

UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 769,116, dated August 30, 1904.

Application filed August 4, 1903. Serial No. 168,172. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. SCHNEIDER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electric switches; and it is the object of the invention to obtain a construction of quick opening and closing switch by the use of an exceedingly simple mechanism.

It is a further object to obtain a construction that is especially adapted for use in connection with handled heaters, such as sad-irons.

With these objects in view the invention consists in the construction as hereinafter set forth.

In the drawings, Figure 1 is a longitudinal section through the handle of the sad-iron to which my improved switch is applied. Fig. 2 is a perspective view of a portion of the switch, and Fig. 3 is an elevation illustrating a modified construction. Fig. 4 is a section on line *x x*, Fig. 1.

Heretofore electric switches have been made in which the contacting member is moved in opposite directions for opening and closing the switch by placing the actuating-spring in the one instance under compression and in the other under tension. Such constructions require the use of detents or other means for temporarily arresting the movement of the contact member during the tensioning of the spring, and this of necessity complicates the mechanism. With my invention the contact member is moved in opposite directions by the same spring or resilient actuating device, and the movement is temporarily delayed during the tensioning of said spring without the use of detents or any parts other than the actuating handle or lever.

Broadly considered, my improved switch comprises a construction in which the upper abutment or point of attachment to the resili-

ent member is shifted upon opposite sides of the limits of movement of its point of attachment to the contact member. Thus in operation in the initial movement of the handle or operating-lever for shifting said abutment the spring is tensioned and acts to hold the contact member against one of its limits. As soon, however, as the abutment is shifted beyond the point of attachment of the spring to the contact member the direction of actuation of said spring is reversed, with the result that the contact member is quickly propelled under the actuation of the spring to its opposite limit.

In the construction shown in Fig. 1, A is the movable contact member, which is, as shown, in the form of a bar slidably secured in bearings B of a frame C.

D is a head at one end of said bar, which forms the contact member, and E and E' are spring-contacts, which are connected by the insertion of the head D therebetween. These contacts E and E' are attached to a suitable insulating-support F and have suitable electric connections with the heater. (Not shown.) The head D is adapted to impinge against one of the bearings B to limit the movement of the bar A in one direction, and the movement in the opposite direction is limited by the lug G, which impinges against the opposite side of said bearings. H is the resilient actuating member for the bar A. This, as shown, is in the form of a coiled spring having the tangentially-extending arms *a* and *b* at opposite ends thereof. One of these arms is pivotally attached to the bar A by engagement with a socket or aperture therein, while the opposite arm is secured to the actuating lever or handle.

As has been stated, the construction shown in Fig. 1 is designed for use in connection with a sad-iron. For this purpose it is desirable to provide a switch that will automatically open its circuit whenever the iron is not in use. To this end the frame C is arranged within a hollow handle I, a portion only projecting beyond the end of said handle.

J is a lever pivotally secured at *c* to the

frame C, having its actuating-lever conforming in shape and adapted to extend in proximity thereto on the handle I.

K is a spring attached to the opposite end of the lever J and also arranged within the hollow handle I, the tension of the spring acting to move the lever, so as to sever its actuating-arms *d* from the handle and at the same time move said lever in the position for opening the switch.

In the position of parts shown in Fig. 1 the lever J is in adjacency to the handle I or in the position when grasped by the operator using the iron. This will hold the inner arm *e* of the lever J in a position where the arm *b* is beyond the arm *a*—that is, so the tension of the spring H is exerted to press the bar A inward in the handle and hold the head D in contact with the springs E E'. Whenever the handle I is released by the operator, the lever J will be actuated by the spring K and moved into the position shown in dotted lines, in which the arm *b* of the spring is moved inward beyond the arm *a*. The result will be that at the instant the point of attachment to the arm *b* with the lever J passes the point of attachment of the arm *a* to the bar A the tension of the spring H will be exerted in the opposite direction and will cause the quick movement of the bar A outward until arrested by the head D striking the bearing B. This will open the switch by severing the head D from the contact-springs E and E'. To again close the switch, it is only necessary to move the lever J in contact with the handle I, whereupon the point of attachment to the arm *b* will again be moved downward beyond the point of attachment to the arm *a*, causing the spring H to move the bar A inward.

In order to protect the mechanism, that portion of the frame C which projects beyond the handle I is preferably in the form of a housing *f*, which incloses the spring H and inner arm *e* of the lever J.

In Fig. 3 a modified construction of switch is shown in which the actuating member is in the form of a bar J', which is slidably secured in bearings and is adapted to move parallel to the bar A. The end of the actuating member J' is provided with a handle or knob L, which may be grasped by the operator to move the member in opposite directions for opening and closing.

In both constructions the essential feature is that the point of attachment of the spring to the actuating member is shifted by the movement of the latter to the point of attachment of the opposite end of said spring to the contact member. This will cause the tension of the spring to act in the opposite direction, as has been above described.

What I claim as my invention is—

1. An electric switch comprising a contact member movable between fixed limits, an actuating member, a resilient member pivotally

secured at its opposite ends respectively to said contact member and actuating member whereby said actuating member will shift the opposite end of said resilient member upon opposite sides of the limits of movement of its point of attachment to the contact member, so that its tension will actuate the contact member in opposite directions.

2. An electric switch comprising a movable contact member, slidable between fixed limits, a guide for the slidable contact, a resilient member pivotally attached to said contact member at one end and an actuating member to which the opposite end of said resilient member is pivotally attached, said actuating member being adapted to carry the pivotal point of attachment to the resilient member thereto beyond the limits of travel of the pivotal point of attachment of said movable contact member whereby the latter is actuated alternately in opposite directions.

3. In an electric switch, the combination with a frame of the contact-carrying bar slidably secured therein and having fixed limits of movement, a coil-spring having tangentially-extending arms, one of which is attached to said sliding contact member and an actuating member to which the opposite tangential arm is pivotally secured adapted to carry the same beyond the limits of movement to the pivotal point of attachment of said spring to the sliding contact member whereby the latter is alternately actuated in opposite directions.

4. An electric switch comprising a contact member slidably mounted upon a suitable support, a longitudinal guideway upon the support, a resilient member attached to said contact member at one end, means for shifting the opposite end of said resilient member upon opposite sides of the limits of movement of its point of attachment to the contact member, whereby its tension is exerted to actuate said contact member in opposite directions, means for limiting the movement of said contact member in its opposite directions, and downwardly-projecting portions on said contact member arranged to abut said last-mentioned means.

5. An electric switch comprising a contact member slidably mounted upon a suitable support, a longitudinal guideway upon the support, a resilient member attached to said contact member at one end, means associated with the opposite end of said resilient member, for shifting the ends of said resilient member upon opposite sides of the limit of movement of its point of attachment to the contact member, whereby its tension is exerted to actuate said contact member in opposite directions, and means within the guideway for limiting the movement of the contact member in either direction.

6. In an electric switch, the combination with a support, of a contact-carrying bar, mov-

ably secured thereupon and having fixed limits of movement, a coil-spring having tangentially-extending arms, one of which is attached to said movable contact member, and
5 an actuating member to which the opposite tangential arm is pivotally secured adapted to carry the same beyond the limits of movement to the pivotal point of attachment of said spring to the movable contact member,
10 whereby the latter is alternately actuated in opposite directions.

7. An electric switch comprising a supporting member, a guideway thereupon closed at one of its ends, a spring-contact member within
15 in said guideway, a contact member slidably

mounted within said guideway, a resilient member operatively associated with said slidable contact member whereby its tension is exerted to actuate said contact member in opposite directions, and means on the slidable
20 contact for engaging said closed end of the guideway for limiting the movement of said contact in either direction.

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

GEORGE J. SCHNEIDER.

Witnesses:

H. C. SMITH,

EMMA I. BARNES.