

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN AND RELATING TO PHOTO-GRAPHIC CAMERAS

(71) We, AGFA-GEVAERT AKTIENGESSELLSCHAFT, a body corporate recognised under German Law, of Leverkusen, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to photographic cameras.

The present invention provides a still camera having a rapid-wind lever and a member for actuating a mechanism in the camera, the member being in the form of a diaphragm mounted in the rapid-wind lever.

Advantageously, in order to ensure a reliable release in spite of the axis of the rapid-wind lever's being situated in the centre beneath the diaphragm, the diaphragm or a plate arranged movably beneath it has at least two release lugs arranged on different sides of a plane containing the axis of rotation and projecting towards the inside of the camera, and arranged to act on a release plate when the diaphragm is actuated. Also advantageously the release plate is arranged so that its centre lies substantially on the said axis of rotation and it has a rotary driving connection with the rapid-wind lever and has an angled lug and, in the rest position of the rapid-wind lever, a member of the mechanism which is to be actuated lies within the actuating range of the lug. It is advisable for an inclined surface to be arranged near the member in order to raise the actuated release plate, and so to prevent actuation, during the simultaneous actuation of the rapid-wind lever.

By means of the arrangement according to the invention, it is possible to arrange the rapid-wind lever and the actuating member for the shutter of a camera so that they are coaxial to one another, so that a particularly space-saving form is produced which is

especially suitable for cameras with small external dimensions.

A photographic camera constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a vertical section taken through a part of the camera; and

Fig. 2 is a section taken on the line II—II of Fig. 1.

Referring to Fig. 1 of the accompanying drawings, the body of the camera, which is indicated generally by the reference numeral 1, includes a member 1a which forms the top of the main portion of the interior of the camera, an intermediate fixed deck 1b which is connected to the member 1a, and a member 1c which forms the top of an upper section of the camera. Secured to the intermediate deck 1b by means of a flange 2a is a bush 2 which passes through the members 1a, 1b, and 1c. A rotatable spindle 3 is inserted into the bush 2 from outside and is secured by means of a screw 4 to prevent it from dropping out or being pulled out. Attached to the outer end portion of the spindle 3 there is a rapid-wind lever 5, which can be moved anticlockwise (as seen looking down on the camera) against the action of a spring 10 to effect film transport and which returns under the action of the spring 10 when it is released.

The rapid-wind lever 5 has on the outside, coaxial with the spindle 3, a recess 5a into which a diaphragm release member 6 is inserted. Beneath the diaphragm 6, there is provided a supporting plate 7, which may be made of metal or a plastics material, and the diaphragm is surrounded by a raised rim 8 to facilitate location of the diaphragm 6 and to protect it against accidental release. On the inwardfacing surface of the supporting plate 7, there are two release webs in the form of lugs 7a, which extend in parallel directions and are arranged one on each side of, and sym-

metrically with respect to, the spindle 3. The webs 7a project through slots in the floor 5b of the recess 5a in the rapid-wind lever 5 and the top 1c into the interior of the upper section of the camera.

In the vicinity of the upper end of the spindle 3 there is located an approximately E-shaped leaf spring 9 (see Fig. 2). The central shank 9a of the three shanks 9a, 9b and 9c of the spring 9 is raised and is supported by the upper end of the spindle 3. Between the upper surfaces of the shanks 9b and 9c, on the one hand, and the underside of the rapid-wind lever 5, on the other hand there is held in a driving connection a release plate 11, which has in its centre an aperture 11a and is formed at its right-hand edge (as seen in the drawings) with an angled lug 11b. The raised shank 9a of the leaf spring 9 projects through the aperture 11a. The angled lug 11b extends into a slot or aperture 12a in a toothed locking wheel 12 which is rotatable about the bush 2. A pin 5d extends downwardly from the rapid-wind lever 5 and engages in a hole in the wheel 12 and forms a drive connection between the rapid-wind lever and the wheel 12.

A locking lever 13 can engage the wheel 12 in a known manner when a feeler (which is known and therefore not shown) has dropped into a perforation in a film which has a perforation for each frame. The wheel 12, and therefore the also the rapid-wind lever 5, are thereby blocked against further transport. At the same time, under the action of two springs 14 and 15, two pawls 17 and 18 which, together with the locking lever 13, are rotatably mounted on a spindle 16 are moved out of engagement with the wheel 12 and a coupling wheel 19, respectively. The wheel 19 is formed with an arcuate slot 19a, the centre of curvature of the arcuate centre line of the slot lying on the axis of rotation of the wheel 19, which is engaged by a pin that extends downwardly from the wheel 12 to form a lost-motion rotary coupling between the wheel 12 and the wheel 19. The two wheels 12 and 19 can, when the pawls 17 and 18 are disengaged, move back into the initial position in a clockwise direction together with the rapid-wind lever 5. The wheel 12 also has provided on it a cam 12b, behind which the pawl 17 drops into place if the rapid-wind lever 5 is accidentally released before completion of a film-transport movement. The rapid-wind lever 5 cannot therefore return completely to its initial position, so that the camera-user is made aware, by the position of the rapid-wind lever 5, that the film transport has not been completed. After the film transport has been completed, the pawl 17, as described hereinbefore, is lifted out in such a way that the rapid-wind

lever 5 can assume its rest position. On the other hand, the lost-motion rotary coupling between the wheel 12 and the wheel 19 is such that the rapid-wind lever 5, when accidentally released prematurely, can return as far as the position determined by the cam 12b, without rotating the wheel 19 with it (cf. German Utility Model No. 7,011,290). The locking pawl 18 is thereby pivoted into engagement with the wheel 19. Only after the complete film transport has been effected properly, do the parts 5, 12 and 19 return to their rest positions as already explained.

The wheel 19 is connected by means of a known one-way drive coupling and a friction member to a gear-wheel 20 and thence to gear-wheels 21, 22 and 23, which drive the film spool key 24 to wind the film onto the film spool. During the actuation of the rapid-wind lever 5, the film is therefore wound up, whilst the gear-wheels 20 and 23 and the film spool key 24 remain at rest during the return of the rapid-wind lever 5.

In the rest position of the rapid-lever 5, the actual camera release member 25 for the shutter mechanism lies below the aperture 12a and thus below the lug 11b. If the diaphragm 6 is then depressed, the member 25 is actuated by means of the release plate 11, but, if the rapid-wind lever 5 is only in a partly actuated state, the camera release member 25 no longer lies within the range of movement of the lug 11, so that the camera cannot be released even when the diaphragm is depressed when the rapid-wind lever 5 is moved accidentally while the diaphragm 6 is depressed, or if the diaphragm is depressed when the rapid-wind lever is slightly displaced from its initial position, the lug 11b meets an inclined surface 26 that does not rotate with the rapid-wind lever so that the release plate 11 is tilted against the action of the leaf spring 9, to such an extent that, despite the fact that the diaphragm 6 is depressed and the release plate 11 thereby lowered, the lug 11b does not project downwards out of the slot 12a to engage the member 25.

The camera described hereinbefore with reference to the accompanying drawings can be modified in a number of respects. Thus, if it is desired to simplify the construction, the cam 12b and the locking pawl 17, and if necessary the locking pawl 18 and the slot 19a, can be omitted. Also, the supporting plate 7 can be omitted, the release webs 7a then being formed on the underside of the diaphragm 6. If the camera were controlled electrically or electronically, for example, the plate 11 or the release member 25 could be replaced by an electrical contact.

WHAT WE CLAIM IS:—

1. A still camera having a rapid-wind lever

metrically with respect to, the spindle 3. The webs 7a project through slots in the floor 5b of the recess 5a in the rapid-wind lever 5 and the top 1c into the interior of the upper section of the camera.

In the vicinity of the upper end of the spindle 3 there is located an approximately E-shaped leaf spring 9 (see Fig. 2). The central shank 9a of the three shanks 9a, 9b and 9c of the spring 9 is raised and is supported by the upper end of the spindle 3. Between the upper surfaces of the shanks 9b and 9c, on the one hand, and the underside of the rapid-wind lever 5, on the other hand there is held in a driving connection a release plate 11, which has in its centre an aperture 11a and is formed at its right-hand edge (as seen in the drawings) with an angled lug 11b. The raised shank 9a of the leaf spring 9 projects through the aperture 11a. The angled lug 11b extends into a slot or aperture 12a in a toothed locking wheel 12 which is rotatable about the bush 2. A pin 5d extends downwardly from the rapid-wind lever 5 and engages in a hole in the wheel 12 and forms a drive connection between the rapid-wind lever and the wheel 12.

A locking lever 13 can engage the wheel 12 in a known manner when a feeler (which is known and therefore not shown) has dropped into a perforation in a film which has a perforation for each frame. The wheel 12, and therefore the also the rapid-wind lever 5, are thereby blocked against further transport. At the same time, under the action of two springs 14 and 15, two pawls 17 and 18 which, together with the locking lever 13, are rotatably mounted on a spindle 16 are moved out of engagement with the wheel 12 and a coupling wheel 19, respectively. The wheel 19 is formed with an arcuate slot 19a, the centre of curvature of the arcuate centre line of the slot lying on the axis of rotation of the wheel 19, which is engaged by a pin that extends downwardly from the wheel 12 to form a lost-motion rotary coupling between the wheel 12 and the wheel 19. The two wheels 12 and 19 can, when the pawls 17 and 18 are disengaged, move back into the initial position in a clockwise direction together with the rapid-wind lever 5. The wheel 12 also has provided on it a cam 12b, behind which the pawl 17 drops into place if the rapid-wind lever 5 is accidentally released before completion of a film-transport movement. The rapid-wind lever 5 cannot therefore return completely to its initial position, so that the camera-user is made aware, by the position of the rapid-wind lever 5, that the film transport has not been completed. After the film transport has been completed, the pawl 17, as described hereinbefore, is lifted out in such a way that the rapid-wind

lever 5 can assume its rest position. On the other hand, the lost-motion rotary coupling between the wheel 12 and the wheel 19 is such that the rapid-wind lever 5, when accidentally released prematurely, can return as far as the position determined by the cam 12b, without rotating the wheel 19 with it (cf. German Utility Model No. 7,011,290). The locking pawl 18 is thereby pivoted into engagement with the wheel 19. Only after the complete film transport has been effected properly, do the parts 5, 12 and 19 return to their rest positions as already explained.

The wheel 19 is connected by means of a known one-way drive coupling and a friction member to a gear-wheel 20 and thence to gear-wheels 21, 22 and 23, which drive the film spool key 24 to wind the film onto the film spool. During the actuation of the rapid-wind lever 5, the film is therefore wound up, whilst the gear-wheels 20 and 23 and the film spool key 24 remain at rest during the return of the rapid-wind lever 5.

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The camera described hereinbefore with reference to the accompanying drawings can be modified in a number of respects. Thus, if it is desired to simplify the construction, the cam 12b and the locking pawl 17, and if necessary the locking pawl 18 and the slot 19a, can be omitted. Also, the supporting plate 7 can be omitted, the release webs 7a then being formed on the underside of the diaphragm 6. If the camera were controlled electrically or electronically, for example, the plate 11 or the release member 25 could be replaced by an electrical contact.

WHAT WE CLAIM IS:—

1. A still camera having a rapid-wind lever



and a member for actuating a mechanism in the camera, the member being in the form of a diaphragm mounted in the rapid-wind lever.

5 2. A camera as claimed in claim 1, wherein the diaphragm is so mounted that its centre lies substantially on the axis of rotation of the rapid-wind lever.

10 3. A camera as claimed in claim 1 or claim 2, wherein the diaphragm is mounted in a member that is mounted in a recess in the rapid-wind lever.

15 4. A camera as claimed in any one of claims 1 to 3, wherein the arrangement is such that depression of the diaphragm actuates the said mechanism only when the rapid-wind lever is in its rest position.

20 5. A camera as claimed in claim 4, wherein there is provided means to ensure that the rapid-wind lever cannot return to its rest position when a film-transport movement is only partially complete.

25 6. A camera as claimed in claim 4 or claim 5, wherein the said mechanism includes a member situated away from the axis of rotation of the rapid-wind lever and there is provided a member arranged to rotate with the rapid-wind lever and to move upon depression of the diaphragm, the arrangement being such that, upon depression of the diaphragm with the rapid-wind lever in the rest position, the two members are brought into engagement with one another.

35 7. A camera as claimed in any one of claims 1 to 5, wherein the diaphragm, or a plate so mounted beneath the diaphragm that it moves downwardly when the diaphragm is depressed, is provided on its underside with at least
40 two lugs arranged on different sides of a plane containing the axis of rotation of the rapid-wind lever and extending towards the interior of the camera, and wherein
45 there is provided a release plate arranged to be acted upon by the lugs when the diaphragm is depressed.

8. A camera as claimed in claim 7,

wherein the release plate is mounted with its centre substantially lying on the axis of rotation of the rapid-wind lever, there is provided a driving connection between the release plate and the rapid-wind lever, the release plate being provided with a projection arranged away from the said axis
55 and wherein the said mechanism includes a member so situated that, upon depression of the diaphragm with the rapid-wind lever in its rest position, it is engaged by the projection.
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9. A camera as claimed in claim 8, wherein there is provided, in the vicinity of the member that forms a part of the said mechanism, an inclined surface so arranged that, if the rapid-wind lever is actuated when the diaphragm is depressed, the release plate is moved upwardly.
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10. A camera as claimed in any one of claims 7 to 9, wherein the release plate is resiliently supported so that it can be tilted.
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11. A camera as claimed in claim 10, wherein the release plate is supported by means of a leaf spring.

12. A camera as claimed in any one of claims 8 to 11, wherein the projection on the release plate enters an aperture in a locking wheel, which is connected to the rapid-wind lever and there is provided releaseable locking means arranged to prevent rotation of the locking wheel in one sense.
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13. A camera as claimed in claim 12, wherein the locking wheel is coupled to a film spool drive by unidirectional drive means and directional blocking means, the arrangement being such that, movement of the rapid-wind lever in one direction operates the film spool drive, but movement in the other direction does not.
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14. A camera substantially as herein-before described with reference to, and as shown in, the accompanying drawings.
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