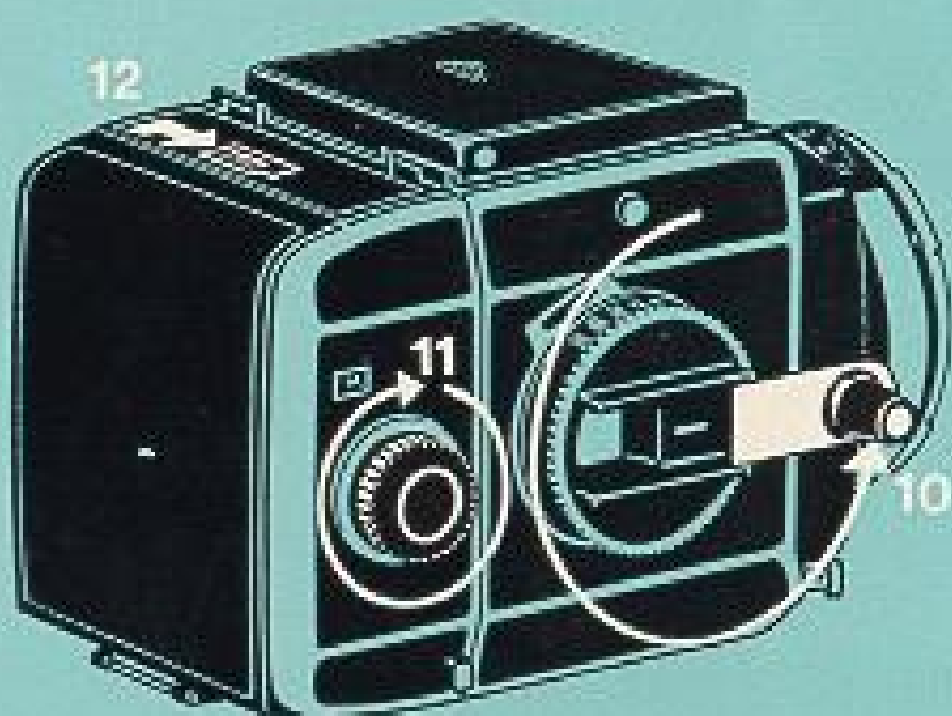
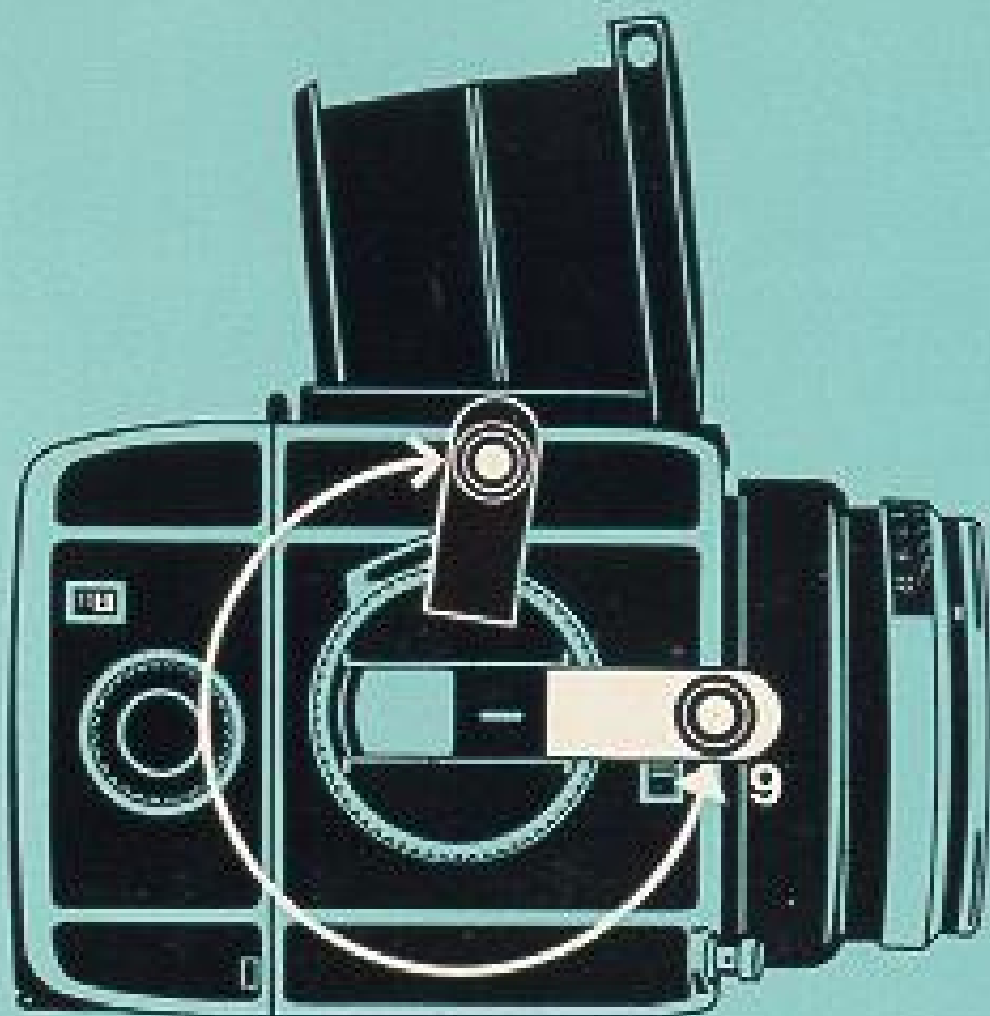
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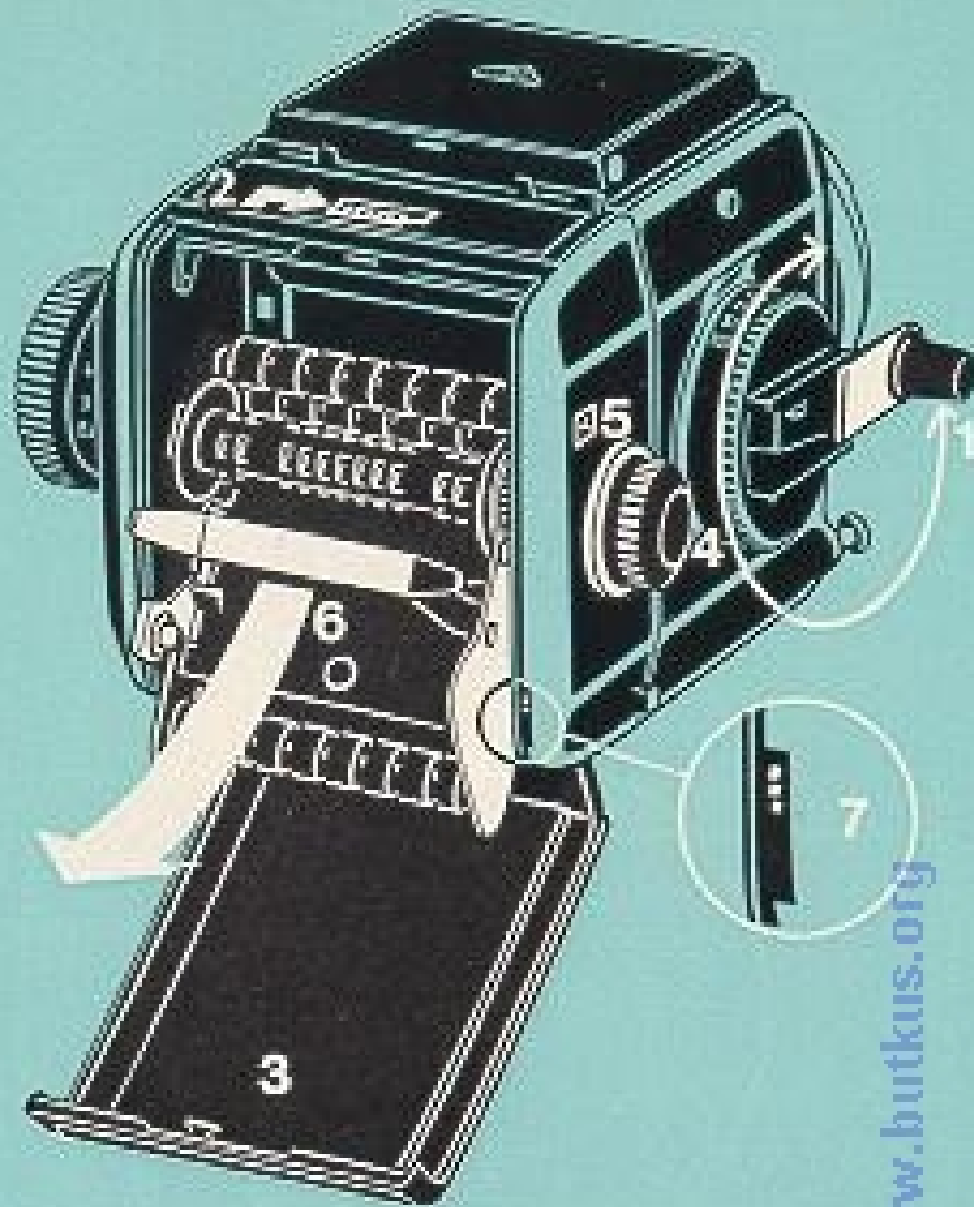


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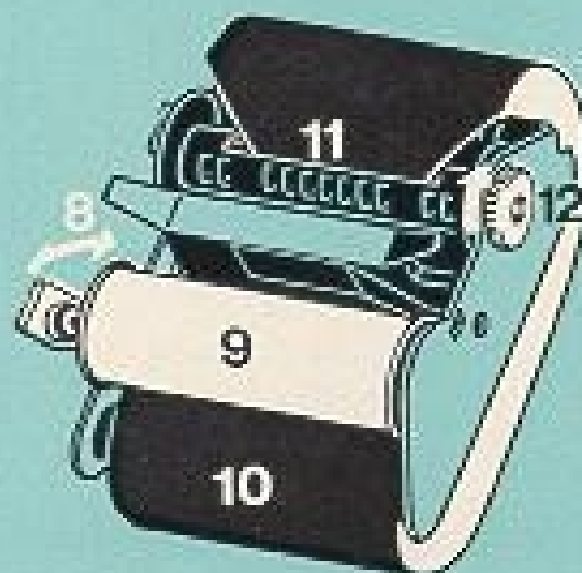






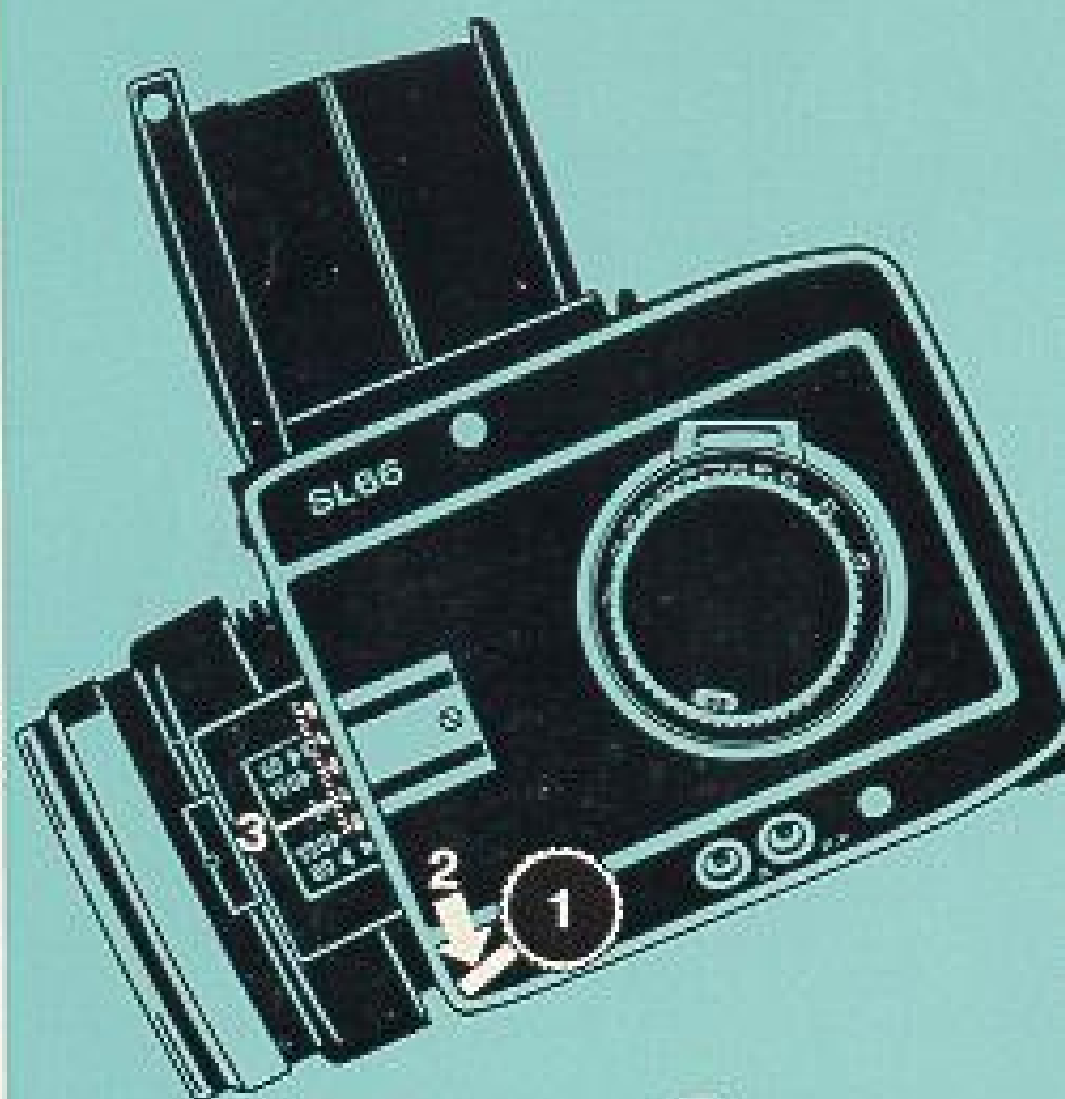


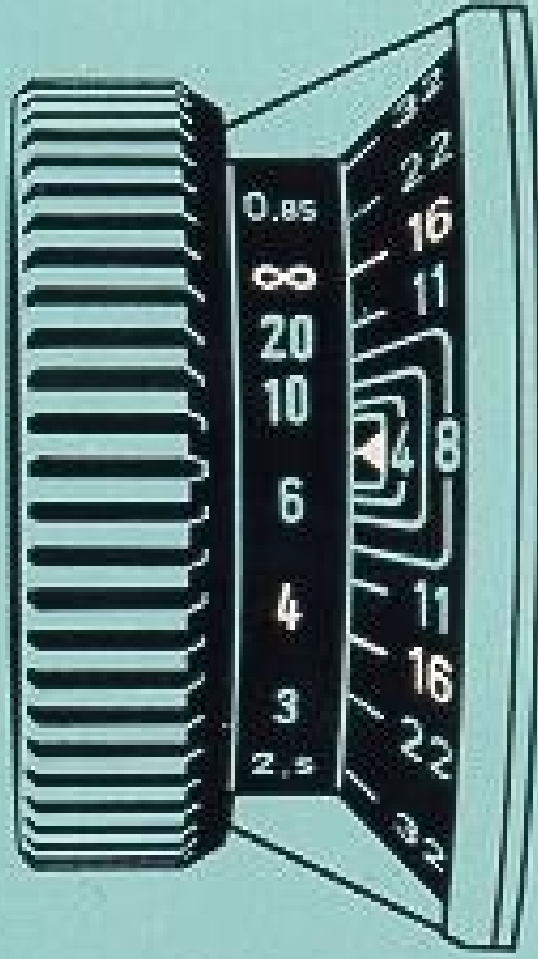
www.butkus.org

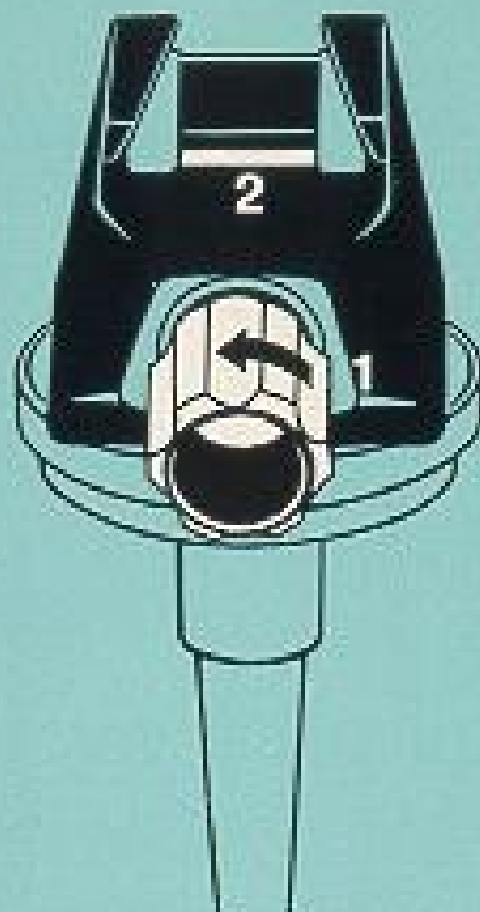


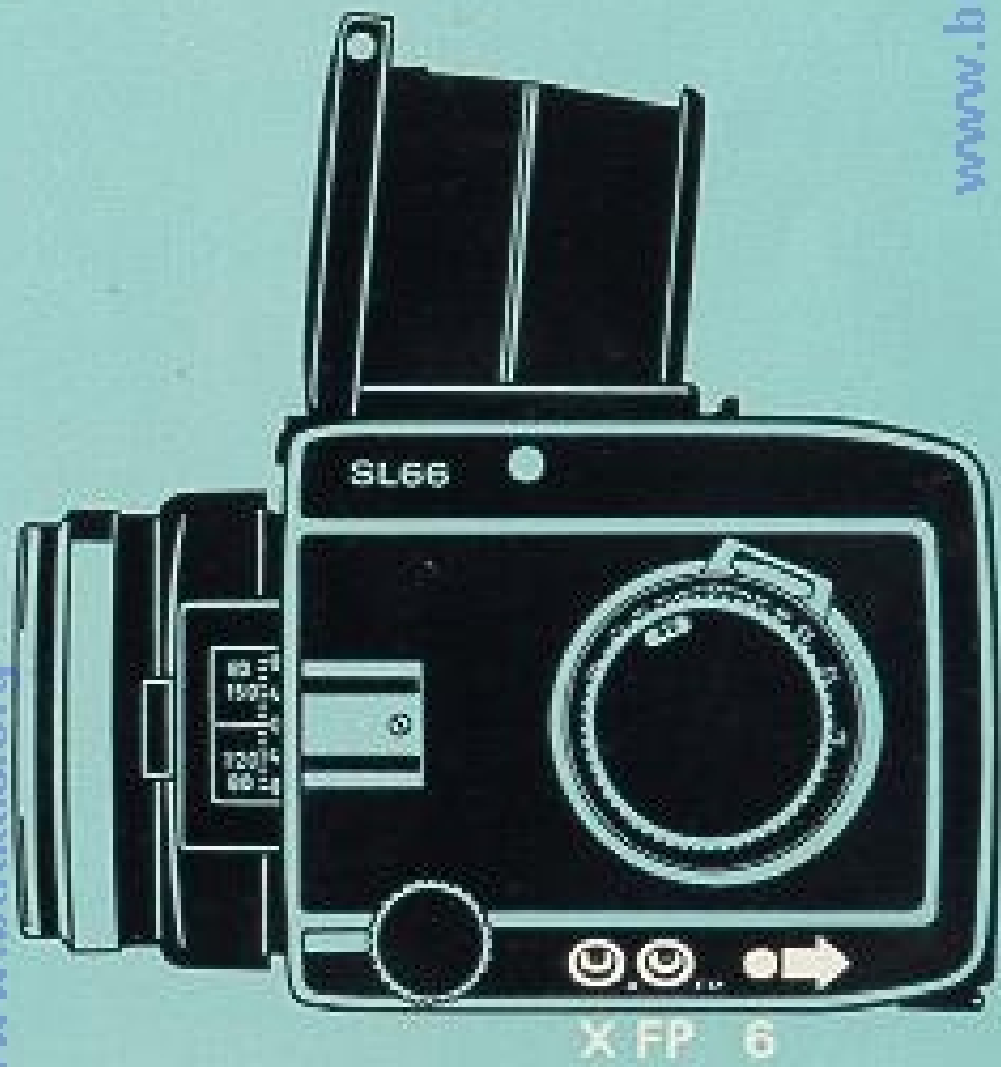
www.butkus.org



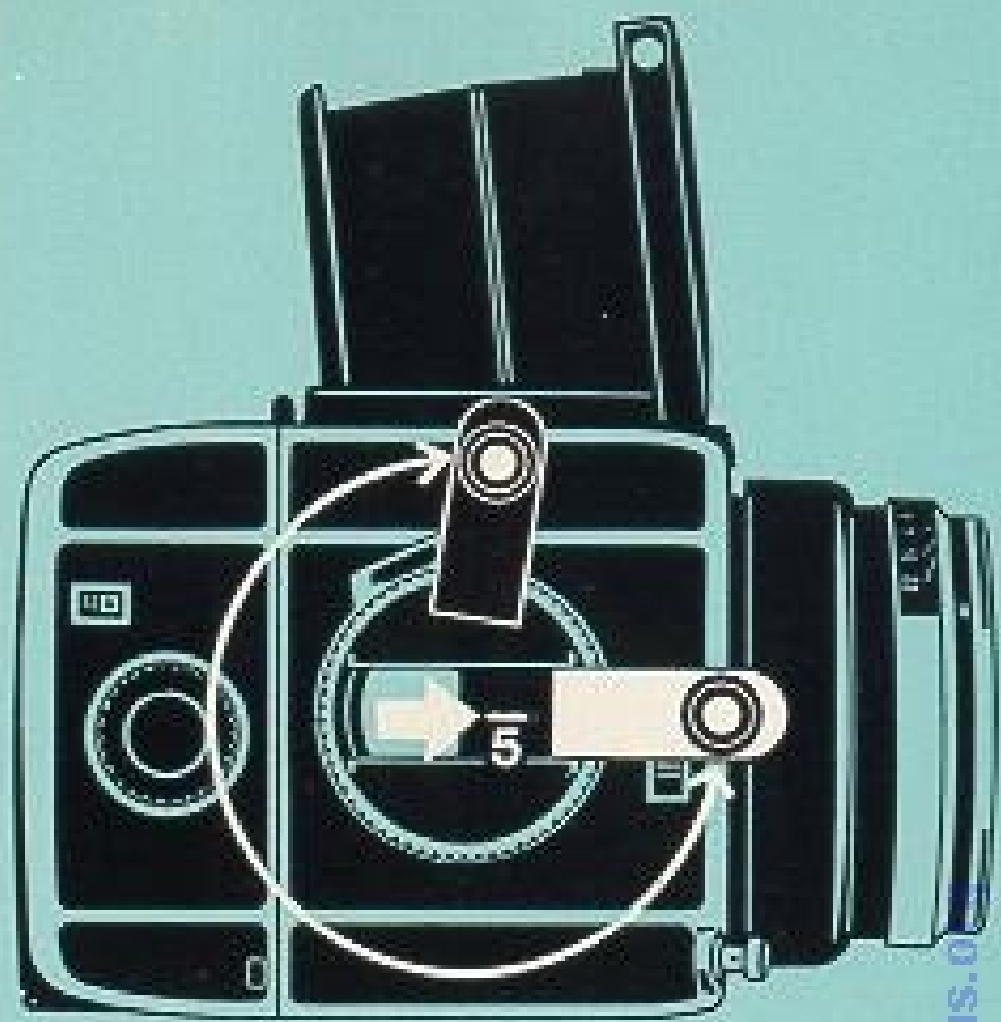


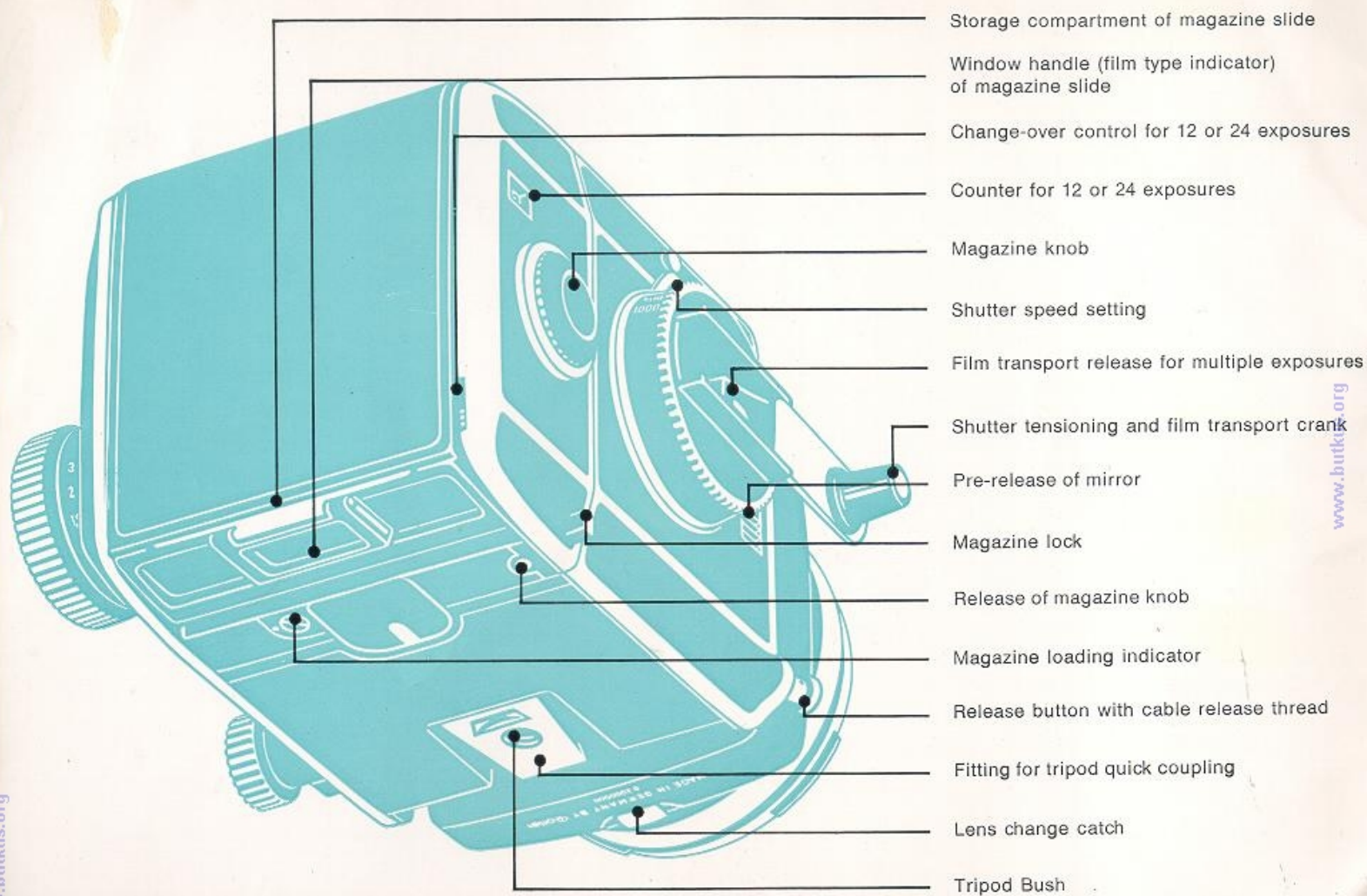


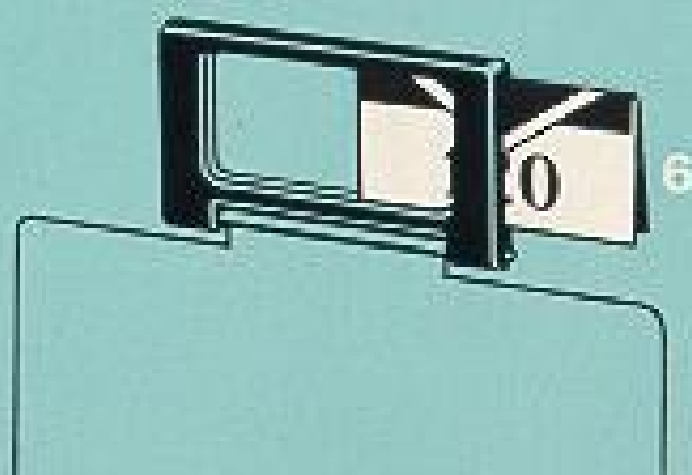
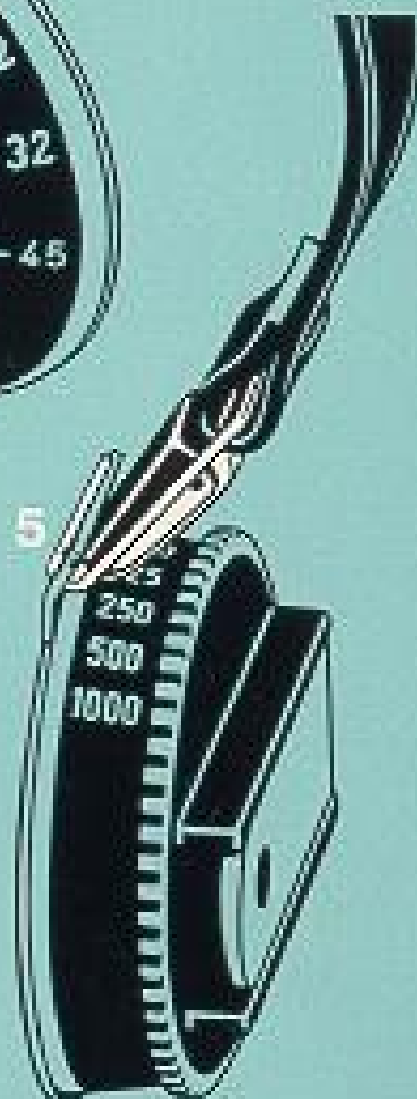
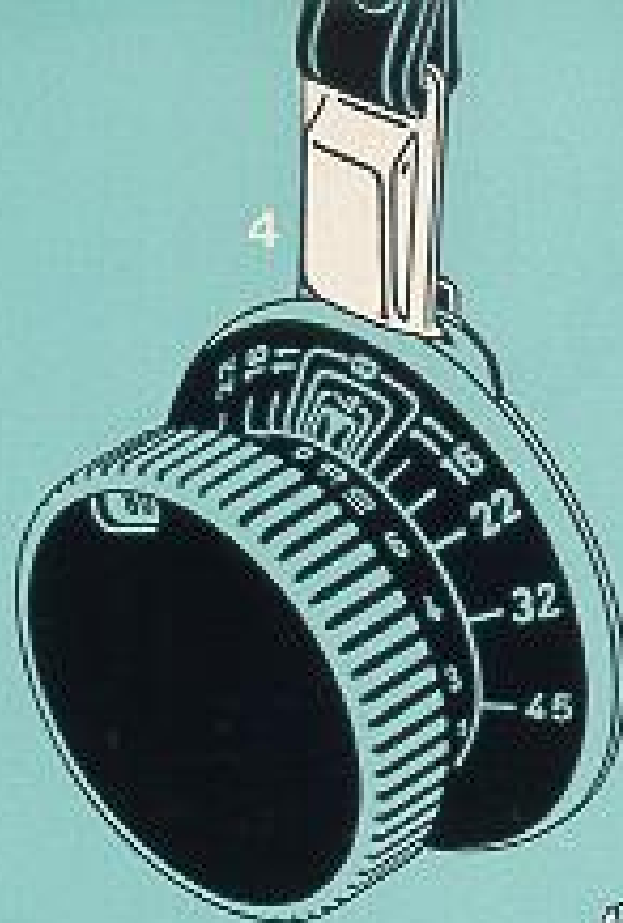


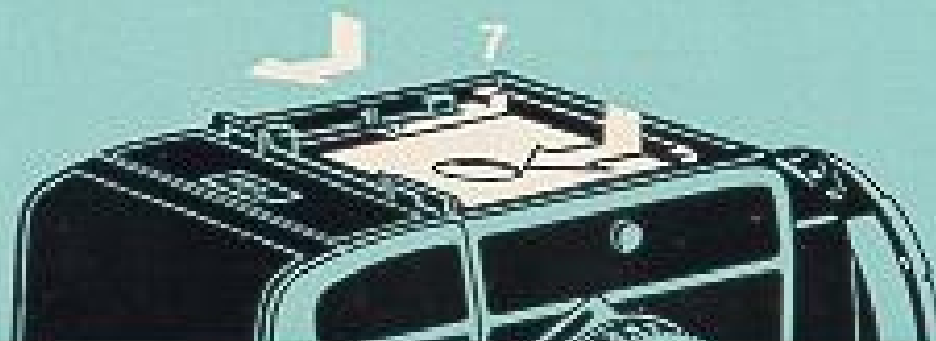
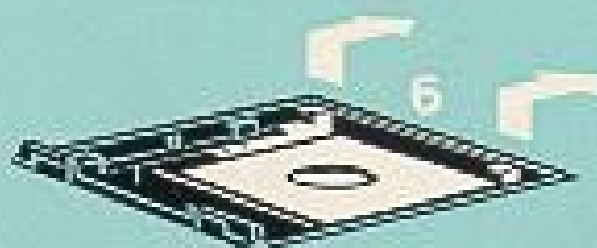
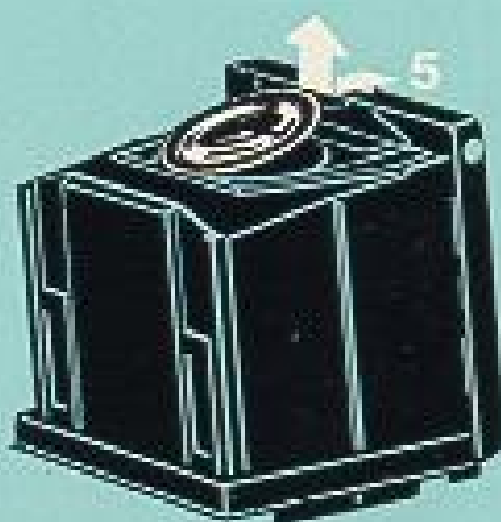
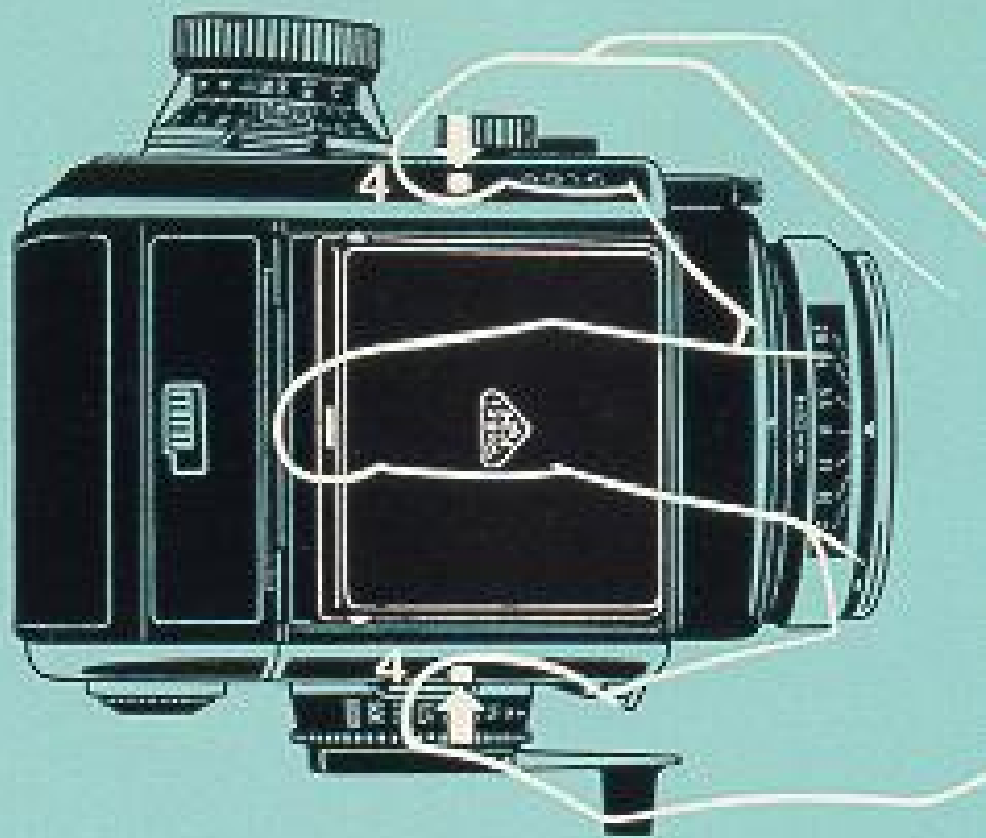


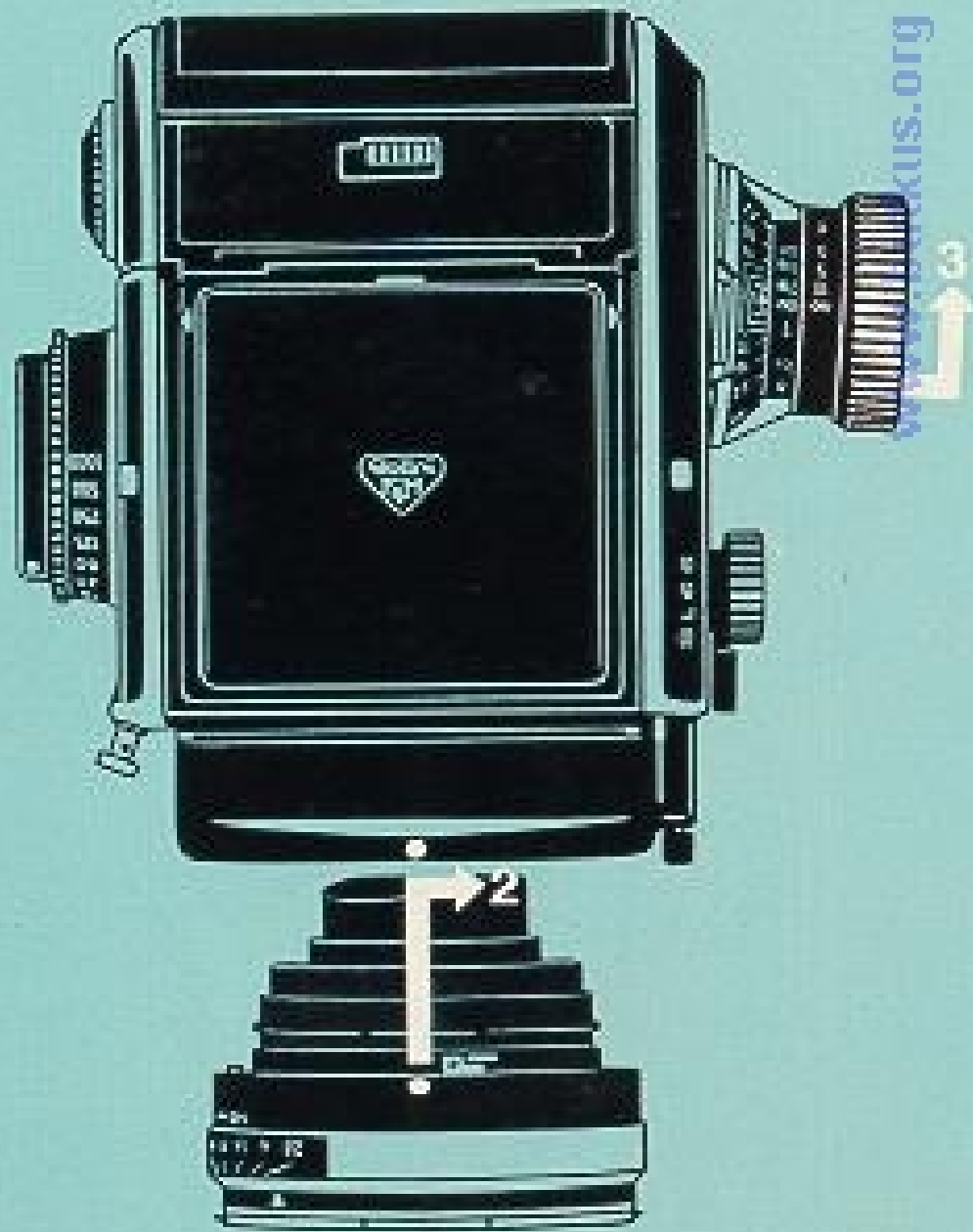
X FP 6

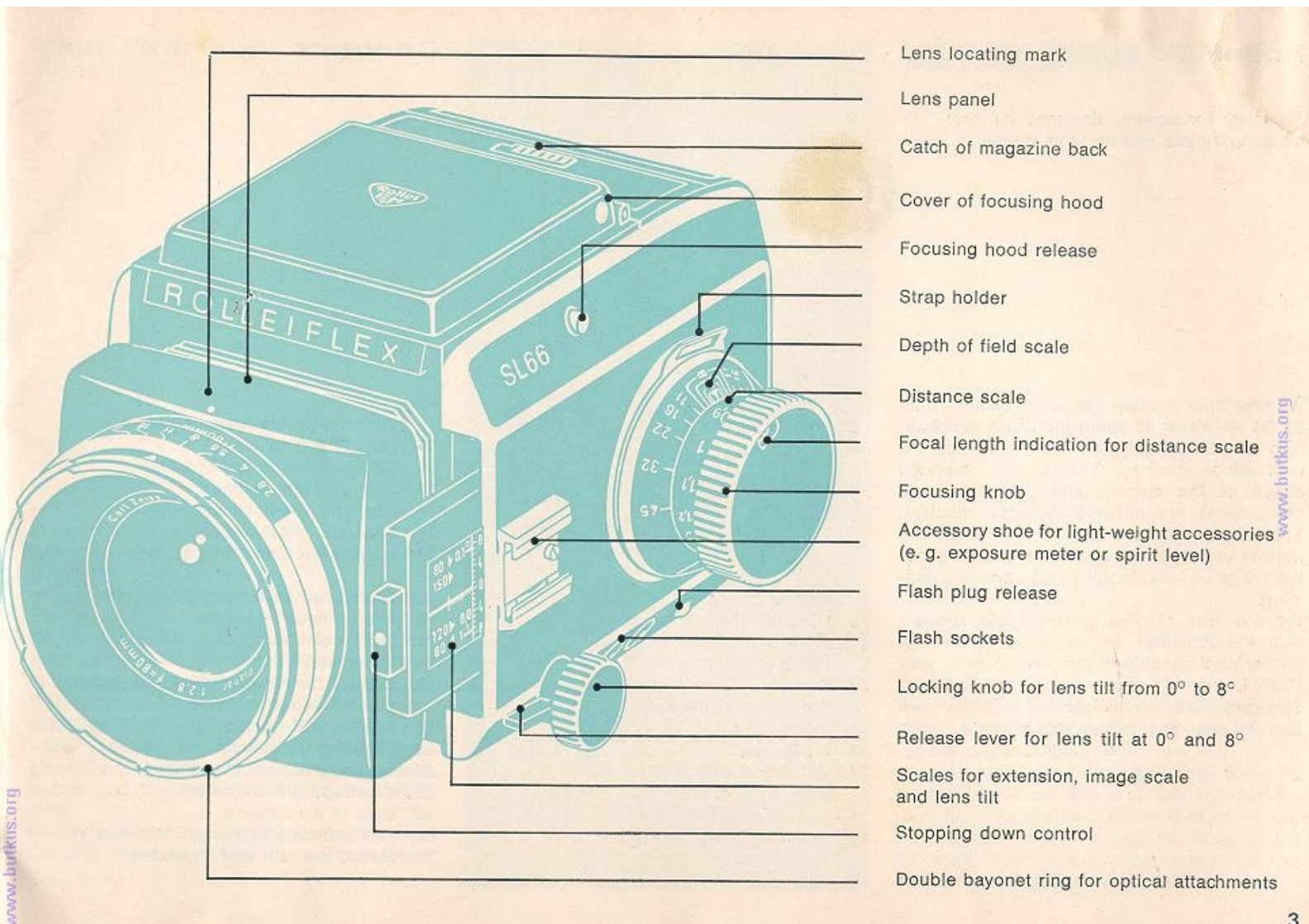


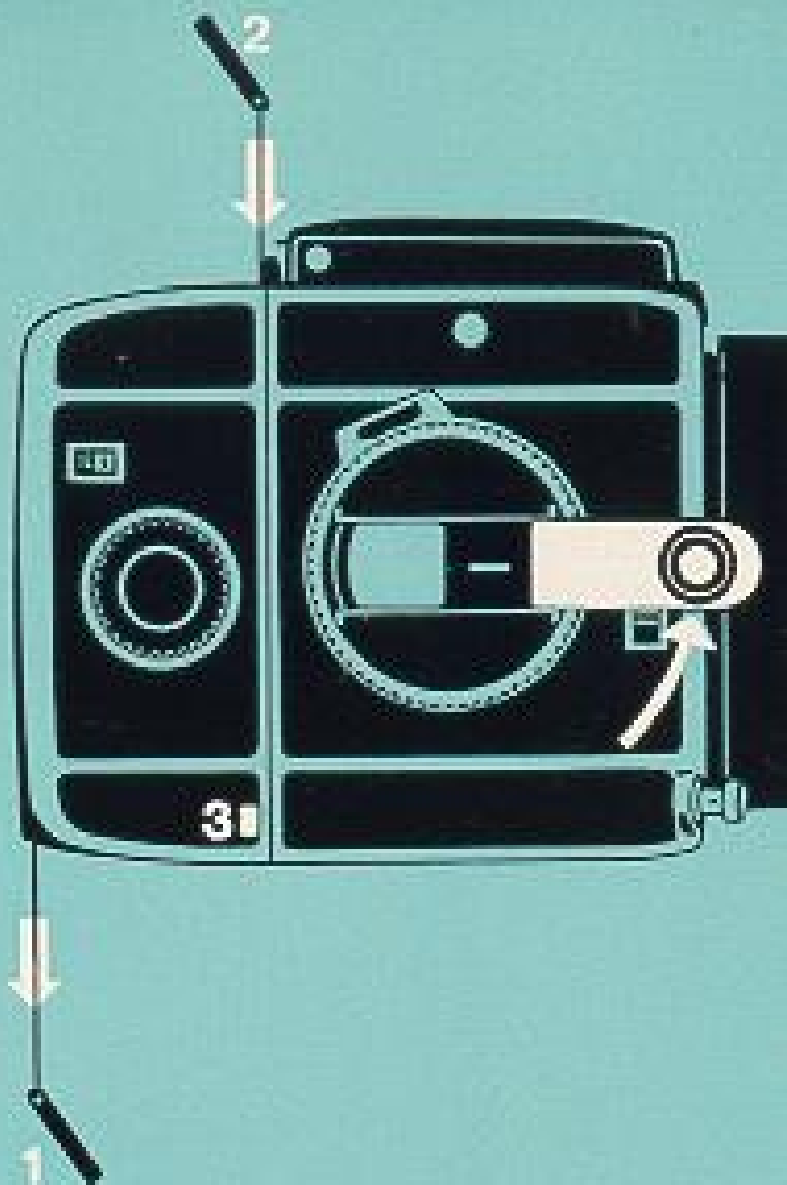


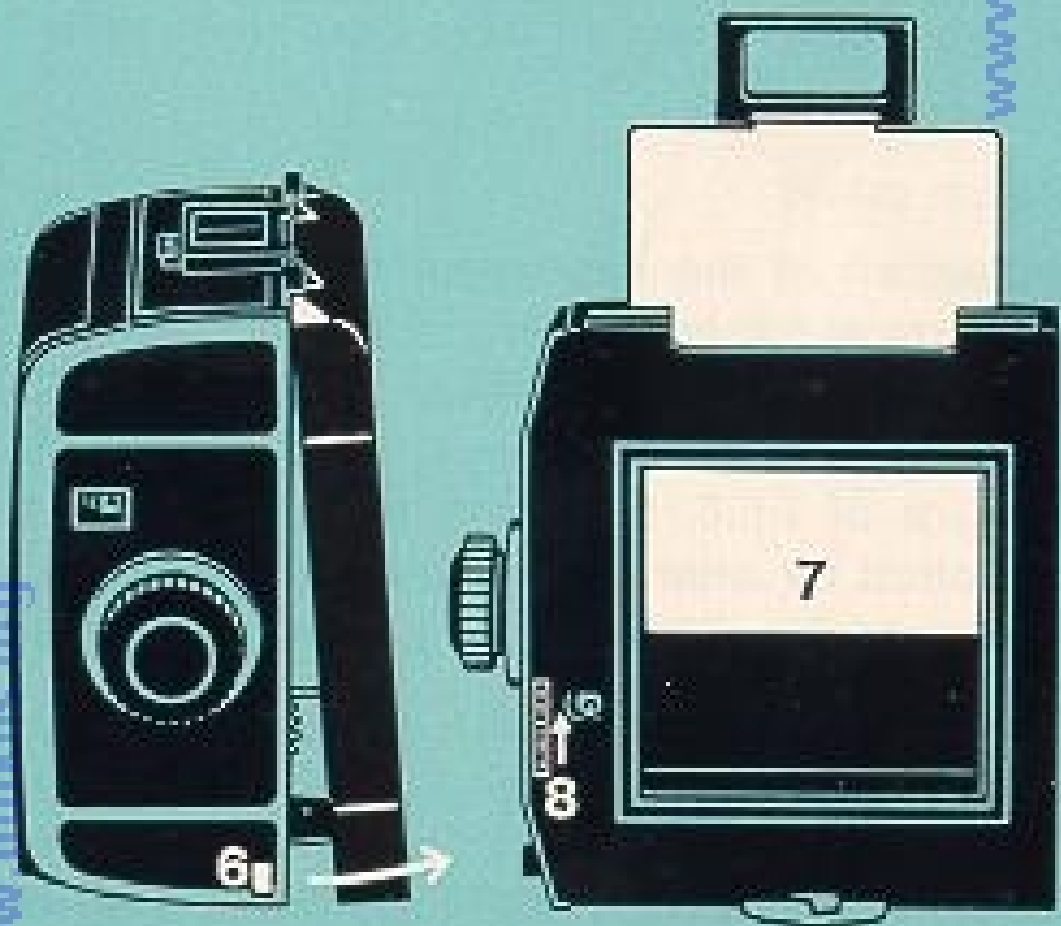


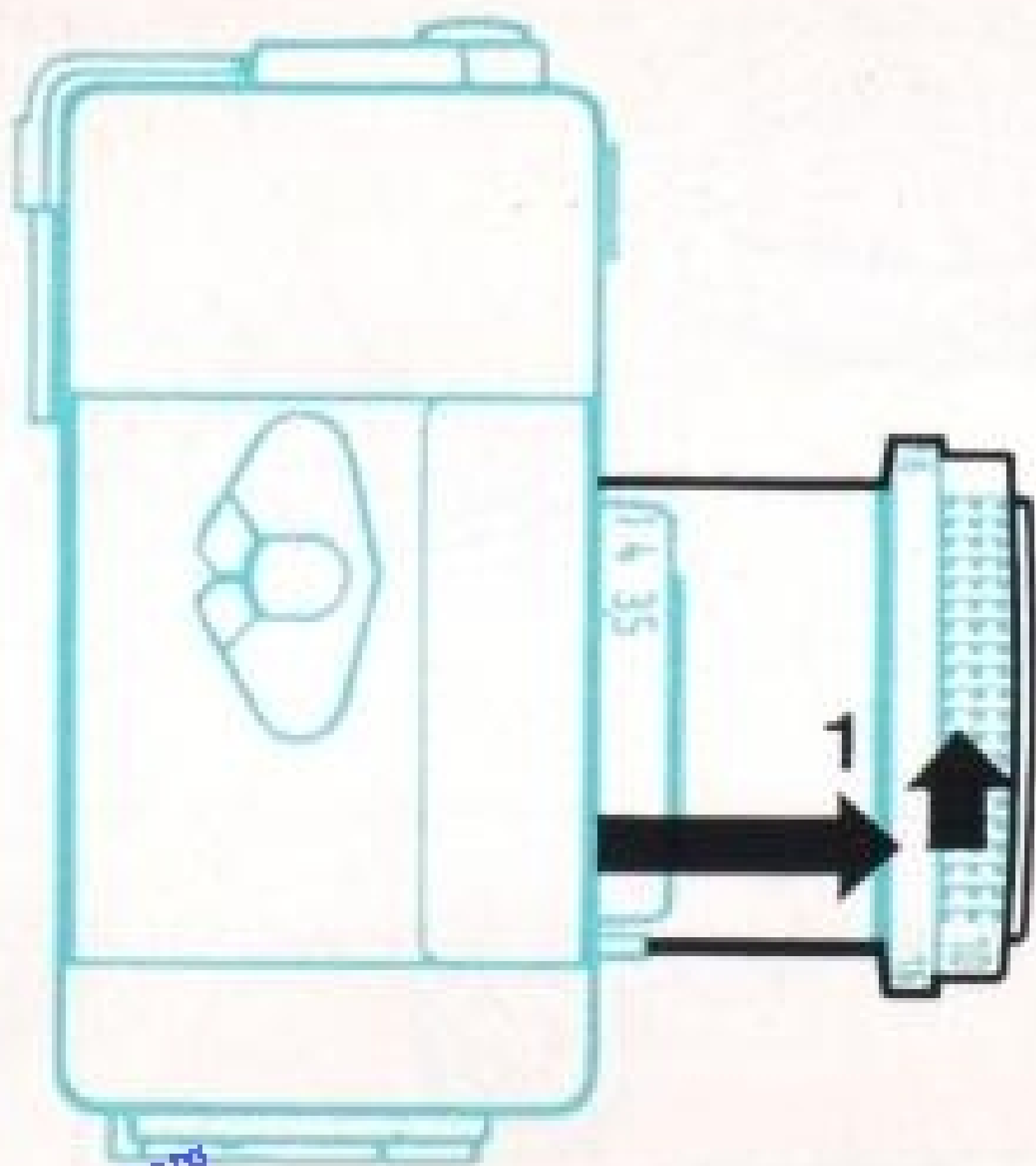


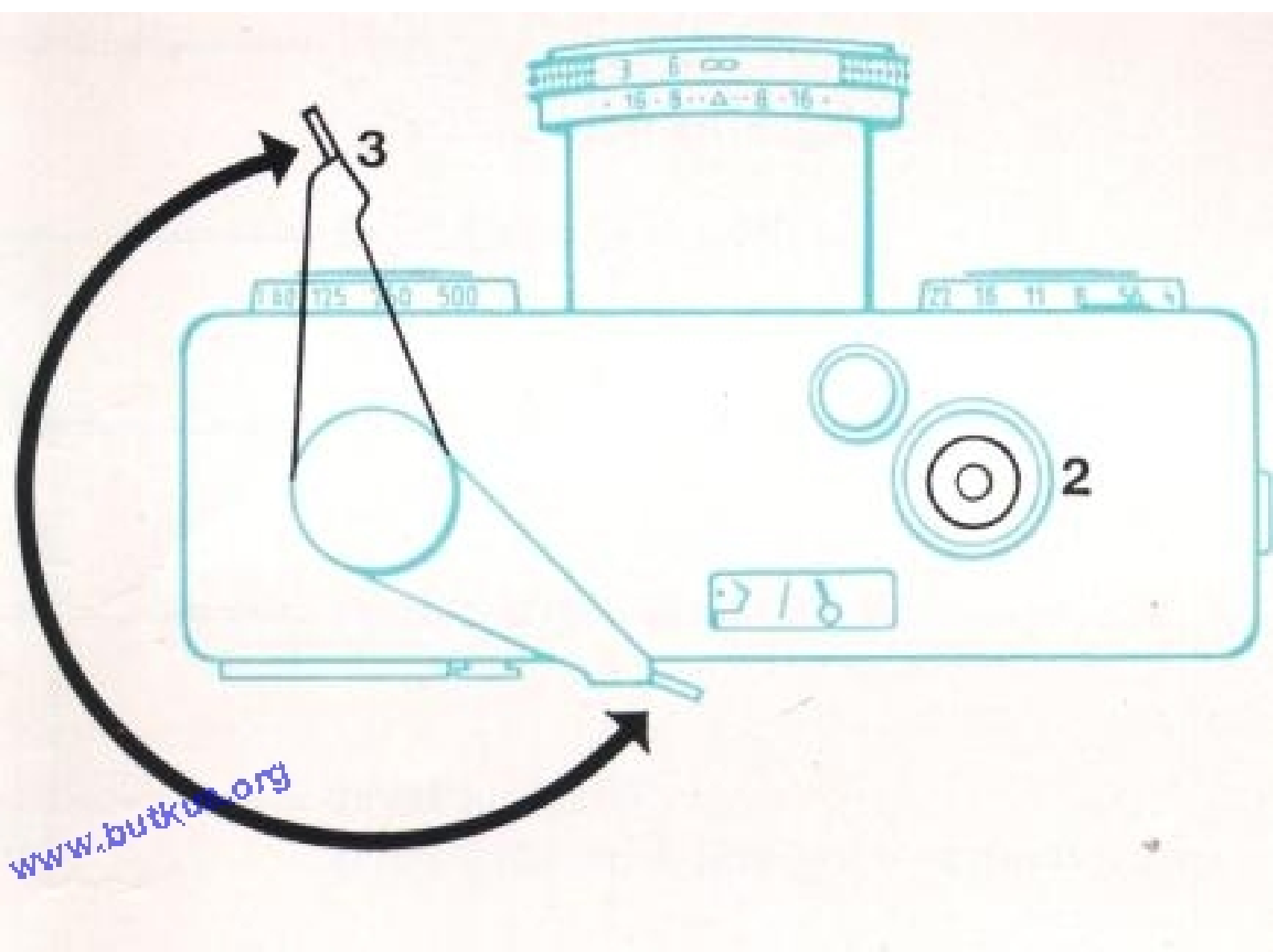


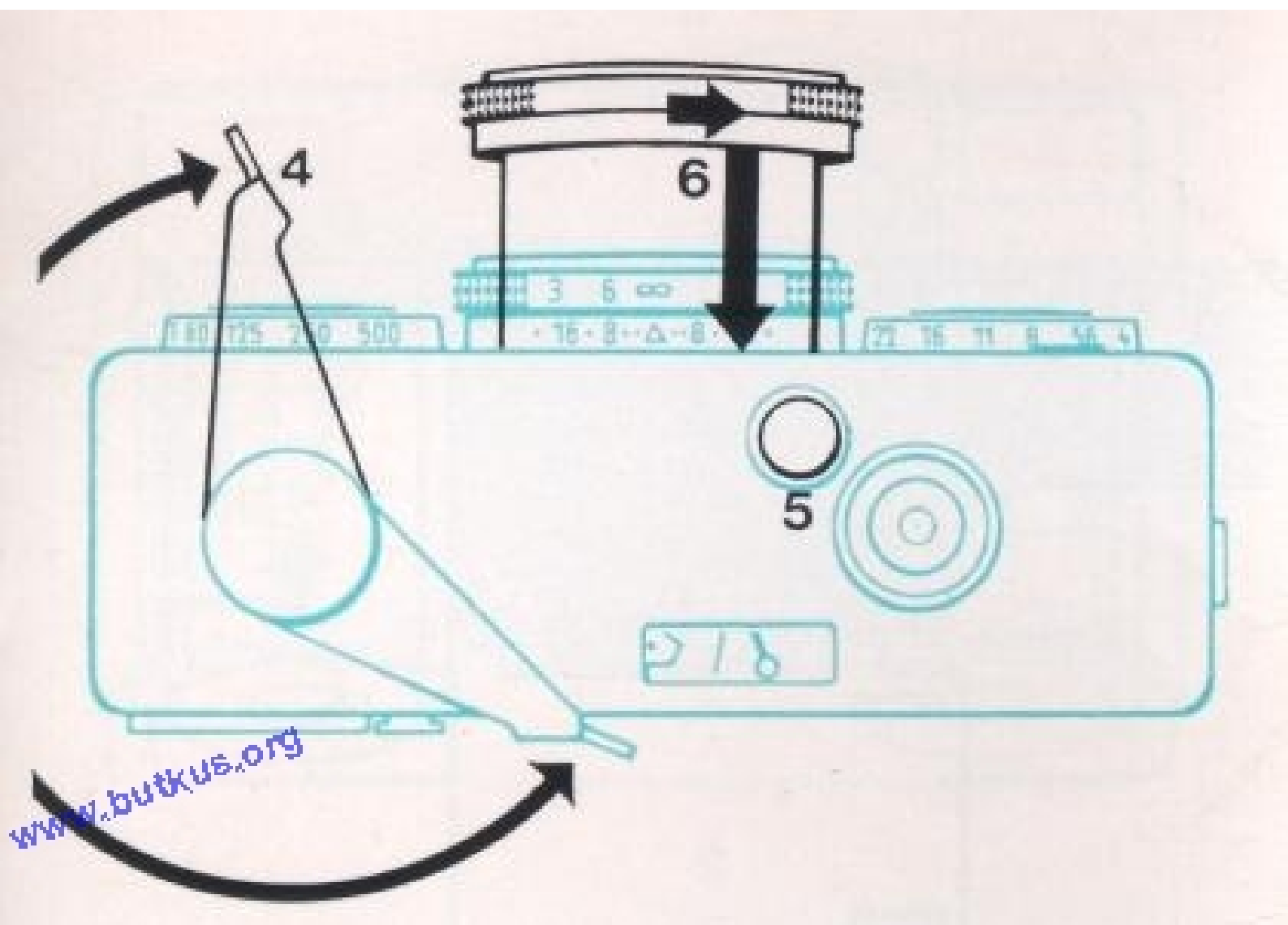


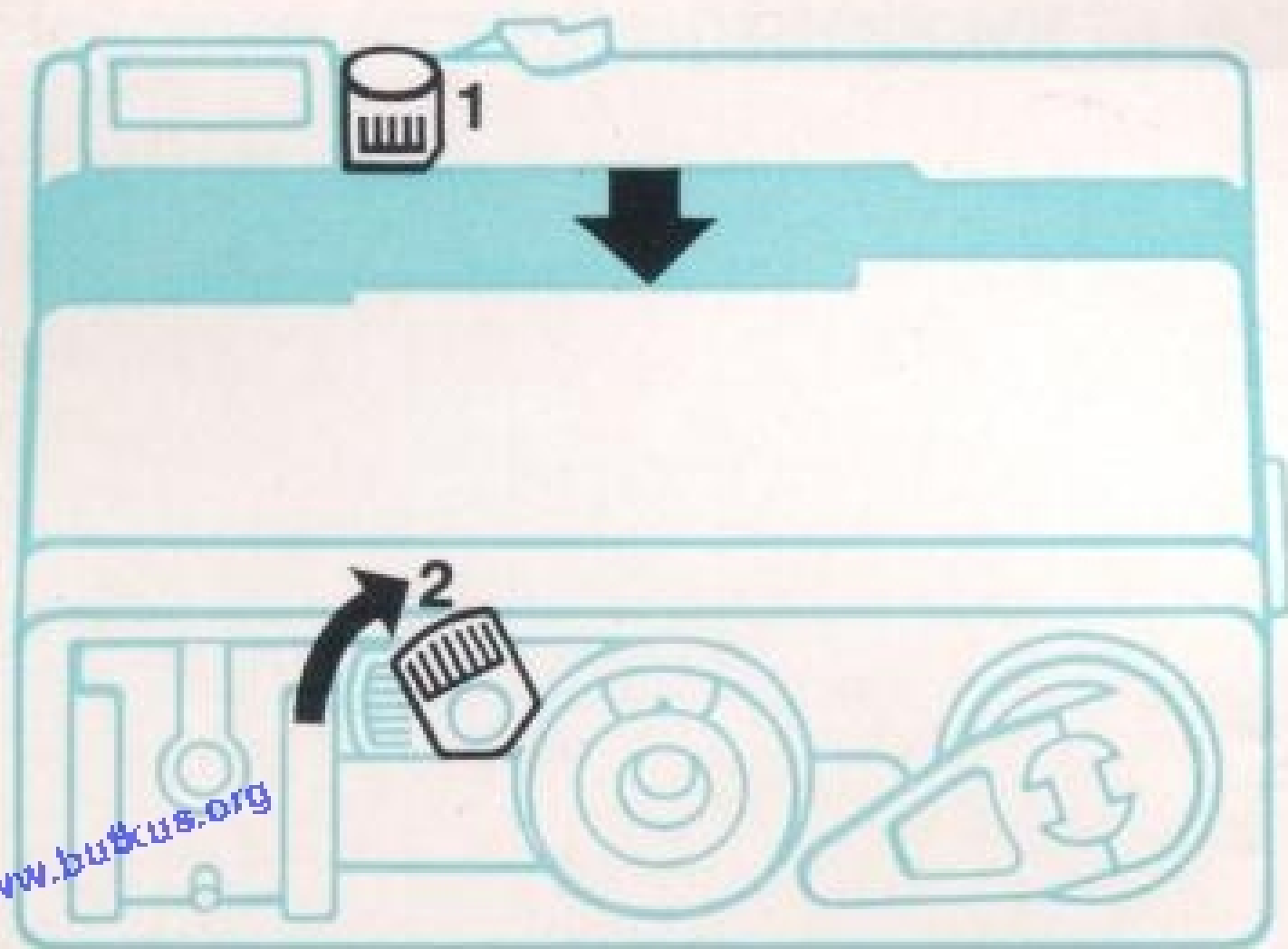




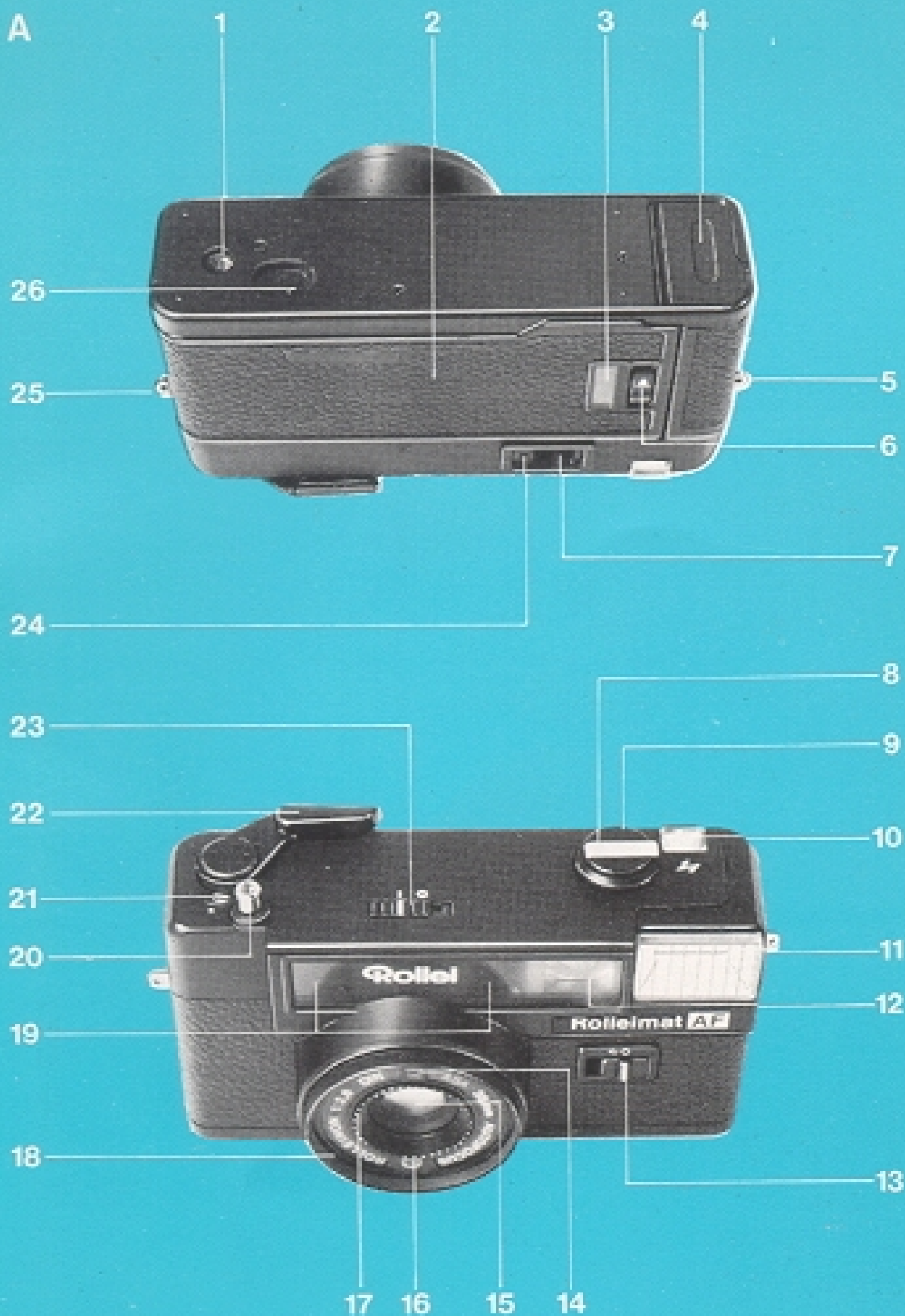


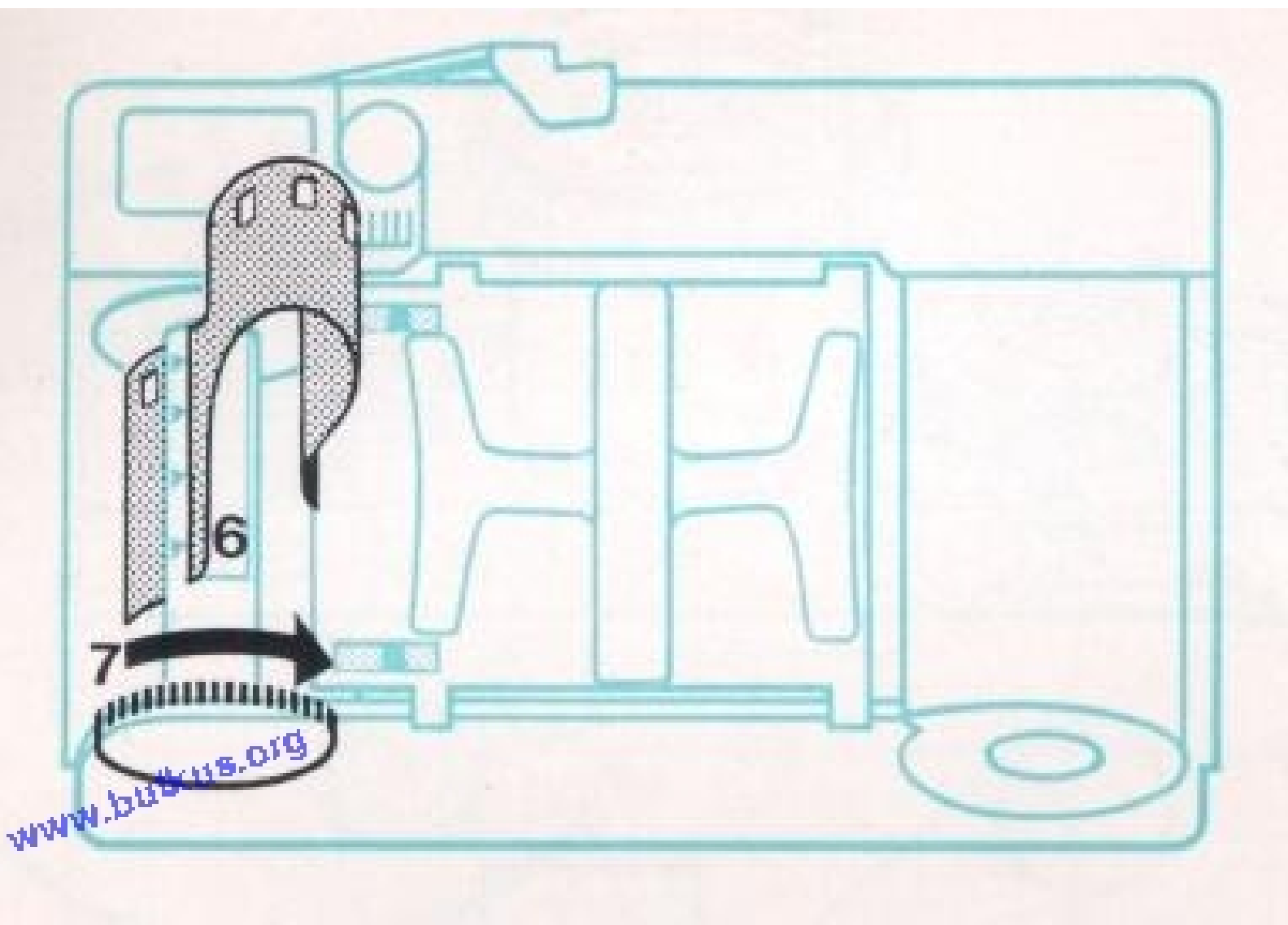


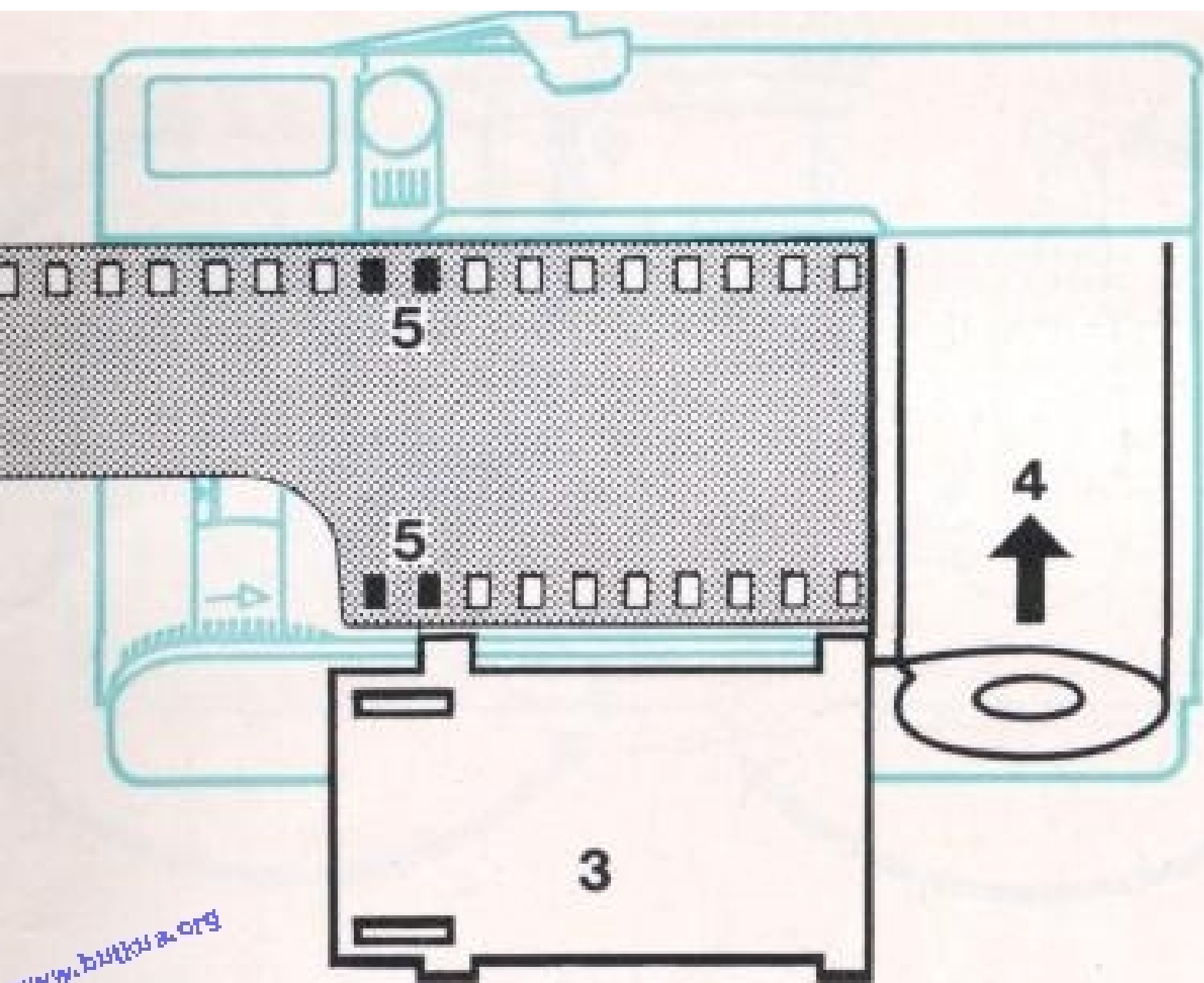


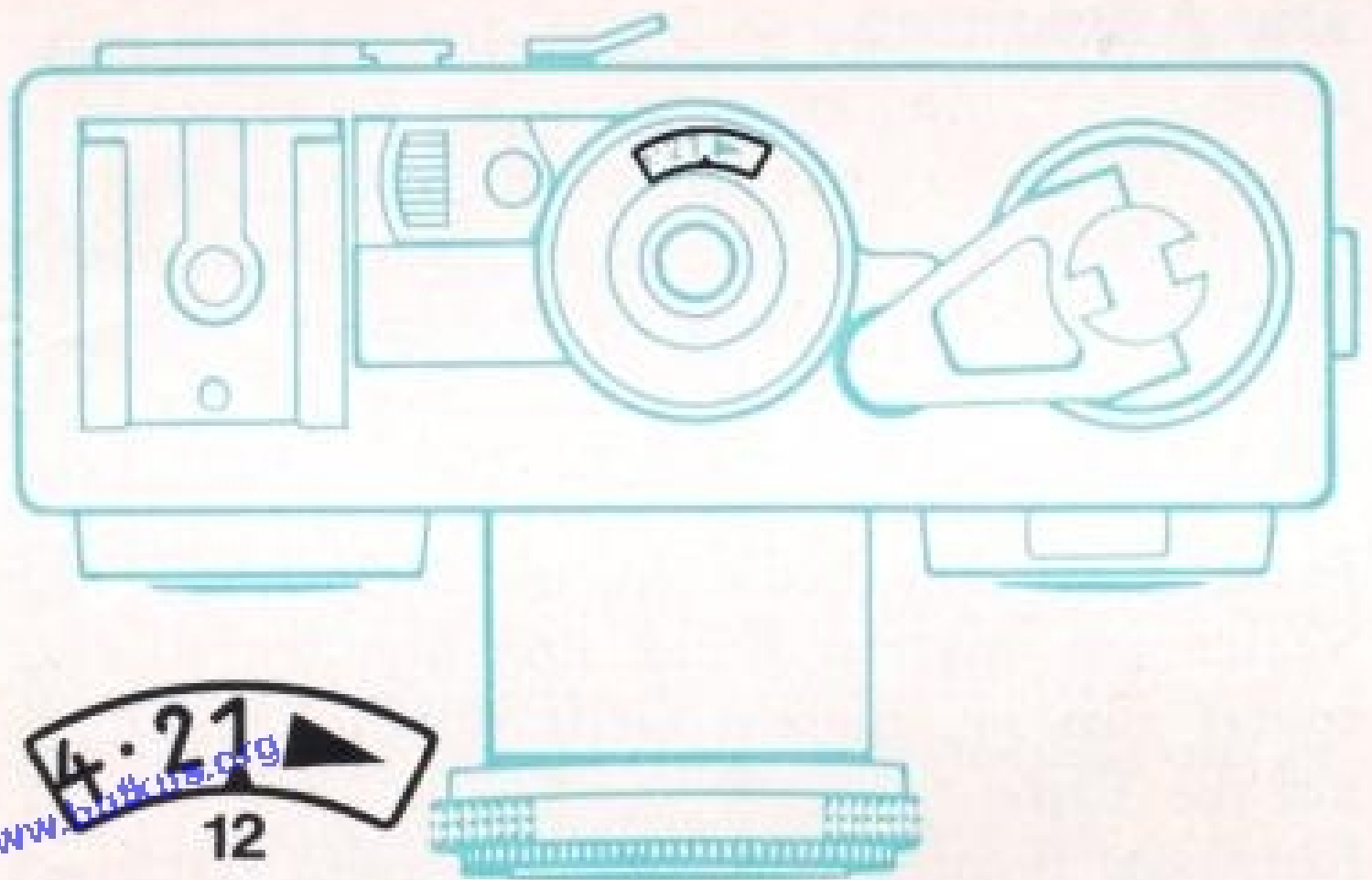


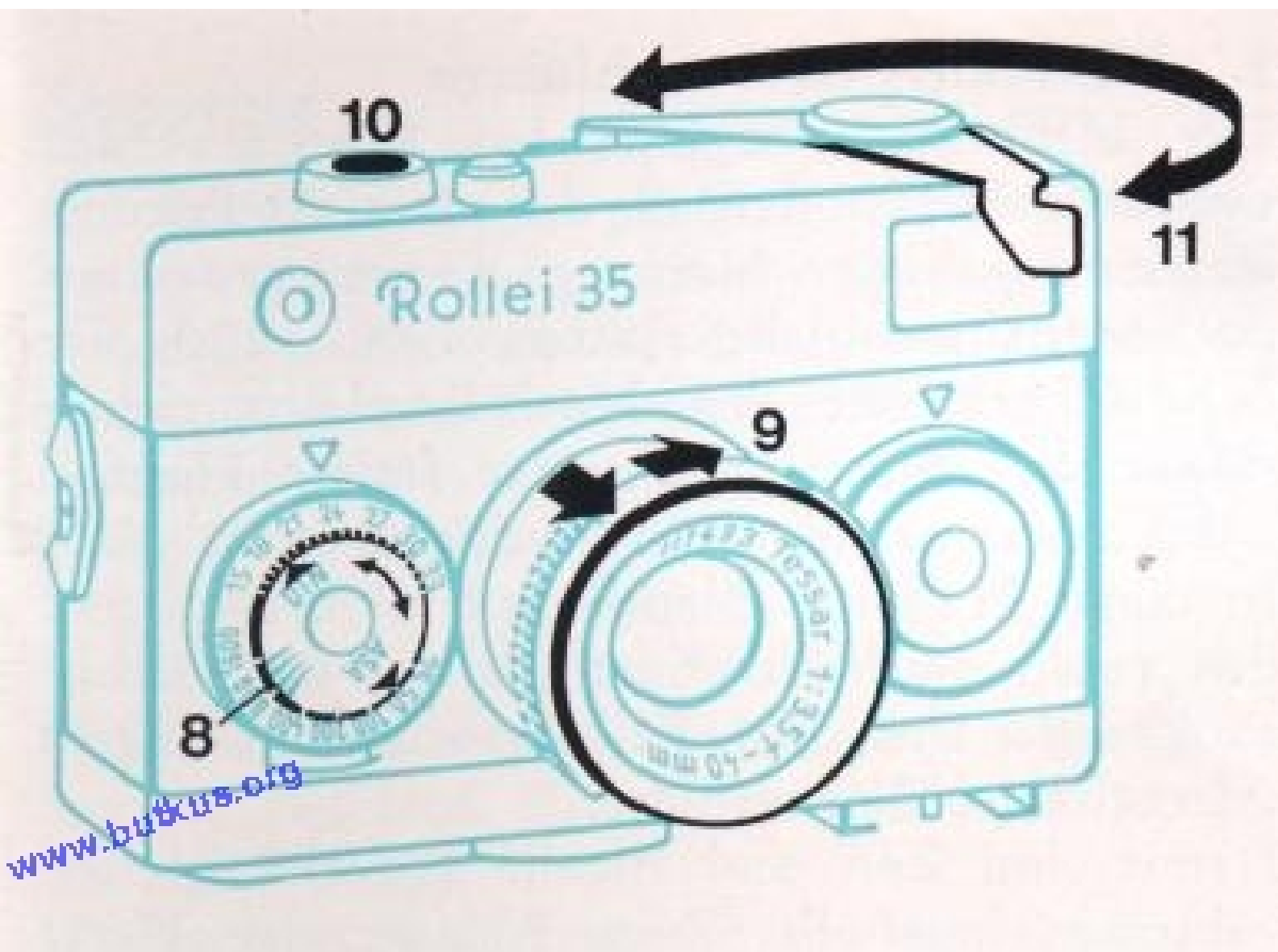
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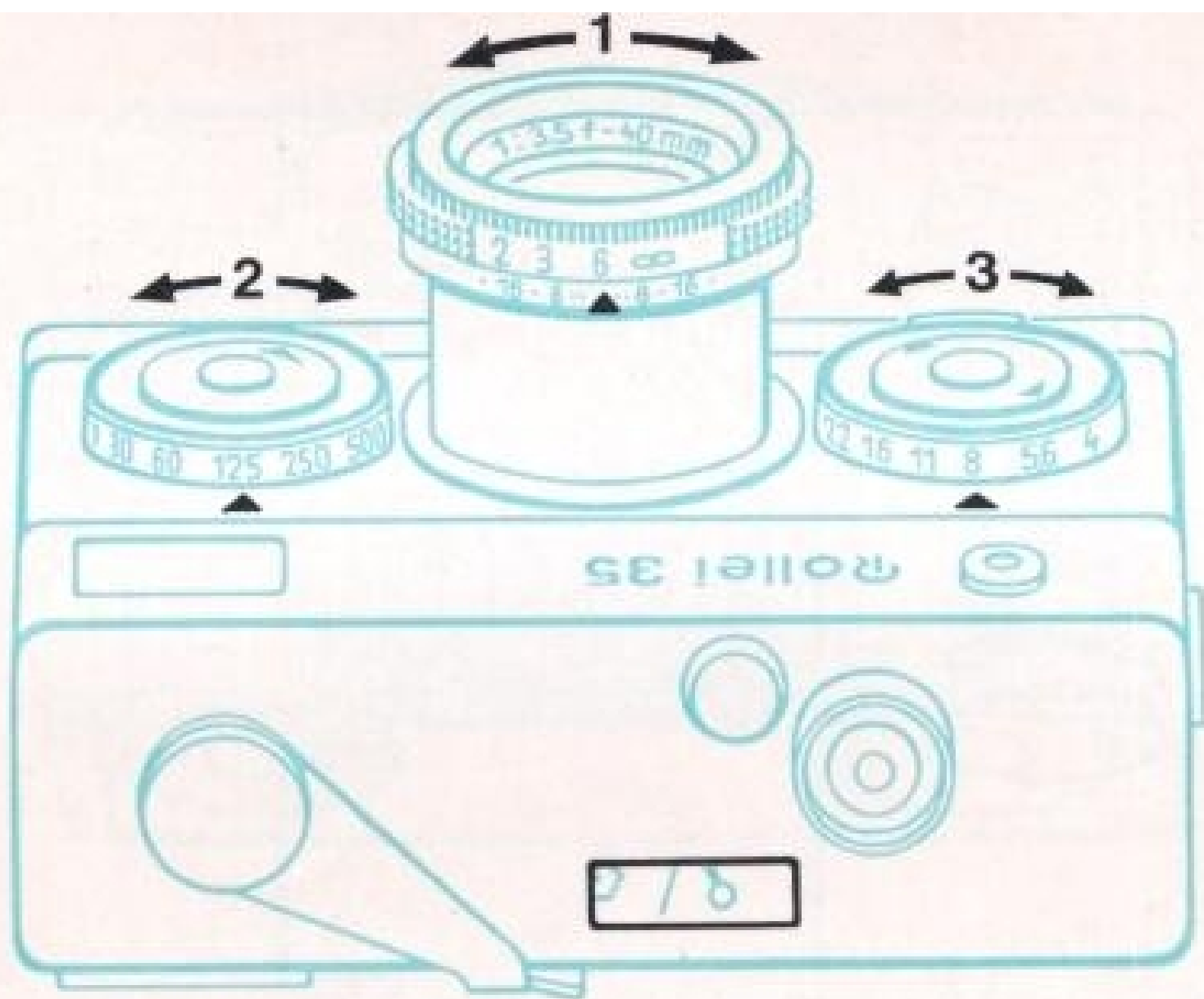


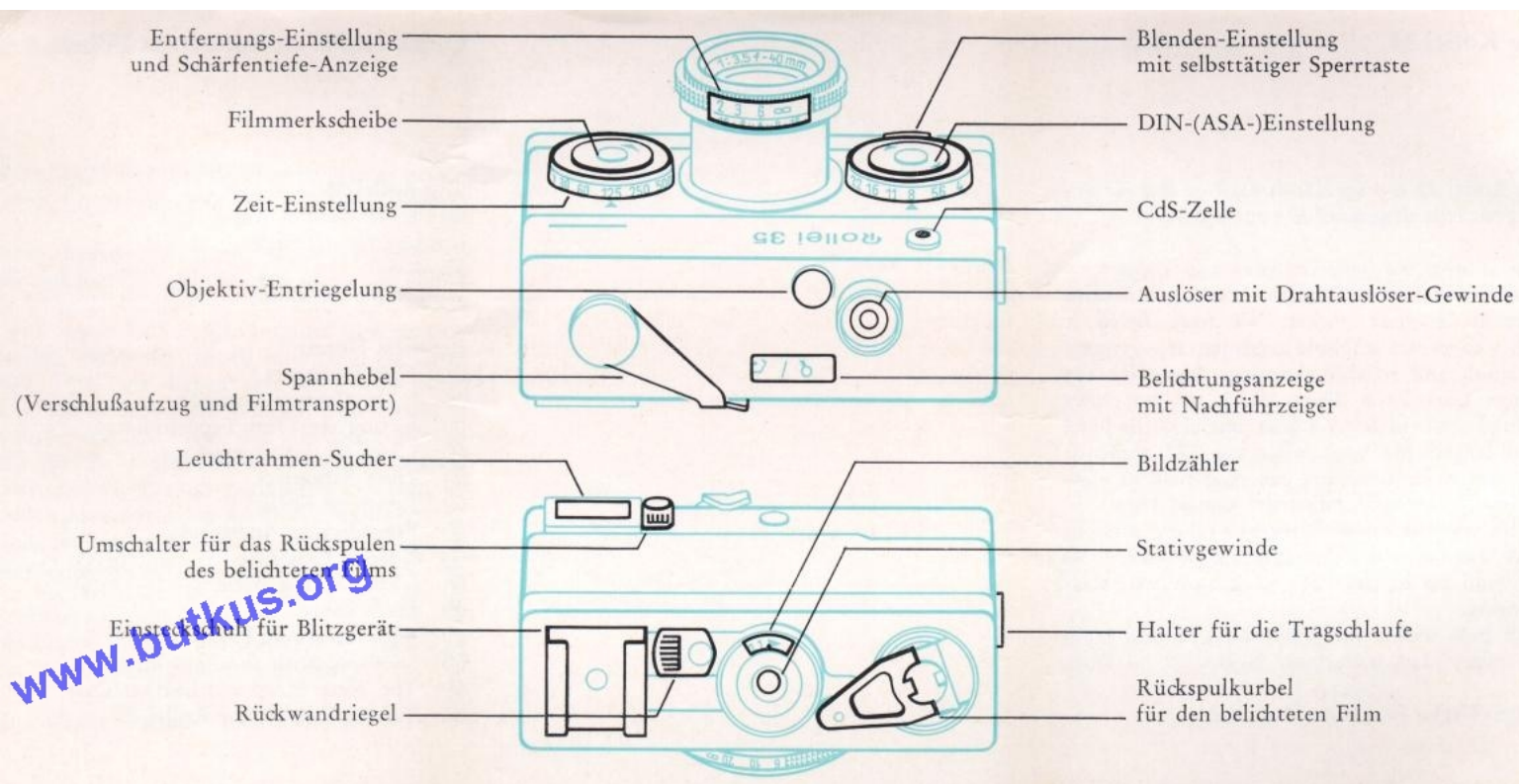






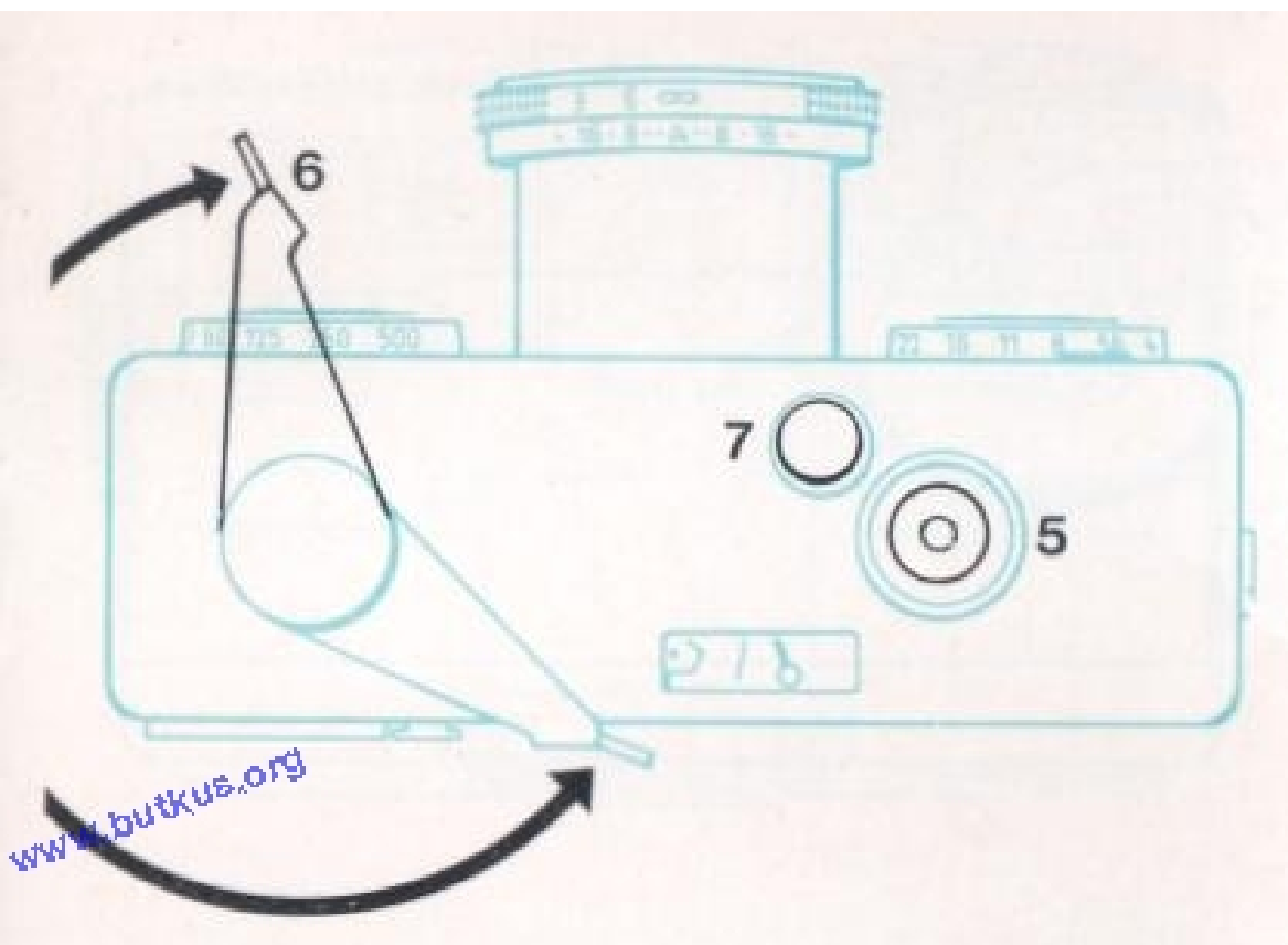


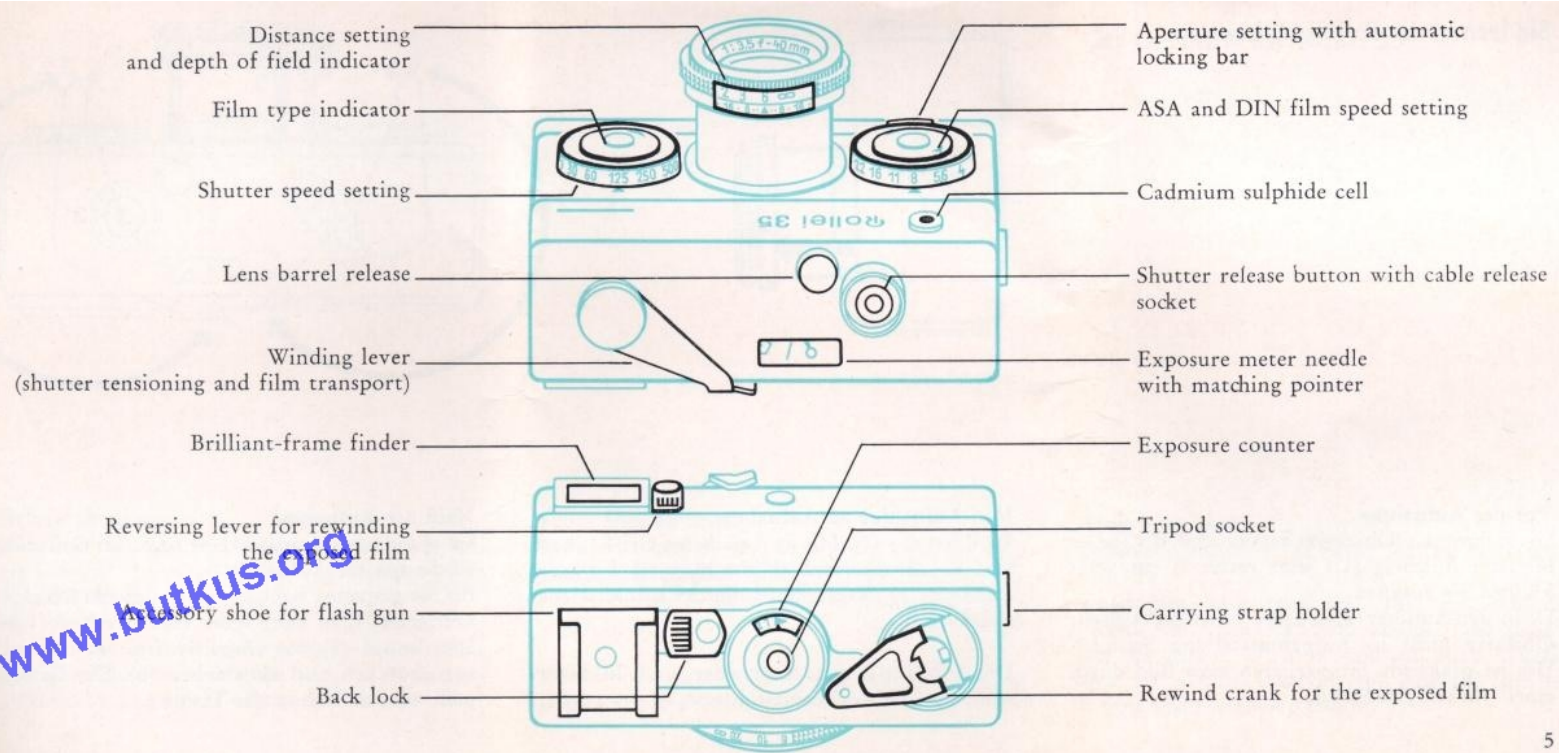


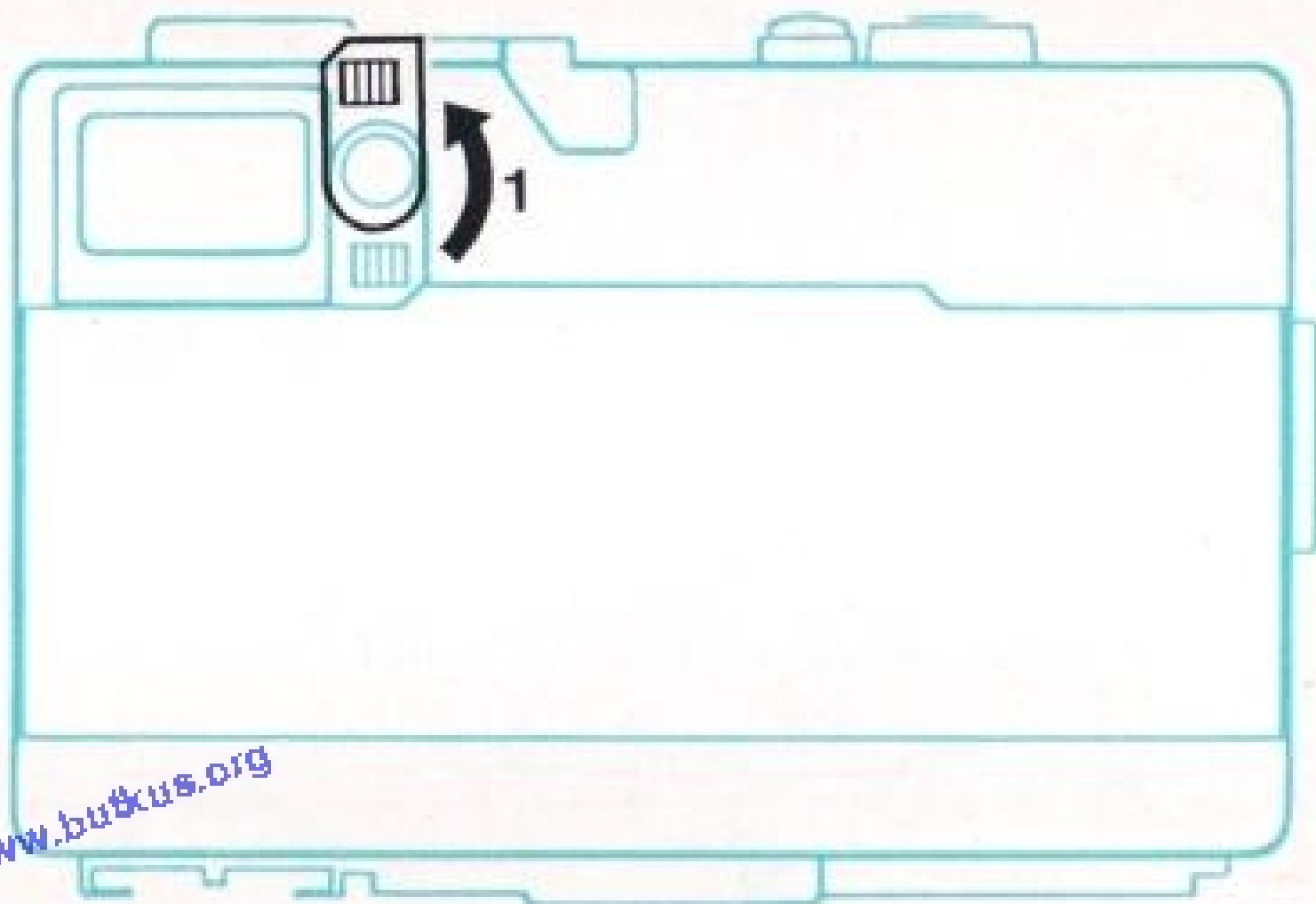




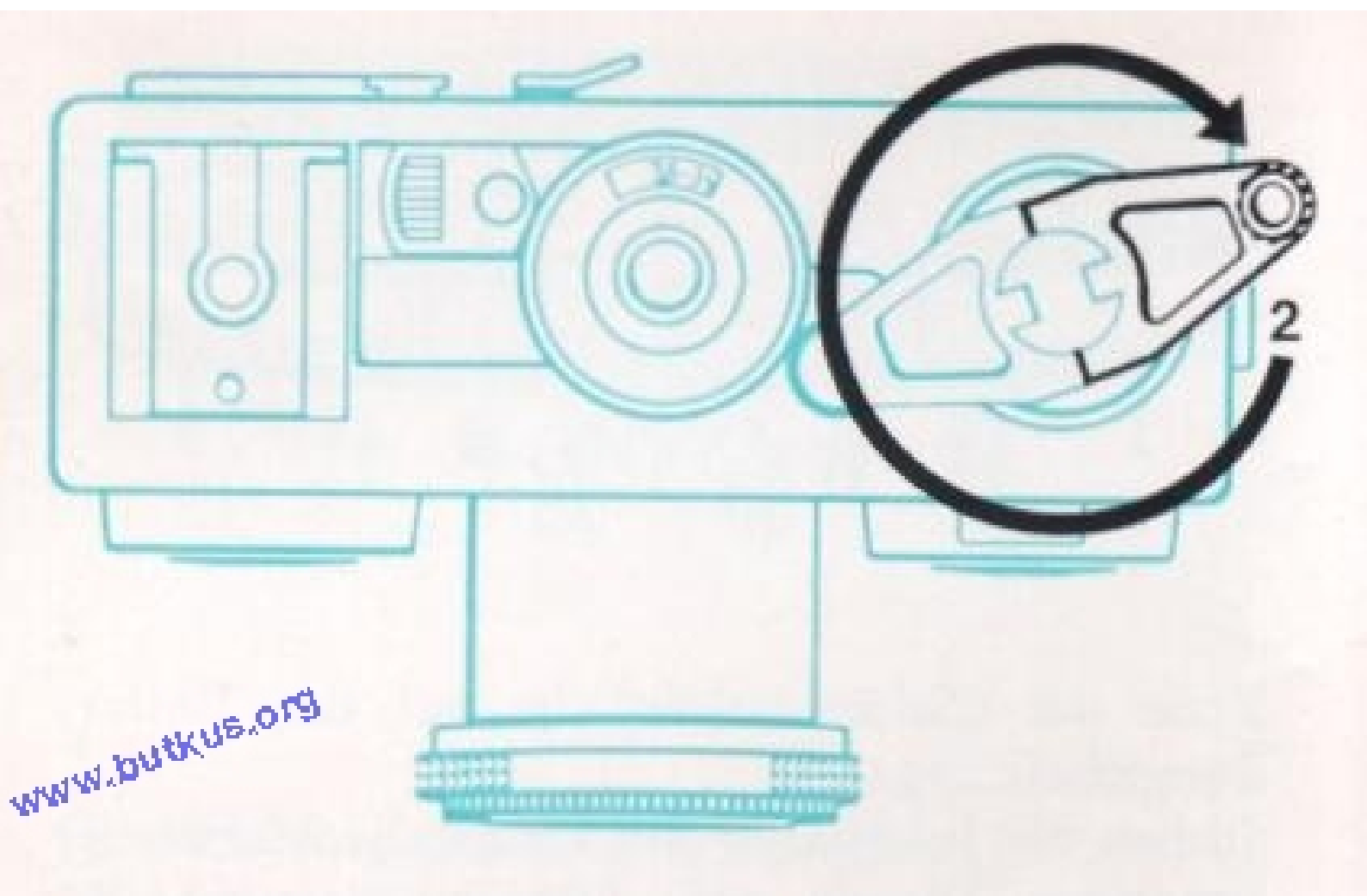
www.ck12.org

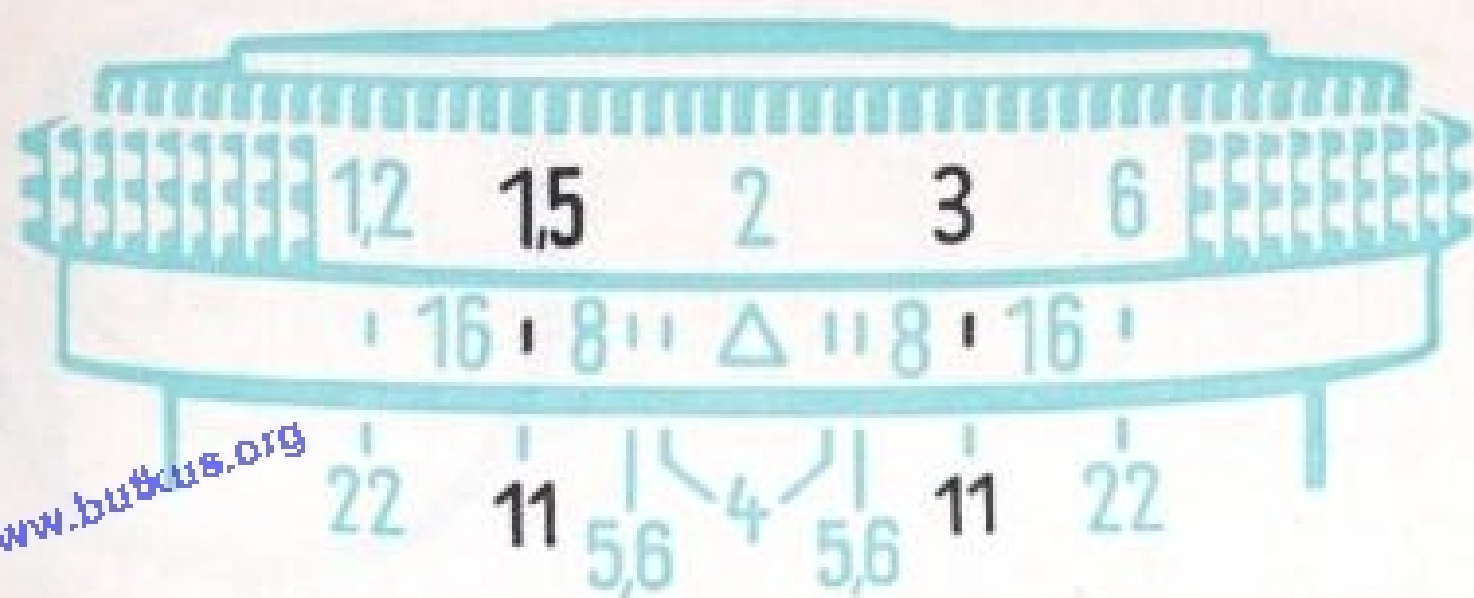






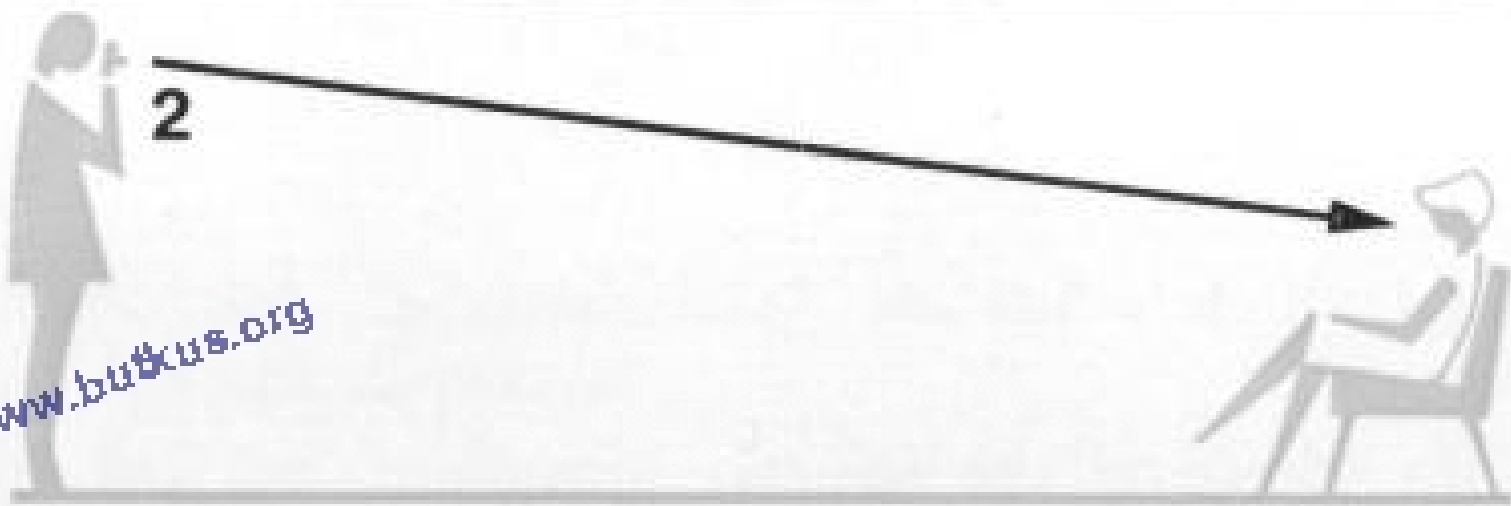
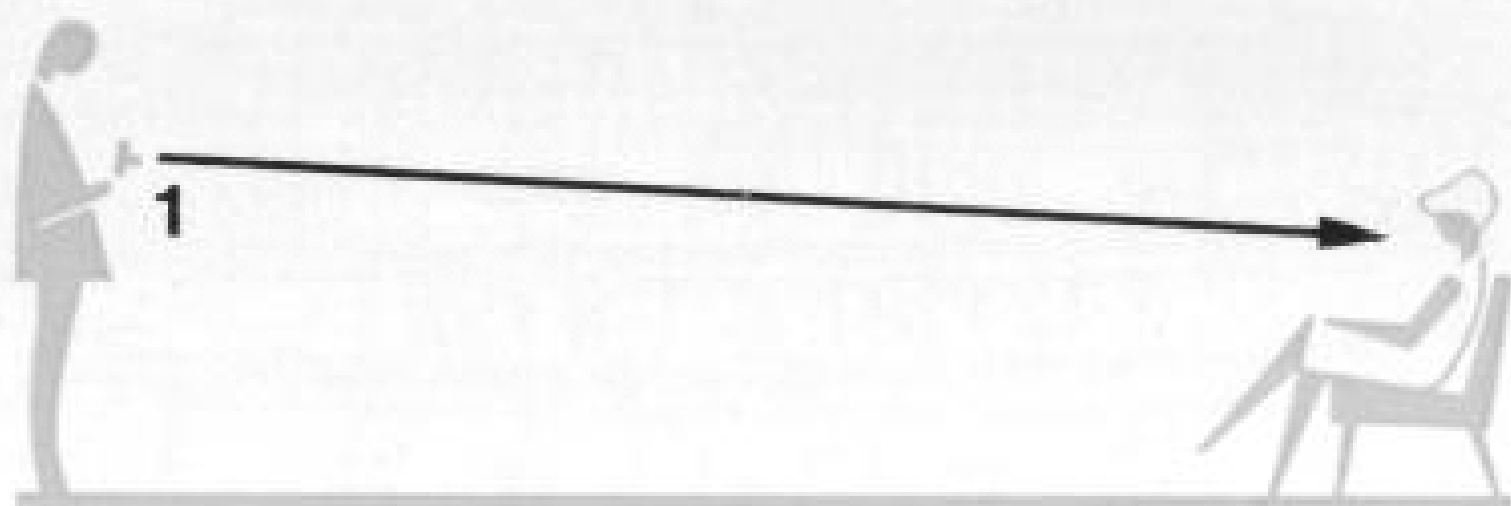


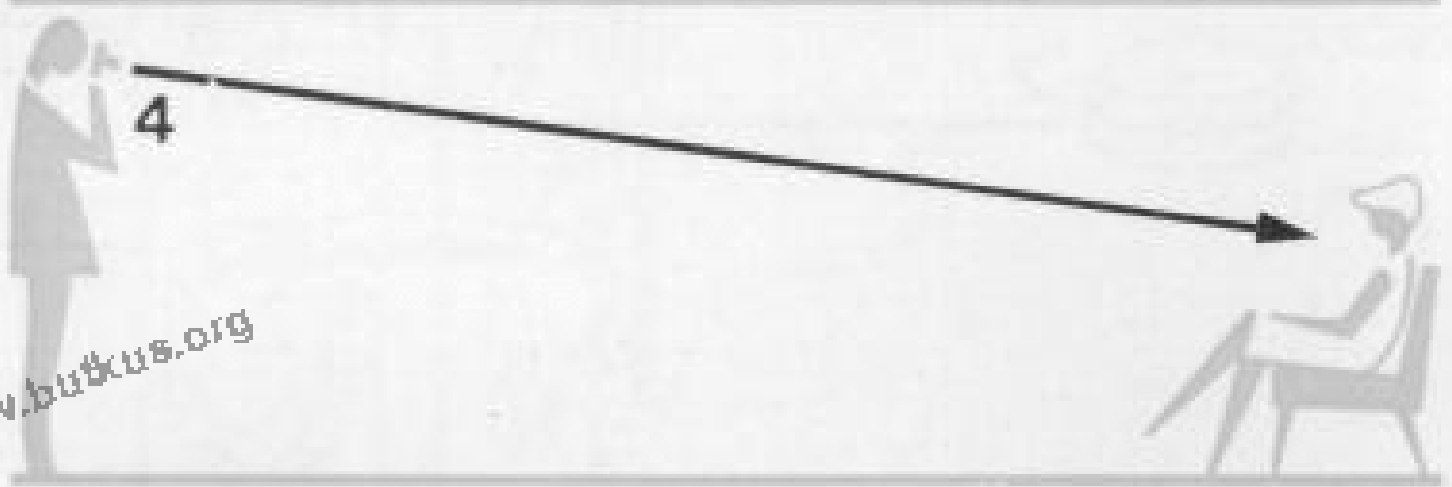
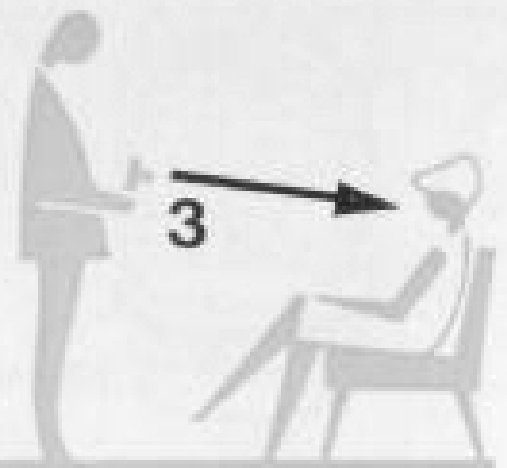




Zeitbelichtung	Automatisch ablaufende Momentzeiten								
B	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500
ruhende Motive (Stativ!)				mäßige			Bewegungen schnelle		







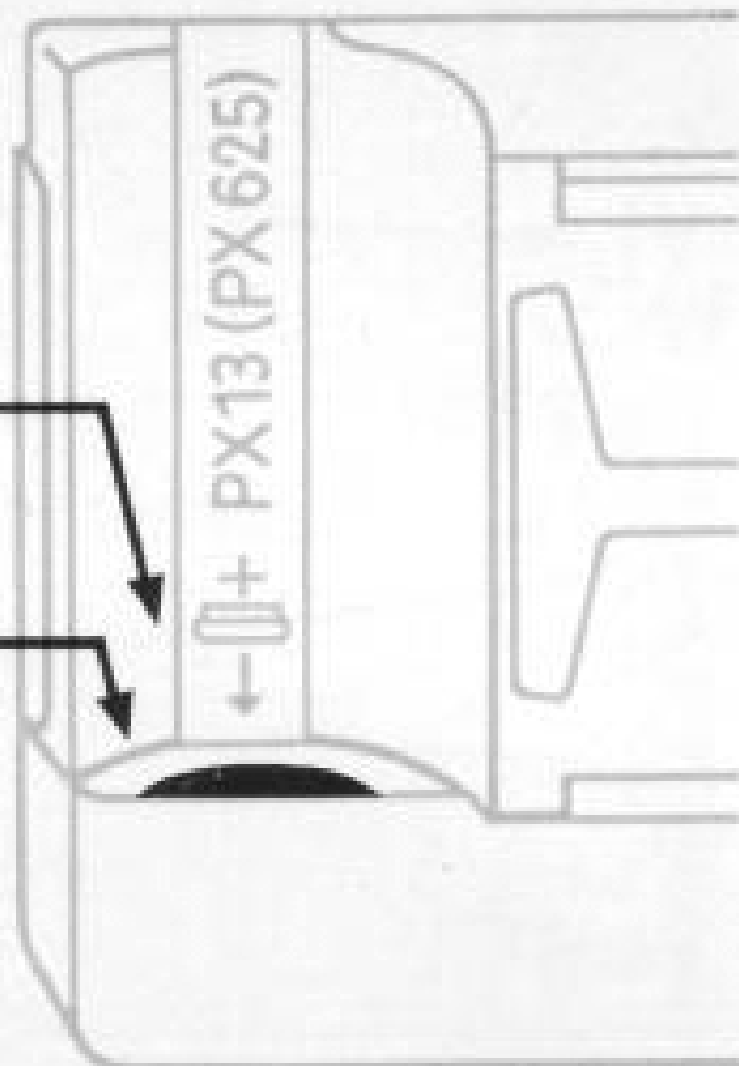
Time exposure	Automatically timed instantaneous exposures								
B	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500
Static subjects (use a tripod)					slow		movement fast		

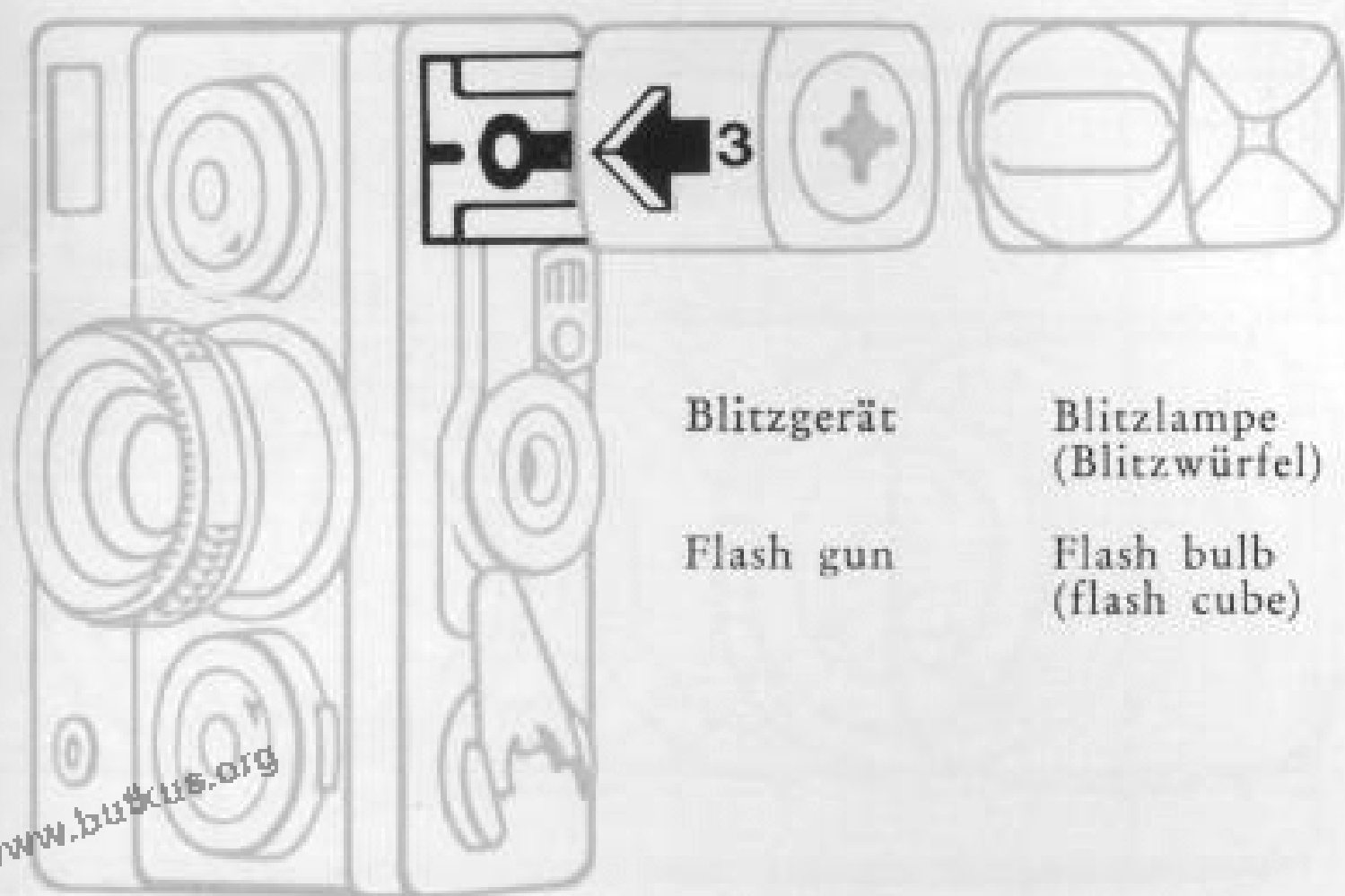


1



2



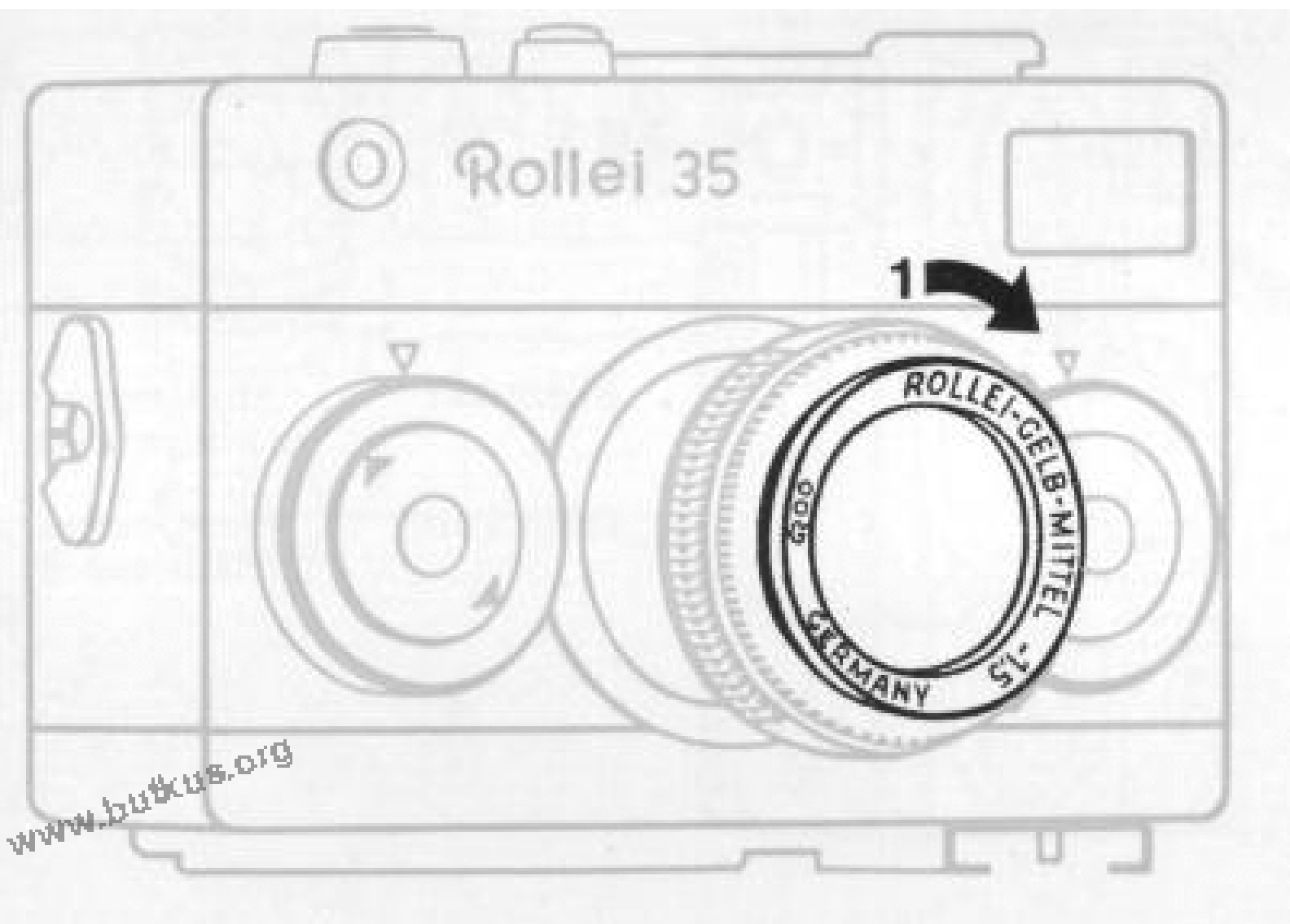


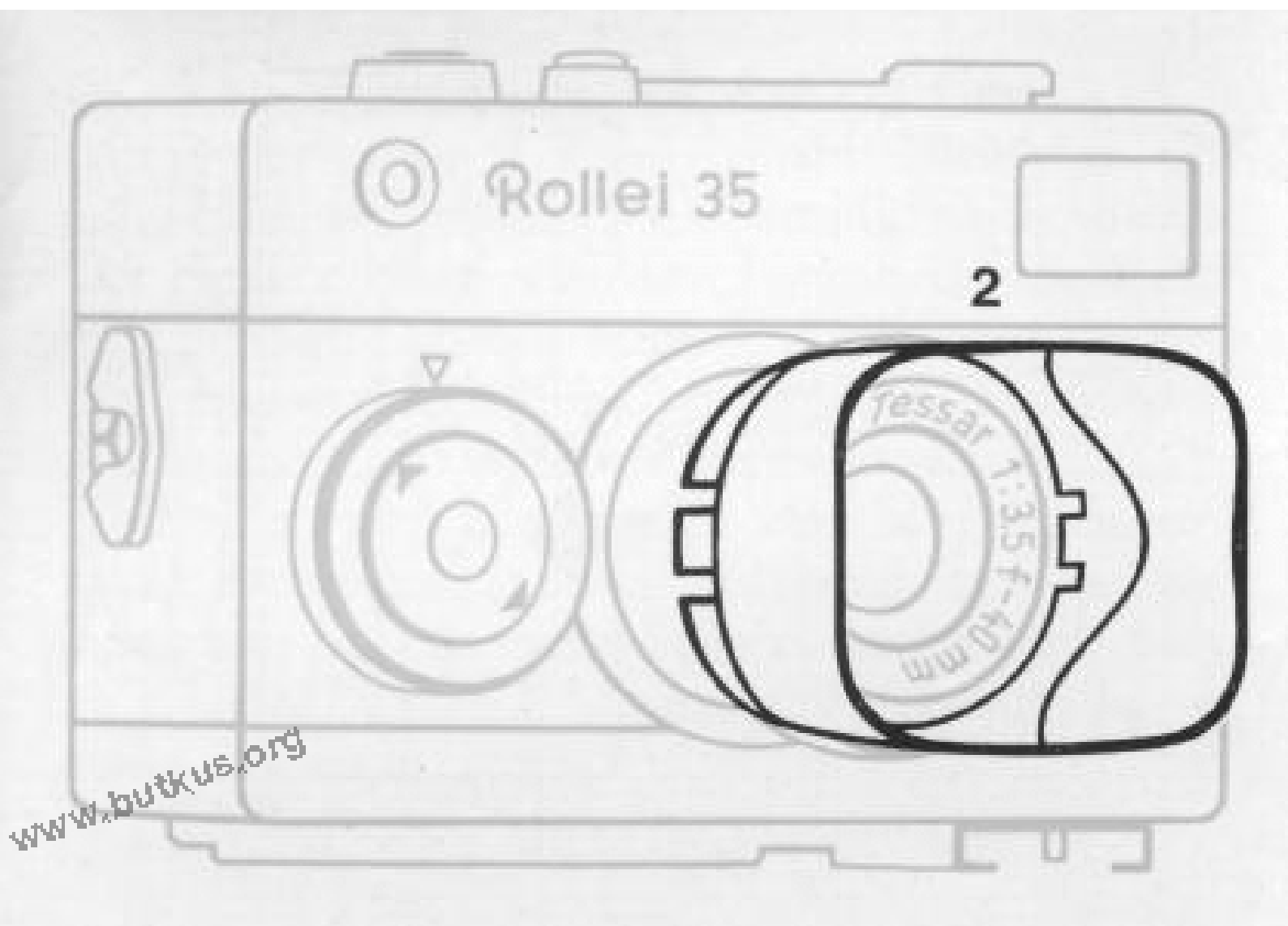
Blitzgerät

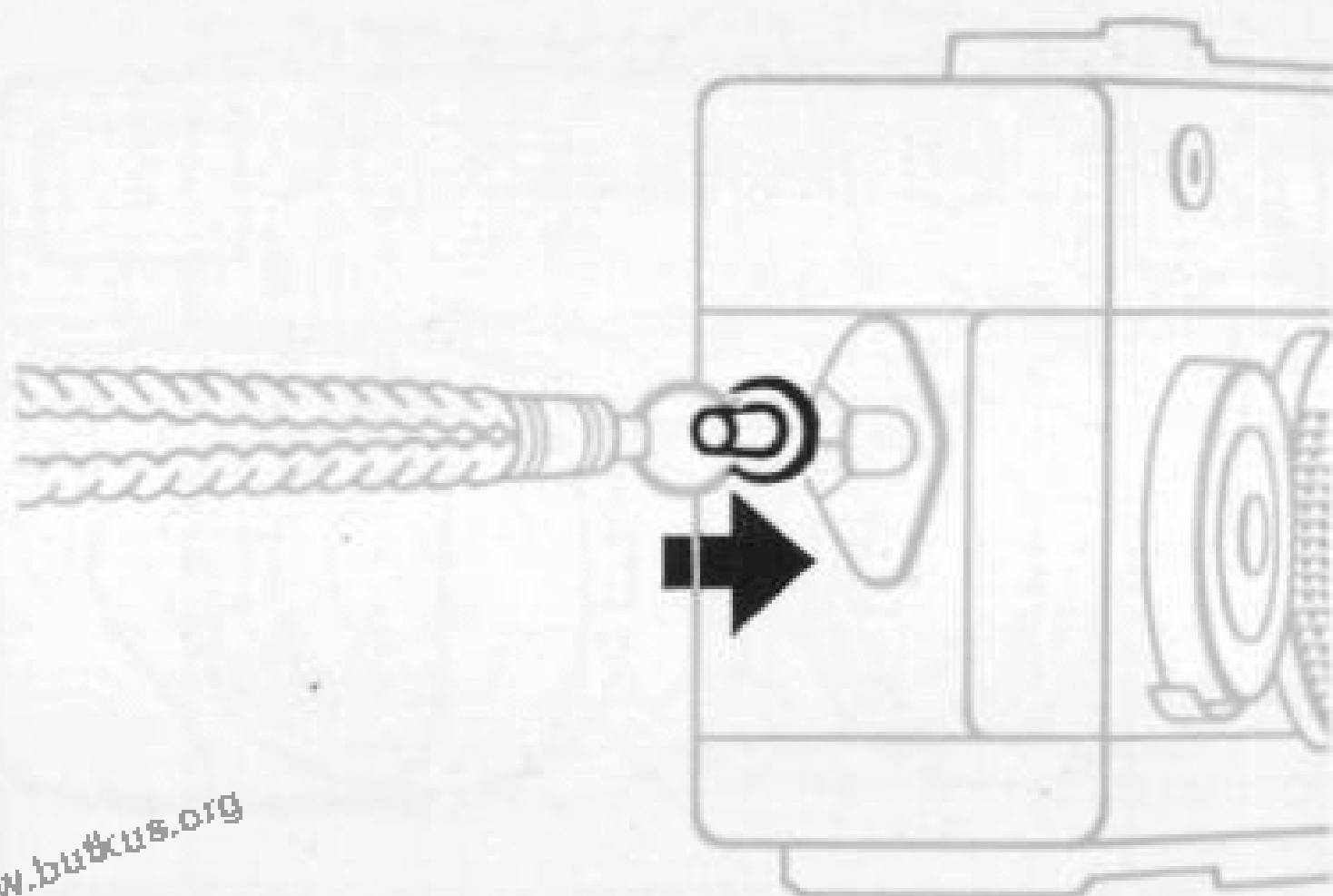
Flash gun

Blitzlampe
(Blitzwürfel)

Flash bulb
(flash cube)







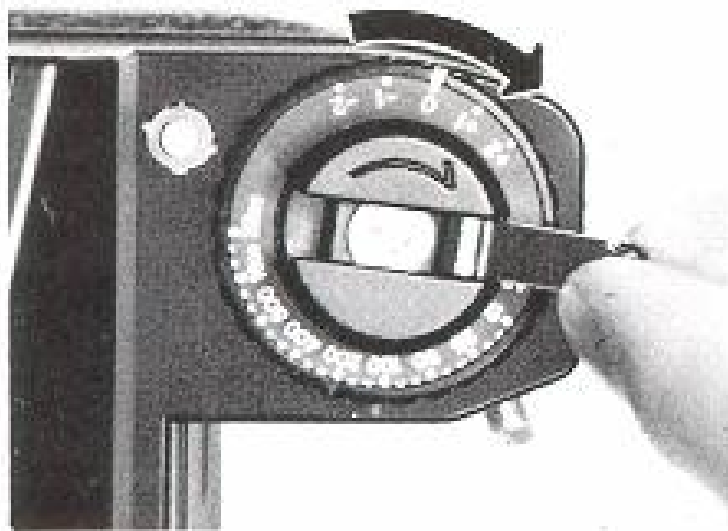


Fig. 29



1st..... Lady: $f/8$, $1/125$ with strobo
2nd..... Buildings: $f/8$, 1sec.

Fig. 30

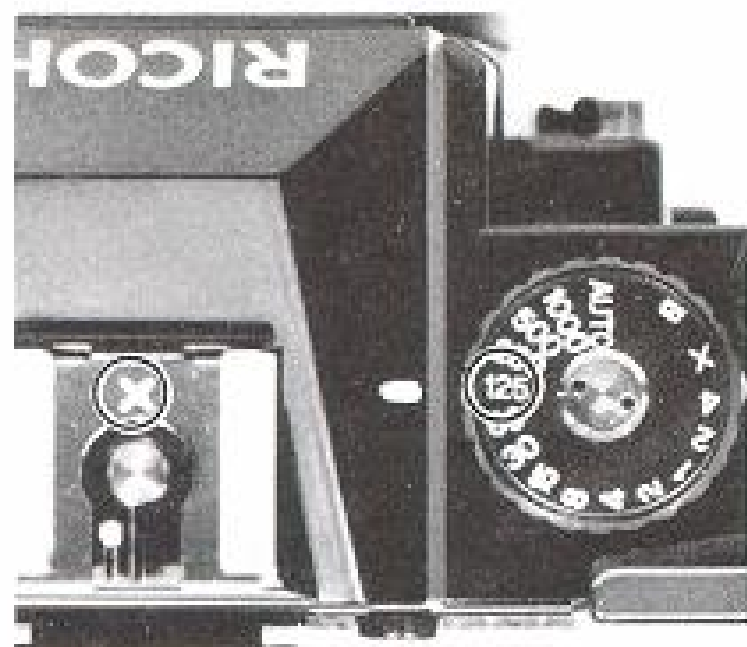


Fig. 33

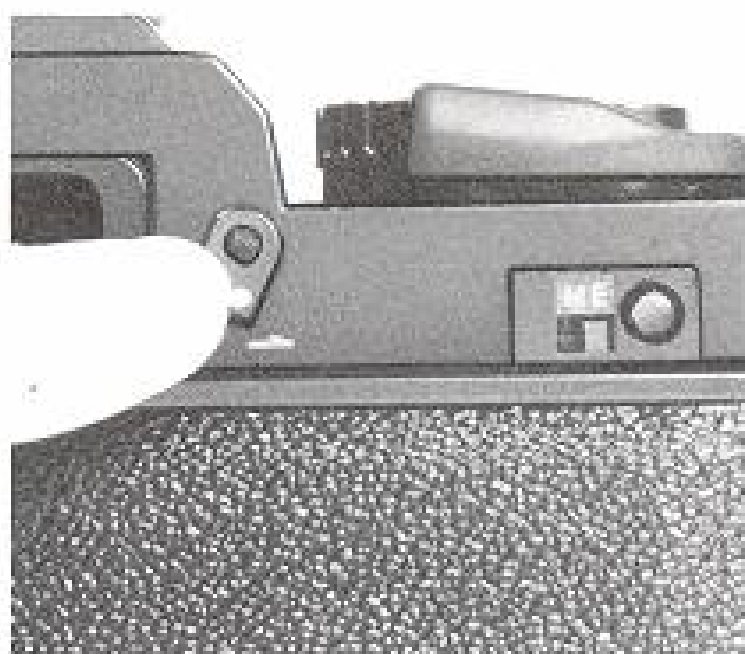


Fig. 35

CONTACT	SHUTTER SPEEDS														
	8	$\frac{1}{90}$	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{15}$	$\frac{1}{30}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{1000}$
X	Electronic Flash														
	M Class														
	MF Class														
	FP Class														

Fig. 34



Fig. 31



Fig. 32



Fig. 38



Fig. 39



Fig. 40



Fig. 41

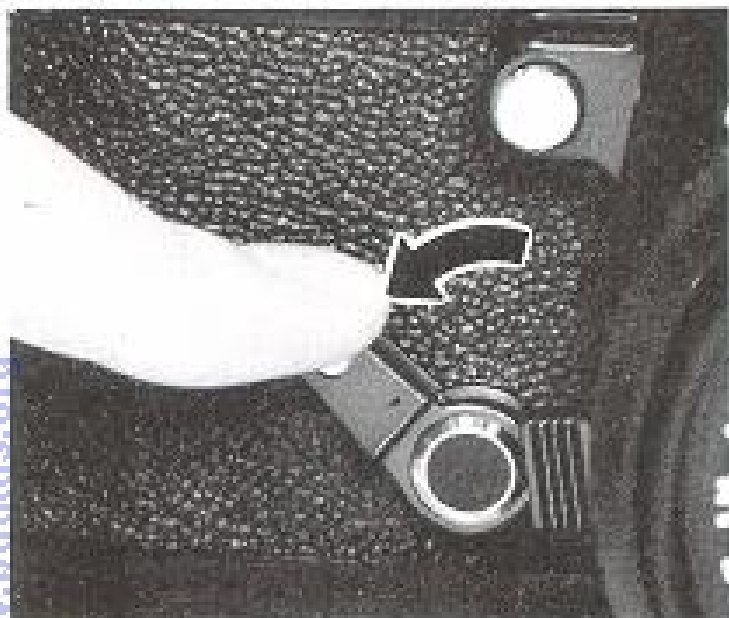


Fig. 36

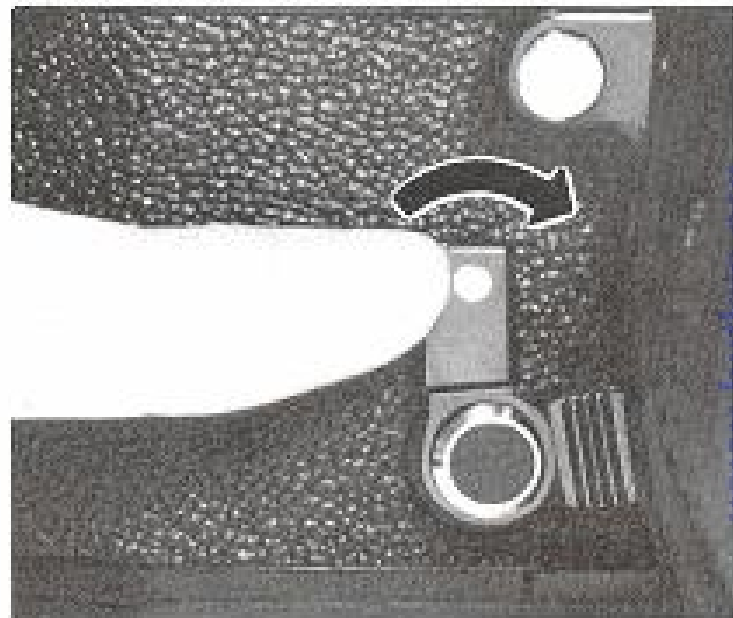


Fig. 37

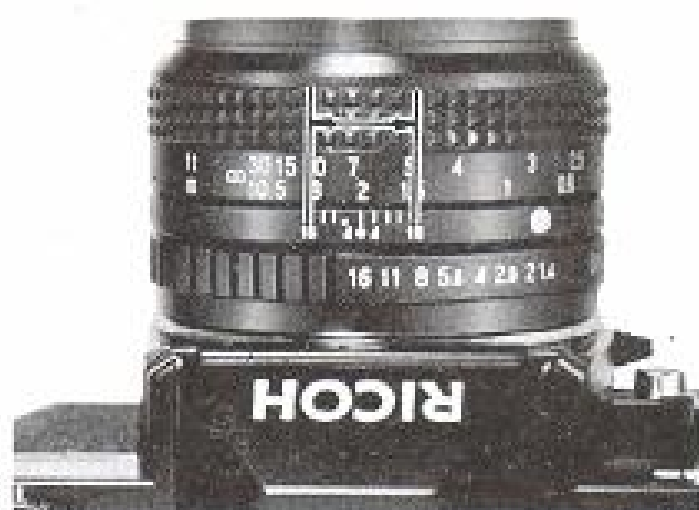


Fig. 42



Fig. 43

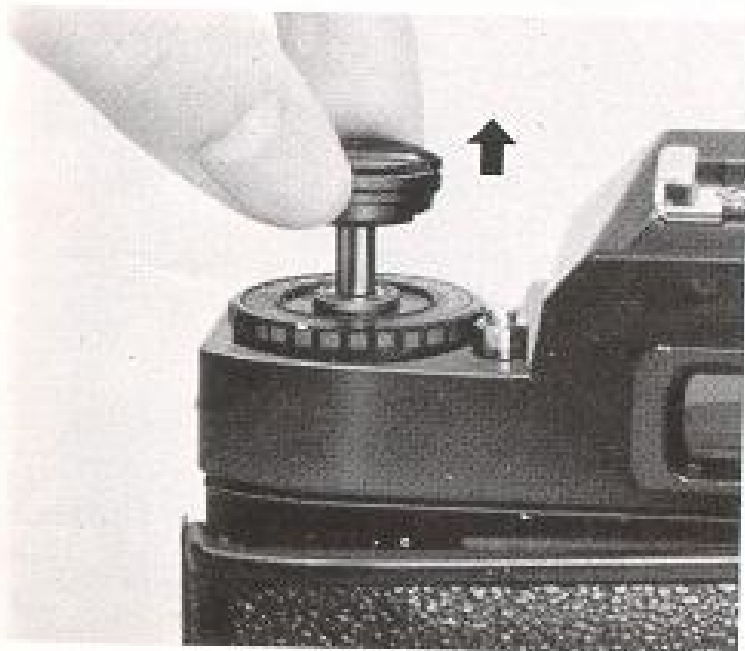
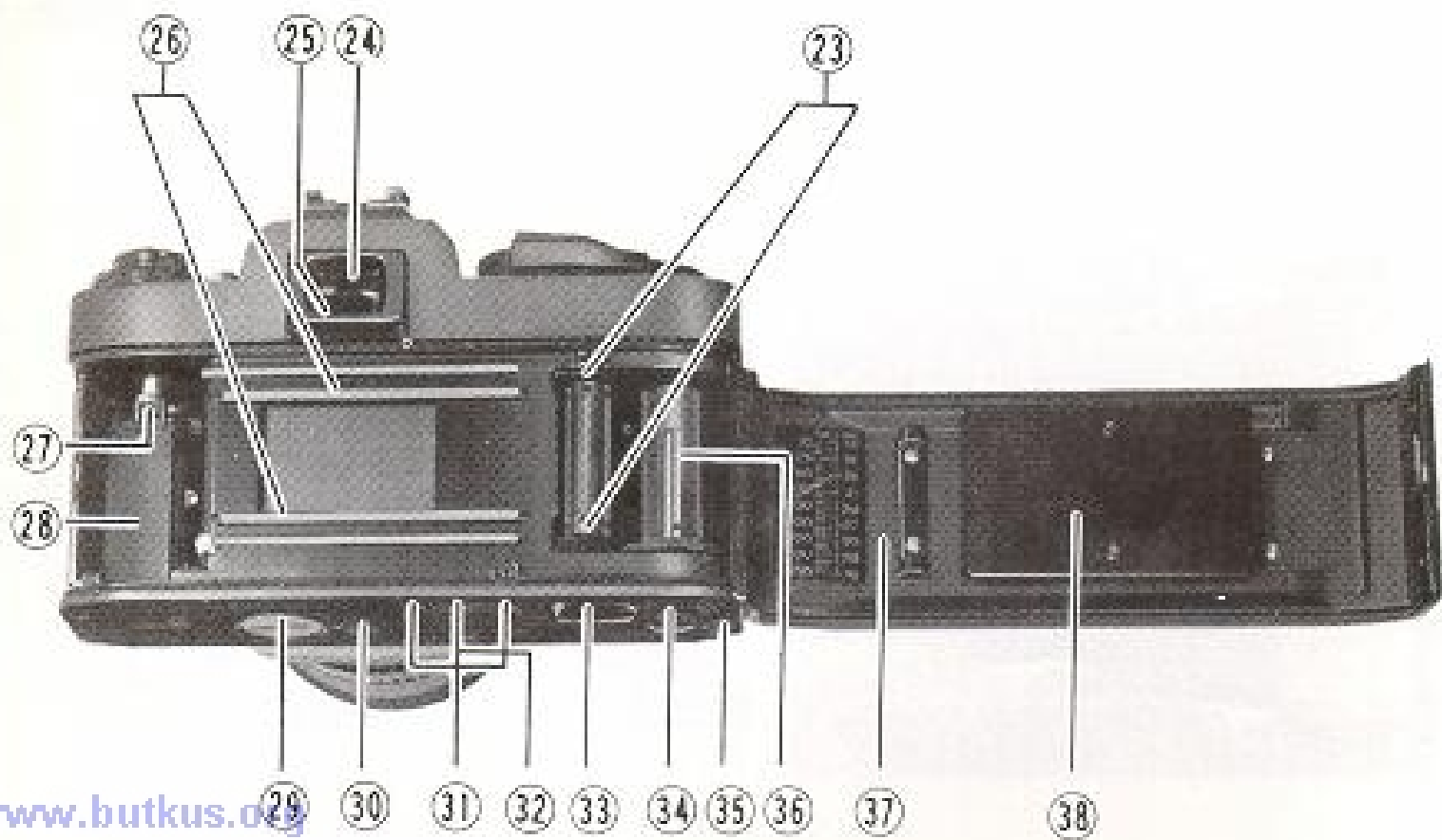


Fig. 3



Fig. 4





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Fig. 1

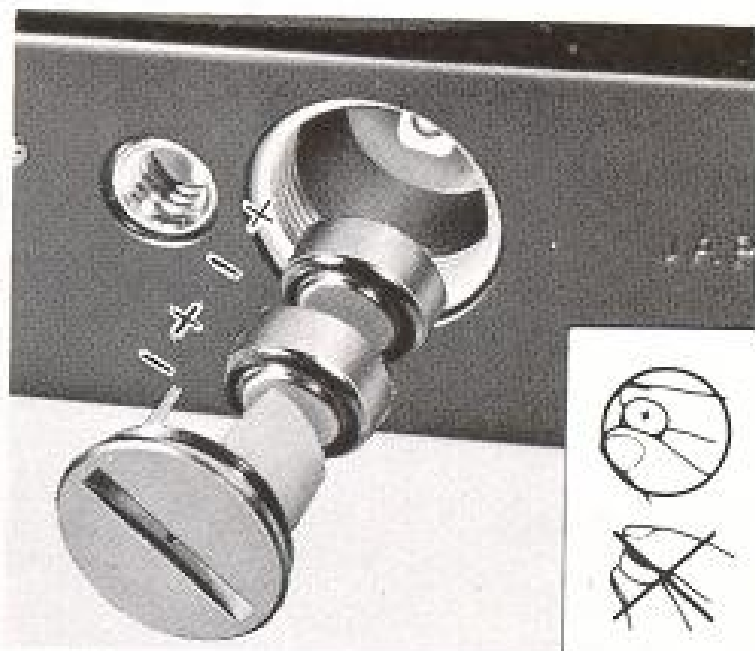


Fig. 2



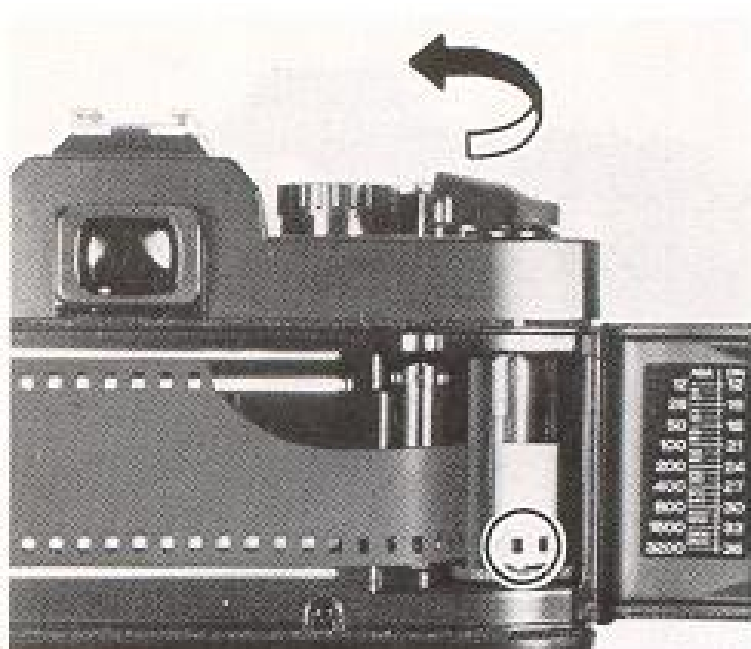


Fig. 7



Fig. 8

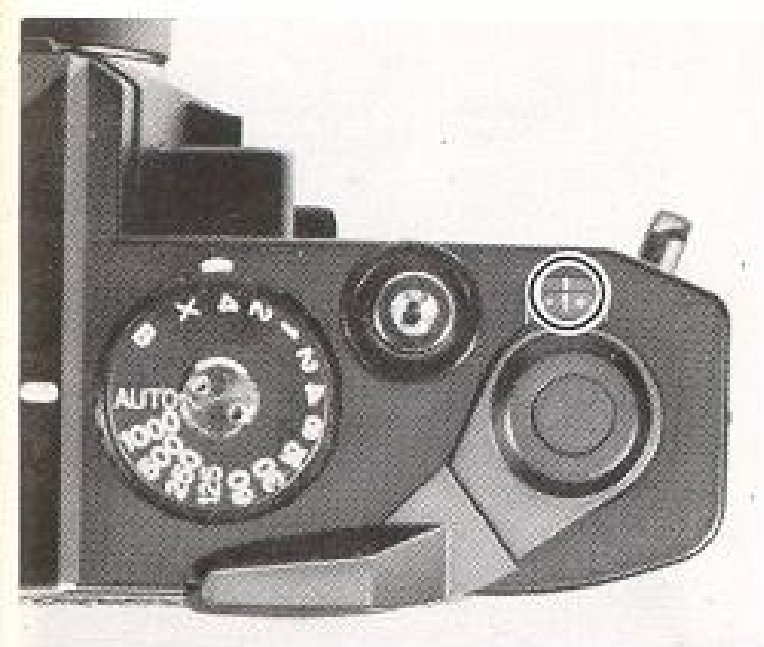


Fig. 9

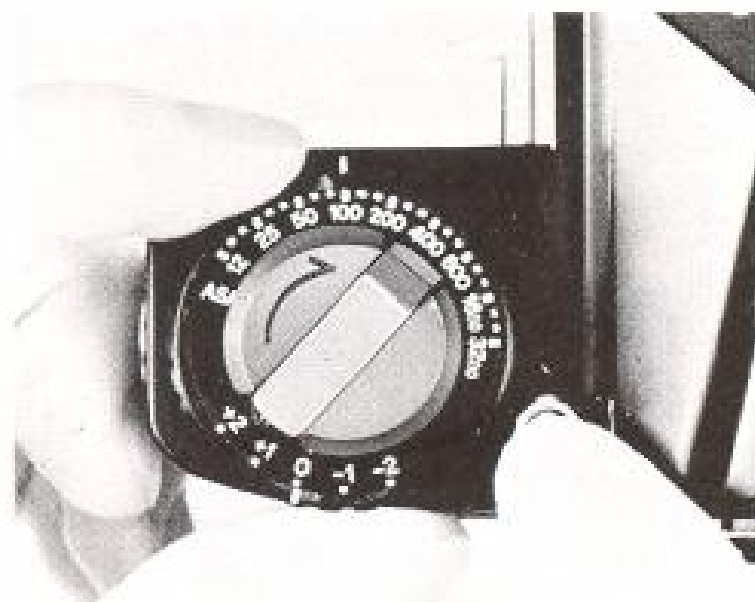
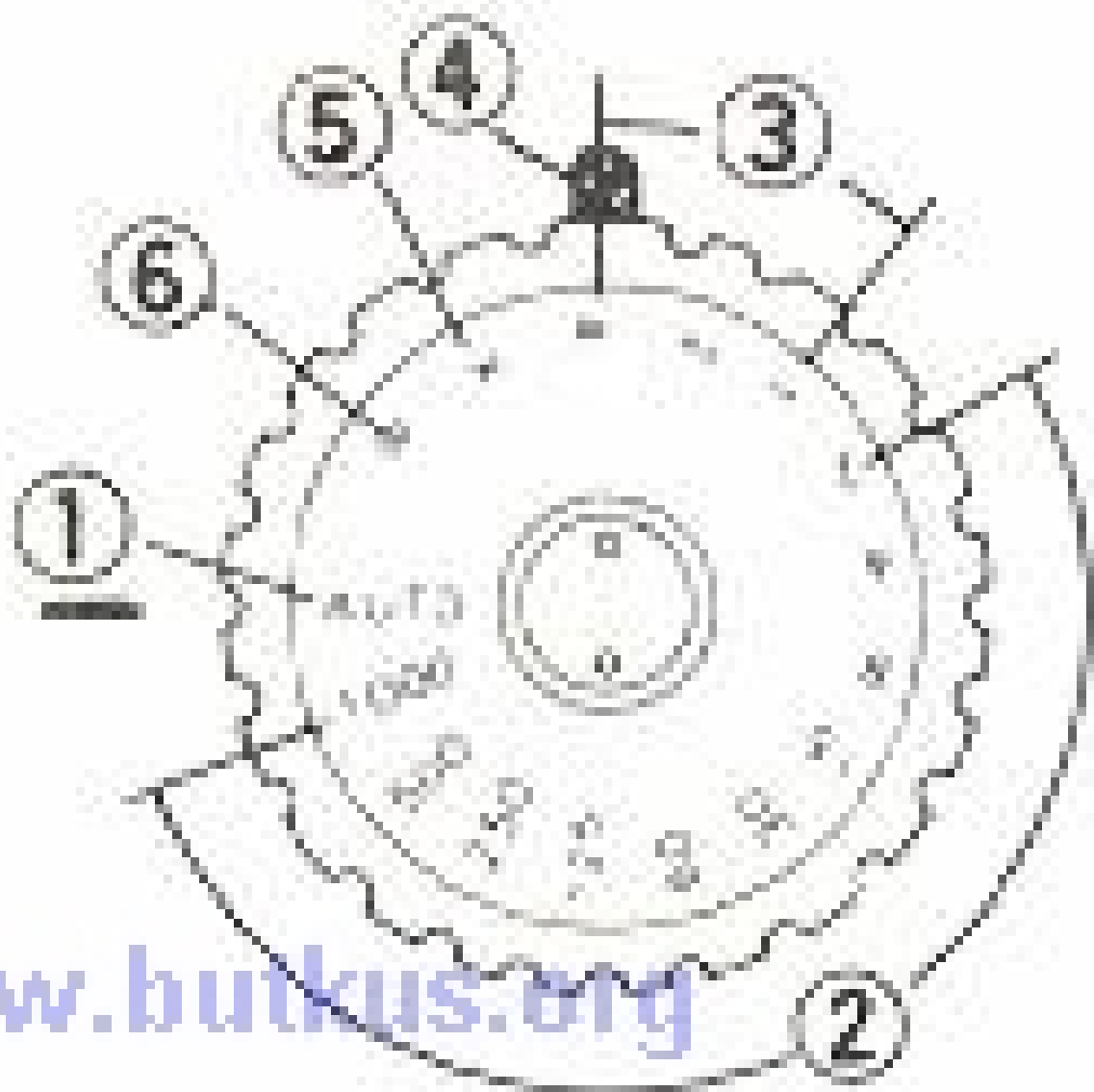


Fig. 10



	1.4	2	2.8	4	5.6	8	11	16
F-stop								
Amount of light ratio	2	1	1/2	1/4	1/8	1/16	1/32	1/64

Fig. 15