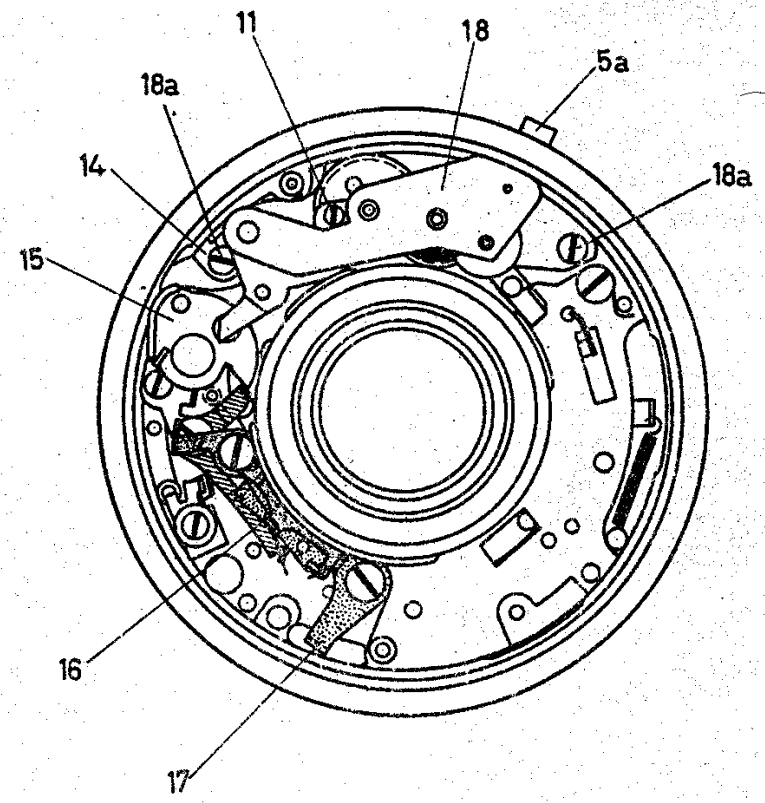
INSTRUCTIONS FOR REPAIRING PRONTOR- PHOTOGRAPHIC SHUTTERS



INSTRUCTIONS ON HOW TO REPAIR THE GAUTHIER LINE OF CAMERA SHUTTERS "PRONTOR-S" , "PRONTO" AND "VARIO"

GENERAL

The present manual of "Instructions in how to repair the GAUTHIER line of Camera Shutters" has been prepared for a number of reasons: - While it is fully justified to require the modern between-the-lens shutters to offer maximum versatility, the space available for the accomodation of the shutter mechanisms in its case is extremely limited. For this reason it is evident that such a requirement could only be fulfilled by a mechanism in which every possible avenue towards miniaturization has been fully exploited. This is certainly true of the Model 00 "Prontor-S" which features an additional built-in delayed action device. From this one can easily understand that such shutters must require a certain amount of care in handling, not only externally, i.e. during the assembly of the optical system, during mounting on the camera and by the user of the camera when he is taking his pictures, but also during all repair work on the mechanism. Improperly executed repair work is very apt to result in permanent malfunctioning of the shutter. In the interest of the shutter and camera manufacturers it is, therefore, of great importance to have all repair work exclusively performed by competent, highly skilled workers.

With such an intricate mechanism as contained in the "Prontor-S" shutter it is vital to observe a number of important rules in order to guard against any mechanical trouble and to insure perfect functioning of the shutter at all times. It is for this reason that this manual deals in detail as much as possible causes of trouble and the proper corrective measures to be taken in each case. In addition, there are included certain types of trouble brought about by extraneous causes such as the accumulation of dirt in the mechanism etc. Attention is, however, invited to the fact that such malfunctioning is in no case caused by faulty manufacture of the parts but that trouble is exclusively caused

by secondary factors. All defects in workmanship and material are eliminated by a rigid inspection system which requires each individual shutter, before leaving the factory, to pass a number of tests in which each of its functions are thoroughly checked.

FOR READY REFERENCE:

1. Cocking Mechanism
2. Release Mechanism
3. Escapement Mechanism
4. Delayed Action Device
5. Shutter Blade Mechanism
6. Diaphragm Mechanism
7. Flash Firing Mechanism
8. Time Setting Mechanism

NOTE THE FOLLOWING:

A. SPARE PARTS — Whenever it should be necessary, when repairing a GAUTHIER camera shutter, to replace any component parts, it is necessary under all circumstances to use only original GAUTHIER spare parts. Using the Shutter Spare Parts Lists, such parts can be easily and promptly obtained from GAUTHIER. Added to these Instructions is one complete set of Spare Parts Lists. Additional copies will be sent upon request.

B. OIL — Under no circumstances oil should be used in the entire shutter mechanism. Even the slightest traces of oil, regardless on which part they may occur, will soon cause malfunctioning of the shutter.

C. GREASE

(a) To insure proper diaphragm operation only a very thin of special grease is used. It is urgently advised not to add any grease in the event repair work has to be performed on the diaphragm assembly. The component parts of this assembly should always be assembled without using any grease or oil.

(b) In order to provide for smooth movement of the speed setting ring, an extremely thin film of the finest quality grease should be applied on the friction area between the speed setting ring and the shutter housing. However, extreme care should be exercised to insure that only the slightest possible trace

C. GREASE, cont. of finest quality grease is used; otherwise such an excess grease might find its way into the interior of the shutter housing, this condition being likely and caused malfunctioning of the shutter mechanism.

D. DISMANTLING THE SHUTTER — Both the SHUTTER HOUSING and the BASE PLATE ASSEMBLY should be dismantled only in cases where it is necessary to repair the shutter blade mechanism or the diaphragm blade assembly.

Special attention should be given to paragraphs B. and C., as these rules are frequently neglected, and resulting in additional shutter trouble.

The presence of oil or grease on the shutter blades will invariably cause shutter failure. - Should traces of oil or grease be found on the shutter blades, refer to the section titled "Shutter Blade Mechanism" in the manual and carefully follow the blade cleaning instructions; failure comply with these instructions will only result in inaccurate shutter speeds and often permit stray light to enter the camera with the shutter blades not fully closed.

Included with this manual there will be found a complete list of the most common types of troubles resulting from causes already mentioned.

When referring to these Instruction, please bear in mind the following points:

(a) In accordance with the above-mentioned classification of the causes of trouble, the item "Shutter fails to operate" is dealt with in the three sections titled "Cocking Mechanism", "Escapement Mechanism" and "Shutter Blade Mechanism". For details, see these sections.

(b) In certain cases, Size 0 shutters have to be handled in a different way from Size 00 shutters. Special attention is invited to this fact.

(c) Part names and part numbers as used in the Instructions agree with part names and numbers found in the Spare Parts Lists.

Instructions for repairing Prontor photographic shutters

1. COCKING MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) During cocking, cocking lever jumps back to original position, shutter will not cock.	Lug L of inner release lever fails to engage edge K of cocking lever. 0257-U 98 Inner Release Lever 0257-U 101 Cocking Lever 0257-146 Exterior Release Lever Screw	Correct position of lug L by bending to ensure proper engagement of inner release lever.

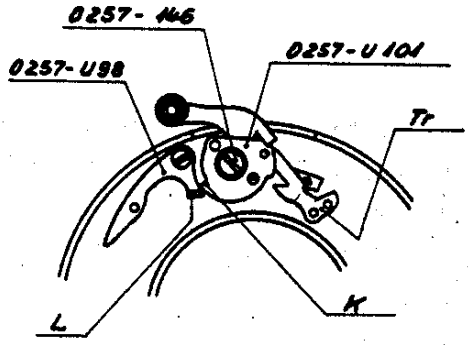


Fig. 1
(Size 0 Shutter)

(2) Upon the cocked shutter being released, the cocking lever fails to return. - Consequence: Shutter fails to operate (see also "Escapement Mechanism", Item 1, and "Shutter Blade Mechanism", Item 1).	Plane of movement of driver Tr is not vertical in relation to longitudinal axis of shutter.	Use tweezers to correct position of driver Tr.
(3) Cocking the shutter requires excessive effort, too stiff or binding.	Individual coils of driving spring located beneath cocking lever, along exterior release lever screw 0257-146, are out of alignment.	Correct position of spring coils or install new spring.

2. RELEASE MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) Shutter fails to be released within range J of movement of exterior release lever prescribed for camera.		Correct position of arm B of inner release lever by bending.

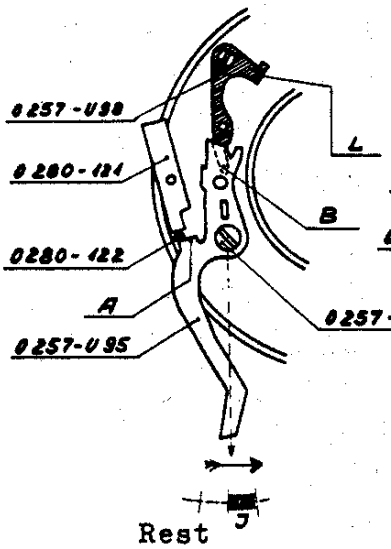


Fig. 2a
(Size 0 Shutter)

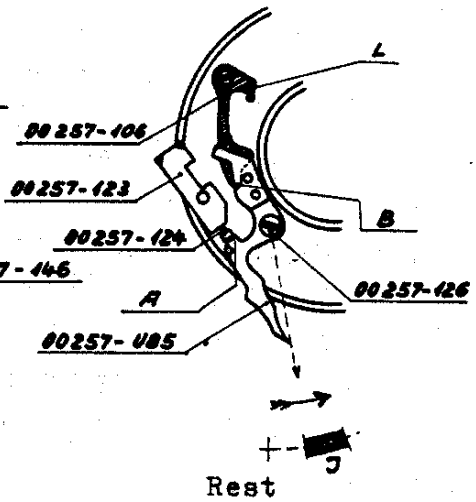


Fig. 2b
(Size 00 Shutter)

0257-U98) Inner Release Lever
00257-106)

0280-121) Release Tube
00257-123)

0257-122) Release Pin
00257-124)

0257-U95) Exterior Release Lever
00257-U85)

0257-146) Exterior Release Lever Screw
00257-126)

(2) Releasing the shutter requires excessive effort, i.e. release works too hard. Shutter releasing stiff or binding.	(a) Improper bending of lug L of inner release lever (see "Cocking Mechanism", Item 1) has changed radial position of lug L.	(a) Install new inner release lever.
	(b) Individual coils of driving spring located beneath exterior release lever along exterior release lever screw are out of alignment.	(b) Correct position of spring coils or install new spring.

RELEASE MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
(3) With uncocked shutter, exterior release lever is not locked in position.	(a) Lug A on exterior release lever extending vertically in relation to drawing plane of Figs. 2 & 3 includes an angle with the drawing plane which is noticeably different from 90°.	(a) Correct position of lug A by bending.

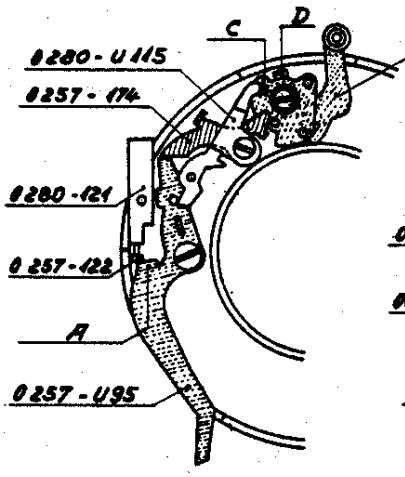


Fig. 3a
(Size 0 Shutter)

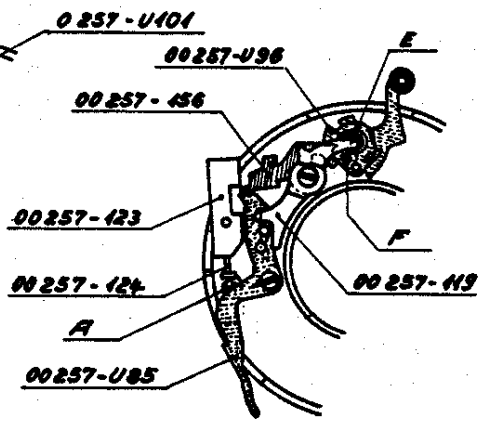


Fig. 3b
(Size 00 Shutter)

0257-U95) 00257-U85)	Exterior Release Lever
0280-121) 00257-123)	Release Tube
0257-122) 00257-124)	Release Pin
0257-U101) 00257-U 96)	Cocking Lever
0257-174) 00257-156)	Locking Lever
0280-U115) 00257- 119)	Time Lever

(b) Relative movement of time lever and locking lever impeded by excessive friction.	(b) 1. Use tweezers to correct play of time lever and locking lever. 2. If trouble is caused by rust or oxidation, install new levers.

RELEASE MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
(4) With shutter set for bulb exposure (B), mechanism completes its cycle, i.e. shutter blades close despite the fact that exterior release lever is held in its release position.	(a) Size 0 Shutter: Lug C of time lever which extends vertically in relation to drawing plane of Fig. 3a fails to arrest cocking lever by engaging lug D. Size 00 Shutters: Arm E of time lever fails to engage abutment F of cocking lever.	(a) Size 0 & 00 Shutters: Correct shape of time lever by bending in drawing plane in such a manner that lug C of time lever catches lug D of cocking lever.
	(b) Failure of escapement mechanism prevents movement of cocking lever from being delayed.	(b) For corrective measures refer to section titled "Escapement Mechanism."

3. ESCAPEMENT MECHANISM

NOTICE:- The escapement mechanism is held in position on the base plate only by the screws S_1 and S_2 (Figs. 4a & 4b). To remove the escapement mechanism, first remove the front plate and the time setting ring, then undo the screws S_1 and S_2.

TROUBLE	CAUSE	CORRECTION
(1) Escapement mechanism fails to operate upon shutter being released. Consequence: Shutter remains out of operation (see also section "Cocking Mechanism", Item 2, and "Shutter Blade Mechanism", Item 1).	(a) Dirt has accumulated in mechanism. (b) Dirt is found not to be the cause of trouble.	(a) Use pure petrol (gasoline) to clean parts. (b) In any case, install a new escapement mechanism.

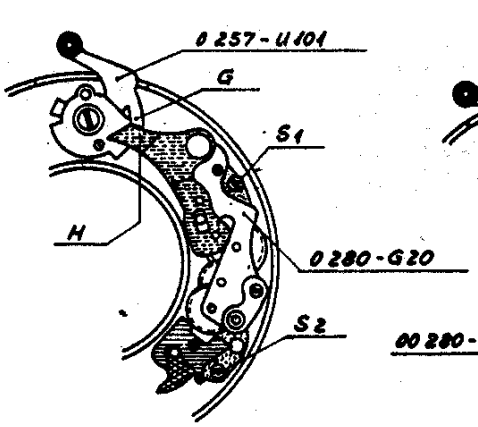


Fig. 4a
(Size 0 Shutter)

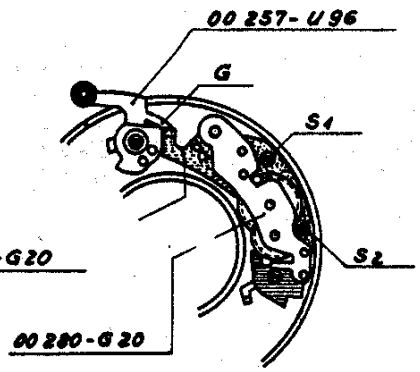


Fig. 4b
(Size 00 Shutter)

0280-G20) Escapement
00280-G20) Mechanism

H = retarding lever of escapement mechanism

(2) The operating period of the escapement mechanism does not coincide with the correct portion of the shutter blade operating period.	Incorrect position of arm G of cocking lever.	Correct position of arm G by bending in such a manner that escapement mechanism is caused to operate while shutter blades are completely open.

4. DELAYED ACTION DEVICE

NOTICE:- The delayed-action device is held in position on the base plate only by the spring serving to drive the device (see Fig. 5a). To remove the delayed-action device, first remove the front plate and the time setting ring, then unhook the above-mentioned spring from the stud St (Fig. 5a) or from the lug P (Figs. 5b & 5d), respectively.

TROUBLE	CAUSE	CORRECTION
(1) Delayed-action device fails to be caught in detent during shutter cocking.	(a) Arm M on underside of delayed-action device fails to engage bar lever (Figs. 5a-5d).	(a) Correct position of arm M by bending in drawing plane.

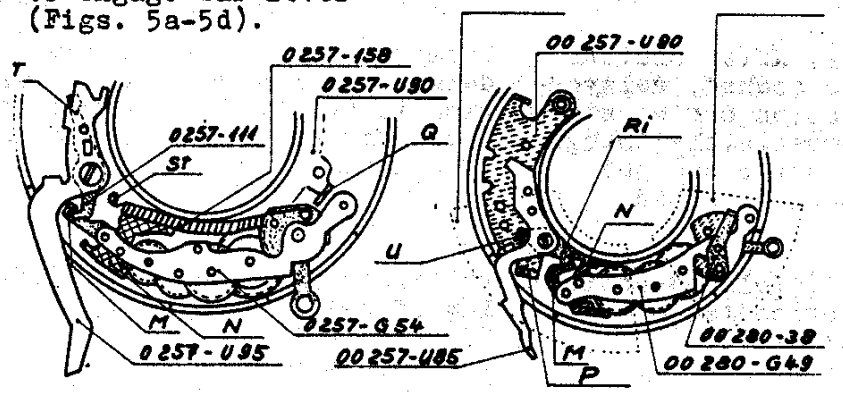


Fig. 5a
(Size 0 Shutter)

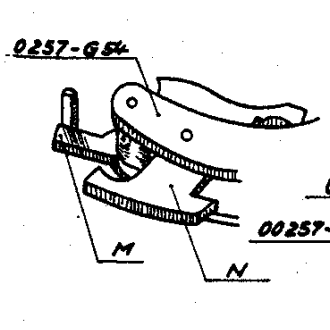
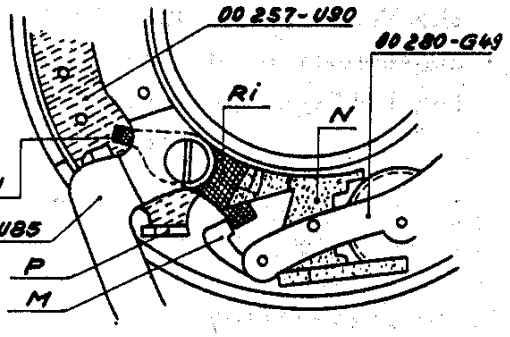
0257-U95) 00257-U85)	Exterior Release Lever
0257-111) Ri)	Bar Lever
00257-U90	Bar Lever Plate (w/ Bar Lever)

Fig. 5b
(Size 00 Shutter)

(Spring of delayed-action device omitted for clarity)

0257-G54) 00280-G49)	Delayed-action Device
00280- 38	Locking Lever for Delayed-Action Device
0257-U90) 00280-u80)	Shutter Drive Ring
0257-158	Spring for Delayed-Action Device

DELAYED ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	 Fig. 5c (Size 0 Shutter)	 Fig. 5d (Size 00 Shutter)
(2) After shutter is cocked, delayed-action device starts immediately though shutter has not been released.	Escapement N of delayed-action device is free to move after shutter is cocked.	Correct position of Arm M by bending in such a manner that escapement is arrested by tubular portion of base plate.
(3) Delayed-action device fails to start.	(a) Excessive bending of arm M (see "Correction", Item 1) keeps escapement N from oscillating.	(a) Correct position of arm M by bending.
	(b) Dirt has accumulated in mechanism.	(b) Size 0 Shutters: Clean delayed-action device by brushing; DO NOT WASH.(because of roller clutch). - If trouble cannot be corrected by brushing, install new delayed-action device. Size 00 Shutters: Use pure petrol (gasoline) to clean delayed-action device.

DELAYED ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(4) Delayed-action device fails to complete its cycle, i.e. it stops after shutter blades begin to open.	Incorrect position of lug Q of shutter drive ring (Figs. 5a, 5e, 5f) relative to drawing plane. This reduces to nearly zero the length of safety travel g of segment R (see Fig. 5e). 00280-G49 Delayed-Action Device 00280-U80 Shutter Drive Ring	Correct position of lug Q by bending. Fig. 5e shows CORRECT position of lug Q after delayed-action device has run down. Sufficient length of travel g must be provided for.
(5) Shutter blades open upon delayed-action device being released.	Excessive clearance h (Fig. 5f) exists when delayed-action device is cocked. This clearance should not exceed .2 mm. (.008").	Bend lug Q to obtain correct clearance h.

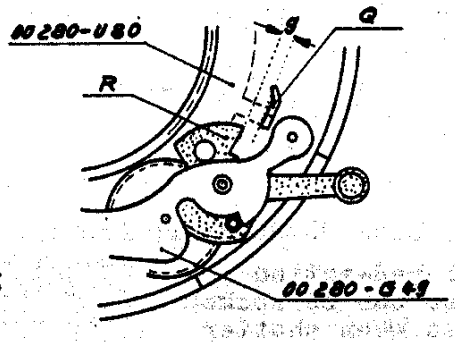
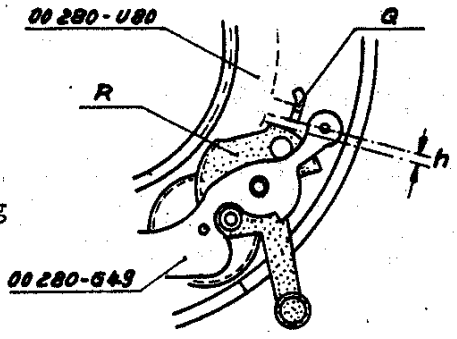


Fig. 5e
(Size 00 Shutter)

Delayed-action device after running down. (Locking lever and spring omitted for clarity).



Right: Fig. 5f (Size 00 Shutter)
(Locking lever and spring for delayed-action device have been omitted for the sake of clarity.)

DELAYED ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(6) Delayed-action device starts before cocking lever is released by inner release lever (see Fig. 1).	Incorrect relative position of inner release lever and bar lever.	Correct shape of inner re-lease lever and bar lever in such a manner that delayed-action device will start only after inner release lever has released cocking lever. To do this, bend arm B of inner release lever (Figs. 2a & 2b) and arm T (Fig. 5a) of bar lever in the case of Size 0 shutter or lug U (Figs. 5b & 5d) in the case of Size 00 shutter, respectively.
(7) Size 00 Shutter: Delayed-action device can be cocked also when shutter is set for bulb exposure (B).	Locking lever for delayed-action device (Fig. 5g) has been accidentally omitted during assembly. Be sure not to overlook this tiny part.	Install locking lever for delayed-action device. - Fig. 5g indicates correct position of locking lever with mechanism uncocked.

00280-G49 Delayed-Action Device

00280- 38 Locking Lever for Delayed-Action Device

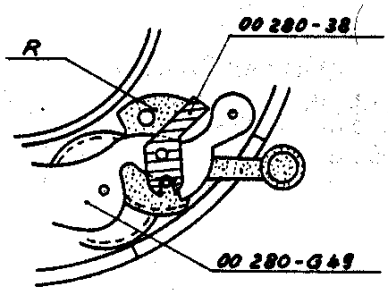


Fig. 5g
(Size 00 Shutter)

Delayed-action device in uncocked condition. (Spring omitted for the sake of clarity.)

5. SHUTTER BLADE MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) Shutter blades adhere to each other and cannot be moved. Consequence: Shutter will not operate. (See also "Cocking Mechanism", Item 2, and "Escapement Mechanism", Item 1).	Shutter blades contaminated with oil or grease.	Remove shutter blades from shutter, place blades on PLANE surface and wipe with DRY cloth. Be sure to avoid fingerprints on shutter blades, as perspiration will destroy protective finish and thus give rise to rust formation.
(2) Shutter blades fail to form light-tight closure of shutter aperture.	Shutter blades are distorted.	Install new shutter blades.
(3) Rust formation on shutter blades.	-	Install new shutter blades.

6. DIAPHRAGM MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) Moving the diaphragm index ring requires excessive effort.	(a) Presence of grease between diaphragm blades.	(a) Wipe diaphragm blades with DRY cloth and follow instructions given under "Shutter Blade Mechanism" Item 1.
	(b) Diaphragm index ring distorted.	(b) Where excessive distortion is observed, install new diaphragm index ring.
	(c) Diaphragm blades are damaged.	(c) Install new diaphragm blades.
(2) Diaphragm aperture is not found to be a regular decagon.	Diaphragm blades damaged; pivoting rivets N_1 and N_2 may be broken. (See Fig. 6).	Install new diaphragm blades.

Fig. 6
Diaphragm Blade

7. FLASH FIRING MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) Flash is not fired (assuming flash bulb and battery are in good working order).	(a) No contact between contact bushing Y of flash fitting and cable plug.	Examine plug and correct faulty condition.
	(b) Size 0 Shutter:	Size 0 & 00 Shutters:
	Insufficient contact pressure between arm W_1 of contact spring and contact plate or between arm W_2 of contact plate and flash fitting.	Correct tension of contact spring by bending.
	Size 00 Shutter:	
	Insufficient contact pressure between contact spring V and flash fitting.	

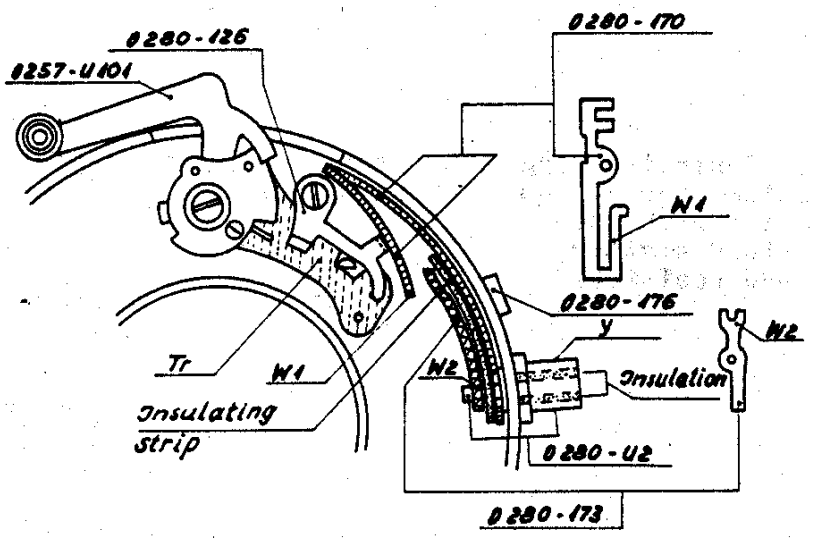


Fig. 7a
(Size 0 Shutter)

For explanation of symbols, refer to following sheet.

FLASH FIRING MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
	0257-U101) Cocking Lever 00257-U 96) Tr = Driving Arm of Cocking Lever 0280-126) Contact Lever 00280-111) 00280-U 2 Flash Fitting	00280-U173 Contact Plate w/ Contact Spring V 0280-173 Contact Plate 0280-170 Contact Spring 0280-176 Insulating Bushing

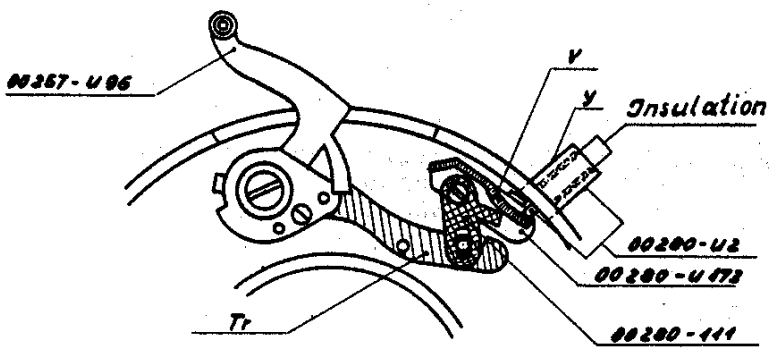


Fig. 7b
(Size 00 Shutter)

(2) Contact-making action does not coincide with prescribed shutter blade position.	Incorrect position of contact spring.	Correct position of contact spring by bending in such manner that contact-making action occurs during portion of shutter blade opening period defined as follows: Lower Limit: Shutter blades form an aperture whose radius is by 1 mm. (.04") smaller than the full-aperture radius; Upper Limit: Shutter blades fully expose aperture.

8. TIME SETTING MECHANISM

TROUBLE	CAUSE	CORRECTION
(1) Moving the time setting ring requires too much or too little effort.	(a) Too little or too much radial play between time setting ring and tubular portion of base plate.	(a) Adjust for proper amount of play by bending spring arm Z in drawing plane of Fig. 8
	(b) Size 00 Shutter: Distance between time setting ring and front plate is too small or too large.	(b) Adjust for proper distance by rotating the thread ring for the front plate. Then lock thread ring in position by having screw on front plate engage in notch of thread ring.

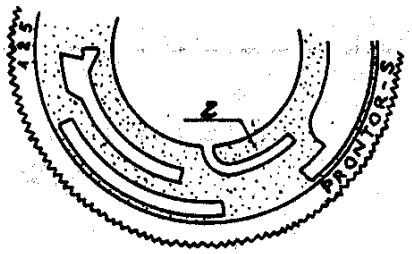


Fig. 8
Time Setting Ring
0280-159

FIRST SUPPLEMENT

to

INSTRUCTIONS ON HOW TO REPAIR

GAUTHIER CAMERA SHUTTERS

This supplement covers the fully synchronized
MODEL PRONTOR SV SHUTTER

CONTENTS

4a. DELAYED ACTION AND SYNCHRONIZING DEVICE

GENERAL REMARKS

(1) In the Prontor SV shutter, part of the delayed-action device intended for selftiming purposes is used as a synchronizing device serving to take care of the inherent time lag of flash equipment. The synchronizing device is rendered operative by setting the synchro switch ring at the yellow mark. In this position, some of the elements of the mechanism are disengaged from the remaining elements. With the synchro switch ring set at the red mark, however, all elements of the delayed-action device are in their operative positions of engagement.

(2) In contrast to the Pronto and Prontor-S shutters, the delayed-action device is not arranged for pivotal movement but is rigidly mounted on the base plate. The device is held in position by sliding it over the peg 2 which is secured to the base plate and by means of another peg 3 protruding from the underside of the delayed-action device, the latter peg being fitted into a bore provided in the base plate. - To remove the delayed-action device from the shutter, first remove the front plate and the time setting ring, then disengage the spring of the delayed-action device from its anchor 4 (Fig. 10a).

In doing so, see to it that the segment 6, which is connected with the synchro cocking lever 5, takes a position in relation to the lens tube such as is indicated in Fig. 9; otherwise the projections of segment 6 will be caught in the milled recesses of the lens tube, it then being impossible to lift out the mechanism. The position of segment 6 indicated in Fig. 9 is obtained as follows:- First unhook the spring from its anchor 4; then ...

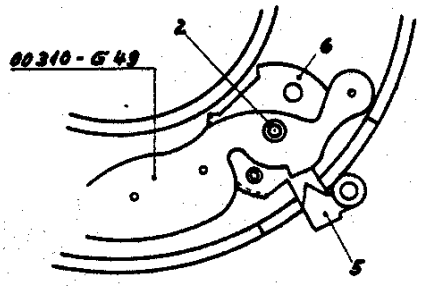


Fig. 9
(Size 00 Shutter)

(a) with the synchro cocking lever in its rest position, rotate the synchro cocking lever in a clockwise direction until the segment reaches the desired position; or

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

(b) with the synchro cocking lever in its cocked position, release the COCKED shutter and rotate the synchro cocking lever in an anti-clockwise direction until the position indicated in Fig. 9 is reached; finally, allow the shutter cocking lever to be again caught in its cocked position.

(3) Due to the design of the Prontor SV shutter, the shutter blades will perform a slight swinging movement while the shutter is being cocked; this will not, of course, allow any light to enter the camera. Any change as regards this movement of the shutter blades may only be made in cases where the faults mentioned below are observed; otherwise the proper functioning of the delayed-action device will be interfered with.

(4) When performing repair work on this shutter model, care should be taken to change the position of lug 7 of the shutter drive ring only in cases where the faults mentioned below are observed. The proper functioning of several phases of the shutter cycle depends on the correct position of lug 7.

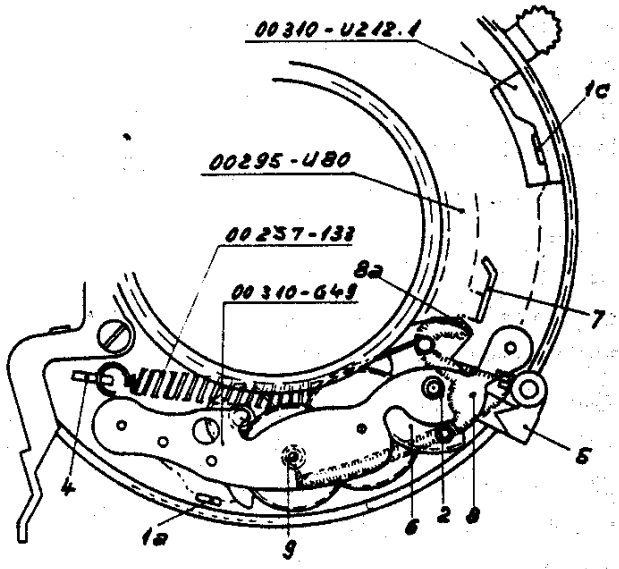


Fig. 10a
(Size 00 Shutter)
00257-133 Spring of Delayed Action Device
00295-U80 Shutter Drive Ring
00310-G49 Delayed-Action Device
00310-U212.1 Synchro Switch Ring

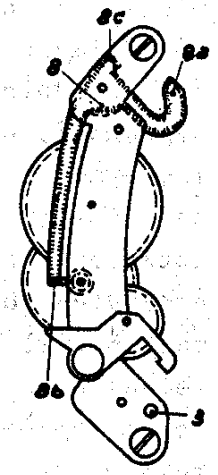
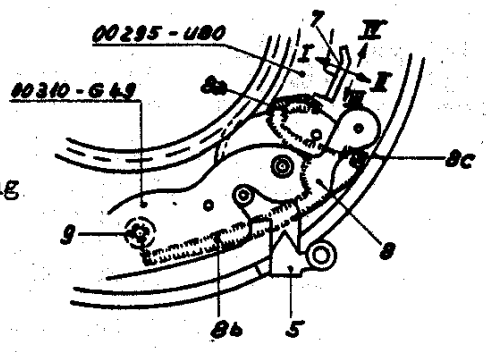


Fig. 10b
Delayed-Action Device
00310-G49
(incomplete)

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(1) Synchro cocking lever fails to lock in position during cocking of delayed-action and synchronizing device.	(a) Lug 7 of shutter drive ring has excessive inclination in direction of arrow I (Fig. 10c); thus it is possible for lug 7, during cocking already, to act upon arm 8a of three-armed locking lever 8 and to rotate this lever counterclockwise. This causes arm 8b of locking lever 8 to release pinion 9.	(a) Correct position of lug 7 by bending in direction of arrow II in Fig. 10c.
	(b) Lug 7 of shutter drive ring has excessive inclination in circumferential direction, i.e. in direction of arrow III in Fig. 10c.	(b) Correct position of lug 7 by bending in direction of arrow IV in Fig. 10c.



00295-U80
Shutter Drive Ring

00310-G49
Delayed-Action Device

Fig. 10c
(Size 00 Shutter)
Delayed-Action Device in Cocked Position

(2) After shutter cocking lever is locked in cocked position, the cocked delayed-action and synchronizing device starts running without the shutter being previously released.	(a) Insufficient clearance between lug 7 of shutter drive ring and arm 8a of locking lever 8 in direction of arrow III in Fig. 10c.	(a) Correct position of lug 7 by bending in direction of arrow IV in Fig. 10c.

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	(b) Because lug L of inner release lever (see "Cocking Mechanism", Fig. 1) is bent out of position, the shutter cocking lever has to travel too great a distance between its stop position and its register. Thus, before lug L engages edge K of cocking lever, the shutter drive ring is rotated a corresponding amount, the ring in turn rotating the locking lever 8 and releasing the delayed-action and synchronizing device.	(b) Correct position of lug L by bending.
(3) Delayed-action and synchronizing device fails to run off.	(a) Lug 7 of shutter drive ring has excessive inclination in direction of arrow II in Fig. 10c. This causes locking lever 8 to be locked in position, thus preventing delayed-action and synchronizing device from being released.	(a) Correct position of lug 7 by bending in direction of arrow I in Fig. 10c.
	(b) Dirt has accumulated in mechanism.	(b) Use pure petrol (gasoline) to clean mechanism.

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(4) With the synchro switch ring set at the yellow mark, the synchronizing device fails to run off, while, with the synchro switch ring set at the red mark, the delayed-action device does run off.	Arm 1a of synchro switchring (Fig. 10d) is deflected radially from vertical position in relation to drawing plane. As a result, gear 10 and pinion 11 are not completely brought out of engagement.	Adjust arm 1a of synchro switch ring for vertical position in relation to drawing plane.

00310-U212.1
Synchro
Switch Ring

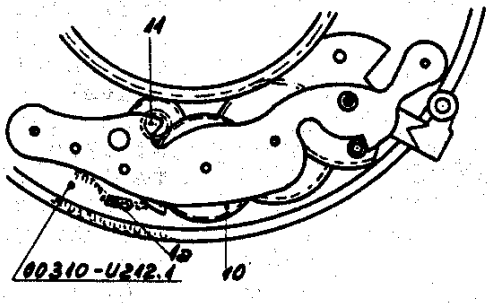


Fig. 10d
(Size 00 Shutter)

(5) The delayed-action and synchronizing device fails to complete its cycle, i.e. upon the shutter blades beginning to open, the mechanism stops or fails to run until the synchro cocking lever has completed its travel (see also Section 8a, "Time Setting Mechanism", Item 1).	(a) Vertical lug 8d on arm 8c of three-armed locking lever 8 is excessively deflected in direction of arrow V in Fig. 10e and therefore interferes with movement of synchro cocking lever 5 which is connected with segment 6.	(a) Correct position of lug 8d by bending in direction of arrow VI in Fig. 10e.

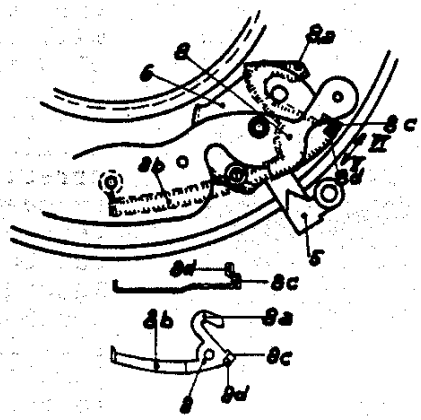


Fig. 10e
(Size 00 Shutter)

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	Only with 1/300-sec. setting:-	
	(b) Lug 8d has excessive deflection in direction of arrow VI in Figs. 10e & 10f. At the moment at which lug 7 is released by segment 6, the synchro cocking lever 5 assumes the position indicated in Fig. 10f. The synchro cocking lever has to travel the angular distance s before striking lug 8d. Due to the extremely short open period of the shutter when set for 1/300 sec., lug 7 of the shutter drive ring, owing to the above-mentioned reason, will leave arm 8a of locking lever 8 during its return travel before the synchro cocking lever 5 has completed its length of angular travel s. On the contrary, when lug 7 has left the arm 8a, the synchro cocking lever will only have traveled the angular distance s_o. Thus, the spring-loaded locking lever 8 will arrest the pinion 9 by means of arm 8b before the mechanism can be finally released by synchro cocking lever 5 striking lug 8d to permit the shutter to complete its operating cycle.	(b) Correct position of lug 8d by bending in direction of arrow V in Figs. 10e & 10f.

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	Only with 1/300-sec. setting:-	
	(c) Lug 7 of shutter drivering has excessive deflection in direction of arrow II in Figs. 10c & 10f. As a result, lug 7 will prematurely release arm 8a of locking lever 8 during the return movement of the shutter drive ring, this causing the mechanism to be locked before the synchro cocking lever reaches the lug 8d (for detailed explanation, refer to Item b).	(c) Correct position of lug 7 by bending in direction of arrow I in Figs. 10c & 10f.

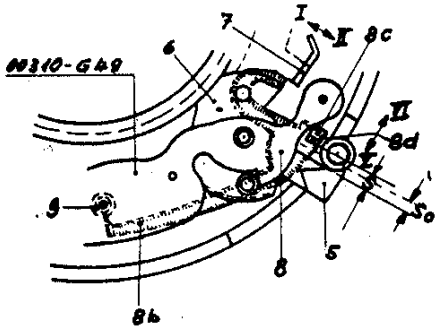


Fig. 10f
(Size 00 Shutter)

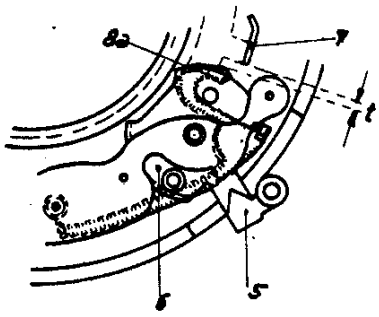


Fig. 10g
(Size 00 Shutter)

00310-G49
Delayed-Action Device

DELAYED ACTION AND SYNCHRONIZING DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(6) Shutter blades open upon delayed-action and synchronizing device being released.	With delayed-action and synchronizing device in cocked condition, distance t (Fig. 10g) is too large.	Reduce distance t, taking into consideration the types of trouble mentioned earlier.

NOTICE:- The type of trouble discussed in Item 6 of Section 4, "Delayed-Action Device" (Sheet No. 13) cannot occur in PRONTOR-SV shutters. On the other hand, the type of trouble explained in Item 7 (Sheet No. 13) may occur also in PRONTOR-SV shutters; for causes and corrective measures, refer to sheet No. 13.

7a. FLASH FIRING MECHANISM

GENERAL REMARKS

(1) Figures 11a and 11b illustrated the two hitherto produced types of flash firing mechanism used in Size 00 shutters, Fig. 11a showing an earlier design, while Fig. 11b shows the current production model. Fig. 11c illustrates the flash firing mechanism used in Size 0 shutters.

(2) In PRONTOR-SV shutters, contact is made at two different points (X- and M-contacts). The design of the X-contact is the same as that of the contact system described on Sheets No. 16 and 17, these sheets thus fully covering the PRONTOR-SV shutter.

The types of trouble discussed in the following paragraphs arise only in connection with the M-contact of the PRONTOR-SV shutter.

(3) In the case of Size 00 shutters, care should be taken to keep contact resistance as low as possible by providing for intimate contact between the arm 12 of the spring and the flange 13 of the flash fitting. In addition, the spring arms 14 and 15 are required to rest elastically against No. 2 contact lever (00295-U226 and 00310-U226, respectively).

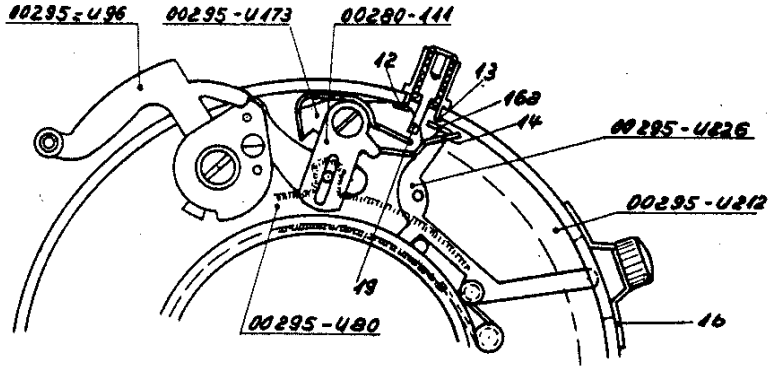


Fig. 11a
(Size 00 Shutter)
Earlier Design of Firing Mechanism

00295-U96	Cocking Lever	00280- 111	No. 1 Contact Lever
00295-U80	Shutter Drive Ring	00295-U226	No. 2 Contact Lever
00295-U173	Contact Plate	00295-U212	Synchro Switch Ring

FLASH FIRING MECHANISM, cont.

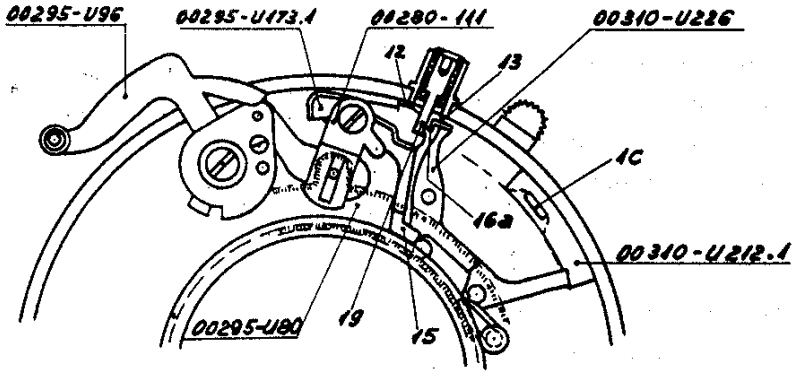


Fig. 11b
(Size 00 Shutter)
New Design of Firing Mechanism

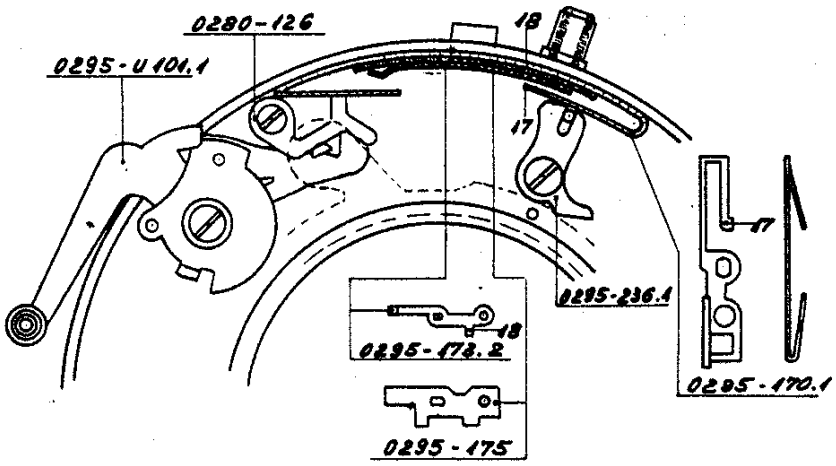


Fig. 11c
(Size 0 Shutter)

00295-U96	Cocking Lever	0280-126	No. 1 Contact Lever
00295-U80	Shutter Drive Ring	0295-U101.1	Cocking Lever
oo295-U173.1	Contact Plate	0295- 173.2	Contact Plate
00280-111	No. 1 Contact Lever	0295- 175	Insulating Plate
00310-U226	No. 2 Contact Lever	0295- 170.1	Contact Spring
00310-U212.1	Synchro Switch Ring	0295- 236.1	No. 2 Contact Lever

FLASH FIRING MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
	Size 0 Shutters:	
(1) Flash is not fired (assuming flash bulb and battery are in good working order).	(a) Gap between spring arm 17 and arm 18 is too large.	(a) Reduce gap by bending spring arm 17.
	Size 00 Shutters:	
	(b) Gap between arm 16a of contact lever and contact pin 19 is too large.	(b) Reduce gap by bending No. 2 contact lever.
	(c) No. 2 contact lever is retained by arm 1b or arm 1c, respectively, of synchro switch ring.	(c) Correct position of arm 1b or arm 1c by bending.
	(d) Plane of rotation of contact lever is not parallel with drawing plane so that contact lever fouls against base plate.	(d) Correct shape of contact lever by bending or install ne contact lever.
	Size 0 & 00 Shutter:	
	(e) Lug 7 of shutter drive ring has excessive deflection in direction of arrow III in Fig. 10c, the result being that distance t in Fig. 10gis too small to ensure contact-making at that moment at the latest when lug 7 strikes cam surface of segment 6.	(e) Correct position of lug 7 by bending in direction of arrow IV in Fig. 10c.

FLASH FIRING MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
(2) Contact is made during shutter cocking.	(a) Gap between contact points 17 and 18 or between contact 16a and contact pin 19 is too small.	(a) Increase gap by bending the respective parts.
	(b) Due to distortion of lug L of inner release lever (see Fig. 1 in Section "Cocking Mechanism") there is an excessive distance between the stop position of the shutter cocking lever and its detent position. As a result, the shutter drive ring is rotated a corresponding amount until lug L engages edge K of cocking lever, this causing No. 2 contact lever to be released for contact-making, i.e. to be forced against spring arm 17 which, in turn, is forced against arm 18.	(b) Correct position of lug L by bending.

8a. TIME SETTING MECHANISM

TROUBLE	CAUSE	CORRECTION
	Size 00 Shutters only:-	
(1) With delayed-action and synchronizing device uncocked, time setting ring cannot be set at "B" (see Section 4a, "Delayed-Action and Synchronizing Device", Item 5).	During a preceding shutter cycle during which the shutter had been set for 1/300 sec., the delayed-action and synchronizing device has failed partially or completely to perform the last portion of its cycle. As a result, the locking lever of the delayed-action device does not permit the time setting ring to be rotated in order to be set at its "B" position.	Refer to Section 4a, "Delayed-Action and Synchronizing Device", Item 5, Steps (b) & (c).

SECOND SUPPLEMENT

to

INSTRUCTIONS ON HOW TO REPAIR

GAUTHIER CAMERA SHUTTERS

- -

This supplement covers the fully synchronized

MODEL PRONTOR-SVS SHUTTER

CONTENTS

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:					Sheet No. 33

INTRODUCTORY REMARKS ON THE PRONTOR-SVS SHUTTER

(1) The PRONTOR-SVS shutter is a development of the PRONTOR-SV. Both the general design and the mode of operation of this new shutter closely resemble those of the PRONTOR-SV.

(2) The main difference between the PRONTOR-SVS and the PRONTOR-SV is to be seen in the fact that in the PRONTOR-SVS provision has been made for the cocking operation to cause the combined delayed-action device and synchronizer to be cocked at the same time.

(3) Also the PRONTOR-SVS has a synchro switch ring permitting the shutter to be selectively set for different types of exposure. However, in contrast to the PRONTOR-SV, in which this ring can be set at two different positions, the PRONTOR-SVS has a synchro switch ring which may be set at any of three different positions. The purpose of these three positions, which are marked "M", "X" and "V", respectively, is explained here below:

"M" = Setting for flash exposures using M-type flash bulbs with shutter speeds between 1/50 and 1/300 second;

"X" = Setting for electronic flash exposures using any desired shutter speed and for flash bulb exposures with a shutter speed of up to 1/25 second;

"V" = Setting for exposures to be timed by the delayed-action device, also in combination with electronic flash (up to 1/300 second) and flash bulbs (up to 1/25 second).

Where no flash exposure is intended, the synchro switch ring may be set at "X" or "M".

It is a special feature of the PRONTOR-SVS shutter that it permits -- also in its cocked condition -- any of its settings to be repeatedly changed as desired.

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	Lager Nr.	Geprüft			
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1a. COCKING MECHANISM

INTRODUCTORY REMARKS

(1) The PRONTOR-SVS shutter is cocked in the same manner as the other Gauthier shutters described earlier, i.e. either by means of the cocking lever projecting from the shutter casing or by means of the cokcing shaft extending through a hole in the back of the casing.

(2) (a) Simultaneous cocking of the shutter mechanism and the delayed-action device is provided for by a system of levers (Figs. 12a and 12b) comprising a cocking arm 1 and a cocking arm 2. The cocking arm 2 is pivoted about a pin 102 carried by the segment wheel 101 of the delayed action device, whereas the cocking lever co-operates with the cocking arm 1 through a bevelled pin 103 which is riveted to the cocking lever.

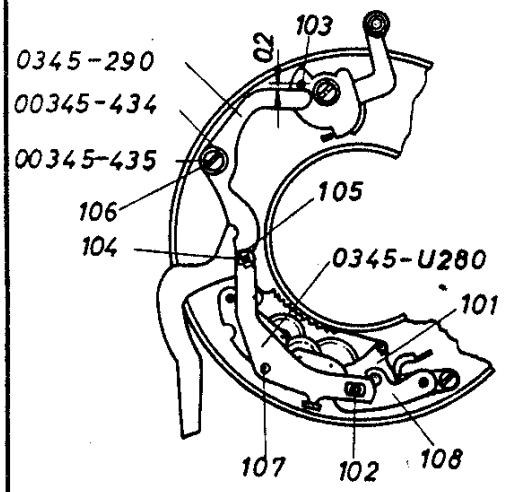

Fig. 12a
(Size 0 shutter)

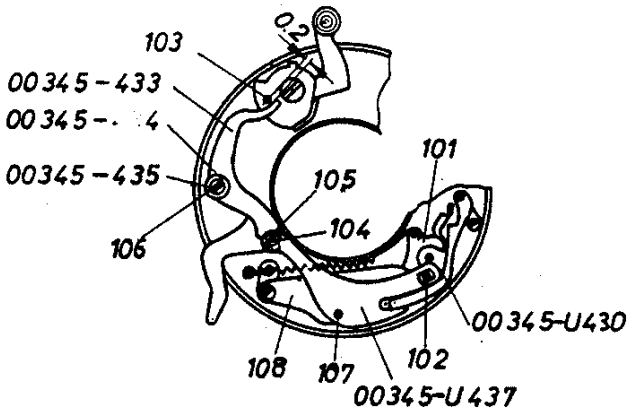

Fig. 12b
(Size 00 shutter)

0 345-290	cocking arm 1
0 345-U280	cocking arm 2
00345-434	cocking arm washer
00345-435	lug screw

00345-433	cocking arm 1
00345-U437	cocking arm 2
00345-434	cocking arm washer
00345-435	lug screw
00345-U430	supporting lever

(2) (b) The cocking arms 1 and 2, when incorporated, are interconnected by a pin-and-slot joint 104, 105.

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COCKING MECHANISM, cont.

(2) (c) The cocking arms 1 and 2 are supported as follows:

Cocking Arm 1

In size 0 and 00 shutters, the cocking arm 1 is pivoted about a pin 106 which is riveted to the base plate. In order to produce a spring action in that portion of the cocking arm which co-operates with the pin 103, the former is locked to pin 106 by means of a lug screw and a spring washer. When repairing the mechanism, be sure firmly to tighten the lug screw.

Important:

During a certain period of manufacture of size 00 shutters there was used, instead of the lug screw 00345-435 and the spring washer (cocking arm washer) 00345-434, only a screw having a higher head. When repairing such shutters, either again use the last-mentioned screw or use the screw 00345-435 in combination with the cocking arm washer 00345-434. Under no circumstances must this latter screw be used without the cocking arm washer.

Cocking Arm 2

In all shutter types, the cocking arm 2 carries a riveted axle pin 107 which projects into a bearing hole provided in the upper side plate 108 of the delayed-action device.

During an initial period of the manufacture of PRONTOR-SVS shutters, the cocking arm 2 was placed freely movable on the side plate 108 (see Figs. 12a and 12b) and was held in position by the time setting ring. In some of these shutters, cumulative assembly tolerances were compensated for by the insertion of shims between the cocking arm 2 and the time setting ring. Some of these shims are made of thin spring steel strips, while others consist of plastic material.

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COCKING MECHANISM, cont.

Where shutters of this type have to be repaired, with the existing delayed-action device being retained, the above-mentioned shims will again have to be placed in position. When it is intended to install another delayed-action device, it is first necessary to measure the distance between the upper side of the cocking arm and the upper edge of the surrounding wall (see Fig13). If this distance is found to be in excess of .2 mm (.008"), the shim should again be inserted.

In shutters of later production, the cocking arm 2 is held in position by securing means independent of the speed setting ring. For this purpose in size 0 shutters the cocking arm is riveted to the side plate 108. The connection between the cocking arm and the pin 102 on the segment wheel 101 is established by the cocking arm roller 0345-332 which has to be inserted through a circular aperture provided at the end of the oblong slot (see Fig. 12c).

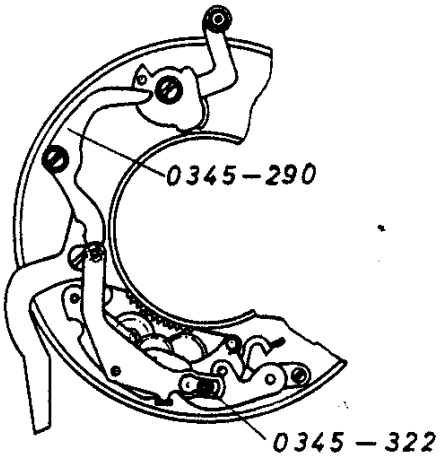

Fig. 12c
(Size 0 shutter)
0 345-322 cocking arm roller
0 345-290 cocking arm roller

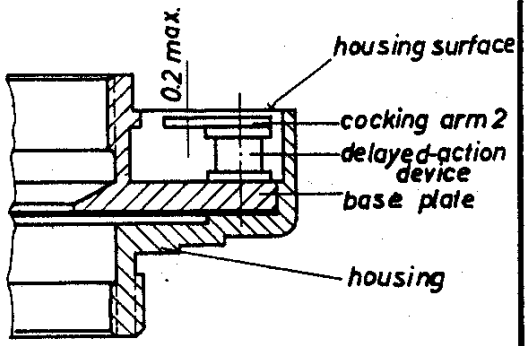

Fig. 13
(Size 0 and 00 shutter)

In the case of size 00 shutters, the cocking arm 2 can be removed from the side plate 108 also when the arm is not loosely fitted. In this case, the cocking arm is held in position either

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COCKING MECHANISM, cont.

by a screw 00345-429 which extends through a slot in the arm (see Fig. 12d) or by a rotatable interlocking rivet carried by the side plate 108 (see Fig. 12e).

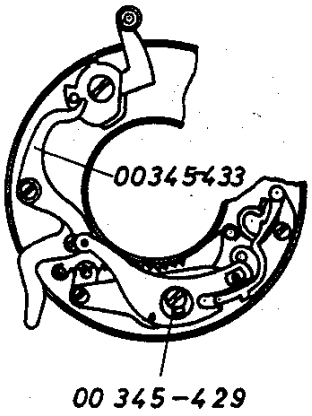

Fig. 12d
(Size 00 shutter)

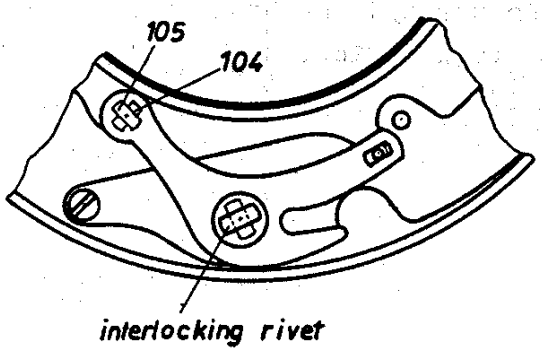

Fig. 12e
(Size 00 shutter)

00345-433 cocking arm 1
00345-429 screw for cocking arm 1

Be sure not to use any shims in the shutter mechanisms illustrated in Figs. 12c, 12d and 12e.

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COCKING MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
(1) Operation of cocking lever fails also to cock the synchronizer and delayed-action device.	(1) Cocking rivet 103 fails to drive cocking arm 1 for the following reasons:	
	(a) With shutter in released position, cocking arm 1 has its end on top of pin 103 rather than in front of the pin.	Bend cocking arm 2 in direction of arrow A in Fig.14 to produce a clearance of about .2 mm. (.008") between end of cocking arm 1 and pin 103.

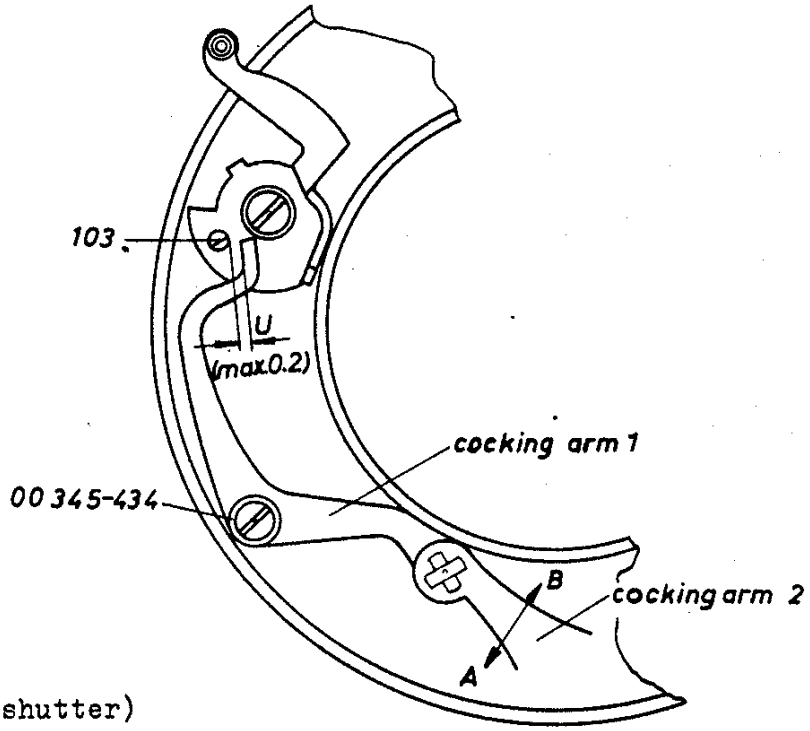

Fig. 14
(Size 0 and 00 shutter)

00345-434 cocking arm washer

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COCKING MECHANISM, cont.

TROUBLE	CAUSE	CORRECTION
	(b) Cocking arm washer 00345-434 has no tension so that pin 103 will only lift cocking arm 1 in an axial direction without rotating it.	Insert proper cocking arm washer 00345-434.
	(c) End of cocking arm 1 is bent upward.	Straighten cocking arm 1 until it is plain.
	(2) Only with shutters according to Figs. 12a and 12b: Slot 101 of cocking arm 2 is disengaged from pin 102 carried by segment wheel.	Measure distance indicated in Fig. 13 and, if necessary, insert a compensating shim.
(2) The synchronizer and delayed-action device will run down immediately after cocking.	See Trouble (1) (a) under Synchronizer and Delayed-Action Device.	

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4b. SYNCHRONIZER AND DELAYED-ACTION DEVICE

INTRODUCTORY REMARKS

In addition to the fact that the shutter itself is simultaneously cocked with the synchronizer and delayed-action device, these latter mechanisms of the PRONTOR-SVS shutter differ from those of the PRONTOR-SV as follows:

(1) Two screws (Figs. 15a and 15b) are used to secure the synchronizer and delayed-action device to the base plate. In the size 00 shutter, the screw 00345-443 also serves as a locking screw in the assembly of the shutter.

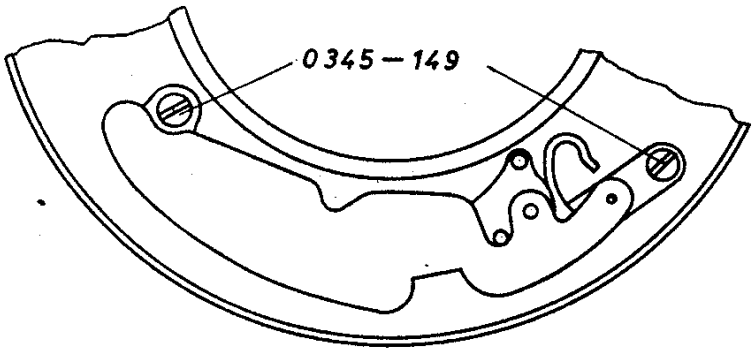

Fig. 15a
(Size 0 shutter)

0345-149
fixing screw for delayed action device

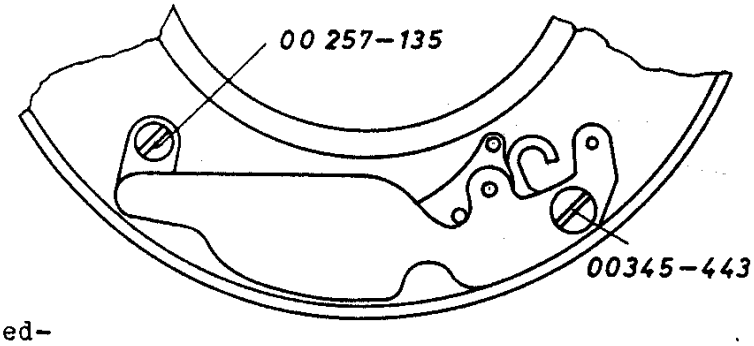

Fig. 15b
(Size 00 shutter)

00345-443
fixing screw for delayed-action device, long

00257-125
fixing screw for delayed-action device, short

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

(2) The drive spring of the PRONTOR-SVS synchronizer and delayed-action device is weaker than the corresponding spring of the PRONTOR-SV. Therefore, when removing and installing this spring, extreme care must be exercised not to distort the spring, as this would impair the dependability of the synchronizer and delayed-action device. Distorted springs must never be used again; use new springs instead.

(3) At the end of the cocking operation, the synchronizer and delayed-action device is locked by the locking lever 109 which then engages the locking pin 111 carried by first drive pinion 110 (see Figs. 16a and 16b).

In PRONTOR-SVS shutters, the upturned lug 112 of the drive ring serves to operate the locking lever in order to release the mechanism. In the course of time the design of the releasing arms of the locking levers was changed; the various shapes being indicated in dotted lines in Figs. 16a and 16b.

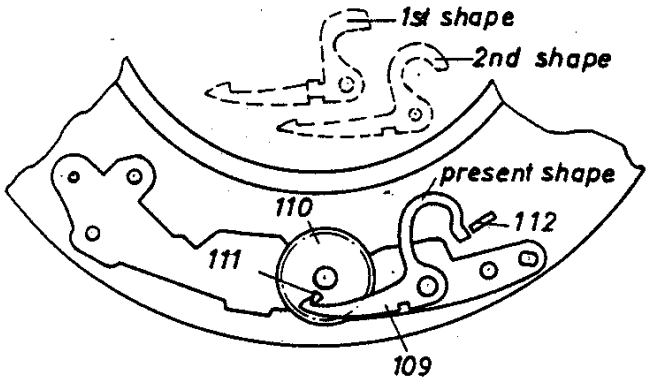

Fig. 16a
(Size 0 shutter)

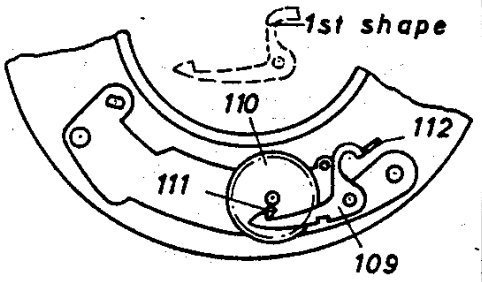

Fig. 16b
(Size 00 shutter)

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

(4) In the PRONTOR-SVS shutter, a supporting lever serves to retain the released driving ring during the running-down period of the synchronizer and delayed-action device, this lever being operated by the cocking arm 2. The arrangement of the supporting lever is different in Size 0 and Size 00 shutters, and different methods of holding this lever in position have been adopted in the course of time. The various arrangements are described in the following paragraphs.

Size 0 Shutter

The original arrangement of the supporting lever is shown in Fig. 17a, where the supporting lever is connected to the base plate by a screw. A second arrangement is shown in Fig. 17b, where the supporting lever is pivoted about a pin carried by the base plate. Later on, in connection with the adoption of the arrangement of the cocking arm illustrated in Fig. 12c, another change was made according to which the supporting lever is mounted on the lower side plate 113 as shown in Fig. 17c.

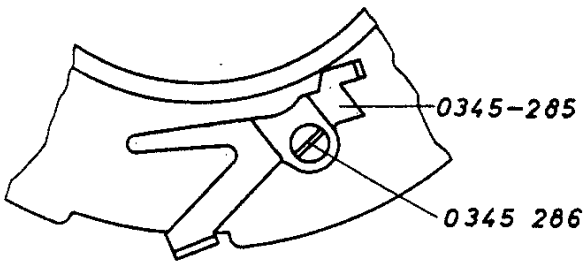

Fig. 17a
(Size 0 shutter)

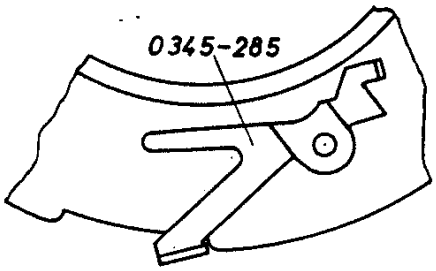

Fig. 17b
(Size 00 shutter)

0345-285 supporting lever
0345-286 supporting lever screw

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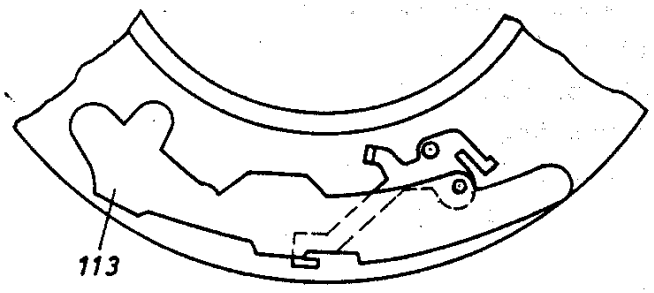
SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

Fig. 17c
(Size 0 shutter)



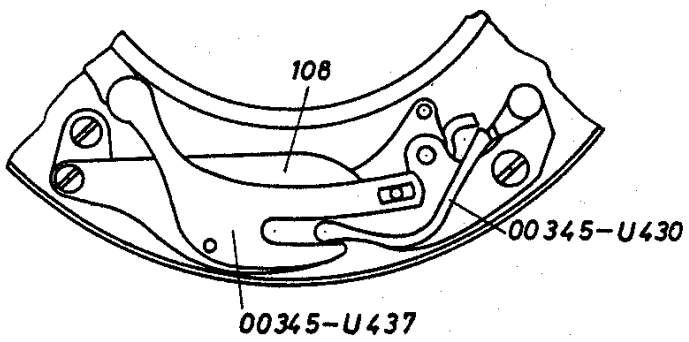
IMPORTANT:

The synchronizer and delayed-action device shown in Figs. 17a, 17b and 17c are not interchangeable. When ordering spare parts, please refer to the respective figures.

Size 00 Shutter

In size 00 shutters the supporting lever is carried by the upper side plate 108. Originally the supporting lever was mounted as shown in Fig. 17d, i.e. in the same manner as the cocking arm 2 (see Fig. 12b). What has been said about the cocking arm 2 in this respect applies in the proper sense for locking the supporting lever.

Fig. 17d
(Size 00 Shutter)



00345-U437
cocking arm 2

00345-U430
supporting lever

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

At a later time, when independent means were introduced to hold the cocking arm 2 in position, similar means were adopted for the supporting lever. According to this arrangement, the supporting lever is permanently attached to the side plate 108 as shown in Fig. 17e. The synchronizers and delayed-action devices illustrated in Figs. 17d and 17e are interchangeable.

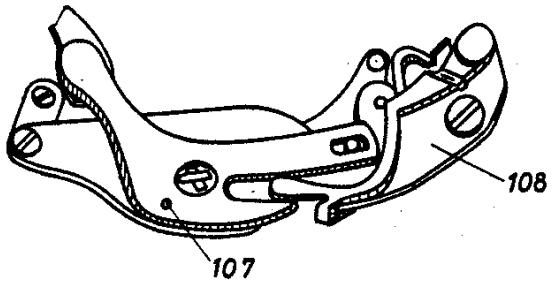

Fig. 17e
(Size 00 Shutter)

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(1) The synchronizer and delayed-action device will run down immediately after cocking	(a) Excessive distance U (Fig.14) between locking rivet 103 and cocking arm 1. As a result, the tensioning motion of the synchronizer and delayed-action device is so short that the locking lever 109 cannot engage the locking rivet 111 of the first pinion 110.	Bend the cocking arm 2 in the direction of arrow B in Fig. 14, Sheet 39, to obtain the prescribed distance U.
	(b) Already when in its rest position, lug 112 of the drive ring shifts the locking lever 109 into its released position.	With the release arm of the locking lever formed as shown in Figs. 16a and 16b, bend lug 112 in direction of arrow C in Fig. 18b. In all other cases, bend the release arm of the locking lever in direction of arrow D in Fig. 18a, b.

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(2) Whether the synchro switch ring is set at "V", "X" or "M", the shutter will not run down upon the release lever being operated, because the synchronizer and delayed-action device fails to run down.	(a) Lug 112 has been bent excessively in direction of arrow "E", so that it cannot at all or not properly shift the locking lever 109, the result being that the synchronizer and delayed-action device is not released.	Bend lug 112 in direction of arrow "F" in Figs. 18a and 18b.
	(b) Dirt has accumulated in synchronizer and delayed-action device.	Rinse mechanism in pure petrol (gasoline).

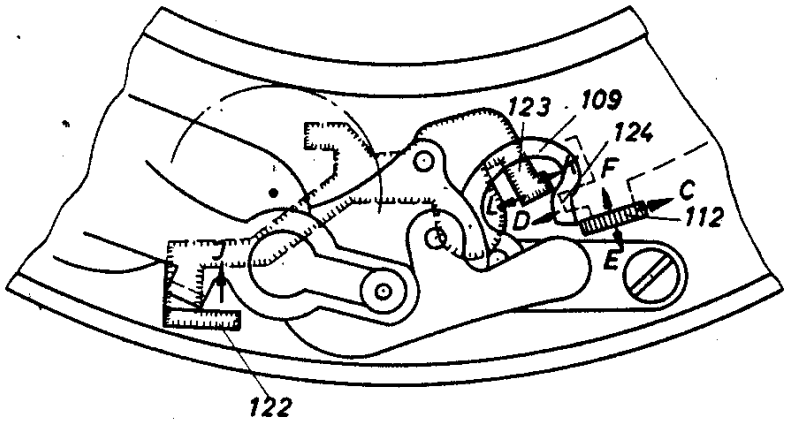

Fig. 18a
(Size 0 Shutter)

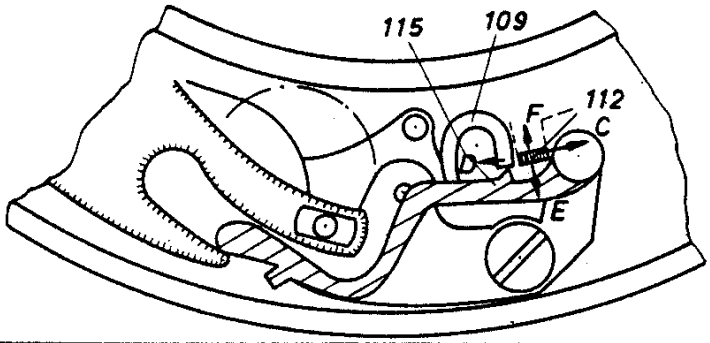

Fig. 18b
(Size 00 Shutter)

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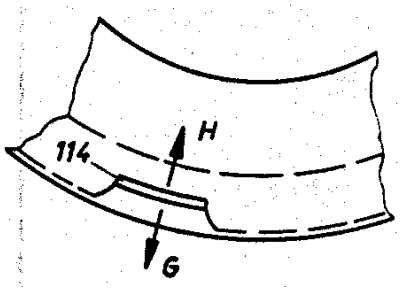
SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(3) When the synchro switch ring is set at "X" and "M", the shutter fails to run down upon the release being operated, whereas the delayed-action device and shutter mechanism will run down properly at "V".	Arm 114 has been excessively bent in direction of arrow "G" causing the change-over bridge to be unsufficiently rotated and the two mechanisms to be incompletely uncoupled; this will block the mechanism.	Bend arm 114 in direction of arrow "H" in Fig. 18c (i.e. vertical to drawing plane).  Fig. 18c (Size 0 and 00 Shutter)
(4) Shutter mechanism is not released after synchronizer and delayed-action device has run down.	(a) Mechanism has not run down completely.	(a) Rinse mechanism in pure petrol (gasoline). If this fails to correct the trouble, check the drive spring for proper condition. When spring is distorted, insert a new spring.

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	(b) Size 0 Shutters: The mechanism has completely run down, but the lug 123 of the supporting lever is bent excessively in the direction of arrow "L", so that the arresting with lug 124 on the drive ring is not released at all. Fig. 18a. To release the lug 124, the supporting lever would have to be swung farther than is permitted by the running-down movement of the synchronizer and delayed-action device. This causes the lug 124 of the drive ring to remain arrested by the lug 123 of the supporting lever.	Bend lug 123 of the supporting lever in the direction of arrow "K", or bend supporting lever arm 122 in the direction of arrow "J", resp. (Fig. 18a)

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
	(c) Size 00 Shutters: Mechanism has completely run down, however the lug 112 of the drive ring is bent excessively in the direction of arrow "E", or the supporting lever with its locking nose 115 is bent excessively in the direction of arrow "F" in Fig. 18b. To release the lug 112, the supporting lever would have to be swung farther than is permitted by the running down movement of the synchronizer and delayed-action device. This causes the lug 112 to remain arrested by the locking lug 115.	(c) Bend that portion of the supporting lever which carries the locking nose in the direction of arrow "E". (Fig. 18b).

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SYNCHRONIZER AND DELAYED-ACTION DEVICE, cont.

TROUBLE	CAUSE	CORRECTION
(5) Upon the release lever being operated, the synchronizer and delayed-action device will run down properly, but the shutter itself runs down at the same time, independent of the running down of the mechanism	(a) Size 0 Shutters: The lug 123 of the supporting lever is bent excessively in the direction of arrow "K" in Fig. 18a, this preventing the lug 124 of the drive ring from being arrested at all.	(a) Bend the lug 123 of the supporting lever in the direction of arrow "L".
	(b) Size 00 Shutters: The lug 112 of the drive ring is bent excessively in the direction of arrow "F", or the supporting lever with its locking nose 115 is bent excessively in the direction of arrow "E" in Fig. 18b, this preventing the lug 112 from being at all arrested by the locking nose 115.	(b) Bend the lug 112 in the direction of arrow "E", or bend that portion of the supporting lever which carries the locking nose 115 in the direction of arrow "F" in Fig. 18b.

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8b. TIME SETTING MECHANISM

(1) Instead of the original escapement mechanism used in PRONTOR-S and PRONTOR-SV shutters, a new escapement mechanism for the PRONTOR-SVS shutters size 0 has been developped in the meantime.

The new escapement mechanism, which has the stock number 0345-G20, is shown in plan view in Fig. 19. It will be seen that another escapement has been added to the earlier escapement mechanism, the additional escapement being controlled by the lever 116. A pin 117 carried by this lever co-operates with an additional control cam 118 of the time setting ring.

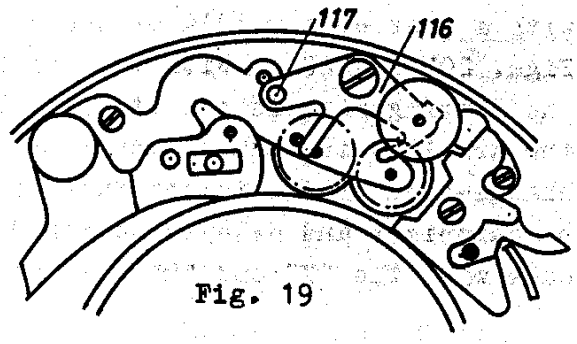

Fig. 19

The time setting ring is shown in Fig. 20a. The control cam 118 has two recesses 118a and 118b which receive the control pin 117 when the shutter is set for 1/10 second or 1 second, respectively. This causes the additional escapement to be rendered operative when one of these two settings is used.

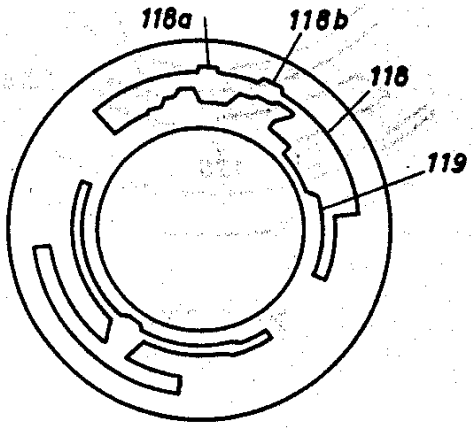

Fig. 20a

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TIME SETTING MECHANISM, cont.

As compared to the time setting ring of earlier design, the control cam 119 controlling the engagement of the anchor has been given a greater length. With the shutter set for 1/10 second, the new escapement will operate without the anchor coming into play; in the case of the earlier escapement, however, the 1/10 second setting was the first setting for which the anchor was rendered operative.

(2) The control cam 120 has been provided for the purpose of rendering the delayed-action device inoperative as soon as the shutter is set for bulb exposures. This control cam co-operates with a bent up arm 121a of the change-over bridge 121 (see Figs. 20b and 20c). With the synchro switch ring set a "V", when the setting ring is set at "B", the control cam 120 must influence the arm 121a in such a manner that the mechanism supported by the change-over bridge is separated from the remainder of the synchronizer and delayed-action device in the same way as is the case with the "X" and "M" settings.

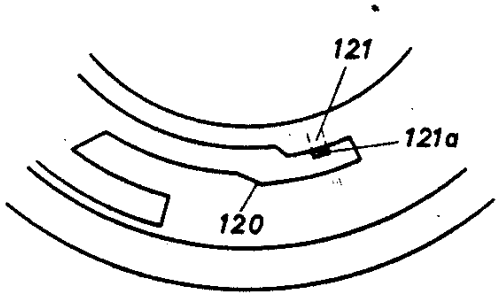

Fig. 20b

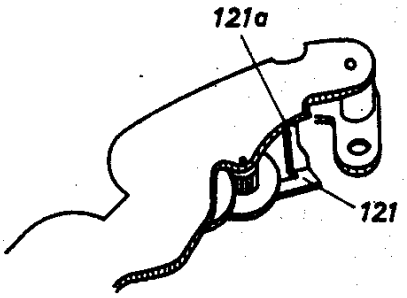

Fig. 20c

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THIRD SUPPLEMENT

to

INSTRUCTIONS ON HOW TO REPAIR

GAUTHIER CAMERA SHUTTERS

- -

This supplement covers the fully synchronized

MODEL PRONTOR-SVS SHUTTER

with

"Linearized" shutter speed and f-stop scales;
Shutter-speed/f-stop coupling; and
Exposure value scale.

- -

CONTENTS

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Introductory Remarks on the New PRONTOR-SVS Shutter

The new PRONTOR-SVS shutter is a development of the PRONTOR-SVS manufactured thus far. This new version of the well-known shutter model is characterized by the following features:-

1. COMPLETE FREEDOM OF SELECTION --- As has been the case with the earlier version of the PRONTOR-SVS, any of the adjustments, including that of the M-X-V selector lever, may be cancelled even after the shutter has been cocked.

2. BUILT-IN SELFTIMER -- While cocking the shutter will cause the selftimer to be wound simultaneously in the customary manner, the selector lever will only be caught in its "V" position after the shutter has been cocked.

3. AUTOMATIC INDICATION OF SELFTIMER EXPOSURES -- On completion of a selftimer exposure, the selector lever will be automatically returned from "V" to "X".

4. SHUTTER-SPEED/F-STOP COUPLING -- In size 00 shutters, the shutter speed setting ring is normally coupled to the diaphragm setting ring. If it is intended to set the shutter speed and f-stop separately, it is necessary to depress the coupling lever.

Size 0 shutters have a shutter-speed/f-stop coupling that can be selectively engaged and disengaged; in other words, the coupling will remain either engaged or disengaged after the coupling lever has been set at the desired position and left in that position.

5. EXPOSURE VALUE SCALE -- The exposure value scale (red numerals) is provided either on the f-stop or shutter speed setting ring. The desired exposure value is selected by setting the index mark provided on the respective other ring opposite the desired value.

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1b. Cocking Mechanism

After size 0 shutters had been manufactured for several months, it became necessary, due to difficulties arising from material properties, to modify the cocking spring assembly.

The modified assembly is characterized by the fact that the lower extension of the bearing sleeve mounted on the cocking lever is now omitted, and that the cocking lever 301, when assembled in position, rests on a roller 0345-437 which is surrounded by the cocking lever spring 0475-147.

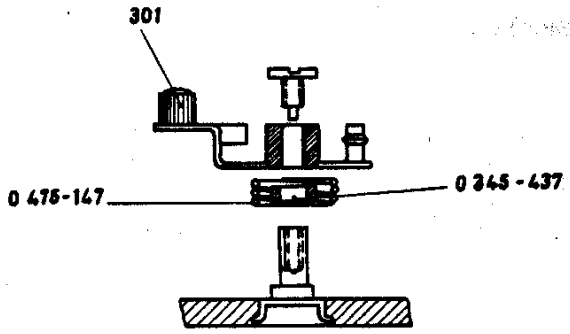

Fig. 1
Exploded side view of cocking lever spring assembly
0345-437 - Roller
0475-147 - Cocking Lever Spring

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2a. Release Mechanism

In the new PRONTOR-SVS model (size 0), the finger-operated release lever, in addition to its function of releasing the shutter, has the function of unlocking the change-over bridge member 210 (see Fig. 11, page 64) of the selftimer.

Further details on this point as well as on an error likely to occur during repair work, i.e.

"After the shutter is released, the release lever will not return to its original position"

will be found in Sheets 63, 64 and 71 of Section 4c. (Selftimer and Flash synchronizer).

3a. Escapement Mechanism

NOTE: For sizes 00 and 0 of the new PRONTOR-SVS having a linear shutter speed scale, we have developed new escapements which are dealt with in detail in the following sheets.

1. Size 00 Shutter

a. The primary feature of the new escapement is the fact that two different escapement levers are provided for cooperation with the star wheel, these levers being selectively engageable as described in Sheets 81 and 82 (Shutter Speed Setting Mechanism).

b. During the initial period of approximately twelve months, during which the new shutters were made, the escapement 00381-G20 was used.

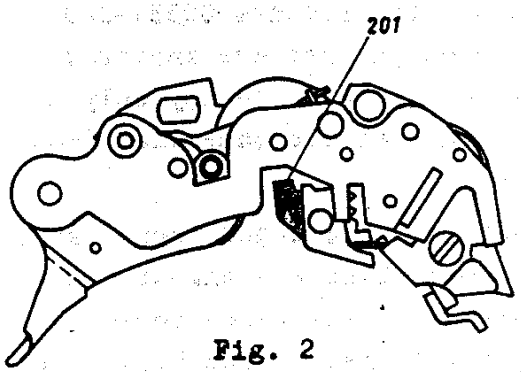

Fig. 2
Plan View of Escapements 00381-G20 and 00475-G20

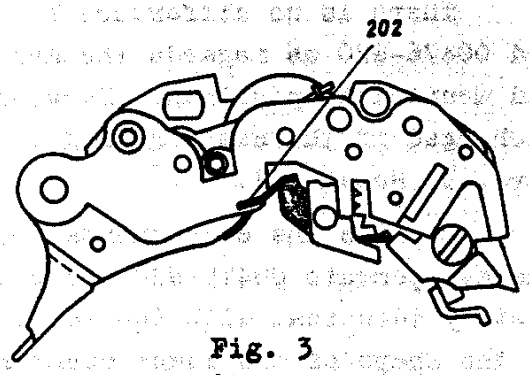

Fig. 3
Plan View of Escapements 00475-G20.1 & 00476-G20

c. In the case of the escapement 00381-G20 there existed the risk of one or both of the two levers could be bent out of shape by improper handling of the shutter, i.e. by changing the position of the speed setting ring during the running-down of the shutter (only possible during playful tampering). In order to eliminate this source of trouble, the escapement 00381-G20 has been replaced by the escapement 00476-G20 which includes a modified speed setting ring as explained in Sheet 84 (Shutter Speed Setting Mechanism).

These two escapements differ primarily in that in the escapement 00476-G20 the arm of the smaller lever has been given a greater length. In Figs. 2 to 5, the lever of the escapement 00381-G20

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Escapement Mechanism, cont.

is identified by the reference number 201, whereas that of the escapement 00476-G20 is identified by the reference number 202. In the case of escapement 00476-G20, if this is fitted with the appropriate setting ring, it is now possible to operate the setting ring at random, even while the shutter is operating, without any risk of damaging the escapement levers.

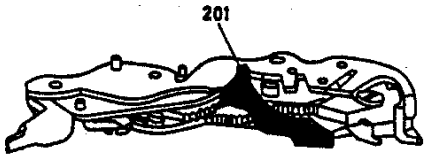

Fig. 4
Perspective View of Escapements 00381-G20 & 00475-G20

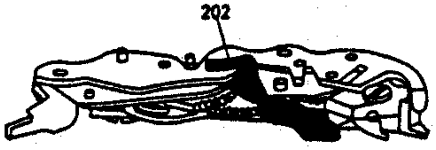

Fig. 5
Perspective View of Escapements 00475-G20.1 & 00476-G20

d. Important Hints

1. There is no difference between the escapements 00381-G20 and 00476-G20 as regards the manner in which they are inserted and mounted in position. However, these escapements may only be exchanged if the setting ring is exchanged at the same time (see Para. 3, Sheet 60).

2. Besides the escapements 00381-G20 and 00476-G20 there exist the escapements 00475-G20 and 00475-G20.1 which are almost completely identical with the former, the only difference residing in the shape of the lower mounting plate (Figs. 5a and 5b). The escapements 00381-G20 and 00476-G20 are used in all shutter models having a flash contact terminal on their rear side, whereas the escapements 00475-G20 and 00475-G20.1 are used in shutters having a contact nipple on their periphery.

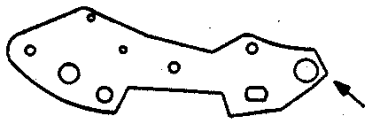

Fig. 5a
Plan View of Lower Mounting Plate of Escapements 00476-G20 and 00381-G20

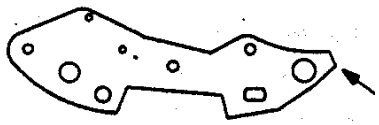

Fig. 5b
Plan View of Lower Mounting Plate of Escapements 00475-G20.1 and 00475-G20

The portions in which these two plates differ is indicated by arrows in the above diagrams.

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Escapement Mechanism, cont.

3. In view of Para. D.1., Sheet 59, and in order to ensure in a simple manner that the proper setting ring will be supplied, repair shops are herewith requested, whenever ordering an escapement 00475-G20.1 or 00476-G20 as a replacement, also to send in the associated setting ring.

2. Size 0 Shutter

a. The main feature of this new model is the fact that it has two separate lever escapements.

b. During a first period of manufacture which lasted for more than one year, the escapement 0475-G20 was used. A variety of styles of this escapement were used; they can be distinguished by the different appearance of the parts of the lever escapement arranged on the upper plate. These differences result from the fact that some parts are black-finished, while others are chrome-plated or made of bronze. All of these escapements are interchangeable at random. The mode of operation of the escapement is described on Sheet 85 (Shutter Speed setting Mechanism).

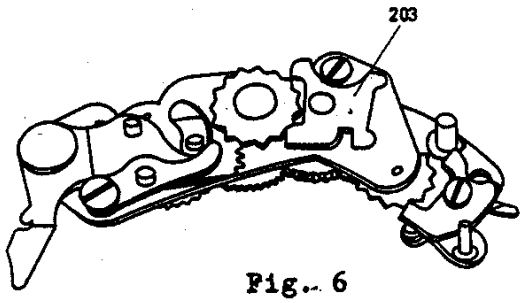

Fig. 6
Plan View of Escapement 0475-G20

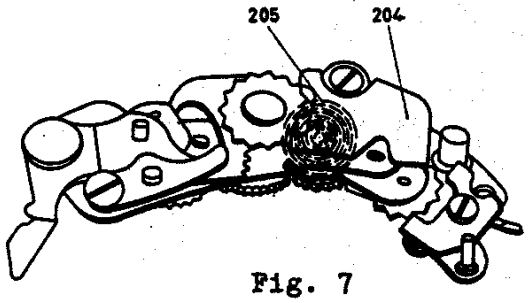

Fig. 7
Plan View of Escapement 0475-G20.1

c. In order to permit of easier adjustment of the various shutter speeds, the escapement 0475-G20 shown in Fig. 6 has been replaced by the escapement 0475-G20.1 shown in Fig. 7. The latter differs from the former in that the escapement lever mounted on the upper plate is of different design and that a spiral return spring 205 has been provided between the upper plate of the movement and the plate carrying the upper escapement lever.

Escapement Mechanism, cont.

In Figs. 6 and 7, the levers of the escapements 0475-G20 and 0475-G20.1 are respectively indicated by the reference numbers 203 and 204.

d. Important: The two escapements 0475-G20 and 0475-G20.1 are fully interchangeable in the shutters.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 61

4c. Selftimer and Flash Synchronizer

NOTE: The new PRONTOR-SVS, which is available in two sizes, is fitted with a redesigned selftimer which is described below.

1. Size 00 Shutter

a. The new selftimer of the PRONTOR-SVS differs from its forerunner in that an additional lever is provided on the under side of the lower mounting plate. This lever, which is indicated by the reference numeral 206 in Fig. 8, is in positive engagement with the change-over bridge member 207.

b. The lever 206 is arranged to be operated by a control pin 208 (Fig. 9) carried by the drive ring in such a manner that, with the shutter inoperative, the change-over bridge 207 is also inoperative. During its short travel from its rest position up to the point of release, the pin 208 will unlock the lever 206, so that, with the change-over ring set at "V", the disengageable gear wheel 302 carried by the change-over bridge will be brought into mesh with the gear wheel 303 which is operatively connected with the remainder of the mechanism. Fig. 9 illustrates the proper position of the parts involved, i.e. the complete engagement between the gears 302 and 303 immediately before the movement is released by the locking lever 109.

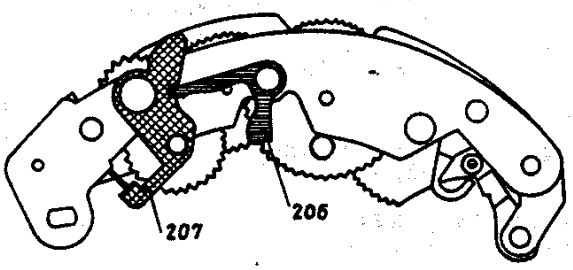

Fig. 8
Selftimer 00375-G49
Underneath View of
Lower Plate

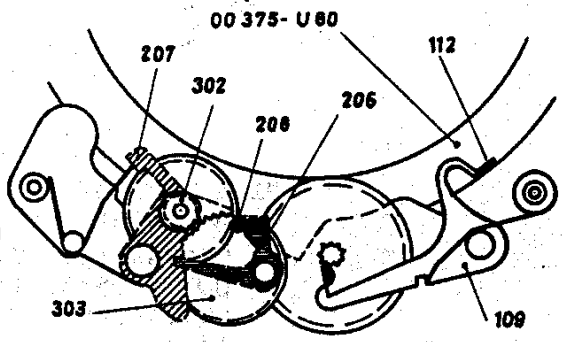

Fig. 9
Selftimer 00375-G49
Position immediately
before Release

00375-U80: Drive Ring
112: Lug on Drive Ring
109: Locking Lever (see p.42)

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H.
	Lager Nr.	Geprüft			Calmbach a.d. Enz
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Selftimer and Flash synchronizer, cont.

With the settings "X" or "M", however, the cooperation between the control pin 208 and the lever 206 is of no consequence, as in these cases the lug 414 on the change-over ring (see Sheet 48) will have disengaged the change-over bridge.

c. The new selftimer 00375-G49 is <u>not</u> interchangeable with the selftimer 00345-G49 of earlier design.

d. Arranged on the upper plate of the selftimer is a two-armed lever 00375-U543 which serves as a detent keeping the shutter speed setting ring in its respective definite position (for details on the functioning of this lever, refer to Sheet 84, Shutter Speed Setting Mechanism). The detent lever 00375-U543 is pivoted on the trunnion screw 00375-443 which also serves to hold the selftimer mechanism in position. The lever 00375-U543 is supported from the wall of the shutter casing by the spring 00375-546.

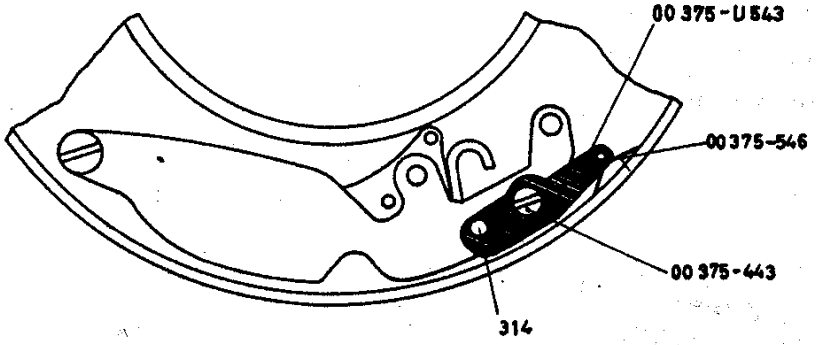

Fig. 10
Plan View of Selftimer Upper Plate
with Detent Lever 00375-U543

00375-443: Trunnion screw
00375-U543: Detent Lever
00375-546: Spring
314: Rivet on Detent Lever

<u>2. Size 0 Shutter</u>

a. The new selftimer differs from the selftimer of earlier design by the provision of an additional lever 209 (Fig. 11) on the under side of the lower carrier plate. This lever, which funo-

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 63

Selftimer and Flash synchronizer, cont.

tions as a locking lever, cooperates with the change-over bridge 210 on the one hand and with the lug 211a of the release lever on the other (see Figs. 12 and 13).

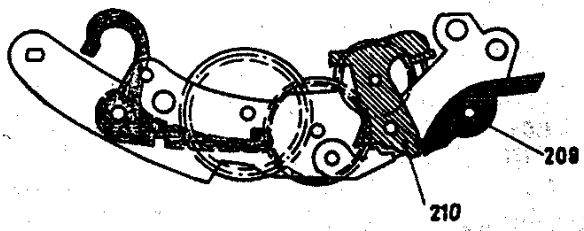

Fig. 11
Plan View of Lower Plate
of Selftimer 0475-G54

b. Lever 209 cooperates with the change-over bridge and the release lever in the following manner: Upon the release lever 211 being depressed, its arm 211a will swing the locking lever 209 round, thus releasing the change-over bridge (Fig. 12).

With the shutter in its "M" or "X" position, this will be of no consequence, the lug 114 (see Sheet 48) of the change-over ring keeping the change-over bridge disengaged, whereas in the "V" position the pinion 304 carried by the change-over bridge will be brought into mesh with the first gear wheel 305 of the remaining mechanism under the influence of the changeover-bridge spring.

As soon as the drive ring, during its shutter opening movement following the running-down of the selftimer, reaches a position in which the shutter blades are fully open, the lug 212 carried by the drive ring will strike the arm 210a of the change-over bridge, swinging the bridge around so that the latter can again be locked by the locking lever 209 engaging the nose 210b of the bridge member.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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Selftimer and Flash Synchronizer, cont.

d. The new selftimer 0475-G54 is <u>not</u> interchangeable with any of the selftimers of earlier design.

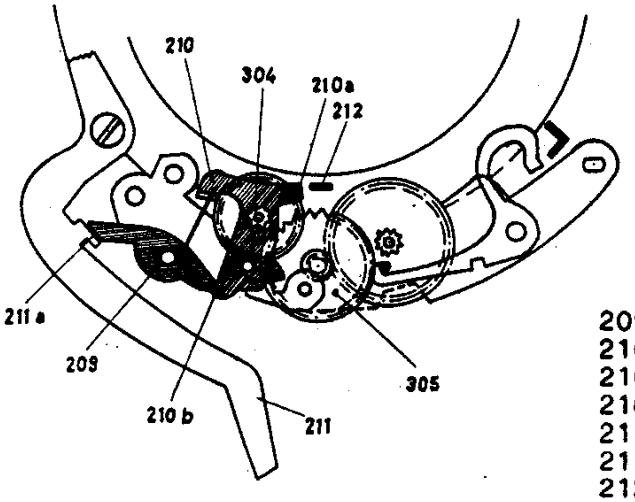


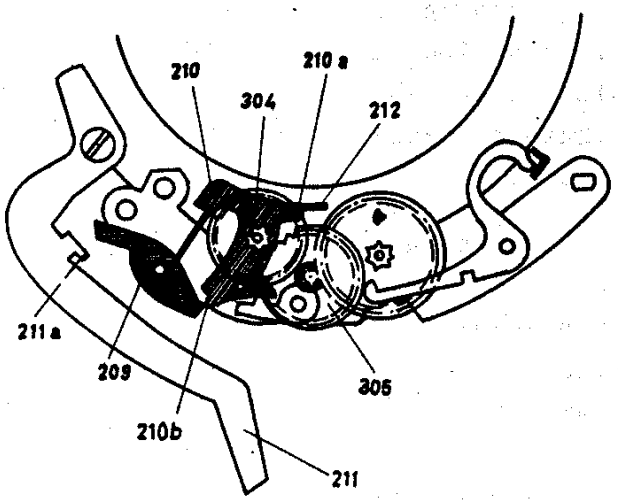
Fig. 12

Plan View of Selftimer with change-over bridge still locked in position

209	Locking Lever
210	Change-Over Bridge
210a	Change-Over Bridge Arm
210b	Change-Over Bridge Nose
211	Release Lever
211a	Release Lever Lug
212	Drive Ring Lug
304	Disengageable Pinion
305	Gear Wheel

Fig. 13

Plan View of Selftimer Iug 212 is just striking arm 210a of change-over bridge so that the latter is locked in position by lever 209 engaging nose 210b of change-over bridge.



Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G. m. b. H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 65

Selftimer and Flash Synchronizer, cont.

3. A Special Feature

of the new PRONTOR-SVS is to be seen in the fact that the selector lever will be automatically returned from "V" to "X" upon a selftimer exposure being completed. This automatic resetting operation is effected as follows:-

a. Size 00 Shutter

The spring 00475-541 (see Fig. 14), which, while housed in the shutter casing, engages the change-over ring tends to hold the latter in its "X" position.

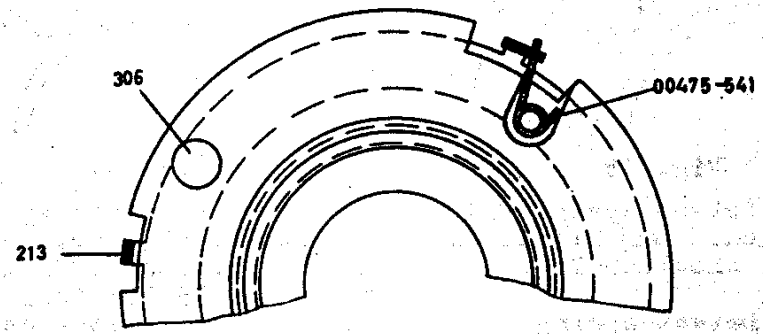


Fig. 14

00475-541 Spring
306. Cocking Lever Pivot

Cocking the shutter will cause the lug of the cocking lever to release the detent spring 00475-538. The latter cooperates with an upturned lug 213 on the change-over ring in such a manner that, when the change-over ring is moved from "X" to "V" with the shutter cocked, a shoulder 214 (Fig. 15) provided in the spring is engaged with the rear face of lug 213 so as to retain the change-over ring in its "V" position against the action of spring 00475-541. Upon the exposure being completed, the cocking lever will return to its original position, swinging the free arm of the spring towards the wall of the shutter casing, thus causing the lug 213 of the change-over ring to be disengaged from the shoulder of the detent spring, so that the spring 00475-541 can return the change-over ring to its "X" position.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 66

Selftimer and Flash synchronizer, cont.

With the shutter in its non-cocked condition, the detent spring rests against the wall of the shutter casing. To ensure proper engagement, there should be a clearance of approximately 0.1 mm. or .004" between the offset portion of the spring 00475-538 and the wall of the shutter casing (see Fig. 16).

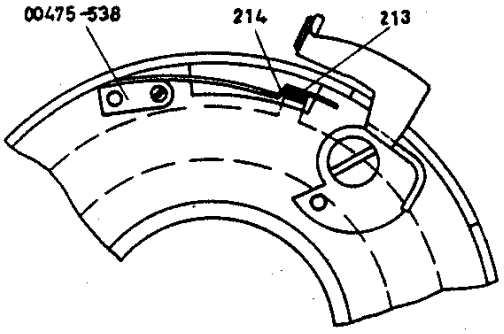


Fig. 15

Position of detent spring with shutter cocked. Lug 213 is engaged behind shoulder 214.

00475-538 Detent Spring

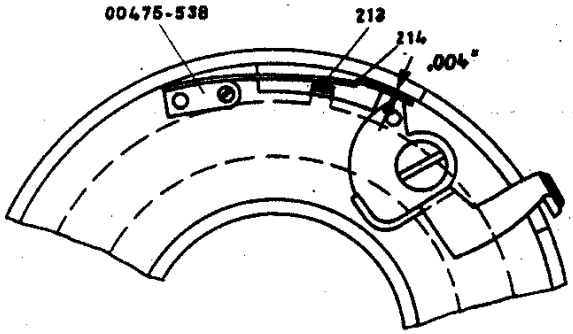


Fig. 16

Position of detent spring with non-cocked shutter. The point of the cocking lever urges the spring 00475-538 towards the wall of the shutter casing.

b. Size 0 Shutter

In size 0 shutters, a detent lever 0475-386 is employed instead of a detent spring. This lever is engaged by the free end of the cocking lever spring, so that the long arm of the lever, with the shutter cocked, is urged against an upstanding pin 106 as shown in Fig. 19. With the shutter uncocked, however, the bevelled pin carried by the cocking lever engages the short arm of the detent lever, so that the long arm of the lever is swung away from the pin against the action of the cocking lever spring (see Fig. 18). The automatic return from "V" to "X" is effected by a spring 0475-375 (Fig. 17) provided in the shutter casing and arranged to engage the change-over ring so as to tend to retain the ring in its "X" position.

The change-over ring carries an upturned lug 213 having a slot in which the nose 215 of the detent lever 0475-386 is engaged upon the shutter being cocked and the change-over ring being set at "V".

Selftimer and Flash Synchronizer, cont.

Upon completion of an exposure, the cocking lever will return to its original position, urging its pin against the detent lever and thus urging the latter away from the pin 106 against the action of the spring (see Fig. 18). This causes the nose 215 to leave the slot in lug 213, so that the change-over ring is free to be returned to its "X" position by spring 0475-375.

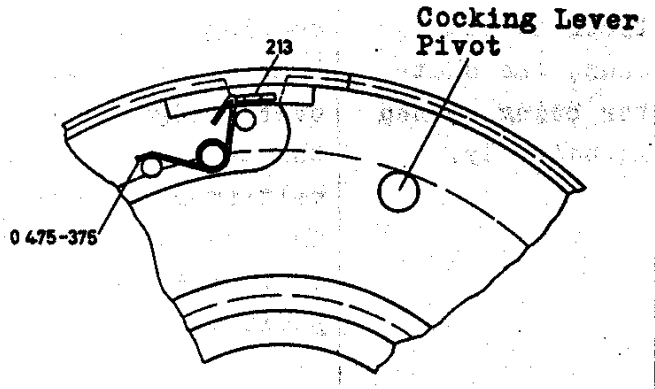


Fig. 17
Plan View of Arrangement of Spring 0475-375

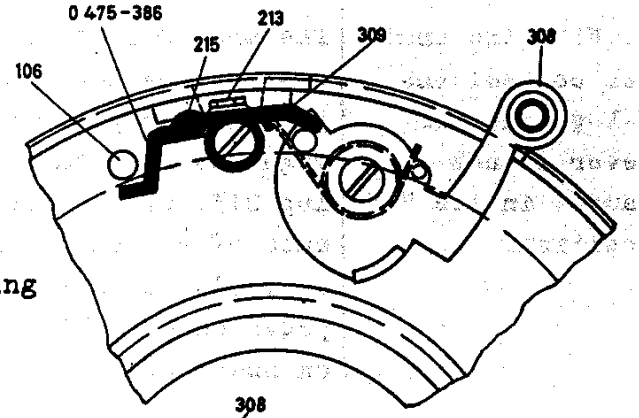


Fig. 18
Shutter Uncocked

0475-386	"V" Detent Lever
308	Cocking Lever
309	Cocking Lever Spring

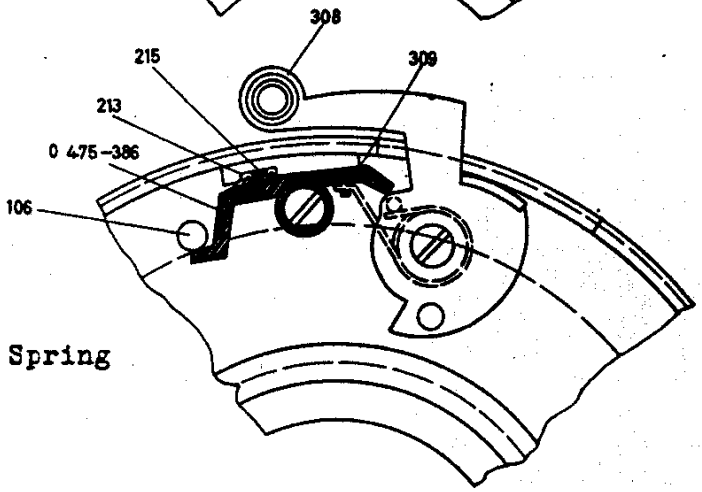


Fig. 19
Shutter Cocked and in "V" Position

0475-386	"V" Detent Lever
308	Cocking Lever
309	Cocking Lever Spring

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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Selftimer and Flash Synchronizer, cont.

SIZE 00 SHUTTER

TROUBLE	CAUSE	CORRECTION
1. With shutter in "V" position, depressing the release will not cause the selftimer to run down, the shutter being opened immediately.	The teeth of the hollow pinion 302 of change-over bridge 207 come too late into mesh with the driving gear. Thus the cocking lever is released before the change-over bridge has coupled the two sections of the selftimer. Therefore, the shutter operates as if in the "X" or "M" position.	Provide for shutter to operate as described in Para. 1b on Sheet 62, i.e. in such a manner that the hollow pinion 302 and the gear wheel 303 are in full mesh before locking lever 109 releases the movement.
2. With the shutter cocked, the M-X-V selector lever is not caught in its "V" position.	The shoulder 214 of detent spring 00475-538 does not properly engage the rear face of lug 213, as the clearance of approx. .1 mm. or .004" has not been provided (cf. Fig. 16 on Sheet 67).	Provide for clearance of approx. .1 mm. or .004" between detent spring 00475-538 and inner periphery of shutter casing wall.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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Selftimer and Flash Synchronizer, cont.

SIZE 00 SHUTTER

TROUBLE	CAUSE	CORRECTION
3. After the shutter has been released in its "V" position, the M-X-V selector lever will not return to its "X" position.	The detent spring 00475-538 is prevented by lug 213 to return to its original position.	Para. 2 on the preceding sheet is applicable.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 70

Selftimer and Flash Synchronizer, cont.

SIZE 0 SHUTTER

TROUBLE	CAUSE	CORRECTION
1. Upon the shutter being released, the release lever will <u>not</u> return to its original position.	Upon the release lever being depressed, its nose 211a jams against lever 209.	Bend nose 211a for proper cooperation with lever 209 in such a manner that the latter has not yet reached its <u>extreme position</u> when release lever 211 has been depressed as far as it will go; a sufficient safety margin for this condition to be satisfied is provided if it is possible, using a pair of tweezers, to move lever 209 by its rivet 209a for an extra 0.2 mm. or .008" (see Fig. 19a).
2. With the shutter cocked, the M-X-V selector lever is <u>not</u> caught in its "V" position.	Nose B of "V" position detent lever 0475-386 fails completely or partially to engage in the rectangular notch of lug 213 (see Fig. 19b).	Bend extension C (Fig. 19b) of detent lever 0475-386 in such a manner that with the lever engaging the upstanding pin 106 the nose B of the lever engages in the notch of lug 213 to a sufficient depth,

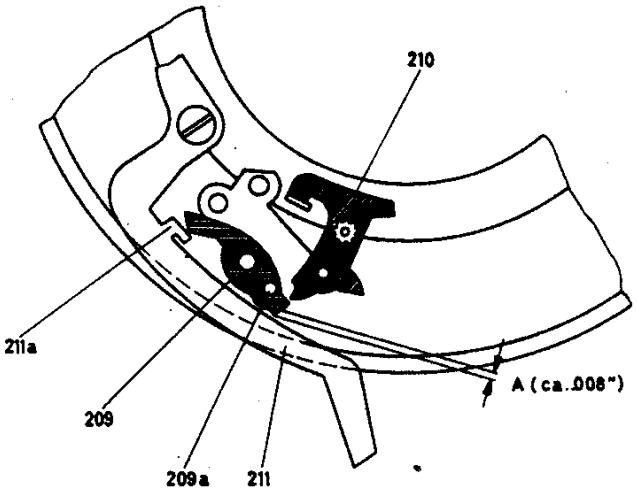

Fig. 19a
Release lever 211 has been depressed as far as it will go, but lever 209 has not yet reached its extreme position.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G. m. b. H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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Selftimer and Flash synchronizer, cont.

SIZE 0 SHUTTER

TROUBLE	CAUSE	CORRECTION
		but not so deep as to impede the return movement of lug 213.

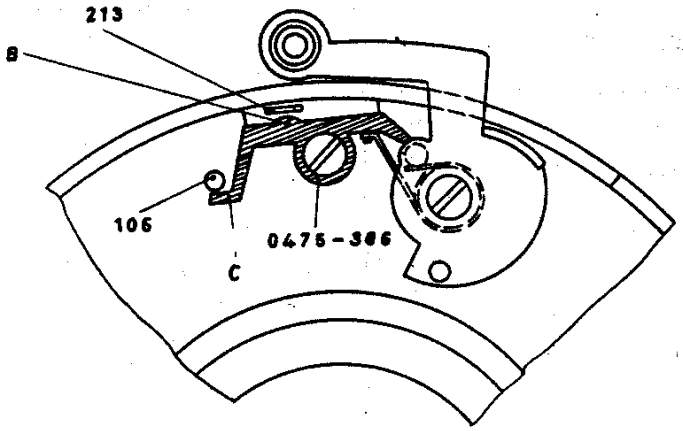


Fig. 19b
Nose B of detent lever 0475-386 cannot engage in the slot of lug 213, as the extension C of the detent lever comes too early into contact with the upstanding pin 106.

3. With shutter in "V" position, depressing the release will not cause the selftimer to run down, the shutter being opened immediately.	Due to excessive lost motion D (Fig. 19c) between nose 211a and lever 209 at the moment the release lever 211 is depressed, it is not until the release of the cocking lever and hence the selftimer that the change-over bridge 210 is released. Thus, the front section of the selftimer (synchronizer) will have run down before the change-over bridge has coupled the two sections of the	Bend nose 211a of release lever 211 to provide for proper functioning, i.e. in such a manner that the change-over bridge 210 is unlocked before the cocking lever is released.

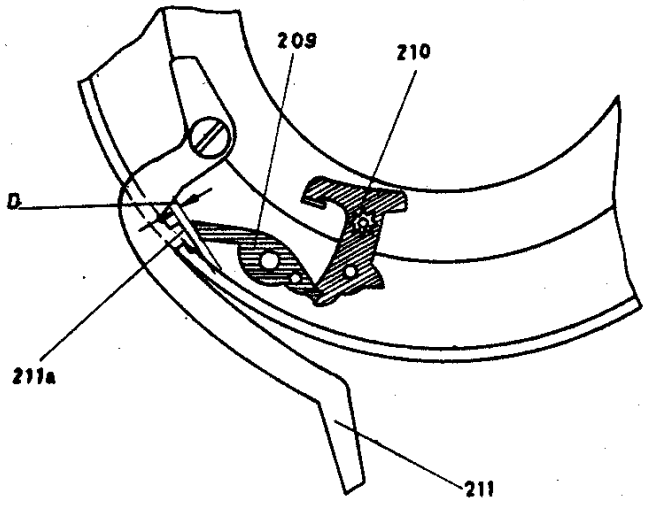
Selftimer and Flash Synchronizer, cont.

SIZE 0 SHUTTER

TROUBLE	CAUSE	CORRECTION
	selftimer. Therefore, the mechanism will operate in the same manner as in its "X" or "M" position.	

Fig. 19c

There exists an excessive lost motion D between nose 211a and locking lever 209.



Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Leger Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 73

5a. Shutter Blade system

1. For use in Size 0 PRONTOR-SVS shutters we have developed reinforced shutter blades. Shutters fitted with these reinforced blades bearing the number 0475-U130 can be identified in general by the fact that the serrations provided on the periphery of the shutter casing are interrupted, as shown in Fig. 20, by a central plain strip 216 or by the fact that the periphery of the casing shows only a single groove.

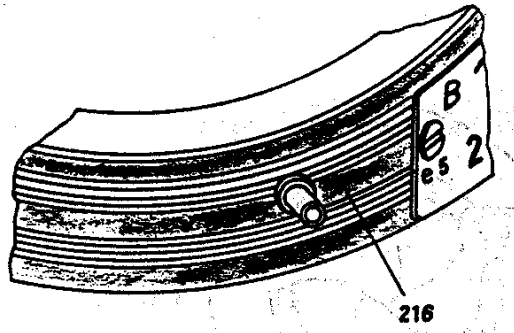


Fig. 20
Fragmentary View of Periphery of Shutter Casing showing Plain Strip between Grooves

Another distinguishing feature of all of these shutters, including those having no peripheral grooves, is a circular groove provided on top of the mounting plate as shown at 217 in Fig. 21.

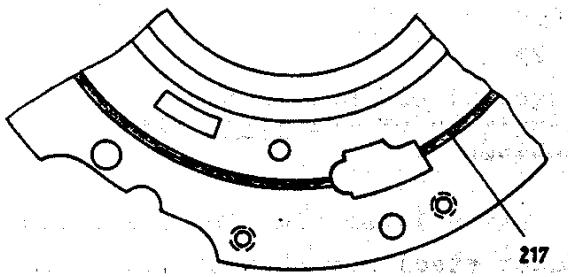


Fig. 21
Plan View of Mounting Plate Upper Side with Identification Groove 217.

2. The shutter blades are reinforced with a plate P surrounding the pivot hole and riveted in position (see Fig. 22). The fact should be noted that in four blades the reinforcing plate is on the upper side, whereas in the fifth blade it is on the under side. Please, be sure to order four blades 0475-U130 and one blade 0475-U130a.

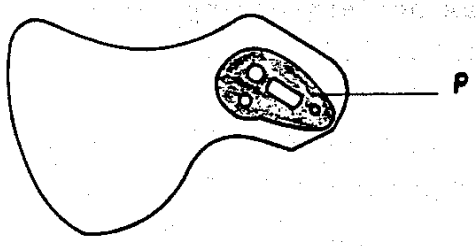


Fig. 22
Plan View of Blade 0475-U130

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
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Shutter Blade System, cont.

Fig. 23 shows the position of the fifth shutter blade in its assembled position. With the shutter viewed in the direction of its axis, this blade is nearest the diaphragm cover plate.

Another feature indicating the proper position of the fifth blade is the milled recess 218 (Fig. 24) of large diameter surrounding the pivot screw of the fifth blade.

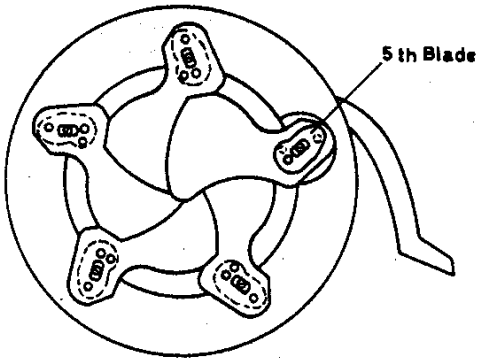


Fig. 23
Arrangement of Shutter Blades, particularly of the Fifth Blade 0475-U130a

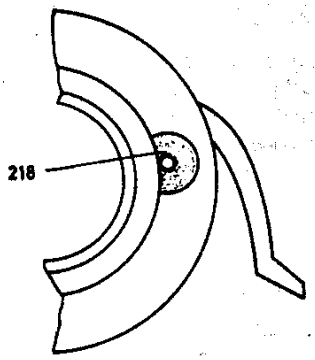
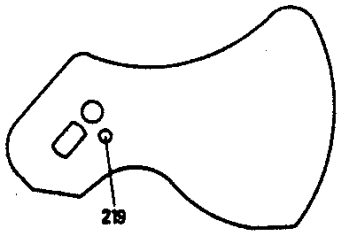


Fig. 24
The Large-Diameter Milled Recess surrounding the Pivot Screw of the Fifth Blade

3. At a later time the availability of a more suitable grade of sheet steel for shutter blades made it possible to dispense with the reinforcing plates 0475-334. The shutter blades made of this new material and having no reinforcing plates are clearly identified by an extra hole 219 as shown in Fig. 25.

Fig. 25
Shutter Blade of New Design having no Reinforcing Plate
Stock No. 0475-130.1



Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 75

Shutter Blade system, cont.

4. **IMPORTANT:** Please note the fact that the reinforced shutter blades 0475-U130 are not interchangeable with the non-reinforced shutter blades 0475-130.1 identified by the hole 219.

Werkstoff	Modell Nr.	Gezeichnet			Alfred Gauthier G.m.b.H. Calmbach a. d. Enz
	Lager Nr.	Geprüft			
Maßstab:	Repair Instructions				Sheet No. 76

6a. Diaphragm System

Introductory Remarks

1. Whereas the former PRONTOR-SVS shutters had ten diaphragm blades, the number of blades has been reduced in the new shutters as follows: Size 00 shutters have five diaphragm blades, and Size 0 shutters have eight diaphragm blades.

2. In conjunction with the adoption of a linear f-stop scale, the diaphragm blades for the new shutter versions have been redesigned as shown in Figs. 26 and 27 below.

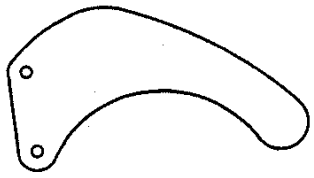


Fig. 26
Diaphragm Blade 00375-U5
for Size 00 Shutters

Fig. 27
Diaphragm Blade 0475-U5
for Size 0 Shutters

Shown below in Figs. 28 and 29 are the diaphragm blade control rings for Size 00 and 0 shutters.

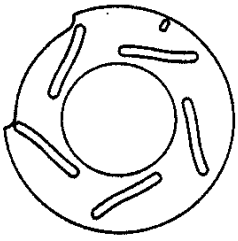


Fig. 28
Control Ring 00475-8
for Diaphragm Blades 00375-U5

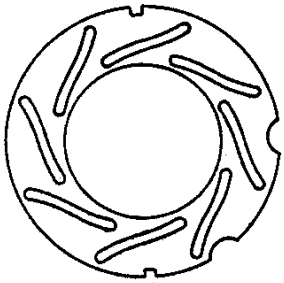


Fig. 29
Control Ring 0475-8
for Diaphragm Blades 0475-U5

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Diaphragm System, cont.

3. **Size 0** shutters fitted with reinforced shutter blades 0475-U130 have the diaphragm cover plate 0475-U10.1 shown in Fig. 30 below.

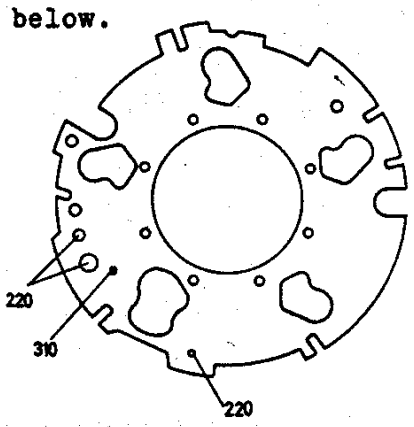

Fig. 30
Diaphragm Cover Plate 0475-U10.1 for use with Reinforced Shutter Blades 0475-U130

IMPORTANT: Figs. 31 and 32 respectively show two different types of diaphragm cover plates used earlier, i.e. the plates 0475-10 and 0475-10.1. The cover plate 0475-U10.1 differs from those of Figs. 31 and 32 in that it has the two holes 220 and the rivet 310 shown in Fig. 30. The diaphragm cover plates 0475-10 and 0475-10.1 are interchangeable with the cover plate 0475-U10.1.

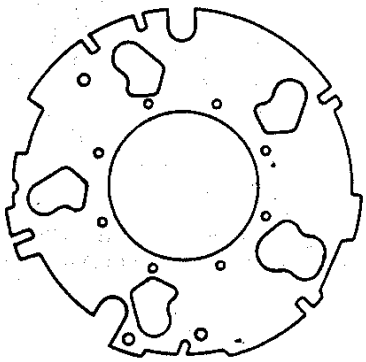

Fig. 31
Diaphragm Cover Plate 0475-10

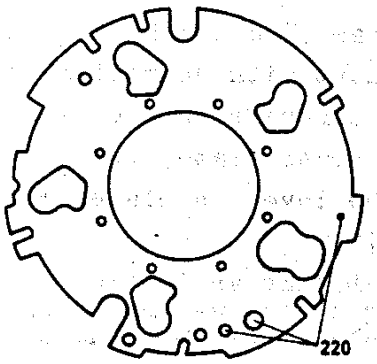

Fig. 32
Diaphragm Cover Plate 0475-10.1

Please, be sure invariably to order diaphragm cover plates 0475-U10.1 as replacement parts.

It is only for use with shutters having shutter blades 0475-130.1 (Sheet 75) that the diaphragm cover plate 0475-U10.2 shown in Fig. 33 has been designed.

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Diaphragm System, cont.

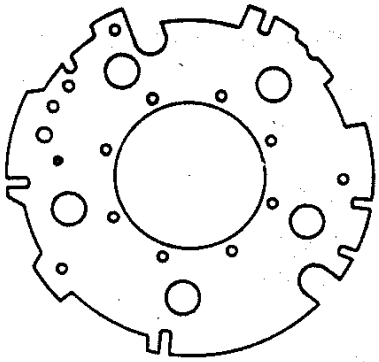

Fig. 33
Diaphragm Cover Plate 0475-U10.2
for Shutter Blades 0475-130.1

The above diaphragm cover plate is not interchangeable with the cover plates mentioned on the preceding sheets.

4. In conjunction with the special design of the shutter-speed/diaphragm coupling of Size 0 shutters, these are provided with a tilting detent member permitting f-stops to be selected in increments of one-half units. The detent mechanism comprises a detent lever 311 carrying a cam 311a which is urged into engagement with serrations provided on the circumference of the diaphragm cover plate, for which purpose the lever is biased by a spring 0475-379.

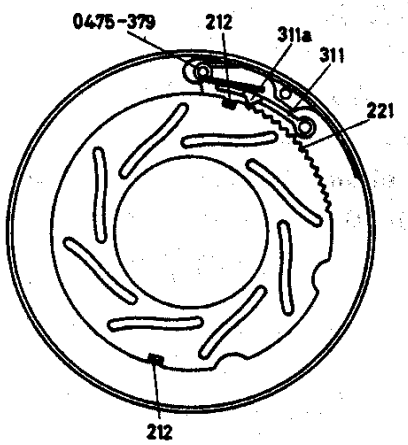

Fig. 34 - Diaphragm Cover Plate with Detent Lever

NOTE: During an initial period, the tilting detent was not provided, the cover plate 0475-8 being used (see sheet 77).

5. In contrast to earlier shutter models, the diaphragm indicator ring is mounted on the rear of the shutter. In Size 00 shutters, the diaphragm indicator ring 00475-U7 can be removed after the three guide screws 00475-575 have been undone. The diaphragm indicator ring carries a rivet which engages in a bore provided in the diaphragm cover plate.

In Size 0 shutters, the place of the above-mentioned guide screws is taken by three guide plates 0475-368 with screws 00280s-176 which hold the diaphragm indicator ring 0475-7 in position.

Diaphragm system, cont.

The upturned drive lugs 212 of the diaphragm indicator ring (see Fig. 34) engage in recesses of complementary rectangular shape in the diaphragm cover plate, thus providing a positive connection between these two parts.

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