

PATENT SPECIFICATION (11)

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(54) IMPROVEMENTS IN AND RELATING TO CAMERAS

(71) We, AGFA-GEVAERT AKTIEN-GESELLSCHAFT, 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:—

The present invention relates to a camera having electronic exposure-control means responsive to the brightness of the prevailing illumination.

In a previously proposed camera of this type the sensitivity of the light responsive means must be varied when a flashlight photograph is being taken.

An object of the invention is to provide a camera of the above type by means of which both daylight and flashlight pictures can be taken without the use of additional correction means and in which the photo-sensitive measuring device and exposure-control device are so sensitive and low in inertia when flashlight pictures are being taken that a short exposure time can be achieved when taking flashlight pictures of, for example, close-up subjects.

The invention provides a camera having electronic exposure control means comprising means responsive to the brightness of the prevailing illumination, means for integrating the output from the light responsive means and arranged to give an output signal when the total amount of light that has fallen on the light responsive means reaches a predetermined value and a liquid crystal responsive to the output from the integration means, and so arranged, between two plane polarizers, in the path of light of the camera objective, that the exposure is terminated when an output signal is delivered by the integrating means.

The means responsive to the brightness of the prevailing illumination and the integration means permit the exposure to be determined with a very low inertia. The liquid crystal too has a low inertia so that exposure control is achieved in an almost inertialess manner.

Advantageously, the integrating means

comprises a summing amplifier having capacitive feedback the output of which is, preferably, connected to the input of a trigger device which is arranged to deliver an output to the liquid crystal when the input reaches a predetermined level. Preferably, the input of the operational amplifier that does not have feedback is connected to a tap from the power supply for the control circuit.

One form of camera constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawing which is a diagrammatic representation of the camera.

Referring to the accompanying drawing a first polarization filter 1 and a second polarization filter 2 are aligned with one another. Fitted between the two polarization filters 1 and 2 is a liquid-crystal element 3 which is connected across the output of a threshold detector 4. The input of the threshold detector 4 is connected to the output of an operational amplifier 5, the inverting input of which is connected to a silicon photo-diode 6, which is sensitive to the light passing through a metering aperture 7. The non-inverting input of the operational amplifier 5 is connected to a mid-point tap of a power supply connected between the output of the operational amplifier 5 and the inverting thereof is an integrating capacitor 10. Two power supplies are designated by the numerals 11 and 12 and a trip switch by the numeral 13. A camera body is designated by the numeral 14 and an objective by the numeral 15. Mounted on the camera body 14 is a flash-cube 16, in which is arranged a flash-bulb 17, in the ready position. The threshold detector 4 is so designed that no potential is applied to the liquid-crystal element 3 before the threshold value has been reached. The liquid-crystal element 3 behaves in a neutral manner when no potential is applied across it. If a potential is now applied to the electrodes of the liquid crystal 3, the light polarized in one direction by the polarization filter 1 and striking the liquid-crystal

element is rotated through approximately 90°. Since the polarization filter 2 is aligned with the polarization filter 1, polarized light turned through 90° does not pass through the polarization filter 2.

Both daylight and flashlight are measured with almost the same sensitivity and in an almost inertialess manner, and after the threshold-value voltage of the threshold detector 4 has been exceeded, exposure is completed in an almost inertialess manner.

WHAT WE CLAIM IS:—

1. A camera having electronic exposure control means comprising means responsive to the brightness of the prevailing illumination, means for integrating the output from the light responsive means and arranged to give an output signal when the total amount of light that has fallen on the light responsive means reaches a predetermined value and a liquid crystal responsive to the output from the integration means, and so arranged, between two plane polarizers, in the path of light of the camera objective that the exposure is terminated when an output signal is delivered by the integrating means.

2. A camera as claimed in Claim 1, wherein the integrating means comprises an operational amplifier having capacitive feedback.

3. A camera as claimed in Claim 2, wherein the output of the operational amplifier is connected to the input of a trigger device which is arranged to deliver an output to the liquid crystal when the input reaches a predetermined level.

4. A camera as claimed in Claim 2 or Claim 3, wherein the input of the operational amplifier that does not have feedback is connected to a tap from the power supply for the control circuit.

5. A camera as claimed in any one of Claims 1 to 4, wherein the light responsive means comprises a silicon photo-diode.

6. A camera having electronic exposure control means substantially as hereinbefore described with reference to, and shown in, the accompanying drawing.

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Both daylight and flashlight are measured with almost the same sensitivity and in an almost inertialess manner, and after the threshold-value voltage of the threshold detector 4 has been exceeded, exposure is completed in an almost inertialess manner.

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1. A camera having electronic exposure control means comprising means responsive to the brightness of the prevailing illumination, means for integrating the output from the light responsive means and arranged to give an output signal when the total amount of light that has fallen on the light responsive means reaches a predetermined value and a liquid crystal responsive to the output from the integration means, and so arranged, between two plane polarizers, in the path of light of the camera objective that the exposure is terminated when an output signal is delivered by the integrating means.

2. A camera as claimed in Claim 1, wherein the integrating means comprises an operational amplifier having capacitive feedback.

3. A camera as claimed in Claim 2, wherein the output of the operational amplifier is connected to the input of a trigger device which is arranged to deliver an output to the liquid crystal when the input reaches a predetermined level.

4. A camera as claimed in Claim 2 or Claim 3, wherein the input of the operational amplifier that does not have feedback is connected to a tap from the power supply for the control circuit.

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