

B. D. HORTON.
ELECTRICAL SWITCH.
APPLICATION FILED SEPT. 5, 1912.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

1,047,414.

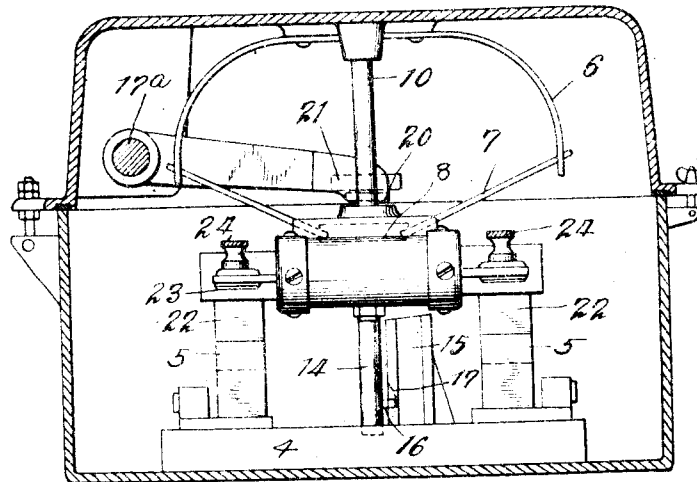
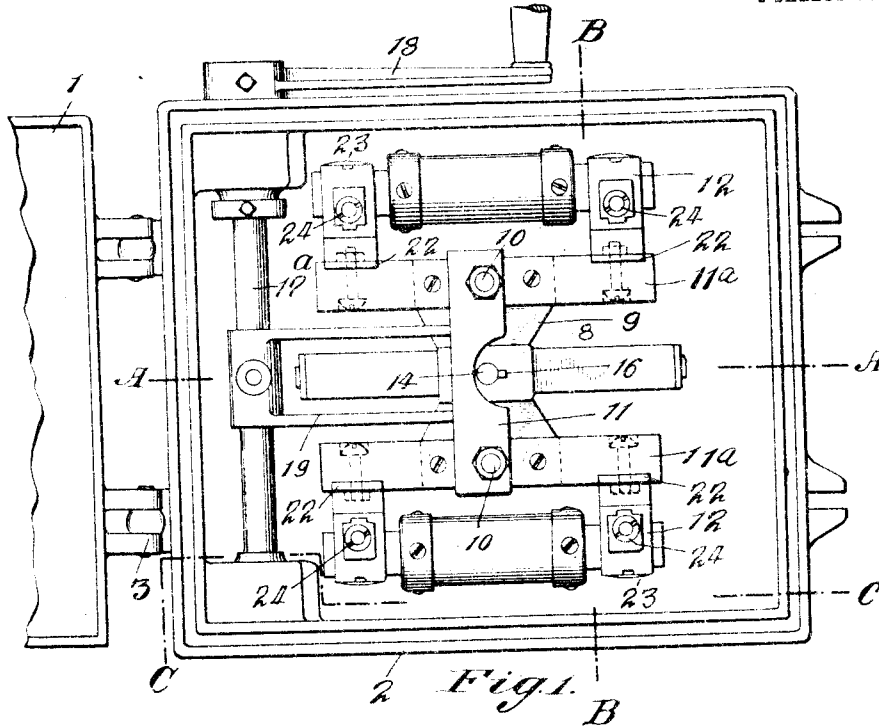


Fig. 2.

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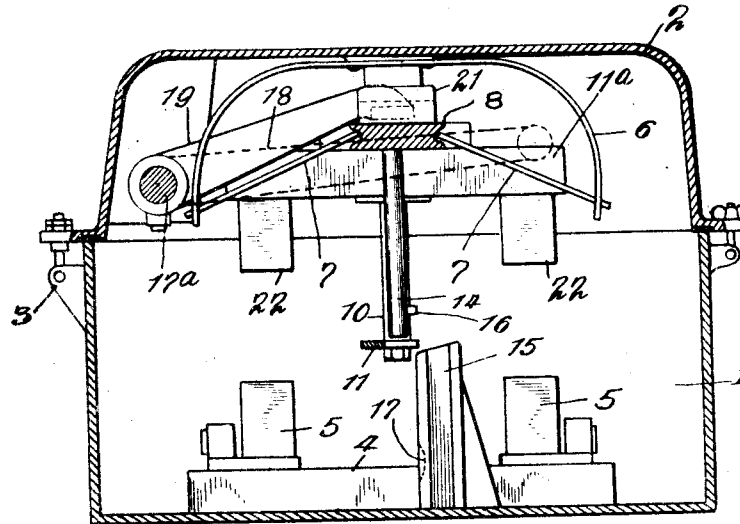


Fig. 3.

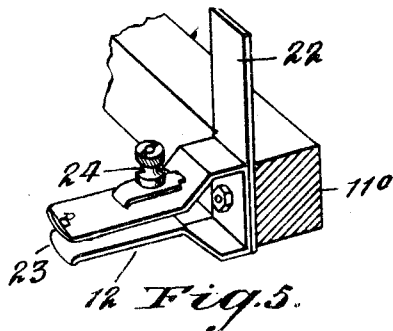


Fig. 5.

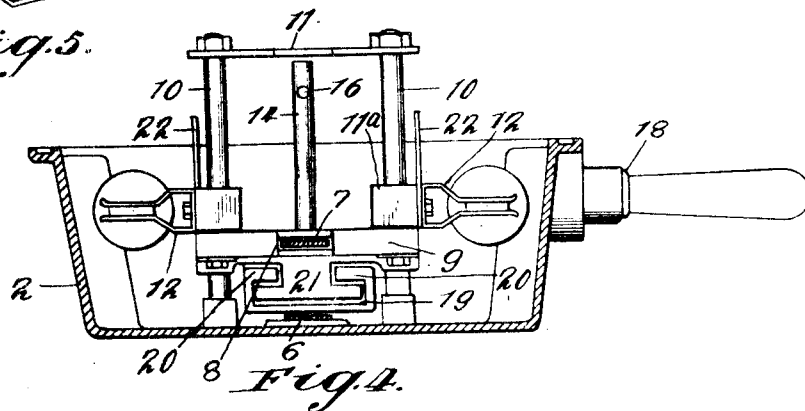


Fig. 4.

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UNITED STATES PATENT OFFICE.

BRYSON D. HORTON, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT FUSE & MANUFACTURING COMPANY, OF DETROIT, MICHIGAN. A CORPORATION OF MICHIGAN.

ELECTRICAL SWITCH.

1,047,414.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed September 5, 1912. Serial No. 718,625.

To all whom it may concern:

Be it known that I, BRYSON D. HORTON, 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 Electrical Switches, of which the following, taken in connection with the accompanying sheets of drawings, is a full, clear, and concise description.

My present invention comprehends certain improvements in electrical switches of that type known as "protected" or "armor-clad" switches, in which the switch contacts and operating mechanism are mounted and inclosed in a metal case provided with a hinged cover.

One of the objects of my invention is to construct a switch of this type in which all of the moving parts of the switch mechanism are movably mounted in the cover of the receptacle or metal case, so that when the switch is in its "off" position—which position the mechanism must assume before the cover can be opened—the cover may be raised and opened, carrying with it this portion of the mechanism, leaving the interior of the receptacle free of obstruction and readily accessible to enable the adjustment, repair, or removal of the stationary portion of the switch, which is preferably rigidly mounted in the base or bottom of the case.

A further object of my invention is to mount the operating handle of the switch in the cover and use it for the dual purpose of both operating and switch mechanism and as an operating handle for the opening of the cover of the receptacle.

A still further object of my invention is to provide a combined fuse-clip and knife-switch-blade contact.

Having thus stated generally the principal objects of my invention, I will proceed to describe one preferable embodiment thereof which I have illustrated in the accompanying sheets of drawings, it being understood that this illustrated and described switch is by way of example only, as the same may, in matters of structural details, be changed or altered without departing from the scope of my invention.

Figure 1 is a plan view of the movable portion of the switch mechanism mounted within the cover of the receptacle, showing the relation of the cover and said mechanism to the body of the case, which is shown partly broken away. Fig. 2 is a view, taken

on line C—C of Fig. 1, with the receptacle closed and the switch mechanism in the "on" position. Fig. 3 is a similar view, taken on line A—A of Fig. 1, of the receptacle in the closed position and with the switch mechanism in its "off" position. Fig. 4 is a view, taken on line B—B of Fig. 1, showing the parallel guide-rods which are fast to and carried by the cover and serve to maintain the movable parts in alinement and operative relation. Fig. 5 is an enlarged detail of the combined fuse-clip and switch-blade.

Certain general characteristics of the illustrated switch have heretofore been described and patented to me by United States Letters Patent and others are shown in a previous application for United States Letters Patent filed by me, and I particularly refer to Letters Patent No. 1,022,628, granted to me on April 9, 1912, and application Serial No. 712,382, filed by me on July 31, 1912. This general type of switch, to which my present invention relates, is a combined double-pole switch in which it is impossible to close the cover with the switch-blades in the "on" position, it being necessary to withdraw the blades to the "off" position both to close and open the cover of the receptacle.

Specifically, the numeral 1 indicates the body of the metal case, 2 the cover portion thereof which is hinged at 3 to the former. Upon the base portion of the receptacle is mounted the insulating bases 4, to which are attached the switch-jaws 5, which form the stationary contacts of the switch mechanism. On the under-side of the cover is rigidly fixed a band-spring 6, provided with suitable slots at its extremities into which are sprung two loose metal-plate expanders 7. The inner ends of these plates engage V-shaped grooves in a plunger-head 8. This plunger-head is formed with lateral extensions 9, which are provided with guide-openings for the guide-rods 10, the latter being fixed to the cover and serve as guides for the plunger-head which reciprocates thereon. At the lower extremity of these guide-rods a cross-plate 11 is attached for limiting the downward movement of the plunger-head and the mechanism which it carries. Fixedly attached to the cross-head and carried thereby, are laterally-extending parallel blocks of insulating material 11*, upon the extremity of each one of which are mounted

my combined fuse-clip and switch-blade 12. The plunger-head 8 is provided with a depending rod 14, designed to engage with an abutment 15, in the event that an attempt
 5 should be made to close the cover of the receptacle with the movable portion of the switch mechanism in its lowered or "on" position. However, when the cover is being closed with the movable portion of the
 10 mechanism in its raised or "off" position, the rod 14 does not engage the abutment but assumes the position shown in Fig. 3, and when the movable mechanism is actuated to close the switch, the rod descends at the side
 15 of the abutment, as shown in Fig. 2. The rod carries at its free end a pin 16, which enters into a depression 17, in the abutment 15, and serves to lock the switch mechanism and prevent the opening of the receptacle
 20 until the movable portion of the switch mechanism has been thrown to its "off" position.

Mounted in suitable bearings in the sides of the cover is journaled a rock-shaft 17^a,
 25 one end of which protrudes through the cover and has mounted thereon an operating lever or crank 18. Mounted on this rock-shaft centrally within the cover of the receptacle is a rock-arm 19, of bifurcated
 30 construction. This rock-arm straddles one side of the band-spring 6 and one of the metal-plate expanders 7. The end of the rock-arm is provided with a pair of inturned tongues or fingers 20, which fit under
 35 an extending T 21, which is part of the casting forming the plunger-head, and through and by this engagement the mechanism is moved or operated.

Referring in detail to Fig. 5, the combined
 40 fuse-clip and switch-blade comprises a blade of knife-like formation 22, a pair of spring-plate members 23, extending at right angles thereto, and suitable adjusting means 24.

The operation of the device is thought to
 45 be obvious. In order to raise the cover 2, the lever 18, fast to the crank-shaft, is raised, thereby rocking the bifurcated rock-arm 19, which forces the plunger-head upwardly, thus carrying the metal expanders
 50 7 with it. These expanders expand the ends of the band-spring 6 upwardly, and when they have passed the dead center the spring action of the spring-band accelerates the upward movement of the mechanism and
 55 causes a rapid break of the switch contacts. When the mechanism has been so operated the pin 16 has been disengaged from the edge of the abutment 15 formed by the depression 17 and permits of the opening of
 60 the cover. When the mechanism has thus been thrown into its "off" position, a further pressure on the handle 18 tends to lift

and open the cover of the receptacle. Thus the handle performs the dual function as heretofore explained. By this arrangement
 65 I am enabled to move the switch mechanism and the cover of the receptacle sequentially, and when both have been moved as thus explained, the interior of the receptacle is entirely open and made accessible and free
 70 from any obstruction by the operating and movable portion of the switch mechanism.

It is obvious that when it is desired to close the receptacle it is first necessary to see that the movable portion of the switch
 75 mechanism is in its raised or "off" position. Otherwise the rod 14, in the closing operation, would abut the abutment 15 to prevent the cover from being closed. The movable portion of the switch mechanism must be in
 80 its reversed or "off" position before the closure can be effected.

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

85. 1. In an electrical switch, the combination of a case having a hinged cover, switch contacts fixed within the receptacle, movable contacts reciprocally mounted in the cover of the receptacle, and an operating handle
 90 journaled in the cover of the receptacle and adapted to be exteriorly operated to move the movable switch contacts to make or break the connection between them.

95 2. In an electrical switch, the combination of a case having a hinged cover, switch contacts mounted on the cover of the case within the receptacle, movable contacts carried by and reciprocally mounted within the cover of the case, a rock-arm journaled in
 100 the cover, and means exterior of the cover connected to the rock-arm and adapted to operate the movable contacts to make or break the connection between them and the fixed contacts and to open the cover of the
 105 receptacle.

110 3. In an electrical switch, the combination of a case having a hinged cover, a switch mechanism mounted within the case, an operating lever exterior of but carried by the
 115 cover, said operating arm having connection with a movable portion of the switch mechanism, said operating arm operating successively to make or break the connection between the contacts of the switch mechanism
 and open or close the cover of the receptacle.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BRYSON D. HORTON.

Witnesses:

LETTIE A. JACKSON
 T. J. KAUFFMAN