PATENT SPECIFICATION

Convention Date (United States): Feb. 3, 1937.
Application Date (in United Kingdom): Aug. 11, 1937.
(Divided out of No. 500,626).
Complete Specification Accepted: Feb. 13, 1939.

500,791
No. 26734/38.

COMPLETE SPECIFICATION

Improvements in or relating to Photographic Cameras

We, JOHAN STEENBERGEN, a Dutch subject, OTTO DIEBEL, a German citizen, HUGO FRAUENSTEIN, a German citizen, EMIL ENGLISCH, a German citizen, HERMANN SCHUBERT, a German citizen, and CONRAD KOCH, a German citizen, trading as IHAGEE KAMERAWERK STEENBERGEN & COMPANY, of 24, Schandauer Strasse, Dresden A.19, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in photographic cameras of the reflex type of the kind having a foldable viewing or focusing hood and a single operating lever, which controls the release of the shutter mechanism to expose the roll film for picture-taking purposes.

The invention is concerned particularly with miniature cameras, although it will be found suitable for use with other types.

The principal object of this invention is to prevent an accidental or inadvertent exposure of the film without the camera having been in any way focused or otherwise set for taking a picture.

According to this invention we provide a photographic camera of the reflux type having a foldable viewing or focusing hood and an operating lever for releasing the shutter mechanism to expose the film, wherein means are provided for preventing actuation of the said lever when the said hood is in the closed or non-focusing position.

The said operating lever is advantageously formed with a slot and the foldable viewing or focusing hood with a latch adapted, in the folding position of the hood, to engage the slot, thereby retaining the lever against accidental movement. The latch is preferably formed on the outer hinged cover member of the hood, a lug being provided on the exterior of the camera casing for the purpose of guiding the latch into a slot when the hood cover is closed down

The camera may be provided with a focusing mirror which is pivotally mounted below the aforesaid hood, and is automatically movable into focusing position on the setting of the camera for exposing a film. The focusing mirror may be held in focusing position against the action of a spring by means of a detent carried by the frame, for example the detent may be carried by one end of a spring blade, the other end of which blade is connected to the side wall of the light chamber of the camera, the detent engaging the mirror when the latter is in focusing position, and the operating lever being formed with a cam adapted, on the movement of the lever, to engage and move the spring blade so as to withdraw the said detent and allow the mirror to move to picture-taking position under the action of its spring.

In order that the invention may be fully understood, we shall now describe one embodiment thereof, by way of example. by reference to the accompanying drawing, in which:—

Fig. 1 is a transverse sectional view of a reflex camera showing the finder hood in the open position ready for focusing.

Fig. 2 is an elevation looking on the opposite side from Fig. 1 and showing the operating lever and a hood-controlled latch, in accordance with the invention, for releasing the said lever, the hood-cover being shown in dotted lines to indicate release of the latch.

Fig. 3 is a view of detail parts of Fig. 2 showing an oscillatable control plate with its detents forming part of the operating mechanism, and

Fig 4. is a perspective view to an enlarged scale of the operating lever.

Referring to the drawing and firstly to Fig. 1, it will be seen that the camera includes a light chamber 1, a lens mount 2, and a focusing mirror 3 pivotally mounted within the light chamber 1. Also in the light chamber 1 is located a finder glass 4 which is advantageously formed with a spherical upper face 5 and a ground or translucent plane bottom surface 6.

Above the finder glass is arranged the hood, the two side walls 7 and the rear wall 8 of which, as well as the front, open centre rectangular cover 9 thereof are

[Price 1/-]

Price 6d

preferably fashioned of thin, but durable metal plates each of which is hinged to the camera body at 10 and the hinges are arranged in rectangular formation. The walls and the cover are also each provided with a spring S^1 bearing against the wall, and the springs tend to unfold the walls of the hood and swing them upwardly and outwardly to uncover the finder-glass or magnifying glass 4 and the focusing mirror 3, and also form the light shaft into which the photographer peers.

The side walls and the rear wall of the hood are advantageously shaped to conform to the contour of the spherical upper face of the finder-glass 4, the rear wall being fashioned with a window 11 for use especially when taking the picture of a moving object.

The rectangular open-centre cover of the hood has hinged, on its pivot pin, a fourth wall or concavo-convex metal plate or front wall 12 for the light shaft, and in this wall is mounted a small magnifying glass or finder 13. This wall and its small finder-glass swing with the cover on the cover-hinge, and, as indicated, the finder-glass projects through and exteriorly of the cover when the walls of the hood are extended by their springs. The wall 12 and its glass 13 may be turned in, to horizontal position, regardless of the remaining walls and cover of the hood, for use in finding the image. In the operation of folding the hood, the two side walls are first folded in and down over the finder glass 4, then the rear wall, and finally the front wall and cover are similarly folded down, and temporarily held by hand until the cover is automatically caught and retained in closed position. For retaining the hood in closed position we employ a spring latch 14. mounted at the rear of the camera body, and adapted to engage in a socket 15 fashioned at the edge of the top or rear portion of the flanged cover, and this latch snaps into the socket when the cover is pressed down to ultimate closing position. By pressure against a latch-head 16, which projects slightly to the rear from the body of the camera, the spring latch is withdrawn from its socket and the spring-operated sections or parts of the hood automatically swing the hood to open position for use as a light shaft.

The focusing mirror 3 is swung from picture-taking position to focusing position, shown in Fig. 1, during this setting operation of the camera, and there retained by a detent 17 which projects through an opening in one of the side walls of the light chamer. This swinging movement is obtained by motion transmitted through a gear shaft 18 which has a lug 19 (figure 2) mounted thereon to revolve therewith, and as the lug revolves it contacts with a flange 20 of an oscillatable arcuate plate 21 pivoted on the exterior face of one of the side walls of the light chamber. The shaft 18 forms a timing shaft of the shutter control mechanism and is rotated during the actuation of this mechanism. As the latter forms no part of this invention it is not thought necessary to describe it more fully here. The oscillatable plate has a pin 22 projecting laterally therefrom through an arcuate slot in the side wall of the light chamber, and this pin is constantly in contact with the upper face of the mirror, at its edge adjoining the side wall. Through these connections, as the camera is being set, the mirror is, owing to the rotation of the timing gear shaft 18, turned down to focusing position in Figure 1, and, as seen in Figure 3, a spring pressed detent 23 pivoted at the underside of the frame plate 24 engages a second flange or lug 25 on the oscillatable plate to hold the pin 22 in the position corresponding to the focusing position of the mirror. This detent 23 is later withdrawn from the path of the flange 25 by a lug, not shown, carried by and rotatable with the aforesaid gear shaft, leaving the mirror 3 under the sole detention of detent 17.

The automatic removal of the focusing mirror 3 from focusing position to non-focusing or picture-taking position, is the first action in the operation of taking a picture, and this action is accomplished by spring S shown in figure 1, which lifts the mirror to upper horizontal position, upon withdrawal of the detent 17 that holds the mirror in focusing position, the plate 21 turning freely around its pivot during the movement of the mirror.

The release of the mirror, together with the shutter, is accomplished by pressure (finger pressure or otherwise) against a button, not shown, or against the flange 26 of a combined spring-pressed operating lever and cam lever 27 best shown in Fig. 4, and pivoted at 28 (Fig. 2) on the outer face of one of the walls of the light chamber 1.

As clearly seen in Figure 2 the lever swings on its pivot beneath a spring blade 29 having one end secured to the side wall of the light chamber 1, and on the other end of this spring blade the detent 17 is mounted and projects through a hole in the side wall, to engage the mirror. As clearly shown in Fig. 4 the lever is fashioned with a suitable cam 30 located beneath the spring blade, and as the lever is swung on its pivot the cam sliding in contact with the free end of the spring

blade moves this end of the blade laterally to withdraw the detent 17.

In accordance with our invention we utilise a safety device which is under control of the hinged cover of the foldable hood, which device co-operates with the operating lever 27 and the focusing mirror to prevent accidental or inadvertent exposure of the film. This device locks or latches the operating lever 27 as the cover is closed, and holds the lever until the cover and hood are unfolded.

In Figure 4 it will be seen that the operating lever 27 is a single unit, which includes the cam-lever 30 to release the mirror from focusing position, as well as performing the previously described functions of the operating lever. The operating lever is fashioned with a slot 31 in its upper headed end, and a latch 32 is pivoted at 33 on the hinged cover 9 of the hood. This latch depends from the cover and normally falls by gravity with its free end in the slot 31 of the operating lever, to prevent swinging of the combined operating lever and cam lever on the pivot 28, a lug 34 being provided on the exterior of the central parts of the body of the camera to guide the latch into its socket.

When the catch 14—15 of the unfolding hood is released the spring-actuated cover 9 is swung to dotted line position of Figure 2, or to full line position of Figure 1, and this swinging movement of the cover on its pivot lifts the lower end or free end of the latch 32 out of its socket 31, thereby freeing the combined operating lever and cam lever, so that pressure on the flange 26 will operate the camera to take a picture. By this means, it will be seen that the lever 27 can only be moved to release the camera mechanism after the hood has been raised to the focusing position.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A photographic camera of the reflex type having a foldable viewing or focusing hood and an operating lever for releasing the shutter mechanism to expose the film, wherein means are provided for preventing actuation of the said lever when the said hood is in the closed or non-focusing position.

2. A photographic camera as claimed in claim 1, wherein the operating lever is formed with a slot and the foldable hood with a latch adapted, in the folded position of the hood, to engage the said slot, thereby retaining the said lever against movement.

3. A photographic camera as claimed in claim 2, wherein the latch is formed on the outer hinged cover member of the hood.

4. A photographic camera as claimed in claims 2 and 3, wherein a lug is provided on the exterior of the camera casing for the purpose of guiding the latch into the slot on the closing of the said hood cover.

5. A photographic camera as claimed in any of the preceding claims, wherein a focusing mirror is pivotally mounted beneath the viewing hood and is automatically moved into focusing position on the setting of the camera.

6. A photographic camera as claimed in claim 5, wherein the focusing mirror is held in focusing position against the action of a spring by means of a detent carried by the frame.

7. A photographic camera as claimed in claim 6, wherein the detent is carried by one end of a spring blade, the other end of which is connected to the side wall of the camera light chamber, such that the said detent engages the mirror when the latter is in focusing position, the aforesaid operating lever being formed with a cam adapted, on movement of the said lever, to engage and move the said spring blade to withdraw the detent and allow the mirror to move to picture-taking position under the action of its spring.

8. The improved photographic camera constructed and arranged substantially as hereinbefore described and illustrated in the accompanying drawings.

Dated this 28th day of June, 1937.

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London, W.C.1,
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Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1939.

Fig. 1.

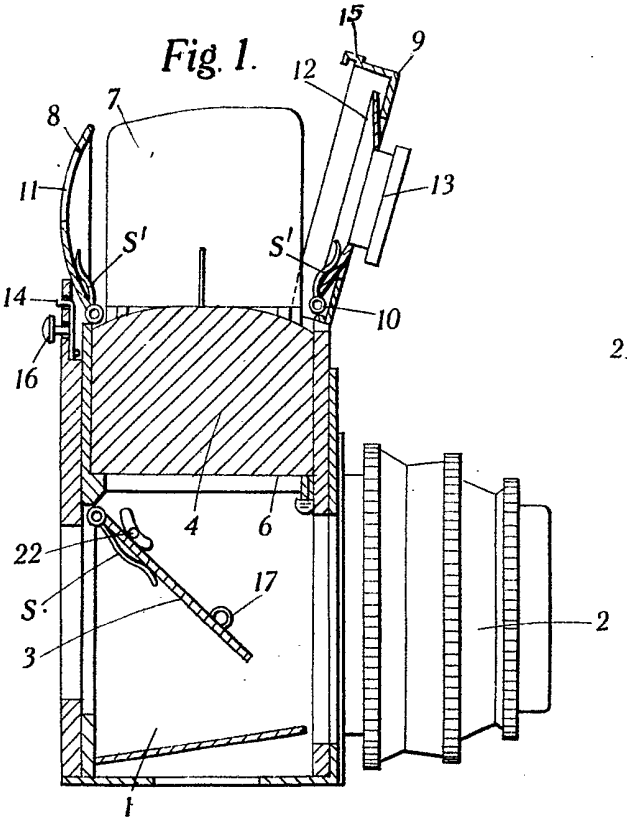


Fig. 3.

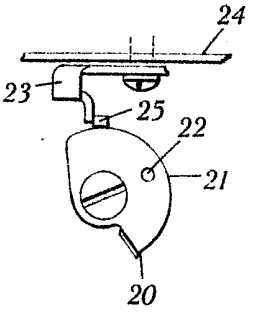


Fig. 2.

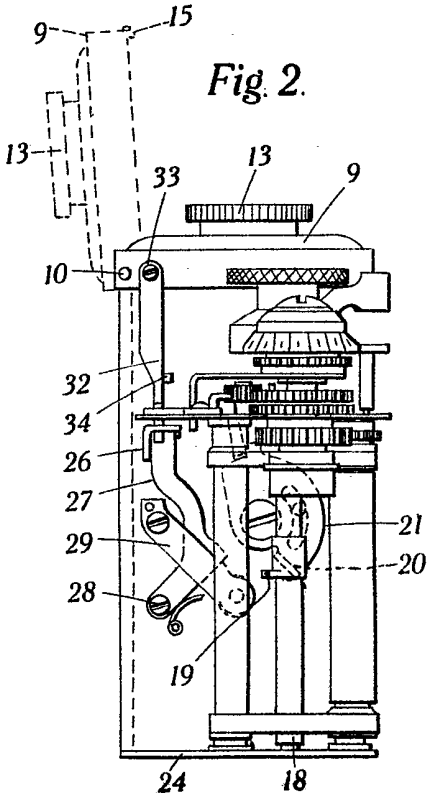
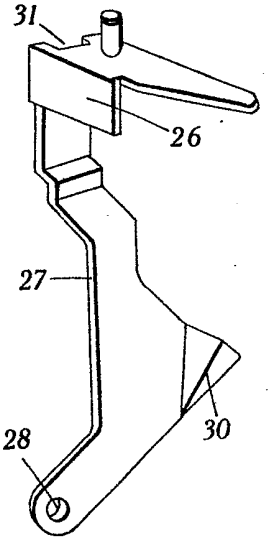


Fig. 4.



Malby & Sons, Photo-Litho.