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H. HUBBELL, JR

BATTERY SWITCH

Filed Nov. 14, 1925

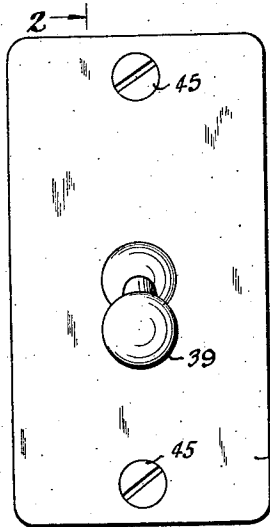


Fig. 1.

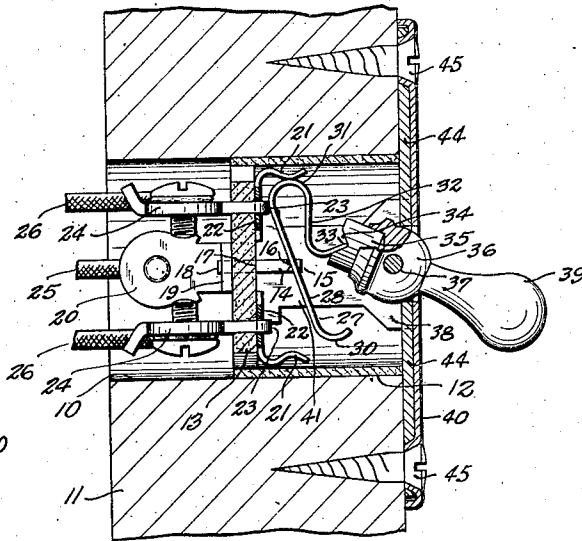


Fig. 2.

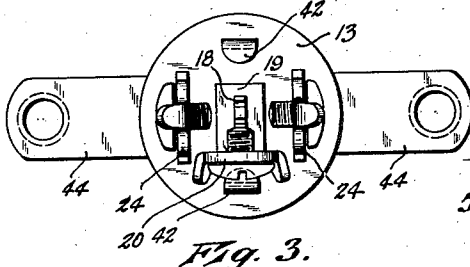


Fig. 3.

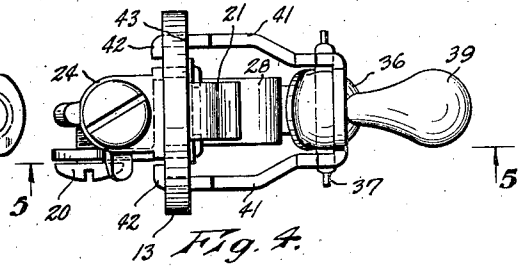


Fig. 4.

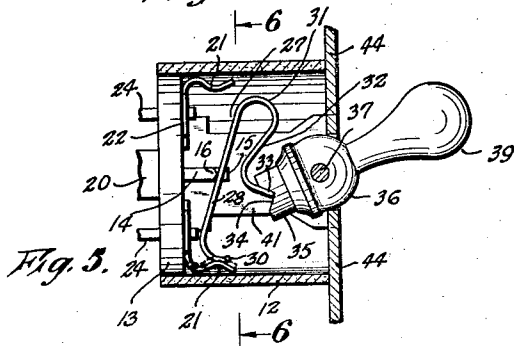


Fig. 5.

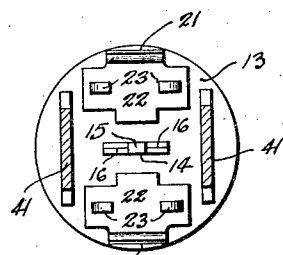


Fig. 6.

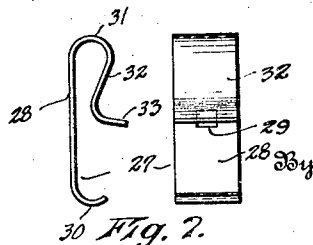


Fig. 7.

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UNITED STATES PATENT OFFICE.

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BATTERY SWITCH.

Application filed November 14, 1925. Serial No. 69,007.

This invention relates to an electric switch and particularly to a switch for low voltages such as are ordinarily used with batteries, and has for an object to provide a snap acting switch which is very simple in construction involving a very small number of parts and which may be easily and quickly assembled, and it is a further object to so arrange the switch and contacts that there is a certain relative sliding movement between the contact members as the connections are made and broken to insure that the contact surfaces are kept clean to give the proper electrical contact.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification, similar reference characters being employed throughout the various figures to indicate corresponding elements. In this drawing,

Fig. 1 is a front elevation of the switch installed.

Fig. 2 is a vertical section substantially on line 2—2 of Fig. 1.

Fig. 3 is an end elevation of the switch removed from the wall.

Fig. 4 is a side elevation thereof.

Fig. 5 is a view similar to Fig. 2 showing the switch in the other extreme position, the section being substantially on line 5—5 of Fig. 4.

Fig. 6 is a transverse section substantially on line 6—6 of Fig. 5, and

Fig. 7 is an edge and front elevation of the movable switch member.

The switch is shown as mounted in an opening 10 in a wall 11, and the switch mechanism is enclosed in a tubular insulating shell 12 of fibre or other suitable material. One end of this shell is closed by an insulating support 13 such as a fibre disc upon which the stationary contacts are mounted. Projecting inwardly from the inner side of this disc is a conducting support or contact 14 having at its free end a central lug or projection 15, and the end walls on the opposite sides of this lug are preferably tapered to provide knife edges 16. This member 14 is provided with a shoulder 17 to engage the inner surface of the disc 13, and an extension 18 extending through the disc where it is riveted to the base 19 of the central binding post 20 by which these mem-

bers are secured to the disc 13. On opposite sides of the member 14 are stationary spring contacts 21, preferably shaped substantially as shown with the curved inner surface facing toward the central member 14 and having feet 22 engaging the inner wall of the disc 13 which are engaged by the turned over lugs 23 of the binding post 24, which pass through the disc 13 and through the feet 22. These lugs secure the stationary contact and the binding post to the disc 13 and also form electrical connection between the binding post and the contact. It will be apparent that as the binding posts are on the outer side of the disc they are easily accessible for connection to the leads 25 and 26.

Mounted on the central contact or conducting member 14 is the movable switch member 27. This member comprises a strip of resilient sheet metal forming a body portion 28 having an opening 29 intermediate the opposite ends thereof into which the lug 15 on the member 14 projects and which retains the switch member on this support 14 so that it may rock on the knife edges 16. The opposite ends of the body portion of the switch are curved outwardly to form rounded ends 30 and 31, while one end portion 32 extends backwardly over the body portion to a position substantially over the pivotal support 14 and then extends outwardly where it terminates in a free end 33. This free end seats in a recess 34 in a plug of insulating material 35, which plug is mounted in a socket in the inner end of the lever 36. This lever is pivotally mounted at 37 in a yoke 38, and the handle 49 projects outwardly through an opening in the cover plate 40 where it is accessible for operation. The pivot 37 is in substantial alignment with the conducting member 14. The yoke is substantially U-shape as shown in Fig. 4, and has side arms 41 extending on opposite sides of the switch mechanism, the free ends of these arms being provided with lugs 42 passing through openings in the insulating disc 13 and turned over on the outer surface thereof to secure these arms to the disc, the arms being provided with shoulders 43 engaging the inner surface of the disc. The yoke also has lateral extensions 44 to rest against the surface of the wall under the cover plate 40 and through which the switch

mechanism is secured by the screws 45 which also secures the cover plate 40.

In operation the switch member 27 is so proportioned that when mounted in position
5 between the member 14 and the lever the free end portion 32 is forced inwardly toward the body portion so that it is under tension, and the resiliency of the member causes it to tend to move outwardly away
10 from the body portion. It will now be apparent that as the lever 36 is rocked on its pivot from the position shown in Fig. 2, as the free end 33 approaches the line joining the pivot 16 of the switch member and the
15 axis of the pivot 37 for the lever, the free end of the switch member will be forced inwardly toward the body portion, still further placing this member under tension. As the free end 33 passes beyond this line joining
20 the two pivots the spring action of the switch member will swing the switch member and the lever with a snap action to the position shown in Fig. 5, so that the switch member moves away from the upper contact
25 21 into engagement with the lower contact 21 with a quick snap action giving a rapid make and break. The stationary contacts 21 are so positioned that normally the distance between their inner curved surfaces is
30 less than the distance between the curved ends 30 and 31 of the switch member, so that when they are engaged by this member they are forced laterally outward somewhat as indicated by the dotted lines at the
35 lower part of Fig. 5. This action always insures proper contact between the contacts 21 and the switch member, and the relative positions of these members causes a rubbing or wiping action between their contact surfaces when the switch member is operated,
40 to maintain these surfaces clean and insure proper electrical contact. It is further to be noted that the switch member merely rests on the knife edges 16 and is held against lateral movement by lug 15, while the resilient or spring action of the contact member reacting against the plug 35 retains the contact member against the knife edges.

Having thus set forth the nature of my
50 invention, what I claim is:

1. In an electric switch, a conducting member, a stationary contact at one side of said member, a switch member pivotally
55 mounted on the conducting member and adapted to engage the stationary contact, said switch member comprising a body portion pivoted to the conducting member and an end portion curved backwardly upon the body portion and then extending outwardly
60 away from the body and terminating in a free end, and a rocking lever engaging said

free end to swing the switch member about its pivot.

2. In an electric switch, a pair of spaced contacts, a switch member pivoted to one of the contacts and adapted to bridge said contacts, said switch member comprising a resilient metal strip including a body portion which is pivoted to the contact and an end portion curved backwardly over the body portion and then extending outwardly away from the body portion, and a rocking lever engaging said outwardly extending portion to swing the switch member about its pivot.

3. In an electric switch, a movable switch member comprising a resilient metal strip including a pivoted body portion and an end portion curved backwardly over the body portion and then outwardly away from said portion where it terminates in a free end, a pivoted lever, and an insulating plug carried by said lever having a notch to receive said free end.

4. In an electric switch, a movable switch member comprising a resilient metal strip including a pivoted body portion and end portions curved laterally therefrom on opposite sides of the pivot, one of said end portions extending back over the body portion and then outwardly therefrom adjacent said pivot and terminating in a free end, and a pivoted lever having a recess in which said free end is seated.

5. In an electric switch, an upright conducting member, a movable switch member comprising a resilient metal strip including a body portion pivoted on the end of said member and an end portion curved backwardly over the body portion and extending outwardly therefrom adjacent the pivot, and a pivoted lever engaging said outwardly extending portion and cooperating therewith to retain the switch member on the conducting member.

6. In an electric switch, an insulating support, an upright conducting member mounted on said support, a movable switch member comprising a resilient metal strip including a body portion pivoted to said conducting member intermediate the ends of the strip and having its ends curved laterally, one of said ends extending backwardly over the body portion and then outwardly therefrom where it terminates in a free end, a pivoted lever, an insulating plug carried by the lever having a recess in which said free end is seated, and spring contacts mounted on the support in position to engage said curved ends of the switch member.

In testimony whereof I affix my signature.

HARVEY HUBBELL, JR.