

PATENT SPECIFICATION

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- (21) Application No. 12122/75 (22) Filed 24 March 1975
 (31) Convention Application No. 2 445 991 (32) Filed 26 Sept. 1974 in
 (33) Fed. Rep. of Germany (DT)
 (44) Complete Specification published 30 March 1977
 (51) INT. CL.² G03B 17/18
 (52) Index at acceptance
 G2A 401 403 461 521 524 526 536 542 607 616 CQ



(54) IMPROVEMENTS IN OR RELATING TO CAMERAS

(71) We, **BALDA-WERKE PHOTOGRAPHISCHE GERÄTE UND KUNSTOFF GmbH & Co. KG**, a company of the Federal Republic of Germany, of 498 Bunde 1, Postfach 1229, Steinmeisterstrasse 16-20, 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:—

This invention relates to a camera comprising a photocell light detector, a battery, and a warning lamp to indicate insufficient illumination for a picture to be taken.

In known cameras of this type the testing of the state of charge of the battery is effected by covering the photocell with the hand and seeing whether a test lamp lights up with the photocell so masked. If this is the case this means that the charge of the battery is sufficient. The important disadvantage of this known testing device and of the known method of testing lies in the fact that inexperienced camera users after covering the photocell by hand either forget to depress the test switch or only partially cover the photocell. This results in erroneous indications from the test procedure and in certain circumstances can lead to an unnecessary and premature replacement of the battery.

It is an object of the present invention to provide a camera of the type first mentioned above in which a masking of the photocell by hand and subsequent actuation of a test switch or test device is no longer necessary. It is a further object of the invention to achieve an arrangement in which the actuation of a single element is sufficient to achieve the desired result without any additional manipulation being necessary.

In accordance with the present invention there is provided a camera comprising a

photocell light detector, a warning lamp controlled by the light detector to indicate when ambient light is insufficient, a battery included in an electrical circuit with said lamp and switch, a mask movable between a first position in which it covers the light detector and a second position in which the light detector is not covered by the mask, and an actuating element for moving the mask from said second position to said first position and actuating the switch only when said mask is in said first position, whereby to close said circuit so that the lamp indicates the state of charge of the battery.

Thus, the warning lamp which serves to indicate insufficient ambient light for the taking of a picture also serves as the test lamp for indicating the state of charge of the battery. With such an arrangement the warning lamp serves a double function.

In order to avoid erroneous indications, it is preferred that the movement of the actuating element to said first position is only possible by overcoming the force of a spring. An appropriate spring could be for example the contact spring of the switch.

The present invention has the advantage that it ensures a reliable indication of the state of charge of the battery and achieves this without expensive additional components. The use of the lamp which is provided anyway for indicating insufficient illumination makes a separate test lamp unnecessary.

In order that the invention may be more readily understood, two preferred embodiments in accordance therewith will now be described in detail by way of example and with reference to the accompanying drawing, in which:

Fig. 1 is a longitudinal sectional view through a camera provided with a sliding mask, the section being taken immediately in front of the plane of movement of the

mask;

Fig. 2 is a partial front view of a camera with a hingeable mask, but with the mask not shown;

5 Fig. 3 is a circuit diagram including a circuit for indicating light intensity and the state of charge of the battery; and,

10 Fig. 4 is a perspective view of an actuating element for the hinged lens masking flap.

Referring first to Fig. 1, there is there shown a camera having a casing 1, a lens 2, a photocell light detector 3, and a view-finder 9. A generally flat actuating element has a hand grip 10 at one end thereof and a masking slide 11 integral therewith and in the central portion thereof and is displaceable by means of the hand-grip in front of the components 2, 3 and 9. The slide 11 has a rectangular aperture 11a which upon a displacement of the slide 11 in the direction towards the free space 12, i.e. to the right as viewed in Fig. 1, moves in front of the lens 2. A round hole 11b in the slide 11 also moves to a position in alignment with the photocell 3 with this displacement of the slide 11 to the right as viewed in Fig. 1. With the movement described above the view-finder 9 is also unmasked. With a displacement of the actuating element from the position shown towards the left the end 11c of the actuating element comes to press against a contact spring 13 of a switch which then is depressed into contact with a contact blade 14 to actuate the switch. The arrangement of the contacts can be seen in the general electrical circuit diagram shown in Fig. 3. Upon closure of the contacts 13 and 14 the electrical circuit between the poles + and - of a battery and through photocell 3 is closed. If the battery voltage is sufficient, the closure of the contacts 13 and 14 results in illumination of a test and/or warning lamp 6 which simultaneously has the function in the illustrated test circuit of indicating an insufficient amount of light for a picture to be taken. Test circuits such as that illustrated in Fig. 3 are well known and the circuit of Fig. 3 will not therefore be described in detail. Moreover, the warning lamp 6 in the illustrated circuit is shown connected in parallel with a second warning lamp 15 which serves to warn against over-exposure.

The slide 11 is shown in Fig. 1 in an arrested position. The arresting of its movement is effected by means of a spring-loaded ball 25 which engages in a notch 24 in the actuating element. For testing, the force of the arresting mechanism must be overcome.

60 Fig. 2 is a front view of a camera provided with a hinged mask as opposed to a sliding mask. In the drawing the

hinged mask has been omitted however so that in consequence the view-finder 9, the photocell light detector 3 and a window for the reflected image of the view-finder viewing frame and the rangefinder can be seen. The two warning lamps 6 and 15 are also visible in this window. Beneath the warning lamp 6 there is a light tunnel 16 by means of which the light from the warning lamp 6 can be seen from externally of the camera. In place of this light tunnel one can equally well use an appropriate fibre-optic cable for example in order to transmit the light from a warning lamp 6 to the outside of the camera.

Fig. 4 is a perspective internal view of the actuating mechanism for a hinged mask 17, such as can be used with the camera of Fig. 2. The hinged mask 17 is mounted by means of a bearing pin 18 which extends therethrough and which is seated at its ends in the two side walls of a camera casing 1. On the visible side wall of the camera casing 1 there is mounted on actuating element in the form of a slide 19 on the internal wall surface which is displaceable in the direction of the double-headed arrow 20. The actuation of the slide 19 is effected by means of a manually operable knob 21 which projects proud of the camera casing. With a displacement of the slide 19 shown in Fig. 4 to the left, the mask 17 is hinged open by the pushing action of the slide against the mask. With a displacement to the right, a spring (not shown) pulls the mask into the closed position.

The slide 19 is shown in Fig. 4 in its end position which corresponds with the closed position of the lens cover, i.e. of the mask 17. In this end position the slide 19 can be displaced inwardly in the direction of the arrow 22. This displacement in the direction of the arrow 22 serves to close the contacts 13 and 14 and consequently to close the electrical circuit already described briefly in connection with Fig. 3. By the provision of a slide slot 23 which has a wider portion 23a only at its right-hand end as viewed in Fig. 4 it is possible only in the illustrated position of the slide 19 to move the lower part of the slide by means of the knob 21 in the direction of the arrow 22 and thereby to close the contacts 13 and 14.

WHAT WE CLAIM IS:—

1. A camera comprising a photocell light detector, a warning lamp controlled by the light detector to indicate when ambient light is insufficient, a battery included in an electrical circuit with said lamp and a switch, a mask movable between a first position in which it covers the light detector and a second position in which the light detector is not covered by the mask, 130



mask;

Fig. 2 is a partial front view of a camera with a hingeable mask, but with the mask not shown;

5 Fig. 3 is a circuit diagram including a circuit for indicating light intensity and the state of charge of the battery; and,

Fig. 4 is a perspective view of an actuating element for the hinged lens masking flap.

Referring first to Fig. 1, there is there shown a camera having a casing 1, a lens 2, a photocell light detector 3, and a view-finder 9. A generally flat actuating element has a hand grip 10 at one end thereof and a masking slide 11 integral therewith and in the central portion thereof and is displaceable by means of the hand-grip in front of the components 2, 3 and 9. The slide 11 has a rectangular aperture 11a which upon a displacement of the slide 11 in the direction towards the free space 12, i.e. to the right as viewed in Fig. 1, moves in front of the lens 2. A round hole 11b in the slide 11 also moves to a position in alignment with the photocell 3 with this displacement of the slide 11 to the right as viewed in Fig. 1. With the movement described above the view-finder 9 is also unmasked. With a displacement of the actuating element from the position shown towards the left the end 11c of the actuating element comes to press against a contact spring 13 of a switch which then is depressed into contact with a contact blade 14 to actuate the switch. The arrangement of the contacts can be seen in the general electrical circuit diagram shown in Fig. 3. Upon closure of the contacts 13 and 14 the electrical circuit between the poles + and - of a battery and through photocell 3 is closed. If the battery voltage is sufficient, the closure of the contacts 13 and 14 results in illumination of a test and/or warning lamp 6 which simultaneously has the function in the illustrated test circuit of indicating an insufficient amount of light for a picture to be taken. Test circuits such as that illustrated in Fig. 3 are well known and the circuit of Fig. 3 will not therefore be described in detail. Moreover, the warning lamp 6 in the illustrated circuit is shown connected in parallel with a second warning lamp 15 which serves to warn against over-exposure.

The slide 11 is shown in Fig. 1 in an arrested position. The arresting of its movement is effected by means of a spring-loaded ball 25 which engages in a notch 24 in the actuating element. For testing, the force of the arresting mechanism must be overcome.

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hinged mask has been omitted however so that in consequence the view-finder 9, the photocell light detector 3 and a window for the reflected image of the view-finder viewing frame and the rangefinder can be seen. The two warning lamps 6 and 15 are also visible in this window. Beneath the warning lamp 6 there is a light tunnel 16 by means of which the light from the warning lamp 6 can be seen from externally of the camera. In place of this light tunnel one can equally well use an appropriate fibre-optic cable for example in order to transmit the light from a warning lamp 6 to the outside of the camera.

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The slide 19 is shown in Fig. 4 in its end position which corresponds with the closed position of the lens cover, i.e. of the mask 17. In this end position the slide 19 can be displaced inwardly in the direction of the arrow 22. This displacement in the direction of the arrow 22 serves to close the contacts 13 and 14 and consequently to close the electrical circuit already described briefly in connection with Fig. 3. By the provision of a slide slot 23 which has a wider portion 23a only at its right-hand end as viewed in Fig. 4 it is possible only in the illustrated position of the slide 19 to move the lower part of the slide by means of the knob 21 in the direction of the arrow 22 and thereby to close the contacts 13 and 14.

WHAT WE CLAIM IS:—

1. A camera comprising a photocell light detector, a warning lamp controlled by the light detector to indicate when ambient light is insufficient, a battery included in an electrical circuit with said lamp and a switch, a mask movable between a first position in which it covers the light detector and a second position in which the light detector is not covered by the mask, 130

and an actuating element for moving the mask from said second position to said first position and for actuating the switch only when said mask is in said first position, whereby to close said circuit so that the lamp indicates the state of charge of the battery.

2. A camera as claimed in claim 1 in which the lamp is visible through a viewing window in the camera casing when the mask is in its second position.

3. A camera as claimed in claim 2 and 3 in which the movement of the actuating element to said first position is only possible by overcoming the force of a spring.

4. A camera as claimed in any proceeding claim, in which the mask is integral with the actuating element.

5. A camera as claimed in claim 1 or 2 in which the actuating element is displaceable in one direction to move the mask to said first position and in another direction to actuate said switch.

6. A camera substantially as hereinbefore described with reference to Figs. 1 and 3 or Figs. 2, 3 and 4 of the accompanying drawing.

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Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd., Berwick-upon-Tweed, 1977.
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.



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