

PATENT SPECIFICATION

(11) 1 252 450

DRAWINGS ATTACHED

- (21) Application No. 58027/68 (22) Filed 6 Dec. 1968
 (31) Convention Application No. K 59653/57a Gbm
 (32) Filed 8 Dec. 1967 in
 (33) Germany (DT)
 (45) Complete Specification published 3 Nov. 1971
 (51) International Classification G 03 b 15/03 19/18
 (52) Index at acceptance

G2A 1G 1K2A 1K2Y 1KY
 G2E A20A1 A20B2 A20CX

- (72) Inventor HORST SIMON



(54) PHOTOGRAPHIC APPARATUS

(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 photographic apparatus having a pair of electrical contacts for connecting a received battery cell to an associated electrical circuit, and particularly to means for automatically cleaning the connecting surfaces of a received battery cell and at least one mating circuit contact in order to maintain an effective electrical connection therebetween.

The connecting surfaces of battery cells and mating circuit contacts are made of metals that are susceptible to becoming oxidized with the passage of time. Such oxidation sometimes increases the electrical resistance at the interface of connected surfaces to such an extent that circuit malfunctions result, even with battery cells that are otherwise in operative condition but which have been out of use for a considerable period of time. In order to avert such circuit malfunctions, the connecting surfaces of battery cells and mating circuit contacts should be cleaned regularly, as can be done, for example, by rubbing connected surfaces against each other.

In accordance with the present invention there is provided a photographic apparatus having means for receiving an associated member preparatory to operating the apparatus comprising a pair of electrical contacts for connecting a battery cell received therebetween in an electric circuit in the apparatus and a displaceable member which extends into the means for receiving an associated member and, upon insertion of the associated member into said means, is displaced by the

associated member and effects relative movement between the cell and at least one of the contacts to clean the mating surfaces thereof.

The photographic apparatus could be a still-picture or moving-picture camera having a receptacle for receiving a photographic attachment needed for proper operation of the camera, in which case the associated member could be such an attachment insertable in the receptacle.

In the accompanying drawings:—

Fig. 1 is a fragmentary perspective view, with portions broken away for clarity of illustration, of a flash attachment in accordance with one embodiment of the present invention, showing a battery cell holder, a flashbulb socket, and a flashbulb not yet fully inserted in the socket;

Figure 2 is a fragmentary perspective view, with portions broken away for clarity of illustration, of a photographic camera according to the present invention, showing part of a camera housing, a battery cell holder and a flashcube socket, along with a flashcube not yet fully inserted into the socket; and

Fig. 3 is a perspective view, with portions broken away for clarity of illustration, of a motion-picture camera showing two battery cell holders, a chamber for receiving a film magazine, and a film magazine fully inserted in the chamber.

The embodiments illustrated in Fig. 1 of the drawings comprises, for a still-picture camera, a battery cell holder 10 and a socket 11 for receiving a flashbulb 12 having a base portion 13 insertable in the socket. Included in socket 11 are two electrical contacts 11a and 11b engageable by base portion 13 to connect flashbulb 12 to an associated electrical circuit (not shown). Extending from socket 11 into a cell holder 10 is an actuating member comprising a pin 14 which is engageable with a battery cell 15 received in cell holder 10 between electrical contacts 16 and 17. The battery cell 15 is provided with electrical

[Price 25p]

contact surfaces 15a and 15b at its opposite ends, surface 15a engaging contact 16 and surface 15b engaging contact 17 when battery cell 15 is inserted in cell holder 10 to connect cell 15 to the associated electrical circuit. Urging the battery cell 15 toward socket 11 is a spring member 18 which, as illustrated, is formed integrally with the contact 17. Thus, when there is no flashbulb in the socket 11, the spring member 18 urges the battery cell 15 upward, as viewed in Fig. 1, to a first (upper) position between contacts 16 and 17. As a flashbulb 12 is fully inserted in the socket 11, its base portion 13 actuates pin 14, and hence battery cell 15, in a downward direction, as viewed in Fig. 1, in opposition to the upward-biasing influence of the spring member 18, to move the battery cell 15 to a second (lower) position between the contacts 16 and 17. In this manner, insertion of flashbulb 12 in the socket 11 causes relative movement between the battery cell 15 and the mating contacts 16 and 17, thereby cleaning the connected surfaces of the battery cell and both circuit contacts. When flashbulb 12 is removed from the socket 11, the spring member 18 urges the battery cell 15 upward to the first (upper) position so that relative movement between the battery cell 15 and mating contacts 16 and 17 is again effected. In order to assist the return of the pin 14 to its first (upper) position, additional biasing means comprising a spring 19 may be provided to urge pin 14 upward when the flashbulb 12 is removed.

The embodiment illustrated in Fig. 2 of the drawings is similar to that illustrated in Fig. 1, the differences being that the still-picture-camera housing *H* in Fig. 2 comprises a socket 11' for receiving a flashcube 12' having a base portion 13' insertable in socket 11' to actuate pin 14'. Other elements in the embodiment of Fig. 2 are identical to those shown in Fig. 1 and are designated by the same reference numerals bearing primes. Operation of the device illustrated in Fig. 2 is likewise the same as that of the device shown in Fig. 1, the associated member in Fig. 2 being a flashcube instead of a flashbulb as seen in Fig. 1.

The embodiment illustrated in Fig. 3 of the drawings comprises a motion-picture camera *C* having a battery cell 33 between mating resilient contacts 31 and 32 and also a cell holder 40 for receiving one or more battery cells 43 between mating resilient contacts 41 and 42. Contacts 31 and 32 serve to connect the battery cell 33 to one associated electrical circuit, such as an exposure-control circuit in the camera (not shown), while contacts 41 and 42 serve to connect battery cells 43 to another associated electrical circuit, such as a camera-drive-motor circuit (not shown). Also included in camera *C* is a chamber 50 for receiving a film magazine

51 having surfaces 52 and 53 which face cell holders 30 and 40, respectively, when the film magazine has been inserted in chamber 50 as shown. Extending from chamber 50 into cell holder 30 for engagement with contact 31 is a resilient actuating member 34, and similarly extending from chamber 50 into cell holder 30 for engagement with contact 32 is a resilient actuating member 35. In like fashion, resilient actuating members 44 and 45 extend from chamber 50 into cell holder 40 for engagement with contacts 41 and 42, respectively.

In operation, as film magazine 51 is fully inserted in chamber 50, surface 52 of the film magazine moves actuating members 34 and 35 towards the lefthand side (as viewed in Fig. 3), which in turn move contacts 31 and 32, respectively, towards the lefthand side relative to battery cell 33. In like manner, surface 53 of the film magazine moves actuating members 44 and 45 downward (as viewed in Fig. 3), which in turn moves contacts 41 and 42, respectively, downward relative to battery cells 43. Thus, placing film magazine 51 in its operative position in chamber 50, a prerequisite to operating camera *C*, effects relative movement between battery cell 33 and mating contacts 31 and 32 and relative movement between battery cells 43 and mating contacts 41 and 42, thereby cleaning the connected surfaces to ensure an effective electrical connection therebetween.

Actuating members 34, 35, 44 and 45, and contacts 31, 32, 41 and 42, are made of a resilient material to provide a biasing influence urging the return of the actuating members as well as the contacts to their respective original positions upon the removal of the film magazine 51 from chamber 50. Hence, in the embodiment of Fig. 3 as in the previously described embodiments, relative movement between a received battery cell and mating circuit contact is ensured during both the positioning and removal of an associated member.

The present member includes the positioning of any other associated member which is prerequisite to proper use of the apparatus involved. Thus the invention is intended to embrace any relative movement between a received cell and a mating circuit contact, for the purpose of cleaning the connected surfaces, that is effected automatically by the positioning of such a member which may be necessary before the apparatus can be properly used.

WHAT WE CLAIM IS:—

1. A photographic apparatus having means for receiving an associated member preparatory to operating the apparatus, comprising a pair of electrical contacts for connecting a battery cell received therebetween in an electric circuit in the apparatus and a displaceable member which extends into the



contact surfaces 15a and 15b at its opposite ends, surface 15a engaging contact 16 and surface 15b engaging contact 17 when battery cell 15 is inserted in cell holder 10 to connect cell 15 to the associated electrical circuit. Urging the battery cell 15 toward socket 11 is a spring member 18 which, as illustrated, is formed integrally with the contact 17. Thus, when there is no flashbulb in the socket 11, the spring member 18 urges the battery cell 15 upward, as viewed in Fig. 1, to a first (upper) position between contacts 16 and 17. As a flashbulb 12 is fully inserted in the socket 11, its base portion 13 actuates pin 14, and hence battery cell 15, in a downward direction, as viewed in Fig. 1, in opposition to the upward-biasing influence of the spring member 18, to move the battery cell 15 to a second (lower) position between the contacts 16 and 17. In this manner, insertion of flashbulb 12 in the socket 11 causes relative movement between the battery cell 15 and the mating contacts 16 and 17, thereby cleaning the connected surfaces of the battery cell and both circuit contacts. When flashbulb 12 is removed from the socket 11, the spring member 18 urges the battery cell 15 upward to the first (upper) position so that relative movement between the battery cell 15 and mating contacts 16 and 17 is again effected. In order to assist the return of the pin 14 to its first (upper) position, additional biasing means comprising a spring 19 may be provided to urge pin 14 upward when the flashbulb 12 is removed.

The embodiment illustrated in Fig. 2 of the drawings is similar to that illustrated in Fig. 1, the differences being that the still-picture-camera housing *H* in Fig. 2 comprises a socket 11' for receiving a flashcube 12' having a base portion 13' insertable in socket 11' to actuate pin 14'. Other elements in the embodiment of Fig. 2 are identical to those shown in Fig. 1 and are designated by the same reference numerals bearing primes. Operation of the device illustrated in Fig. 2 is likewise the same as that of the device shown in Fig. 1, the associated member in Fig. 2 being a flashcube instead of a flashbulb as seen in Fig. 1.

The embodiment illustrated in Fig. 3 of the drawings comprises a motion-picture camera *C* having a battery cell 33 between mating resilient contacts 31 and 32 and also a cell holder 40 for receiving one or more battery cells 43 between mating resilient contacts 41 and 42. Contacts 31 and 32 serve to connect the battery cell 33 to one associated electrical circuit, such as an exposure-control circuit in the camera (not shown), while contacts 41 and 42 serve to connect battery cells 43 to another associated electrical circuit, such as a camera-drive-motor circuit (not shown). Also included in camera *C* is a chamber 50 for receiving a film magazine

51 having surfaces 52 and 53 which face cell holders 30 and 40, respectively, when the film magazine has been inserted in chamber 50 as shown. Extending from chamber 50 into cell holder 30 for engagement with contact 31 is a resilient actuating member 34, and similarly extending from chamber 50 into cell holder 30 for engagement with contact 32 is a resilient actuating member 35. In like fashion, resilient actuating members 44 and 45 extend from chamber 50 into cell holder 40 for engagement with contacts 41 and 42, respectively.

In operation, as film magazine 51 is fully inserted in chamber 50, surface 52 of the film magazine moves actuating members 34 and 35 towards the lefthand side (as viewed in Fig. 3), which in turn move contacts 31 and 32, respectively, towards the lefthand side relative to battery cell 33. In like manner, surface 53 of the film magazine moves actuating members 44 and 45 downward (as viewed in Fig. 3), which in turn moves contacts 41 and 42, respectively, downward relative to battery cells 43. Thus, placing film magazine 51 in its operative position in chamber 50, a prerequisite to operating camera *C*, effects relative movement between battery cell 33 and mating contacts 31 and 32 and relative movement between battery cells 43 and mating contacts 41 and 42, thereby cleaning the connected surfaces to ensure an effective electrical connection therebetween.

Actuating members 34, 35, 44 and 45, and contacts 31, 32, 41 and 42, are made of a resilient material to provide a biasing influence urging the return of the actuating members as well as the contacts to their respective original positions upon the removal of the film magazine 51 from chamber 50. Hence, in the embodiment of Fig. 3 as in the previously described embodiments, relative movement between a received battery cell and mating circuit contact is ensured during both the positioning and removal of an associated member.

The present member includes the positioning of any other associated member which is prerequisite to proper use of the apparatus involved. Thus the invention is intended to embrace any relative movement between a received cell and a mating circuit contact, for the purpose of cleaning the connected surfaces, that is effected automatically by the positioning of such a member which may be necessary before the apparatus can be properly used.

WHAT WE CLAIM IS:—

1. A photographic apparatus having means for receiving an associated member preparatory to operating the apparatus, comprising a pair of electrical contacts for connecting a battery cell received therebetween in an electric circuit in the apparatus and a displaceable member which extends into the

- means for receiving an associated member and, upon insertion of the associated member into said means, is displaced by the associated member and effects relative movement between the cell and at least one of the contacts to clean the mating surfaces thereof.
- 5 2. A photographic apparatus according to Claim 1, wherein the relative movement in one direction is effected against the action of a spring.
- 10 3. A photographic apparatus according to Claim 2, wherein the means for receiving an associated member comprises a socket for receiving a flashcube or flashbulb, and the
- 15 displaceable member comprises a slidably mounted pin having one end extending into the socket for displacement by the insertion of the flashcube or flashbulb, and the other end engaging the battery cell to displace the
- 20 battery cell relative to the contacts.
4. A photographic apparatus according to Claim 1 having a pair of displaceable members and wherein the means for receiving an associated member comprises a chamber for receiving a film magazine, each displaceable member comprising a resilient member which is disposed for engagement by the magazine inserted in the chamber and has one end which, upon insertion of the magazine into the chamber, displaces one of the contacts relative to a battery cell.
- 25 5. A photographic apparatus according to claim 1, substantially as hereinbefore described with reference to, and as shown in, Fig. 1, Fig. 2 or Fig. 3 of the accompanying drawings.
- 30 35

L. A TRANGMAR B.Sc. C.P.A.
Agents for the Applicants

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1971.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

