

PATENT SPECIFICATION

(11)

1 429 829 /

1 429 829

- (21) Application No. 47097/73 (22) Filed 9 Oct. 1973
 (31) Convention Application No. 296 390 (32) Filed 10 Oct. 1972 in
 (33) United States of America (US)
 (44) Complete Specification published 31 March 1976
 (51) INT. CL.² G03B 17/18 17/20
 (52) Index at acceptance
 G2A 401 403 521 524 526 536 542 547 563 584 589 590 651
 CS
 (72) Inventor DAVID EASTON BEACH



(54) INDICATOR FOR CAMERA

(71) We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America of 343 State Street, Rochester, New York 14650, United States of America, 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:—

The present invention relates to a photographic camera having means for indicating a preselected condition of the camera.

It is an object of the present invention to provide an indicator, for use with electronically controlled cameras, which provides a signal indicative of a preselected condition, visible both within the camera viewfinder and external to the camera body.

According to the present invention, there is provided a photographic camera comprising a viewfinder, a lens element of which has a peripheral portion directly visible external to the camera body, a light source energisable to indicate the existence of a preselected condition or state or operability of a camera function, and light conducting means disposed relative to the light source and the lens element to transmit light from the light source to illuminate a surface of the light conducting means viewable through the viewfinder, and to transmit light through the lens element to illuminate the peripheral portion thereof.

The invention will now be described, by way of example with reference to the accompanying drawings in which:

Fig. 1 is a perspective, cut-away view of a camera including a viewfinder and an indicator according to one embodiment of the present invention,

Figs. 2 and 3 are detailed views of lens elements which may be used with the em-

bodiment shown in Fig. 1, and

Figs. 4 and 5 are alternative embodiments of the invention of Fig. 1.

Because photographic cameras are well known, the present description will be directed in particular to elements forming part of, or cooperating more directly with, the present invention, camera elements not specifically shown or described herein being understood to be selectable from those known in the art.

Referring first to Fig. 1 there is shown a portion of a camera body 10, part-sectioned, so as to show a viewfinder assembly 12. A viewfinder for use in the present invention may be of conventional form and may utilize two, three or more lens elements. The viewfinder 12 includes an aperture 14, a first lens element 16, a second lens element 18 and a third lens element 20. The viewfinder 12 operates in the usual manner, for providing for viewing by an operator, through the aperture 14, an upright image, of an object on the optical axis of the viewfinder 12.

The camera includes a control circuit 22 which provides for electronic control of exposure control apparatus 23, in accordance with scene light intensity. The electronic control circuit 22 and exposure control apparatus 23 may be such as that disclosed in commonly assigned, copending Application No. 42594/72 (Serial No. 1,407,255). The control circuit 22 includes a light source such as a lamp 24 energisable in response to various pre-selected conditions, such as, when a low scene light intensity condition exists, i.e. a condition of light normally requiring artificial illumination, such as by use of a flash unit. The lamp 24 may also be energised when a shutter controlled by the exposure control apparatus 23 is open. By appropriate switching, as described in the above-referenced application, the lamp 24 may also be used to

indicate the presence of a defective received flash unit.

When a lamp, such as the lamp 24, is used in cameras similarly proportioned to that shown by the camera body 10 of Fig. 1, that is a thin, flat, rectangular camera, only a small volume is available in the camera in which the aforementioned items may be placed. This space is particularly limited when the indicator is intended to be observed while looking directly into the viewfinder aperture 14, and also intended to be observed by an operator other than when using the viewfinder 12, for example, when the operator uses a cable release with the camera.

In accordance with the present invention, the lamp 24 is located adjacent to one end of an elongate light transmitting means 30. The light transmitting means 30 may be hollow or may be solid, for example a fibre optic member, capable of transmitting light from one end of the member to the other. The light transmitting means 30 may be flat at the end 33 adjacent lamp 24 and bevelled at the other end 34 to provide a surface viewable in the viewfinder, and may include a projecting portion 32 contiguous with the base of the lens element 18 for illuminating an externally visible peripheral portion thereof. Light from the lamp 24 is transmitted through the light transmitting means 30, through the projecting portion 32, to the lens element 18. A number of shapes for the light transmitting means 30 which are suitable for use with the present invention, may be devised by one skilled in the art, and the light transmitting means 30 may be located in various positions relative to the lens element 18. The configuration as shown in Fig. 1 is therefore only representative of the many configurations possible. A shield 36 may be placed over the light transmitting means 30 and lamp 24 to prevent stray light being visible in the viewfinder 12.

The lens element 18 may be of glass or plastics and may have polished surfaces so as to transmit light from one edge surface to the opposing surface, without losing an appreciable amount of light at the adjacent surfaces. Lens elements which may be used with the present invention are more clearly shown in Figs. 2 and 3. The lens element 18 of Fig. 2 which is shown in the embodiment of Fig. 1, has a peripheral portion including a dome portion 38 received in an opening 40 in the camera body 10. The dome portion 38 of Fig. 2 may also take the form identified by reference numeral 138 in Fig. 3; however the shape is not critical. Moreover, an extended portion 39 as shown in Fig. 3 may replace the bevelled end 34 shown in Fig. 1.

A second embodiment of the present invention is shown in Fig. 4, wherein a cut-away view of a camera body 110 shows a viewfinder 112. The viewfinder 112 includes an aperture 114, a first lens element 116, a second lens element 118, and a third lens element 120. In this alternative embodiment of the invention, the lens element 116 is disposed immediately adjacent to the aperture 114, and forms an eyepiece for viewing an object scene through the viewfinder 112. A light transmitting means 130 extends substantially parallel to the axis of the viewfinder 112, similarly to light transmitting member 30 as shown in Fig. 1, and includes an extension 132 contiguous with the lens element 116. A lamp 124 is located adjacent to one end of the light transmitting means 130, so that light provided by the lamp 124 will be transmitted along the light transmitting means 130, through extension 132, and through the lens element 116 to peripheral portion in the form of a dome portion 138 of the lens element 116. In the embodiment shown in Fig. 4 it is evident that an indicator may be provided for viewing externally of the camera by means of a dome portion 138, or the dome portion 138 may be replaced by an indicator element 142 of a third embodiment shown in Fig. 5. In the embodiment of Fig. 5, the peripheral portion forming the indicator element 142 is the whole periphery of the lens element 144. The lens element 144 of Fig. 5 replaces the lens element 116 of Fig. 4, and the indicator element 142 replaces the dome portion 138 of Fig. 4. In the embodiment of Fig. 5, light from the lamp 124 will be transmitted along the light transmitting means 130, through the extension 132, to the lens element 144, and transmitted transversely across lens element 144, to illuminate the indicator element 142. The indicator element 142, when illuminated, may be observed by the eye of an operator through the viewfinder 112, from a position looking through the aperture 114, and from a position displaced a distance from the aperture 114 in any direction.

The apparatus of Fig. 1 may be used by an operator in the following manner. A control member (not shown) is depressed to energise the control circuit 22 as the operator looks through the viewfinder 12, or the control member may be depressed as the operator observes the dome portion 38 from a position external to the aperture 14. If a low light intensity condition exists, (or such other condition as the lamp 24 may be arranged to indicate) the lamp 24 will be energised and light will be transmitted along the light transmitting means 30, through the viewfinder 12, and through

the lens element 18, to the dome portion 38. The operator may see the illuminated dome portion 38, or by looking through the viewfinder aperture 14, see the illumination 5 in the lens 18. The end 34 may be bevelled away from the eye of the operator to reduce the level of light as seen through the aperture 14. If scene light conditions are such that a low scene light condition exists, and 10 the operator does not choose to use artificial illumination, the operator will know that the exposure time as controlled by the electronic circuit 22 may be too long for the camera to be hand held. Therefore, the 15 operator may then place the camera on an appropriate rigid object, such as a tripod, before the shutter release mechanism (not shown) is actuated. After the camera has been so placed, and an object in a scene to 20 be photographed has been properly brought within the field of view of the camera, the release mechanism may be depressed and the operator is then able to withdraw his eye from the viewfinder 12 25 and observe by the illumination of the dome 38 by light from the lamp 24 the period of time that the shutter is open.

The apparatus as shown in Figs. 1 and 4 may be utilised in the manner as just described when the dome portions 38 or 138 30 are utilised. However, in the event that the operator does not remove his eye from the viewfinder to observe the external indication that the shutter is open, the indication is visible through the viewfinder 35 via the light transmitting means 30, 130.

The invention has been described in detail with particular reference to a preferred embodiment thereof, but it will be under-

stood that variations and modifications can 40 be effected within the scope of the invention, as defined in the appended claims.

WHAT WE CLAIM IS:—

1. A photographic camera comprising a viewfinder, a lens element which has a per- 45 ipheral portion directly visible—external to the camera body, a light source energisable to indicate the existence of a preselected condition or state or operability of a camera function, and light conducting 50 means disposed relative to the light source and the lens element to transmit light from the light source to illuminate a surface of the light-conducting means viewable through the viewfinder, and to transmit 55 light through the lens element to illuminate the peripheral portion thereof.

2. A photographic camera as claimed in Claim 1, further including a light sensitive circuit, which establishes an exposure 60 interval related to scene light intensity, wherein the predetermined condition exists when the exposure interval exceeds a pre-selected time.

3. A photographic camera as claimed 65 in Claim 1 or 2, further including a shutter, wherein the preselected state exists whilst the shutter is open.

4. A photographic camera as claimed in Claim 1, 2 or 3, wherein the lens 70 element and light conducting means comprise a one-piece unit.

5. A photographic camera as here- 75 inbefore described with reference to and as illustrated in the accompanying drawings.

L. A. TRANGMAR, B.Sc., C.P.A.
Agent for the Applicants.

the lens element 18, to the dome portion 38. The operator may see the illuminated dome portion 38, or by looking through the viewfinder aperture 14, see the illumination in the lens 18. The end 34 may be bevelled away from the eye of the operator to reduce the level of light as seen through the aperture 14. If scene light conditions are such that a low scene light condition exists, and the operator does not choose to use artificial illumination, the operator will know that the exposure time as controlled by the electronic circuit 22 may be too long for the camera to be hand held. Therefore, the operator may then place the camera on an appropriate rigid object, such as a tripod, before the shutter release mechanism (not shown) is actuated. After the camera has been so placed, and an object in a scene to be photographed has been properly brought within the field of view of the camera, the release mechanism may be depressed and the operator is then able to withdraw his eye from the viewfinder 12 and observe by the illumination of the dome 38 by light from the lamp 24 the period of time that the shutter is open.

The apparatus as shown in Figs. 1 and 4 may be utilised in the manner as just described when the dome portions 38 or 138 are utilised. However, in the event that the operator does not remove his eye from the viewfinder to observe the external indication that the shutter is open, the indication is visible through the viewfinder via the light transmitting means 30, 130.

The invention has been described in detail with particular reference to a preferred embodiment thereof, but it will be under-

stood that variations and modifications can be effected within the scope of the invention, as defined in the appended claims.

WHAT WE CLAIM IS:—

1. A photographic camera comprising a viewfinder, a lens element which has a peripheral portion directly visible external to the camera body, a light source energisable to indicate the existence of a preselected condition or state or operability of a camera function, and light conducting means disposed relative to the light source and the lens element to transmit light from the light source to illuminate a surface of the light-conducting means viewable through the viewfinder, and to transmit light through the lens element to illuminate the peripheral portion thereof.

2. A photographic camera as claimed in Claim 1, further including a light sensitive circuit, which establishes an exposure interval related to scene light intensity, wherein the predetermined condition exists when the exposure interval exceeds a preselected time.

3. A photographic camera as claimed in Claim 1 or 2, further including a shutter, wherein the preselected state exists whilst the shutter is open.

4. A photographic camera as claimed in Claim 1, 2 or 3, wherein the lens element and light conducting means comprise a one-piece unit.

5. A photographic camera as hereinbefore described with reference to and as illustrated in the accompanying drawings.

L. A. TRANGMAR, B.Sc., C.P.A.
Agent for the Applicants.

