W. BAUER.

CIRCUIT CONTROLLER FOR PORTABLE ELECTRIC LIGHTS.

APPLICATION FILED JUNE 2, 1916.

1,236,657. Patented Aug. 14, 1917.

Fig. 4.

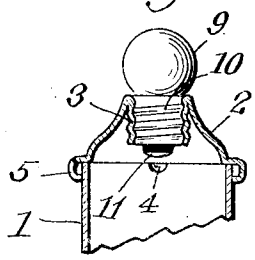


Fig. 1.

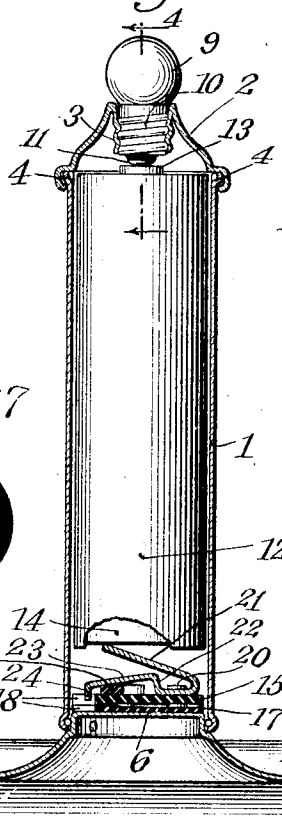


Fig. 5.

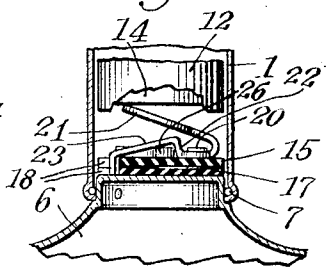


Fig. 6.

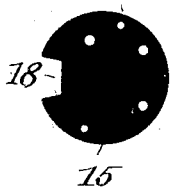


Fig. 7

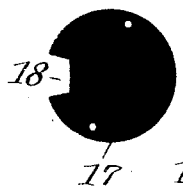


Fig. 8.

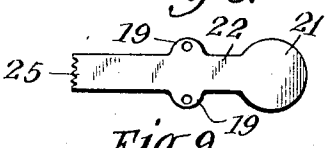


Fig. 9.

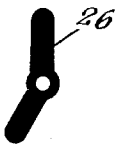


Fig. 2

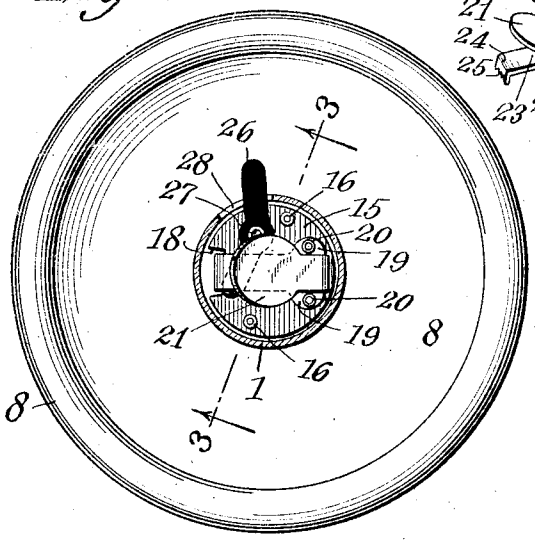


Fig. 10

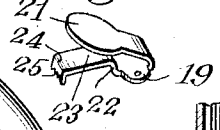
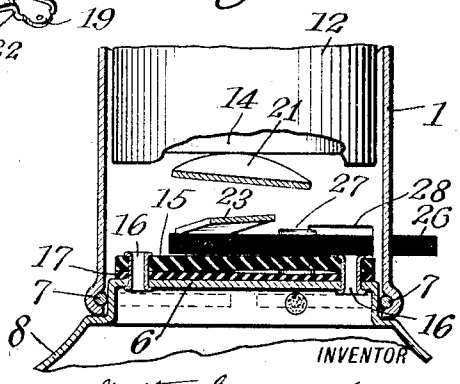


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CIRCUIT-CONTROLLER FOR PORTABLE ELECTRIC LIGHTS.

1,236,657. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed June 2, 1916. Serial No. 101,214.

To all whom it may concern:

Be it known that I, WALTER BAUER, a citizen of the United States, residing at 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 Circuit-Controllers for 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 circuit controllers for portable electric lights or flashlights, more particularly those portable electric lights which are known as electric candles. Objects of my invention are simplicity of construction, durability, reliability, inexpensiveness of manufacture, and other objects and advantages which will hereinafter appear.

My invention includes features of construction and combinations of parts as will appear from the following description.

I shall now describe the electric candle illustrated in the accompanying drawings as embodying my invention and shall thereafter point out my invention in claims.

Figure 1 is a central vertical or longitudinal section of the candle, with the circuit in the open condition.

Fig. 2 is a transverse section of Fig. 1 as viewed from above taken on a plane just above the circuit-controlling parts, with the circuit-controlling parts and the base appearing in plan.

Fig. 3 is an enlarged partial longitudinal section on a plane indicated by the slightly inclined line 3—3 of Fig. 2 as viewed from the right.

Fig. 4 is a partial longitudinal section on a plane indicated by the line 4—4 of Fig. 1.

Fig. 5 is a partial longitudinal section in the plane of and corresponding to what appears at the lower part of Fig. 1, with the circuit-controlling parts in elevation and the circuit in the closed condition.

Fig. 6 is a plan view of the base plate, of insulating material, of the circuit controller.

Fig. 7 is a similar view of an insulating spacing plate below the base plate.

Fig. 8 is a plan view of the circuit-controlling spring member in flat condition or before it has been bent.

Fig. 9 is a plan view of the circuit-controlling lever or switch lever, of insulating material.

Fig. 10 is a perspective view of the bent circuit-controlling spring.

The electric candle illustrated in the accompanying drawings as containing one embodiment of my invention has a tubular cylindrical battery-containing casing part or column 1, the upper end of which is closed by a removable cover cap or top 2 provided with a screw-threaded lamp socket 3 and removably held in place on the tubular casing part 1 by means of oppositely arranged outwardly indented lugs 4 at the upper end or edge of the casing part 1 which engage above an inturned rim at the lower edge of the cover cap 2, a notch 5 being provided in such rim to permit the passage of one of the lugs 4, for the attachment or removal of the cover cap or top 2. The lower end of the casing tube 1 is closed by a metallic end plate or bottom 6, which is of shallow inverted cup-shape, fitting into the lower end of the tube 1 and is soldered in place, the joint being rendered more secure by means of a wire 7 shown as contained in an inner groove formed by a bead at the lower end of the tube 1. The bottom closure or end plate 6 is shown as extended peripherally outward to form a supporting base 8.

An ordinary minature incandescent lamp, having a bulb 9, has its screw-threaded base 10, forming one of the lamp terminals, screwed into the lamp socket 3 in electrical connection therewith, and has its other or central terminal 11 exposed at the inside of the casing. A battery, having a usual outer insulating covering 12, is contained within the casing with its carbon terminal 13 at the top in contact with the central terminal 11 of the lamp, a zinc battery cup 14 being exposed at the bottom of the battery and forming the other battery terminal. Electrical connection between the zinc battery terminal 14 and the end plate 6 of the casing tube 1 is controlled by means of the circuit controller embodying my present invention and now to be described.

A switch base or base plate 15 of suitable insulating material, such as vulcanized fiber, is supported at the inside of the casing bottom or end plate 6 by means of tubular rivets 16 shown as two in number, passing through the margin of the base plate 15 and through

the metallic end plate 6 and also through an interposed insulating spacing plate 17, the otherwise circular insulating plates 15 and 17 being provided with registering notches 18. A circuit-controlling spring, shown as a bent sheet metal contact strip, shown separately in Fig. 10, is provided, and has an attaching portion including perforated side lugs 19 providing for the securing of the contact spring to the upper or inner side of the insulating base plate 15 by means of tubular metal rivets 20 which pass through the lugs 19 and the margin of the base 15 and are insulated from the metallic end plate 6 of the casing by the interposed insulated spacing plate 17.

Adjacent to the margin of the switch base 15, the circuit-controlling spring strip projects and is reversely bent to an upward inclination above the base plate or switch base 15 in spaced relation to and overlapping upon the circuit-controlling part of such spring strip and terminates in a rounded contact-making end 21 which resiliently supports the battery within the casing and also makes electrical connection with the zinc battery terminal 14. Inward from its attaching lugs 19 the contact-making and circuit controlling spring strip is bent upward to form a shoulder 22 from the upper part of which the spring strip is bent over and extended laterally to form an inclined actuating part 23 which inclines downward from the shoulder 22 toward the base plate 15 but is spaced therefrom. Adjacent to the margin of the base plate 15 and opposite to or above the notch 18 therein, the downwardly inclined spring part 23 is bent downward to form a second shoulder 24 spaced from the shoulder 22 and between which and joining the shoulders 22 and 24 at the top is the downwardly inclined part 23. The downwardly projecting part forming the shoulder 24 terminates in a notched contact-making or circuit-controlling end 25 which normally or when the circuit-controlling spring is unrestrained is in contact with the metallic end plate 6 of the metal casing to close the battery circuit through the lamp, as is shown in the drawings in Fig. 5.

A bent switch lever 26 is pivoted within the casing at the upper or inner side of the insulating switch plate or base plate 15 upon a tubular metal pivot 27 which extends through the insulating supporting plate 15 and is insulated from the metallic casing bottom or end plate 6 by the interposed insulating plate or spacing plate 17, the switch lever 26 being of comparatively thick and rigid insulating material, such as vulcanized fiber. The outer end of the circuit-controlling switch lever 26 projects to the outside of the casing through a transverse slot 28 in the tubular casing part 1 and provides for the manual actuation of the switch lever 26. The inner end of the switch lever 26 extends between the spaced shoulders 22 and 24 of the circuit-controlling spring, and is also between the inclined spring part 23 and the insulating base plate 15, the switch lever 26 being of sufficient thickness to fill the space between the inclined spring part 23 and the base 15 at the place of their greatest distance apart adjacent to the shoulder 22, this inner end of the switch lever 26 being movable between and limited by the shoulders 22 and 24.

To open the circuit, as appears in Figs. 1, 2 and 3 of the drawings, the projecting outer end of the circuit-controlling switch lever 26 is moved to the left as seen from the outside of the casing, which will be in a clockwise direction as seen in the plan view of Fig. 2. When the switch lever 26 is thus moved to produce the open circuit condition, its inner end will move out of contact with and away from the abutment formed by the shoulder 22 and will move toward and into contact with the other limiting shoulder 24, and in its travel between the inclined spring part 23 and the insulating base 15 it will exert a wedging action which will raise the outer or lower end of the inclined part 23, whereby the notched or toothed contact end 25 of the circuit-controlling spring will be lifted free from contact with the metal end plate 6 of the casing, thereby to break the continuity of the circuit at this point.

To produce the closed circuit-condition the pivoted switch lever 26 is moved in the opposite direction or in a counter-clockwise direction as viewed in Fig. 2, thereby to move its inner end away from the outer limiting shoulder 24 toward and into contact with the other higher limiting shoulder 22 where the inclined actuating part 23 of the spring member is more widely spaced from the supporting base 15, whereby the resiliency of the spring member in its circuit-controlling part outward from the attaching rivets 20 will move the notched contact-making end 25 of the circuit-controlling spring into circuit-completing contact with the electrically conductive bottom or end plate 6 of the metallic casing. It is to be noted that the parts of the circuit controller of my invention are few in number and of simple construction, while producing highly effective results.

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 circuit controller for a portable electric light comprising a circuit-controlling spring, a supporting base upon which the circuit-controlling spring is secured with a part of the spring spaced from the base and

inclined thereto, and a wedge member movable between the base and the inclined part of the spring for opening or closing the circuit.

2. A circuit controller for a portable electric light comprising a supporting base, a circuit-controlling spring mounted on the base and having a free end part spaced from and inclined to the base, and a switch lever pivoted on the base and movable between the base and the inclined part of the spring for moving the spring to open or close the circuit.

3. A circuit controller for a portable electric light comprising an electrically conductive plate, an insulating plate supported thereon, a circuit-controlling spring mounted on the insulating plate and having a part spaced from and inclined to the insulating plate and provided with a free end adapted to be resiliently pressed into circuit-closing contact with the electrically conductive plate to close the circuit, and a switch lever pivoted on the insulating plate and movable between the insulating plate and the inclined part of the spring for wedging the spring out of contact with the electrically conductive plate to open the circuit or for permitting the spring automatically to close the circuit.

4. A circuit controller for a portable electric light comprising an electrically conductive casing part including an end plate, an insulating plate supported on the end plate at the inside of the casing, a bent circuit-controlling spring mounted on the insulating plate and having a part spaced from and inclined to the insulating plate and provided with a free contact-making end resiliently pressed into circuit-closing engagement with the end plate, the circuit-closing spring projecting at its other end to form a resilient battery-supporting contact terminal within the casing, and a switch lever of insulating material pivoted on the insulating plate and coöperative by wedging action with the inclined part of the spring to open or close the circuit and projecting through said electrically conductive casing part to the outside of the casing for manual actuation.

5. A circuit controller for a portable electric light comprising an electrically conductive casing part including an end plate, a base plate of insulating material, a spacing plate of insulating material between the base plate and the electrically conductive end plate, fastening means passing through the base plate and the spacing plate and the end plate for supporting the base plate and the spacing plate on the end plate, a bent circuit controlling spring at the inner side of the base plate and having spaced shoulders joined by a part inclined to the inner face of the base plate, the shoulder adjacent to the inclined part at its approach to the base plate terminating in a contact-making end adapted to be pressed by the resiliency of the spring into circuit-closing engagement with the end plate, electrically conductive fasteners for the circuit-controlling spring extending through the base plate and insulated from the end plate by the spacing plate, the other end of the circuit-closing spring projecting reversely back in overlapping relation with the inclined part and forming a resilient battery-supporting contact terminal within the casing, a switch lever of insulating material at the inner side of the base plate and having one of its ends movable between the inclined part of the circuit-controlling spring and the base plate to move the spring by wedging action to open the circuit and adapted to abut against the shoulders on the spring and the switch lever at its other end projecting to the outside of the electrically conductive casing for manual actuation, and an electrically conductive pivot for the switch lever extending through the base plate and insulated from the end plate by the spacing plate.

In testimony whereof I have affixed my signature.

WALTER BAUER.