

PATENT SPECIFICATION

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(54) PHOTOGRAPHIC 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 a battery receiving cavity.

The problems associated with corrosion of battery contacts in photographic cameras are well known. It is common for camera manufacturers to suggest to camera users that both batteries and battery contacts be cleaned with abrasive material to improve electrical contact.

In accordance with the present invention there is provided a photographic camera having a housing which defines a first cavity for receiving at least one battery and a second cavity for receiving roll film, a door movable relative to the housing between open and closed positions to provide access to at least said second cavity, an electrical circuit, and a contact for engaging the battery to connect the battery to the circuit and, moving means for moving a battery received in the first cavity relative to the contact in response to movement of the door between its open and closed positions so as to provide rubbing engagement between the contact and the received battery.

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

Fig. 1 is a perspective view of a portion of a photographic camera embodying the present invention and showing a film compartment door in its open position with a battery in place; and

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Fig. 2 is a sectional view of the camera portion shown in Fig. 1 taken on the line II-II of Fig. 1 and showing the movement of the battery as the camera door is closed.

Because photographic cameras are well known, the present description will be directed in particular to the elements forming part of, or cooperating more directly with, apparatus in accordance with the present invention. It is to be understood that camera elements not specifically shown or described may take various forms well known to those skilled in the art.

Referring to Fig. 1, a camera 10 includes a housing 12 which defines a film compartment 14 and a battery compartment 16. The film and battery compartments 14 and 16 respectively are closed by a single door 18 which is connected to the housing 12 by a hinge (not shown). One of a pair of latch members (only one of which is shown and referred to by numeral 20) which are controlled by a single linkage 22 cooperates with a tab 24 to latch the door 18 in its closed position.

Battery compartment 16 has an entrance aperture and a rib 26 extending into the cavity adjacent the aperture. An electrical contact 28 in the form of a leaf spring is connected to an electrical lead 30 and another contact 32 is connected to another lead 34. Leads 30 and 34 are connected to an electrical load in the camera such as an exposure control device. A leaf spring 36 is mounted in the base of the cavity. An electrical battery holder 38 which may be of the type disclosed in our copending British Patent Application No. 45564/71 (Serial No. 1 371 376), is pushed into the cavity against leaf spring 36. Once in the cavity, battery holder 38 is moved laterally (upwardly as viewed in Fig. 2) until a groove 40 in the battery holder 38 aligns with rib 26. When the holder 38 is now released, the spring 36 will move the battery 90

holder 38 rearwardly so that rib 26 enters the groove 40 to lock the holder 38 in place. Electrical contacts 28 and 32 now engage negative contact 42 and positive contact 44 of the battery holder 38, respectively.

To remove the holder 38, the foregoing operation is reversed. That is, the holder 38 is moved against the spring 36 until the rib 26 is clear of the slot 40. The holder 38 is then moved downwardly as viewed in Fig. 2, and the spring 36 moves the holder 38 sufficiently out of the cavity to be grasped.

A projection 46 is provided on the door 18 so as to engage the battery holder 38 as the door 18 is closed and to move the holder 38 from its full line position in Fig. 2 to its phantom line position against the force of the spring 36. Such movement causes relative movement between battery contacts 42 and 44 and electrical contacts 28 and 32, respectively, so as to provide rubbing engagement between the contacts 28 and 32 and the battery contacts 42 and 44, cleaning all four surfaces. This cleaning action may be aided by roughening the ends of contacts 28 and 32 if desired. The end of projection 46 is tapered or bevelled to keep the battery holder 38 pushed upwardly as viewed in Fig. 2 to prevent accidental ejection of the battery holder 38 by downward movement as the camera door 18 is opened.

Movement of the battery holder 38 relative to the camera contacts 28 and 32 each time the camera door 18 is opened or closed provides for cleaning of the respective contacts upon changing a film roll or battery. If desired, the battery door may be separate from the film compartment door so that a battery may be replaced without risking film fogging. In such an embodiment it is preferred to effect movement of the battery holder relative to the contacts by the opening and closing of the film compartment door so as to produce a contact-cleaning movement of the battery when an exposed film roll is removed from the camera and when a fresh roll of film is substituted.

WHAT WE CLAIM IS:—

1. A photographic camera having a housing which defines a first cavity for receiving at least one battery and a second cavity for receiving roll film, a door mov-

able relative to the housing between open and closed positions to provide access to at least said second cavity, an electrical circuit, and a contact for engaging the battery to connect the battery to the circuit, and moving means for moving a battery received in the first cavity relative to the contact in response to movement of the door between its open and closed positions so as to provide rubbing engagement between the contact and the received battery.

2. A photographic camera according to Claim 1 wherein the moving means comprises resilient means in the first cavity for urging the received battery to a first position relative to and in engagement with the contact, and abutment means on the door for moving the battery from the said first position to a second position in engagement with the contact as the door is closed.

3. A photographic camera according to Claim 1 or 2 wherein the first cavity is shaped to receive a holder containing the battery or batteries and having an elongated configuration, a first portion with an external electrical contact of one polarity thereat, a second portion with an external contact of opposite polarity thereat and an end portion with a groove therein, the camera comprising a rib for entering the groove, a set of resilient contacts for electrically engaging the battery holder contacts to put an electrical load across the said at least one battery and for cooperating with the rib for supporting the battery holder in the camera, the moving means being engageable with the battery holder.

4. A photographic camera according to Claim 3 wherein the rib is located on the camera housing adjacent an opening in the housing through which a holder may be inserted into the first cavity and extending into the first cavity for entering into the groove of a received battery holder, the rib having a surface facing away from the opening and toward an abutment surface of a received battery holder to block movement of the said end portion of the battery holder toward the opening.

5. A photographic camera according to Claim 1 substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

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