May 2, 1961 W. T. RENTSCHLER 2,982,149

SETTING DEVICE FOR PHOTOGRAPHIC CAMERAS

Filed Dec. 1, 1959

Fig. 3

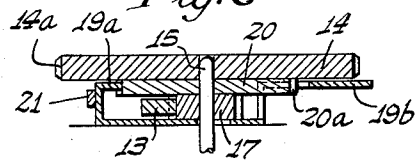


Fig. 5

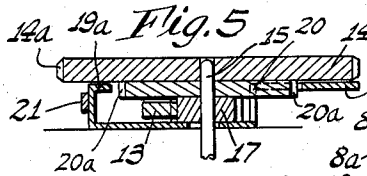


Fig. 1

Fig. 2

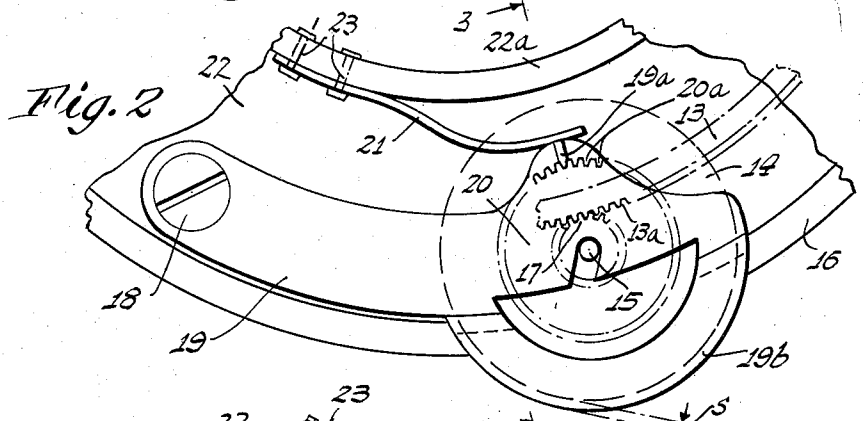
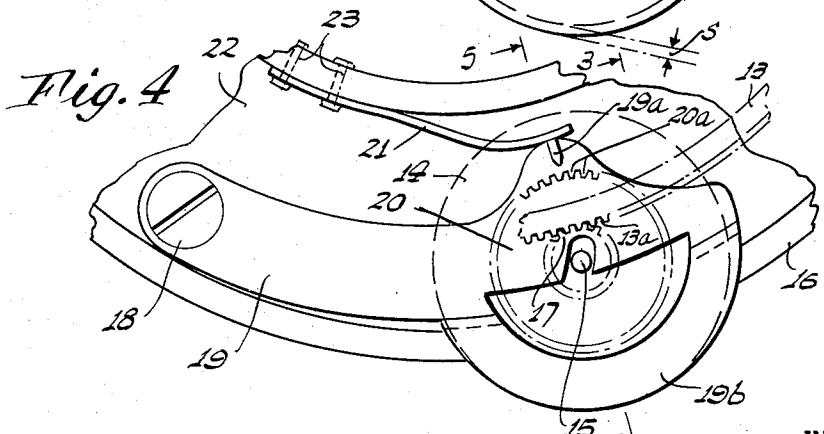


Fig. 4



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SETTING DEVICE FOR PHOTOGRAPHIC CAMERAS

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This invention relates to setting or exposure-regulating devices of photographic cameras, and more particularly to manually operable setting or regulating members which have associated with them manually releasable locking devices normally securely holding the members in the different adjusted positions.

In the past various types of setting devices and releasable locks have been proposed and produced. The special advantage of a locking type setting member resides in the fact that the member may be arranged to move very easily or with extremely little resistance, as is required in order to obtain small or fine adjustments, without the likelihood that the member when once adjusted will be accidentally shifted out of its given position because of the friction-free arrangement. However, locking type adjusting members have the disadvantage that the effecting of the release of the locking device requires a special or additional operation on the part of the user, which requirement precludes the possibility of quickly operating the setting member in the simplest possible manner.

An object of the present invention is to obviate the above-mentioned disadvantage which is characteristic of prior, locking-type setting devices, and to provide an improved lockable setting device which not only has the benefit of the locking function but also has a maximum degree of operational simplicity and enables the adjustment or setting to be made with great rapidity, approaching that of non-locking setting mechanisms.

This object is accomplished, in accordance with the invention, by the provision of a novel organization of setting or adjusting member and manually engageable, actuatable part for the locking device, these components being so arranged with respect to each other that the act of gripping or engaging the setting member first causes the actuatable part of the locking device to be shifted so as to release the lock, as a prerequisite to adjustment of the said member.

Thus, by the present invention, the same advantages are had in a locking type setting mechanism, i.e. simple operation and rapidity of adjustment, as are obtained with well-known setting devices of the non-locking type, wherein the adjusting member is forced to remain in its adjusted position by friction. This is due to the fact that the release of the locking device in the present improved construction no longer requires any special or additional operation. Instead, the locking device is released virtually automatically without the operator being aware of such release, as a consequence of manual engagement being effected with the adjusting or setting member. This is accomplished by requiring the operator to, without knowing the reason for it, first move or shift the actuating member of the locking device as part of the procedure necessary to engage or grip the setting member.

The present invention is not negatived by the existence of well-known photographic intra-lens shutters (of which I am aware) wherein an exposure-time escapement mechanism is provided with a disconnectible armature or

escapement assemblage which is automatically disconnected, in consequences of setting or actuation of the exposure-time setting, by means of a connection, lever, linkage or other system which is actuated when the setting member is gripped. Such prior organization, as provided in conjunction with the exposure-time or speed setting mechanism, does not involve any locking means or device, and the present invention differs from this prior art mechanism just described, by the very problem which it is intended to solve, that is, the use of a locking means or device without requiring a special or extra operation to effect the unlocking of such locking device.

An especially advantageous embodiment of the present invention, setting forth a locking type setting means which is simple in construction and economical to fabricate, involves constituting the adjusting or setting member as a partially masked or enclosed wheel, and arranging the manually engageable actuator part of the locking device so that it is located in the gripping region or accessible peripheral portion of the setting wheel, the said part extending beyond the peripheral wheel portion to an extent which requires it to shift and release the locking device prior to engagement of the wheel by a finger being possible.

Such an emboiment of the present invention is illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary top plan view of a photographic camera having an interchangeable lens assembly incorporating diaphragm and speed or exposure-time setting members or rings which can be adjusted manually, by means of an exposure value setting device being of the special locking type as provided by the invention.

Fig. 2 is a fragmentary front elevational view of the components involved in the locking-type exposure value setting device provided by the invention and illustrated in Fig. 1.

Fig. 3 is a fragmentary cross section taken on the line 3—3 of Fig. 2.

Fig. 4 is a view like Fig. 2, but showing the locking mechanism in its released condition, as when the setting device is being adjusted.

Fig. 5 is a fragmentary cross sectional view, taken on the line 5—5 of Fig. 4.

Referring to Fig. 1, the housing or casing of the camera is indicated by the numeral 1. On the front side of the housing 1 there is provided a photographic intra-lens shutter 2 having an interchangeable lens assemblage 3 provided with a built-in diaphragm, the said assemblage being releasably mounted on the shutter 2 in a well-known manner, as for example by means of a bayonet coupling. For the purpose of effecting a seting of the photographic range or distance, the interchangeable lens assembly 3 is provided with a distance setting ring 4 which is associated with a distance scale 6 cooperable with a stationary index mark 5. A well-known depth-of-focus scale 7 extends on both sides of the setting or index mark 5, as is clearly shown in the figure.

The intra-lens shutter 2 carries an exposure time or speed setting ring 8 which is provided with a knurled rim 8*a*, and also carries a transmission ring 9 which is coupled in the well-known manner with the diaphragm mechanism of the interchangeable lens assembly when the latter is in its operative position as shown in Fig. 1. Scales 10 and 11 are provided for the setting rings 8 and 9 respectively. Both of the scales 10, 11 cooperate with a setting or index mark 12 provided on the periphery of the exposure time setting ring 8. The scale 10 is stationary, whereas the scale 11 is provided on the movable transmission ring 9.

In addition, an exposure-value setting ring 13 is rotatably mounted in the shutter 2. The setting ring 13 is fixedly connected (in a manner not shown) to the trans-

mission ring 9 and is in driving engagement with the exposure-time or speed setting ring 8 by means of a known differential gear (which is not shown for the sake of clarity of illustration) and which does not form the subject matter of the present invention. An adjusting wheel 14 which will be described later, serves for operating the setting ring 13. The adjusting wheel 14 may be locked in different setting positions by means of a manually releasable locking device, also to be shortly described.

In accordance with the present invention, the adjusting or setting wheel 14 and the manually engageable actuatable part of the locking device are so arranged with respect to each other that the act of engaging or gripping the adjusting wheel will require the user to unwittingly actuate and shift the actuatable part in a manner to cause release of the locking mechanism for the wheel.

In the illustrated embodiment of the invention the adjusting wheel 14 is rotatably mounted on a stationary axis or spindle 15 located within the shutter, and the wheel is so positioned between the speed setting ring 8 and the transmission ring 9 (see Fig. 1) that a portion of its outer circumference or periphery (which periphery carries knurling 14*a*) extends beyond the circumference of the side wall 16 of the shutter housing. The adjusting wheel 14 is fixedly attached to a toothed pinion 17 which meshes with outer gear teeth 13*a* provided on the exposure value setting ring 13.

The above-mentioned locking device for the adjusting wheel 14 comprises, in the illustrated embodiment of the invention, a one-armed lever 19 which is pivotally mounted about a pivot screw 18 in the shutter, the free end of the lever having a shape as shown in Figs. 2 and 4 and carrying a detent tooth 19*a* which cooperates with notches 20*a* of a locking disc 20, said disc being fixedly secured to the adjusting wheel 14. A leaf spring 21 serves to yieldably hold the tooth 19*a* of the lever 19 in engagement with one of the recesses 20*a* of the locking disc 20. The leaf spring 21 is secured to the short tube 22*a* of a well-known shutter base plate 22 which carries the members of the shutter mechanism, such securement being effected by means of rivets or screws diagrammatically indicated at 23.

An arcuate part or sector 19*b* is juxtaposed to the adjusting wheel 14 and is carried by the free end of the lever 19, the said sector constituting the actuating member or part of the locking mechanism. When the locking mechanism is in its operative position as shown in Fig. 2, the sector or part 19*b* occupies the position shown (see also Figs. 1 and 3) wherein it projects from the accessible portion of the periphery of the adjusting wheel 14 by an amount indicated by the letter "S" in Fig. 2, this amount being somewhat greater than the extent of movement required of the actuating part 19*b* to effect the release of the locking device (that is, to effect a separation of the tooth 19*a* from the locking disc 20). By such organization, the user in engaging a finger with the setting wheel 14 also unintentionally releases the locking mechanism since such finger engagement of the wheel 14 effects an inward shifting of the sector or part 19*b* against the action of the spring 21. The inward or depressing movement of the part 19*b* is virtually to the periphery of the wheel 14, thereby disengaging the locking tooth 19*a* from the locking disc 20 and releasing the locking device whereby the adjusting wheel 14 may be readily turned to effect a turning movement of the exposure value setting member 13.

Adjusting or shifting of the setting wheel 14 after release of the locking device, due to the connection between the exposure value setting ring 13 and the transmission ring 9, causes an adjustment of the diaphragm of the lens assembly in the sense of an exposure value setting while the exposure time or speed setting ring 8 remains in its adjusted position, due to the existence of a greater moment of adjustment associated with the speed setting ring 8. The speed setting ring 8 is adjusted for purposes of changing the exposure value only in those cases where the diaphragm reaches one of its end positions prior to the exposure value setting attaining the desired adjustment.

If the setting wheel 14 is released after the desired time-diaphragm relation has been set, this will enable the locking device 19*a*, 20*a* to become operative. An adjustment or shifting of the exposure-time setting ring 8 now causes, by means of the differential gear above referred to (and the locked condition of the setting ring 13) an adjustment or shifting of the transmission ring 9 and hence of the diaphragm in the sense of a time-diaphragm selection.

In the foregoing description the invention has been explained in conjunction with a photographic camera. In addition to such use, the invention has utility in connection with devices of various kinds, wherein there is a setting or focus device having a manually operable adjusting member which may be locked in various adjusted positions by means of a manually releasable lock mechanism. The invention will result in the special advantage that the release of the locking device does not require any special or additional operation on the part of the user, but instead the unlocking of the setting device is positively effected without intent, that is, automatically as a consequence of the operator gripping or engaging the setting or focusing member.

I claim:

1. In a photographic camera, a manually operable setting member adapted to be engaged by a finger to effect its operation; a releasable locking device for said setting member, said device having engageable and disengageable members one of which constitutes a holding means, the engagement of said member providing a locking action, and having a manually engageable, actuatable part which is shifted to move one of said members to effect disengagement of the members and release of the locking device, said part being juxtaposed to the setting member and projecting past the same in the path of the finger intended to engage the setting member, and partially obstructing the latter whereby the said act of fully engaging the setting member by a finger first requires the part to be shifted to release the lock as a prerequisite to adjustment of the member.

2. The invention as defined in claim 1, in which the setting member comprises a partially enclosed wheel having an accessible peripheral portion, and in which the actuatable part extends beyond the said peripheral wheel portion to an extent requiring its shifting to release the locking device prior to engagement of the wheel by a finger.

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