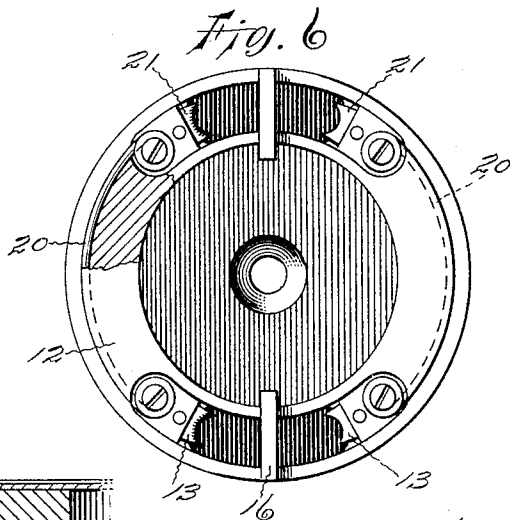
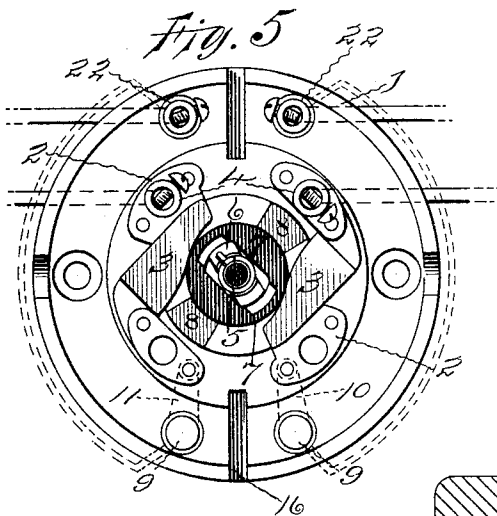
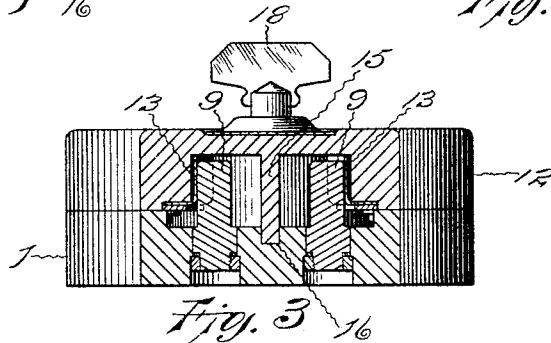
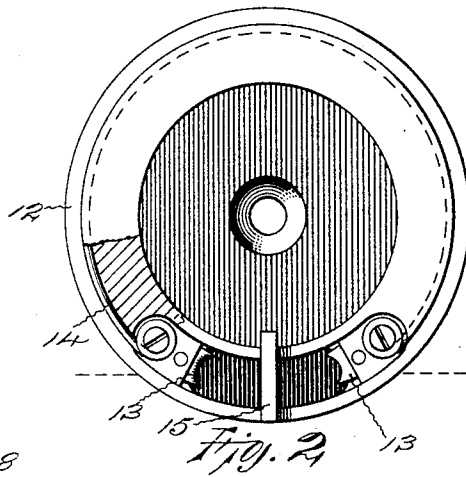
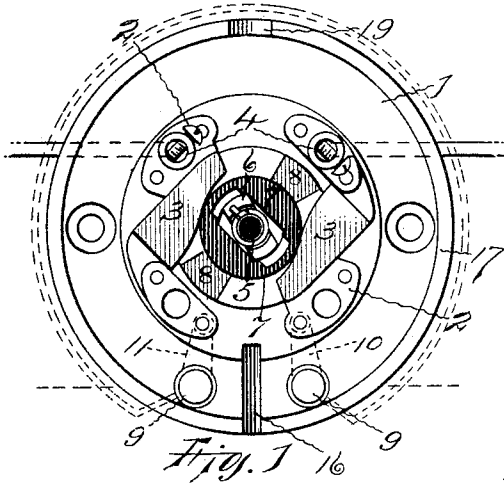


(No Model.)

G. L. MOYER.
CUT-OUT SWITCH.

No. 584,185.

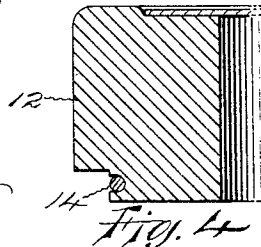
Patented June 8, 1897.



Witnesses:

E. J. Hyde.

C. E. Beckland.



Inventor:

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Harry P. Williams,
att'y

UNITED STATES PATENT OFFICE.

GILBERT L. MOYER, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE PERKINS ELECTRIC SWITCH MANUFACTURING COMPANY, OF SAME PLACE.

CUT-OUT SWITCH.

SPECIFICATION forming part of Letters Patent No. 584,185, dated June 8, 1897.

Application filed November 18, 1896. Serial No. 612,577. (No model.)

To all whom it may concern:

Be it known that I, GILBERT L. MOYER, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Cut-Out Switches, of which the following is a specification.

The invention relates to those devices employed for throwing in or out light, heat, or power circuits which are constructed so as to move when operated with a quick make and break and to open the circuits in which they are connected, so as to prevent accidents should they become charged with any abnormal current.

The object of the invention is to provide in a single structure a simple, convenient, inexpensive, and quick-operating hand-switch attachable to any ordinary circuits, which will surely blow out when the current becomes abnormal without danger of establishing an arc and which can be easily and safely refused by any one.

To this end the invention resides in a device having a base with the ordinary wire attachments and stationary and movable poles, which are electrically connected with posts that are engaged with corresponding conducting-contacts arranged in a removable cap and joined by a comparatively long fusible wire, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a plan of the base of a single-pole device embodying the invention. Fig. 2 is a plan of the cap that is provided for this base. Fig. 3 is a vertical section of the base and cap on plane denoted by the broken lines of Figs. 1 and 2. Fig. 4 is an enlarged sectional view of a portion of the cap. Fig. 5 is a plan of the base of a double-pole device embodying the invention. Fig. 6 is a plan of a cap provided for this latter form of device.

Mounted on the base 1, of insulating material, are the stationary conducting contact-plates 2 and brushes 3, which have binding-posts 4 for the attachment of the circuit-wires. Supported by the base at the center is a rotary spindle 5, which bears a nut 6 and commutator-blocks 7, with the insulated conducting-plate and brush-connecting pieces 8. The

arrangement and operation of these parts are substantially the same as set forth in the United States Patent No. 517,100, dated March 27, 1894.

Projecting from one edge of one face of the base shown in Fig. 1, a little distance from each other, are conducting-posts 9. One of these posts is connected, by a conducting-plate 10, with one of the contact-plates 2, and the other is connected, by a plate 11, with one of the brushes 3.

On the cap 12, that is arranged to fit upon the base, are located conducting-contacts 13, which contacts are joined by a fusible wire 14. This wire is circled around the edge of the cap from one contact to the other preferably in a groove made in a shoulder formed on one face of the cap, as illustrated in Fig. 4.

Between the contacts located on the cap a partition 15, of insulating material, is formed, and this partition is adapted to fit into a recess 16, made in the base between the posts 9. When the base and cap are fitted together and the posts 9 are in engagement with the contacts 13, one post and contact will be separated from the other post and contact by this partition of insulating material, and the only possible electrical connection that can be established between them is through the long fusible wire that passes around the edge of the cap.

A rim 17 is usually formed around the edge of the face of the base of a size that will fit the shoulder on the cap in which the groove for the fuse-wire is made, and when the shoulder on the cap is inserted into the rim on the base the parts are easily held against separation by the operating-handle 18. When the parts are together, the fuse-wire is inclosed between the shoulder and the rim. An opening 19 is made in the wall of the rim as far from the posts as possible to permit of the flashing of the gases incident to the blowing of a fuse.

With the single-pole form (shown in Figs. 1 and 2) when the parts are set to close the circuit current will enter from the wire and binding-post and pass from a contact-plate on the base through a conducting-piece on the commutator-block to a brush and from this brush to one of the posts. Thence the cur-

rent will pass from one contact through the fuse-wire around the cap to the other contact and post, from which it will pass to a contact-plate on the base, through the other commutator-piece and the other brush to the binding-post of this brush, and then out to the wire. This causes the current to pass a long distance through a fuse-wire that is situated in such manner that should it blow out an arc cannot be established between the posts or any parts connected with the switch mechanisms, and this long fuse will surely blow out under the passage of any abnormal current. When the parts are moved to open the circuit with this form, there will be four different points of break, which precludes the establishment of an arc through the switch.

In the double-pole form (shown in Figs. 5 and 6) there are two posts 9, that are electrically connected with a contact plate and brush and that make engagement with the contacts 13 when the cap is put on the base, as in the single-pole form. The contacts 13 in the cap of this form, however, are not joined with each other, but are each joined by a fuse-wire 20 with a contact 21. These contacts 21 are similar to the contacts 13 and make engagement with posts 22, which are supported by the base and provided with binding-screws for the attachment of ends of the circuit-wires. In this form the current instead of passing from one post 9 to the other through a fuse-wire that extends completely around the cap from one contact to the adjacent contact, as in the single-pole form, passes from both posts 9 to the contacts 13 in the cap and from these through the fuse-wires 20 to the contacts 21 and posts 22 and thence into the circuit-wires. When the base is provided with two sets of posts adapted to engage two sets of contacts on the cap, there may be a partition located between each of the sets of posts and there may be two openings in the rim around the base for the escape of the flashing gases when the wires fuse.

This invention provides a construction which permits of the use of an extended length of fuse-wire in such a position that its flashing will not establish an arc between any parts of the switch. The extended fuse-wire can be easily and quickly placed in position in this cap by any one, and as this is accomplished when the cap is removed there is absolutely no danger of short-circuiting the parts when the fuse is being set. The caps are easily placed in position or removed therefrom and can be quickly secured by the operating-handle of the switch.

The single-pole device is particularly adapted to light and heat circuits which are employed in connection with the lighting and heating of electric railway-cars, in which circuits there is a considerable amount of current, for the fuse in this form is so long that the possibility of an arc being established between the posts when the wire fuses is obviated. With this form there is no chance for

an arc to be established between any of the parts of the switch, for the switch parts are entirely separated from the fuse-chamber. There are four distinct points of break in this single-pole device, thus insuring safety from arcing when used in a railway-circuit.

The double-pole form is adapted to ordinary lighting-circuits where it is desirable to combine a switch and cut-out in a single structure. With this form the two fuse-wires are of quite a length and are desirably protected, while the contact-posts are sufficiently insulated to prevent the possibility of an arc between them, thus making this form particularly useful in arc-lighting circuits.

The embodiment of this invention provides in a single simple device the desirable characteristics of a quick-acting snap-switch having several points of break and a safe and convenient cut-out.

I claim as my invention—

1. In an electric switch, in combination, an insulating-base bearing stationary and movable poles, a handle adapted to operate the movable poles, contacts mounted adjacent to each other on the base and connected with the stationary poles, a cap with a chamber for receiving the stationary and movable poles fitted on the base, contacts mounted adjacent to each other upon the cap and engaging with the contacts on the base, and fuse-wire connecting the contacts on the cap and located in a groove separated by insulating material from the chamber that receives the stationary and movable poles, substantially as specified.

2. In an electric switch, in combination, an insulating-base bearing stationary and movable poles, a handle adapted to operate the movable poles, posts connected with the stationary poles, a cap fitted upon the base, contacts borne by the cap engaging with the posts, and fuse-wire connecting the contacts and extending around the edge of the cap, substantially as specified.

3. In an electric switch, in combination, an insulating-base bearing stationary and movable poles, a handle adapted to operate the movable poles, posts connected with the stationary poles, a cap fitted upon the base, contacts borne by the cap and engaging with the posts, fuse-wire connecting the contacts on the cap, and a partition of insulating material extending from one part to the other between the contacts and posts, substantially as specified.

4. In an electric switch, in combination, an insulating-base bearing stationary and movable poles, a handle adapted to operate the movable poles, posts connected with the stationary poles, a cap having a grooved shoulder fitted upon the base, contacts borne by the cap and engaging with the posts, and fuse-wire located in the groove in the shoulder and connecting the contacts on the cap, substantially as specified.

5. In an electric switch, in combination, an

insulating-base bearing stationary and movable poles, a handle adapted to operate the movable poles, posts connected with the stationary poles and posts insulated from the
5 stationary poles, a cap having a grooved shoulder fitted upon the base, contacts borne by the cap and engaging with both sets of posts, fuse-wire lying in the groove and connecting the sets of contacts on the cap, and

partitions of insulating material projecting from the cap between the contacts into recesses on the base between the posts, substantially as specified.

GILBERT L. MOYER.

Witnesses:

H. R. WILLIAMS,
E. J. HYDE.