

No. 646,744.

Patented Apr. 3, 1900.

E. LIEBSCHER.
BRANCH OR LAMP SWITCH.

(Application filed Dec. 22, 1899.)

(No Model.)

FIG. 1.

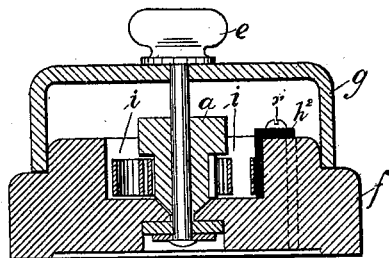


FIG. 2.

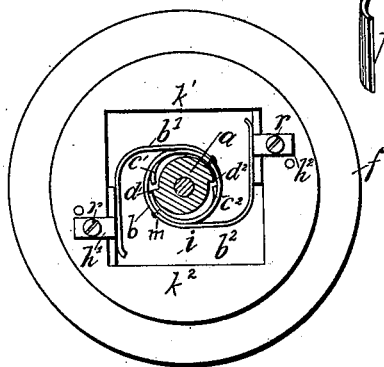


Fig. 5.

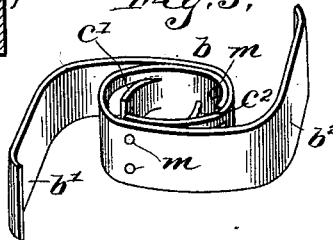


FIG. 3.

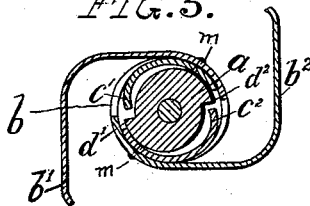


FIG. 4.

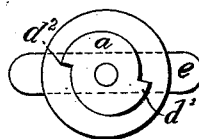
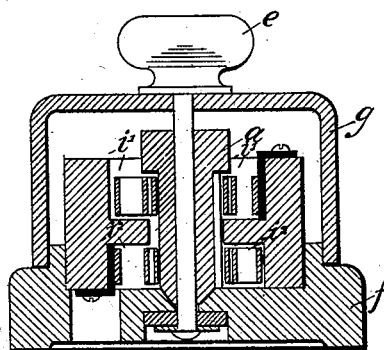


FIG. 6.



WITNESSES:

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ERNST LIEBSCHER, OF NUREMBERG, GERMANY.

BRANCH OR LAMP SWITCH.

SPECIFICATION forming part of Letters Patent No. 646,744, dated April 3, 1900.

Application filed December 22, 1899. Serial No. 741,235. (No model.)

To all whom it may concern:

Be it known that I, ERNST LIEBSCHER, electrician, a subject of the King of Saxony, residing at Nuremberg, in the Kingdom of Bavaria, German Empire, have invented certain new and useful Improvements in Branch or Lamp Switches, of which the following is a specification.

My invention relates to improvements in switches, more especially to those which are usually employed to quickly open or close branch or lamp circuits and aims to simplify their construction by reducing the number of the metallic parts, thus avoiding sparking as much as possible. At the same time I obtain a greater safety in the manipulation of the apparatus. Switches of this kind usually consist of three principal elements—first, of fixed contacts connected to the terminals of the wires, respectively; secondly, of movable spring-contacts actuated by a pivoted handle to open or close the circuit, and, thirdly, of an arresting device, the latter serving to prevent damaging of the parts of the lamp-switch in case the switch-handle should be inadvertently turned in the wrong direction. In the usual switch the arresting device operates as follows: In order to transmit the turning movements of the switch-handle to the contact-making parts, so that the make-and-break action takes place only if the handle is turned to the right, a spring is made use of having a hinged projecting piece. By turning forward the switch-handle the projecting piece is caused to catch a corresponding rib of the axle, while by turning back the handle the projecting piece is caused to slide over said rib.

The spring-arrester in the switches heretofore constructed formed a metallic piece separated from the movable contacts, preferably made of metallic springs.

My present invention consists in the combination, with the movable contacts, of the arresting-spring, so as to form one piece arranged in the following manner: The movable contacts are preferably made of springs, with their connected ends surrounding the switch-axle in a ring-like manner, carrying two inwardly-projecting pieces, the latter

catching corresponding ribs of the axle only if the handle is turned to the right.

My present invention is illustrated by the following figures of the accompanying drawings, in which—

Figure 1 is a cross-section of a switch constructed according to my invention. Fig. 2 is a plan thereof with cover removed. Fig. 3 is a top view of the contact-springs connected with the arresting device. Fig. 4 is a plan of the axle and handle. Fig. 5 is a detail perspective view of the movable contacts and their ring-shaped central portion, and Fig. 6 is a modification of the lamp-switch for bipolar arrangement.

Similar letters of reference indicate corresponding parts throughout the drawings.

Referring to Fig. 1, *a* indicates the pivoted axle, actuated by the turning handle *e* and provided with oppositely-arranged ribs *d' d''*. The axle *a* is preferably mounted on a base-plate *f* of suitable insulating material, the whole mechanism being inclosed, as usual, in a metallic cover *g*. The contacts *h' h''*, which are connected to the terminals of the wires and fixed to the base-plate by means of screws *r*, project inwardly along two opposite walls of a chamber *i* made in the base-plate *f*.

The movable contacts *b' b''*, preferably made of springs, have their connected ends surrounding the switch-axle *a* in the form of a ring *b*, provided with inwardly-projecting pieces *c' c''*, engaged by the ribs *d' d''*, whereby the contacts are caused to move simultaneously by turning the switch-handle *e*. Said projecting pieces or catches *c' c''* are formed of tongues cut out of the stock of the ring *b*, as more clearly shown in Fig. 5, and bent inwardly, so as to extend in opposite directions. The layers formed by bending the inner ends of the contacts *b' b''* into ring shape are preferably connected by rivets *m*.

In Fig. 2 of the drawings the switch is shown in the "on" position—i. e., the lamp-circuit is closed—as the spring-contacts *b' b''* connect across the fixed contacts *h' h''*. If the handle *e* is turned to the right, the ribs *d' d''* of the axle *a* by pressing on the projecting pieces *c' c''* of the contact-springs *b' b''* bring them quickly out of contact, so that

they fly off with a sharp snap to the chamber-walls k' k^2 , insulated from the terminals of the wires. The switch is thus brought in the "off" position.

5 The switch mechanism hereinbefore described is also applicable to double and generally to multiple pole switches. In Fig. 6 of the drawings a double-pole switch constructed according to my present invention is
10 shown. As will be seen by a comparison with the switch illustrated in Fig. 1 of the drawings, the double-pole switch is obtained by arranging two single-pole switches actuated by a common axle, each of the switching
15 mechanisms being inclosed in a separate chamber i' i^2 , insulated from each other.

The switch hereinbefore described offers a great advantage, inasmuch as the number of the metallic parts of the apparatus is considerably reduced. In consequence thereof and
20 owing to its peculiar arrangement, assisted by the length and elasticity of the contacts, the switch has a good quick make-and-break action, rendering it impossible for it to be
25 left in an arcing position.

I am aware that prior to my invention lamp-switches have been made with spring-contacts operating in conjunction with an arresting device, so as to control the lamp-circuit if the handle is turned only in the right
30 direction. I therefore do not claim such a combination broadly.

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

1. The combination, in a lamp-switch, with 35 fixed contacts connected to the terminals of the wires, respectively, of a switch-actuating axle, and a pair of spring-contacts connected at their ends in annular form so as to surround the switch-actuating axle, said springs
40 being provided with inwardly-projecting pieces, and said axle being constructed to engage said projecting pieces, whereby the switch may be actuated, substantially as set
45 forth.

2. The combination, in a lamp-switch, with fixed contacts connected to the terminals of the wires, respectively, of a switch-actuating axle provided with side ribs, and a pair of
50 spring-contacts bent into annular form at their ends and suitably connected, the inner, connected ends of said springs having two inwardly-projecting pieces for engaging with the corresponding ribs on the switch-axle, 55 substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ERNST LIEBSCHIER.

Witnesses:

HERMANN MÜLLER,
OSCAR BOCK.