

(No Model.)

T. HARPER.
ELECTRIC SWITCH.

No. 550,411.

Patented Nov. 26, 1895.

FIG:1.

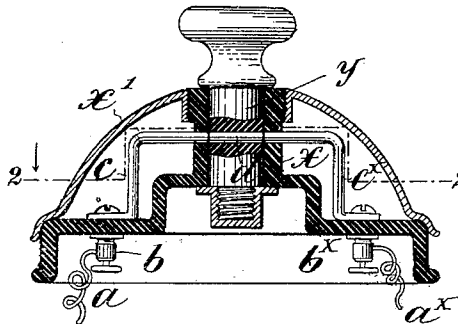


FIG:2.

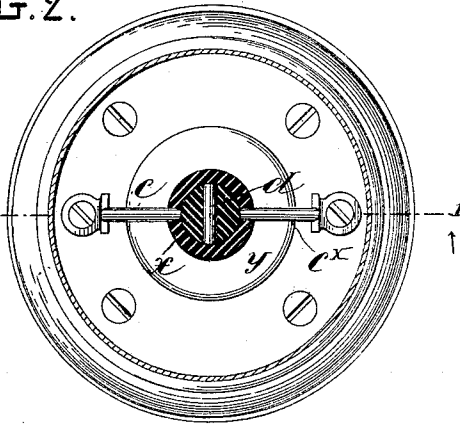


FIG:3.

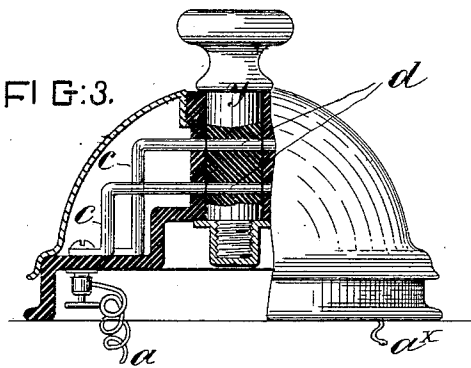


FIG:4.

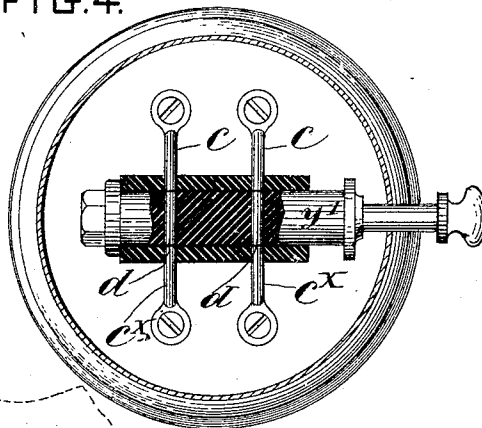


FIG:5.

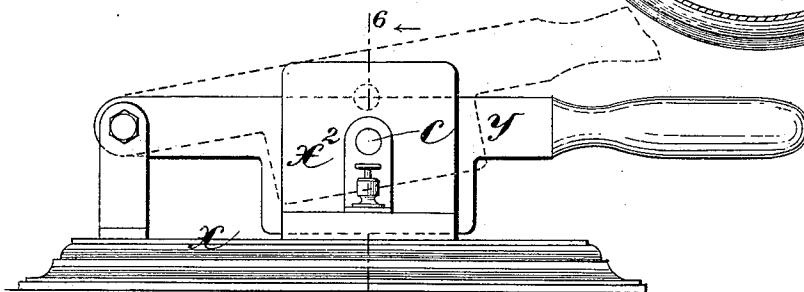


FIG:6.

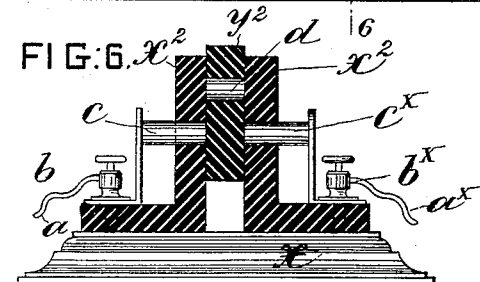
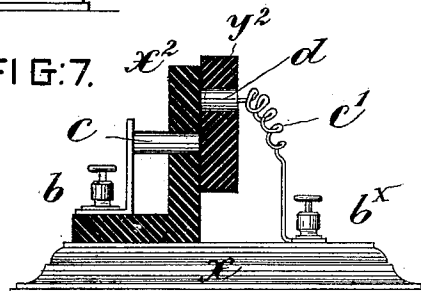


FIG:7.



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS HARPER, OF NEW BRUNSWICK, NEW JERSEY.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 550,411, dated November 26, 1895.

Application filed August 29, 1894. Serial No. 521,596. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HARPER, a citizen of the United States, residing at New Brunswick, Middlesex county, New Jersey, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to switches or devices for breaking and closing electric circuits, and the object is in part to simplify and cheapen the construction and in part to obviate sparking when making or breaking contact. The construction will be fully described hereinafter, and its novel features carefully defined in the claims.

It is very desirable in electric switches to prevent sparking when the circuit is closed or broken, to thoroughly insulate the metallic contact-surfaces when the circuit is broken, and to protect the contact-surfaces at all times against oxidation from the action of the atmosphere, and my improvements permit of obtaining these desirable results.

In the accompanying drawings I have shown several modes of carrying out my invention and of adapting it to different forms or kinds of switches.

Figures 1 and 2 illustrate my invention embodied in a simple wall-switch, Fig. 1 being a section on line 1 1 in Fig. 2 and Fig. 2 a section on line 2 2 in Fig. 1. Fig. 3 is a view similar to Fig. 1, showing the invention applied to a double wall-switch. Fig. 4 illustrates the application of the invention to a double sliding switch. This view represents the switch partly in section and partly in plan. Figs. 5 and 6 illustrate an embodiment of the invention in a knife-switch, Fig. 5 being a side elevation and Fig. 6 a section on line 6 6 in Fig. 5. Fig. 7 illustrates a modification of the construction illustrated in Fig. 6.

Referring first to Figs. 1 and 2, x represents the base-piece or frame of the switch, in which is formed a cylindrical bore to receive a rotative carrier y . As here shown, this carrier has a knob at its outer end, whereby it may be rotated or turned axially in said bore by the thumb and finger, and a cap-nut screwed on its inner end to prevent it from moving longitudinally. The carrier y will be by preference made wholly of some insulating material; but it will suffice if the shank or

journal thereof be made of such material. This shank fits snugly or closely in the bore in the base-piece x , and both the bore and shank may be slightly tapered.

a a^x represent the circuit-wires, terminating at the respective binding-posts b b^x , and c c^x are the terminal contact-pieces of the circuit. These pieces connect at one end with the respective binding-posts and at the other end enter the bore in the base-piece at opposite sides thereof. In the carrier or movable part y of the switch is mounted a contact-piece d , which extends diametrically through the shank thereof and has its extremities flush or even with the surface of the said shank, the extremities of the contact-pieces c c^x being also flush or even with the inner surface of the bore in the base-piece x .

When the carrier or movable part y is so turned as to bring the extremities of the piece d into contact with those of the respective stationary pieces c and c^x , as seen in Fig. 1, the circuit will be closed, and when the movable part y is turned axially until the piece d is out of contact with the pieces c c^x , as seen in Fig. 2, for example, the circuit will be broken.

It is important that the surfaces of the stationary and movable parts of the switch shall be in close rubbing contact at all times, so that as the face of the moving contact-piece passes off from that of the stationary contact-piece there will be no air-space or room for an arc to form, and consequently no spark; also, when the contact-pieces separate in breaking the circuit the faces of the said pieces will be in close rubbing contact, the one with the material of the movable part y and the others with the inner face of the bore in the stationary part x . This will protect the contacting surfaces from oxidation and keep them insulated.

The device as described is simple, easily constructed, and consequently inexpensive. The form of the base-piece x is not material. It may be of some known insulating material, as indurated fiber or the like, and be housed in an ornamental metal case x' .

There may be two or more circuits controlled by one such switch, as seen in Fig. 3, which I denominate a "double" switch. In this construction there are two movable contact-

pieces d in the shank of the carrier and two sets of contact-pieces c c^x .

The carrier may be arranged to slide endwise instead of to rotate axially. This construction is illustrated in Fig. 4, where y' represents the sliding carrier bearing the moving contact-pieces d .

Figs. 5 and 6 illustrate the application of my invention to a knife-switch. In these views x^2 represents cheek-pieces on the base x , between which slide the "knife" or lever y^2 , which carries the movable contact-piece d . The stationary contact-pieces c and c^x pass through the cheek-pieces x^2 and are fixed therein. In Fig. 5 the full lines show the circuit closed, the knife being depressed, and in Fig. 6 the circuit is represented as broken, the knife being elevated.

Fig. 7 illustrates a slight modification of the knife-switch, in which one of the cheek-pieces is omitted and the moving contact-piece d is connected by a flexible coil c' with the binding-post b^x .

My invention is adapted to all purposes where a simple circuit-closer and breaker is required, as in bell circuits, incandescent lights, &c.

I am aware that it is not new, in order to prevent sparking, to so construct an electrical circuit-breaking device that at the instant of breaking the circuit insulating material is interposed between the terminals to break any arc which may form, and this I do not claim.

Having thus described my invention, I claim—

1. A switch comprising a socket of insulating material having on its inner surface two insulated contact-pieces adapted to form circuit-terminals, and a carrier of insulating material revolubly mounted in said socket with its surface in contact with the inner surface of the socket, said carrier being also provided

with two insulated contact-pieces electrically connected to one another and flush with the insulating material and in position to contact with the respective contact-pieces in the socket as the carrier is revolved, whereby, at the instant of breaking contact the insulating material adjacent to each terminal is interposed between the terminals to break any arc which may form, substantially as set forth.

2. A switch comprising a socket of insulating material having on its inner surface two insulated contact-pieces adapted to form circuit-terminals and a carrier of insulating material movably mounted in said socket with its surface in contact with the inner surface of the socket, said carrier being also provided with a contact-piece arranged to contact with the respective contact-pieces in the socket, the terminals being flush with the surfaces of the insulating material, whereby, at the instant of breaking contact the insulating material adjacent to each terminal is interposed between the terminals to break any arc which may form, substantially, as set forth.

3. In a switch, the combination of a base-piece x , having in it a bore, and a carrier y , mounted rotatively and fitting snugly in said bore, of insulated contact-pieces c and c^x mounted in the wall about said bore with their extremities flush with the inner surface of said bore, and the contact-piece d , mounted in and extending through the carrier y , with its extremities flush with the surface of the carrier and adapted to be brought into contact with the pieces c and c^x by the axial rotation of the carrier, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS HARPER.

Witnesses:

ROBERT S. TURTON,
GRANVILLE L. MOORE.