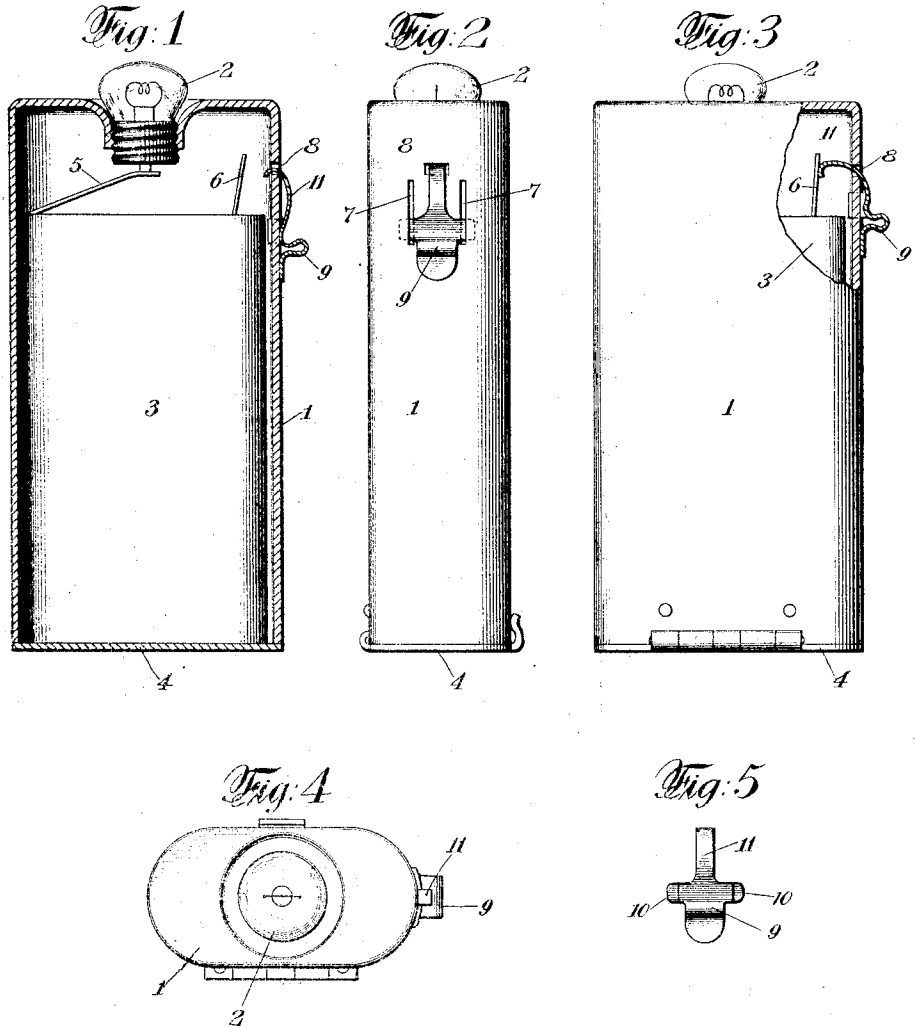


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 PORTABLE ELECTRIC LIGHT.
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To all whom it may concern:

Be it known that I, CONRAD HUBERT, a citizen of the United States, residing in the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Portable Electric Lights, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

My invention relates to portable electric lights, particularly those of small dimensions and convenient shape for carrying in the pocket and for carrying about in the hand in use, commonly called flash lights. In devices of this kind the battery is separable from the casing which carries the lamp, and has exposed contacts which make connection with the lamp terminals, one of these connections being usually permanently maintained while the battery is in the casing and the other connection a manually operable circuit-closer which usually makes contact with an exposed terminal of the battery. The push buttons and other circuit-closers commonly employed give only a short range of circuit-closing movement, and as the fit of the battery in the casing is necessarily quite loose and the exposed terminal with which the circuit-closer makes connection is in some constructions a flexible spring, it is an exceedingly difficult matter to assure that the contact will not be accidentally closed and the battery exhausted and, on the other hand, that the operation of the circuit-closer will certainly close the contact when a closed contact is desired.

An object of my invention is the provision of a circuit-closer having a large range of circuit-closing movement, thereby accommodating a considerable variation in the location of the coöperative battery contact without fear of accidental closure of the circuit and with certainty of intentional closure of the circuit.

Other objects are non-liability of accidental movement of the circuit-closer to circuit-closing position, and retention in closed-circuit condition without effort on the part of the operator.

Other objects are simplicity and compactness of construction, inexpensiveness of manufacture, convenience of operation and durability.

Other objects and advantages of my invention will hereinafter appear.

My invention includes a circuit-closer bodily slidable along the casing and having a contact-making portion movable inwardly and outwardly toward and from the coöperative battery terminal, the circuit-closer including in one part the bodily slidable portion and the contact-making portion or the circuit-closer having a yielding portion directly coöperative with a guide of the casing.

My invention further includes various novel features of construction and combinations of parts as will appear in the following description.

I shall now describe the portable electric light illustrated in the accompanying drawings and embodying my invention, and shall thereafter point out my invention in claims.

Figure 1 is a longitudinal section of the casing and circuit-closer, the circuit-closer being in open position. Fig. 2 is an end elevation as viewed from the right in Fig. 1. Fig. 3 is a front elevation partly in section, with the circuit-closer in closed position. Fig. 4 is a plan view as seen from above in Fig. 1. Fig. 5 is a detail elevation of the circuit-closer as seen in Fig. 2.

Referring to the accompanying drawings, a flattened and rounded outer sheet metal casing 1 has a miniature incandescent electric lamp 2 threaded into a socket formed in the closed end of the casing, and removably contains a battery 3, the open end of the casing being closed by a hinged door 4. The battery terminals are usual projecting resilient metallic contact strips 5 and 6, the strip 5 extending across the end of the battery in position to be directly engaged by one of the lamp terminals (Fig. 1) and the other strip 6 projecting within the casing in position to be engaged by a circuit-closer carried by the casing forming a part of the circuit-completing means from the battery to the lamp, the casing being connected to the other lamp terminal at the lamp socket.

In the portable light illustrated in the drawings, the sheet metal casing 1 has therein parallel guide slots 7 suitably spaced from the closed end of the casing at one of the rounded sides thereof, and the casing also has, adjacent to the guide slots and nearer to the closed end of the casing, a slot 8 constituting a guide aperture for a contact fin-

ger of the circuit-closer. The circuit-closer (shown separately in Fig. 5) is formed of thin sheet metal and has a manually operatable portion at the outside of the casing bent to form a projecting loop 9 for engagement by the thumb. The circuit-closer is slidable bodily along the casing and is slidably mounted on the casing by means of lateral lugs 10 which extend to the inside of the casing through the guide slots 7 and are turned over or clenched at the inside of the casing, being adapted to slide in the parallel guide slots 7, which constitute guideways; the lugs 10 constituting combined guide lugs and attaching lugs.

An inwardly curved yieldable contact finger 11 extends forward from the manually operatable portion of the circuit-closer at the outside of the casing and projects through the finger-guiding slot 8 to the inside of the casing and terminates in a contact-making portion. The finger-guiding slot 8 acts as a guide for the contact finger 11, so that when the circuit-closer is shifted bodily toward the closed end or lamp end of the casing, that is, from the open-circuit position shown in Figs. 1, 2 and 4, to the closed-circuit position shown in Fig. 3, the free end or contact-making portion of the contact finger 11 will be forced inward from the retracted position of Figs. 1, 2 and 4 to the projected position of Fig. 3 and into contact with the projecting battery contact strip 6, and, conversely, when the circuit-closer is shifted bodily toward the open end or door end of the casing, the free contact-making end or contact portion of the contact finger will be moved from the projected closed-circuit position shown in Fig. 3 to the retracted open-circuit position shown in Figs. 1, 2 and 4. As clearly shown in the drawings, particularly by comparison of Figs. 1 and 3, the contact-making portion of the contact finger 11 has a comparatively wide range of movement and has sufficient movement to move into and out of contact with the coöperative battery terminal 6 regardless of the exact location of such terminal.

It will be noted (see Fig. 3 particularly) that the circuit-closing thrust or pressure against the battery contact strip 6 is substantially perpendicular to the direction of bodily sliding movement of the circuit-closer along the guide slots 7, so that such pressure or thrust will have no tendency to move the circuit-closer away from the circuit-closing position. However, to assure retention of the closed-circuit condition, the contact finger 11 is adapted, in the circuit-closing position, to occupy an oblique or angular position in the finger-guiding slot 8, so that the contact finger is pinched or gripped by the walls of the slot to thereby develop friction which will hold the contact finger in

contact with the battery terminal 6, as appears in Fig. 3. The contact finger 11 is shaped to form a stop for preventing the complete withdrawal of the contact finger from the finger-guiding aperture 8 in the casing 1, and is shown as having a bent inner end forming a stop hook which engages the casing at the guide aperture 8 and constitutes a stop for the circuit-closer in its retracted position, as shown in Fig. 1. The back of this hook also presents a smooth rounded surface for making contact with the battery contact terminal 6 (Fig. 3).

It is obvious that various modifications may be made in the construction shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:—

1. A portable electric light comprising a casing, an electric lamp carried by the casing, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, the casing having guideways for a circuit-closer and also having a guide for a contact finger, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer mounted to slide along the guideways of the casing and having a contact finger slidable longitudinally of the finger past the finger guide thereby to thrust the free contact-making end portion of the finger into contact with the exposed battery terminal or to withdraw such contact-making portion from contact with such battery terminal according as the circuit-closer is moved to one position or to the other along the guideways.

2. A portable electric light comprising a casing, an electric lamp carried by the casing, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, the casing having guideways for a circuit-closer and also having a guide for a contact finger, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer having a body portion mounted to slide along the guideways of the casing and having a contact finger projecting from the body portion and terminating in a free contact-making end which is adapted to shift its position relatively to the body portion of the circuit-closer, the contact finger being longitudinally slidable past the finger guide to shift the contact-making finger end to and from contact-making position in relation to the exposed battery terminal.

3. A portable electric light comprising a casing, an electric lamp carried by the casing, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, the casing

having guideways and also having a guide for a contact finger, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer mounted to slide along the casing in the guideways of the casing and having a yieldable contact finger guided by the finger guide of the casing so as to move inwardly and outwardly into and out of contact with the exposed battery terminal.

4. A portable electric light comprising a casing, an electric lamp carried by the casing, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, the casing having guideways and also having a guide for a contact finger, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer mounted to slide along the casing in the guideways of the casing and having a yieldable contact finger guided by the finger guide of the casing so as to move inwardly and outwardly into and out of contact with the exposed battery terminal and arranged to be frictionally gripped by such finger guide to hold the contact finger in contact with the exposed battery terminal.

5. A portable electric light comprising a casing, an electric lamp carried by the casing, the casing having guideways and having therein a guide aperture for a contact finger, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer mounted to slide along the casing in the guideways of the casing and having a manually actuatable portion at the outside of the casing and a relatively shiftable contact finger projecting to the inside of the casing through the guide aperture and guided by the walls of the guide aperture so as to shift the contact finger relatively to the manually actuatable portion into and out of contact with the exposed battery terminal.

6. A portable electric light comprising a casing, an electric lamp carried by the casing, the casing having guideways and hav-

ing therein a guide aperture for a contact finger, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, and circuit-completing means from the other terminal of the lamp including a bodily slidable circuit-closer mounted to slide along the casing in the guideways of the casing and having a manually actuatable portion at the outside of the casing and a yieldable contact finger projecting to the inside of the casing through the guide aperture and guided thereby so as to move inwardly and outwardly into and out of contact with the exposed battery terminal, the contact finger in the circuit-closing position occupying an oblique position in its guide aperture so that it will be pinched by the walls of such aperture to thereby frictionally retain the contact finger in contact with the battery terminal.

7. A portable electric light comprising a casing having therein parallel guide slots and also having a guide slot for a contact finger, an electric lamp carried by the casing, a battery in the casing having one terminal connected to one terminal of the lamp and the other terminal exposed, and circuit-completing means from the battery to the lamp including a bodily slidable sheet metal circuit-closer having a manually operatable portion at the outside of the casing provided with combined guide lugs and attaching lugs extending to the inside of the casing through the guide slots and guided thereby, the circuit-closer also having a yieldable curved contact finger projecting to the inside of the casing through the finger guiding slot and guided thereby so as to move inwardly and outwardly into and out of contact with the exposed battery terminal, the contact finger having a bent inner end forming a stop hook for the circuit-closer in its retracted position.

In testimony whereof I have affixed my signature in presence of two witnesses.

CONRAD HUBERT.

Witnesses:

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HARRY C. LEWIS.