No. 704,113. Patented July 8, 1902.

W. ROCHE.

CIRCUIT CLOSER FOR PORTABLE ELECTRICAL APPARATUS.

(Application filed Dec. 5, 1901.)

(No Model.)

Fig. 1.

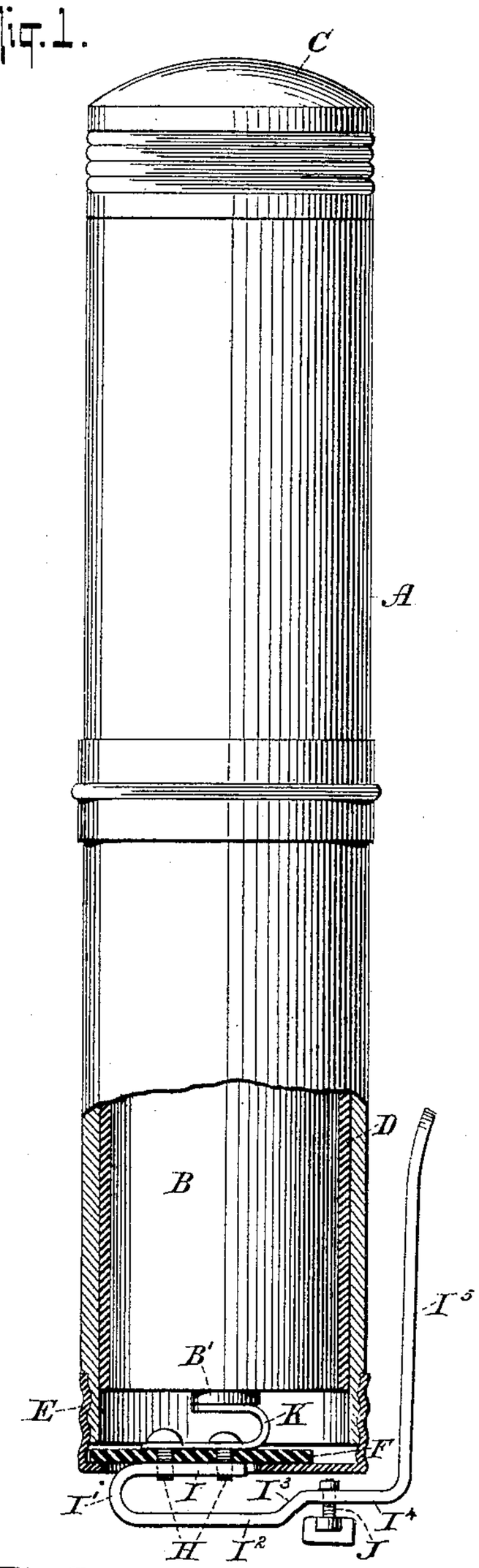
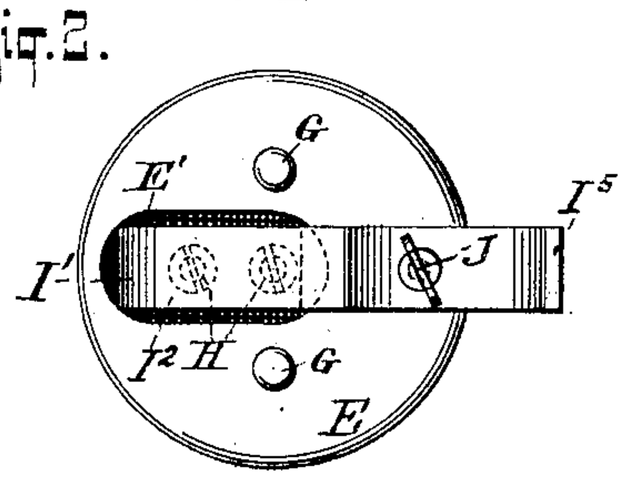


Fig. 2.



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CIRCUIT-CLOSER FOR PORTABLE ELECTRICAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 704,113, dated July 8, 1902.

Application filed December 5, 1901. Serial No. 84,740. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROCHE, a citizen of the United States, residing at Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Circuit-Closers for Portable Electrical Apparatus, of which the following is specification.

My invention relates to portable electrical apparatus, such as flash-lights, gas-lighters, and the like, and has for its object to provide a circuit-closer for apparatus of the above-indicated class which will furnish a perfect contact upon applying a slight manual pressure, which will have means for permanently closing the circuit when desired, and which comprises an improved construction for efficiently connecting the circuit-closer with the source of electricity, such as a dry battery.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is an elevation of a flash-light provided with my improved circuit-closer with parts shown in section, and Fig. 2 is an end view of said apparatus.

My invention is shown as applied to a flash-light of a well-known character, which comprises a casing A, containing one or more batteries B and also carrying at one end a glass pane or lens C, through which shines the light of an electric incandescent lamp located at the said end of the casing and having one of its terminals connected electrically with one pole of the cell or battery and its other terminal connected with the casing A, which is of conducting material, the battery being separated from the casing by a layer of insulating material, such as pasteboard D. So far as above described the construction may be the usual one, and I have not shown any detail of the lamp for this reason.

My improved circuit-closer is attached to the metallic cap E, which fits or screws upon the end of the casing A opposite to that at which the lamp is arranged. This cap is provided in its end surface with a slot or opening E′, and on the inside of the cap is arranged a plate of insulating material F. This plate is secured to the cap by pins or rivets G. To the plate F is secured, as by pins or screws H, one end I of the circuit-closer, said end being out of contact with the cap E. The circuit-closer is of the particular construction shown—that is, it has a return-bend I′ adjacent to the outer end of the slot E′, a straight portion I^2 substantially parallel with the end I, an inward bend I^3, another straight portion I^4, which is located nearer the end of the cap than the straight portion I^2, and, finally, a handle I^5, which extends lengthwise of the casing A at the side thereof. The portion I^4 may carry a screw J, having a milled or flat head and preferably upset at its inner end so that it cannot become detached from the circuit-closer.

One pole of the cell or battery is, as hereinbefore stated, connected with one terminal of the lamp. The other pole of the battery B′ is connected with the circuit-closer, and this is preferably done by securing a curved spring K to the plate F by means of one or both of the screws H, the free end of said spring being arranged to engage the pole B′ when the cap E is screwed home. These parts are so arranged that the spring will be compressed to a certain extent when screwing in the cap E, so that the spring will have sufficient tension to preserve a good contact with the pole B′.

In operation when it is desired to produce a flash-light the operator presses the free end of the handle I^5 inward, and this will cause the circuit-closer to move toward the cap E from the bend I′ to the handle. The inner end of the screw J will thus be brought into engagement with the end surface of the cap E and the circuit will be closed. As soon as the handle I^5 is released the elasticity of the circuit-closer will restore it to its former position, breaking the circuit. In case the screw J is omitted the circuit will be closed in substantially the same manner by the engagement of the portion I^4 of the circuit-closer with the end surface of the cap E. In any event it will be seen that the contact is made not with the side surface of the cap, but with its end surface, and by the arrangement described a very considerable pressure is exerted at the point of contact, so that the circuit is closed positively and the full strength

of the current is available. The purpose of the screw J is to produce a permanent light whenever desired without requiring a constant pressure on the handle I⁵. To effect this, the screw is screwed against the end of the cap E, and it will be understood that after the end of the screw has come in contact with the cap a further turning of the screw will force the circuit-closer outward against its inherent elasticity. Thus the end of the screw will be pressed firmly against the cap E and a good contact will result.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a circuit-closer for electric apparatus, the combination of a conducting cap or carrier with a circuit-closer carried by said cap, but insulated therefrom and provided with an attached end portion, a spring-bend at one end of said attached portion, a return member extending substantially parallel with the end portion and provided with a contact arranged to engage the end surface of the cap or carrier, and a handle portion connected with said return member and extending along the side of the cap or carrier out of contact therewith.

2. In an electric-circuit closer the combination of a cap or carrier with a circuit-closer carried by said cap but insulated therefrom, said circuit-closer comprising an attached end portion, a spring-bend at one end of said end portion, a return member extending along the end surface of the cap, a handle portion extending along the side of the cap, and a contact-screw carried by the return member and adapted to engage the end surface of the cap.

3. In an electric-circuit closer the combination of a conducting-cap having a slot, an insulating-plate secured on the inside of the cap, a circuit-closer secured to said plate within the slot of the cap, but out of contact with the cap, said circuit-closer having a spring-bend adjacent to its attached end, a return member connected with said spring-bend and adapted to effect contact with the end surface of the cap, and a handle portion extending along the side of the cap.

4. The combination with the battery-casing, a conducting-cap therefor adapted for connection with one pole of the battery, a circuit-closer carried by the cap, but insulated therefrom and adapted for contact with the cap, and a spring carried by the cap and connected with the circuit-closer, said spring being adapted to engage with pole of the battery.

5. The combination of the battery-casing, a conducting-cap therefor adapted for connection with one pole of the battery and provided with a slot in its end surface, an insulating-plate secured to the inside of the cap, a circuit-closer arranged on the outside of the plate within the slot of the cap and adapted for contact with the cap, a contact-making spring arranged on the inside of the insulating-plate and adapted for engagement with the other pole of the battery, and conducting fastening devices extending through the insulating-plate and forming an electric connection between the circuit-closer and the spring.

6. The combination of the conducting cap or carrier, with a circuit-closing arm comprising a spring portion secured to said carrier but insulated therefrom, a contact member extending from said spring portion substantially parallel with the end surface of the cap and movable toward the cap to engage the end surface thereof, against the tension of the spring portion, and a handle member extending from the outer end of the contact member lengthwise at the side of the cap and out of contact therewith.

7. The combination of the conducting cap or carrier, with a circuit-closing arm having one of its ends secured to said carrier but insulated therefrom, and provided with a transverse member extending across the end surface of the cap and having a contact portion which is nearer the said end surface than the remainder of said member, and a handle member extending from the outer end of said cross member lengthwise at the side of the cap and out of contact therewith.

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