

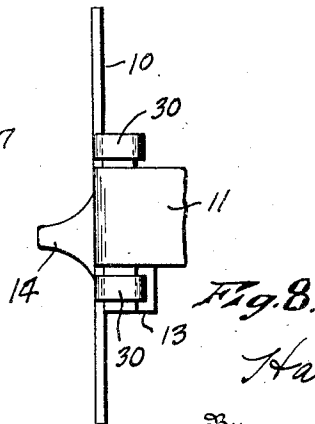
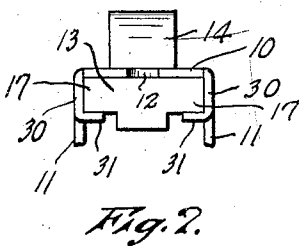
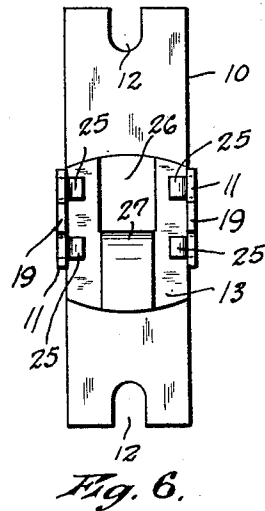
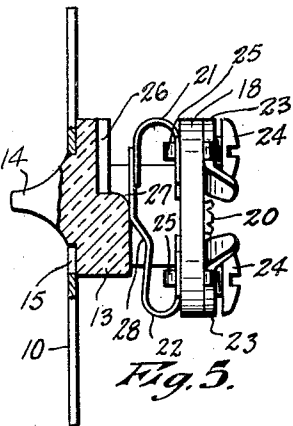
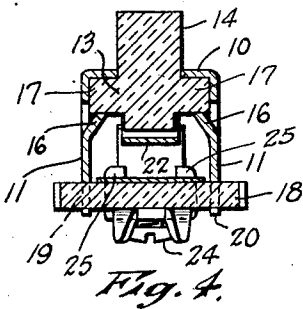
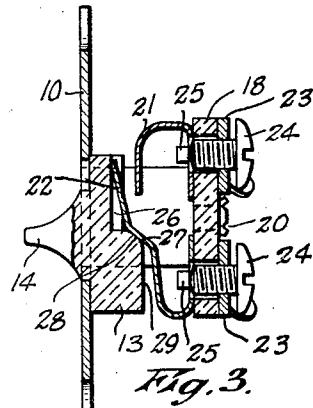
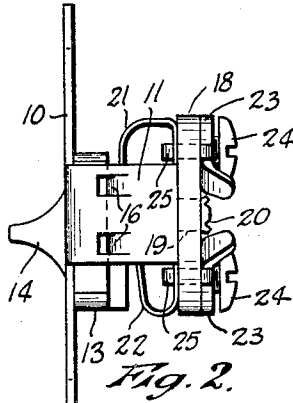
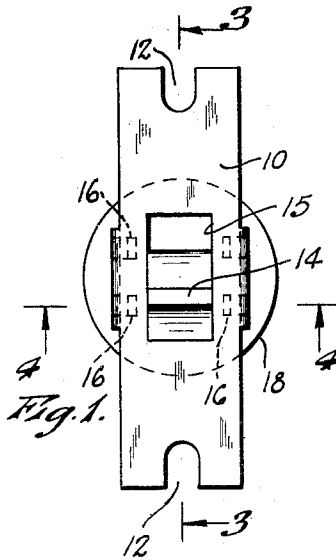
April 12, 1932.

H. HUBBELL, JR

1,853,358

BATTERY SWITCH

Filed Aug. 17, 1928



Inventor

Harvey Hubbell Jr.

By

Hooster & Davis

Attorneys

UNITED STATES PATENT OFFICE

HARVEY HUBBELL, JR., OF BRIDGEPORT, CONNECTICUT

BATTERY SWITCH

Application filed August 17, 1928. Serial No. 300,367.

This invention relates to an electric switch particularly to a battery switch or a switch for use with low voltages, and has for an object to provide a switch which will be of very simple construction, involving a small number of parts, and which may be manufactured at low cost.

It is also an object to provide a switch construction in which there is a positive operation of the movable switch element, and in which it will be positively held in the circuit closing position.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawings forming a part of this specification. In these drawings,

Fig. 1 is a front elevation of the switch.

Fig. 2 is a side elevation thereof.

Fig. 3 is a vertical section substantially on line 3—3 of Fig. 1, showing the switch in the open position.

Fig. 4 is a transverse section substantially on line 4—4 of Fig. 1.

Fig. 5 is a partial side elevation and a partial section similar to Fig. 3 showing the switch in the closed position.

Fig. 6 is a rear elevation showing the base or support for the contacts removed.

Fig. 7 is an end elevation of the frame with the inner ends of the side members broken away showing a slightly different means for securing the operating member in the frame, and

Fig. 8 is a side elevation of the construction shown in Fig. 7.

The switch construction illustrated comprises a substantially U-shaped metal frame composed of a body member 10 and spaced legs 11 extending laterally from the opposite edges of this body portion substantially parallel to each other and at substantially right angles to the body portion. It is preferred that these legs be stamped in one piece with the body portion for simplicity of construction. At its opposite ends the body portion 10 is provided with notches or openings 12 for securing screws to be used in mounting the switch on a suitable support, such as a panel in the dash of an automobile.

Mounted to slide in this frame and between the legs 11 is an operating member 13, preferably a block of insulating material, and it has a finger piece or extension 14 projecting through an opening 15 in the body portion 10 of the frame where it is easily accessible for operation of the block to impart sliding movements thereto. The block is held in position in the frame and guided for sliding movement, in the form shown in Figs. 1 to 6, by inwardly pressed lugs 16 which are cut from the side members or legs 11 on three sides and the free end forced inwardly to lie over and engage the inner wall of the side portions 17 of the block, as indicated in Fig. 4, to secure this block in the frame and with the body portion to provide a guide therefor.

Mounted on the free ends of the legs 11 is a base or insulating support 18. This may be of any suitable construction but is preferably a plate of pressed fibre having openings through which lugs 19 formed on the ends of the legs 11 project and are riveted over, as shown at 20, to securely fasten this insulating support or base to the legs. Mounted on this base or support 18 are the switch contacts involving a stationary contact 21 and a movable contact 22. These contacts are preferably of spring sheet metal formed substantially to the shape shown, the movable contact being considerably longer than the stationary contact and having its free end overlapping that of the stationary contact. The movable contact is also so formed that it tends to move away from the stationary contact and open the circuit. On the opposite side of the base or support 18 are plates 23 carrying binding screws 24 for attachment of lead wires, and these plates have lugs 25 extending through the base or support 18 and through the bases of the contacts 21 and 22 where they are bent over against these bases to securely mount the contacts on the support and also provide electrical connection between the binding post plates and the contacts.

The operating member or block 13 is recessed on its inner wall adjacent one end, as shown at 26, to provide a shoulder or cam surface 27 which is preferably curved as

shown. The movable contact 22 is bent laterally or offset intermediate its length to provide an inclined cam surface 28 which is adapted to be engaged by the cam surface 27 of the operating block to shift the movable contact 22 toward and from the stationary contact 21. This operation is shown in Figs. 3 and 5. In Fig. 3 the switch is open with the spring contact 22 resting at its free end in the recess 26 and its cam surface 28 engaging the cam surface 27 on the operating member 13 and holding this member in one extreme position. If now the operator through the finger piece 14 shifts this block 13 to its other extreme position, or upwardly as viewed in these figures, to the position of Fig. 5, it will be apparent that the cam surface 27 will ride up the cam surface 28 and will force the free end of the movable contact 22 to engagement with the stationary contact 21. The cam surfaces are so located that when in this position the straight surface of the contact 22 rests on the straight surface 29 on the inner wall of the operating member and the contact will be held thereby in closed position without any tendency to shift the operating member 13. In other words the operating member in this position practically locks the contact 22 in the circuit closing position. As this contact is forced against the stationary contact 21 the stationary contact will yield somewhat causing a certain relative sliding movement between the two contacts, thus giving a wiping action on their contacting surfaces and maintaining these surfaces clean to provide good electrical contact. It will, of course, be apparent that when the operating member 13 is shifted downwardly from the position of Fig. 5 the spring contact 22 will move into the position of Fig. 3 away from the stationary contact and open the circuit.

In the form shown in Figs. 7 and 8, instead of providing inwardly extending lugs 16 cut from the side members or legs 11 as shown in the first form, these may be provided as integral lugs 30 extending laterally from the side edges of the body portion 10 and bent over, as shown at their free ends 31, on the inner wall of the side portions 17 of the operating member 13, to retain this member in the frame and guide it for its sliding movements.

It will be apparent from the foregoing description that the device is extremely simple in construction and may be manufactured and assembled at low cost. Also that due to its simplicity it will be very effective in operation and not easily gotten out of order. Having thus described the nature of my invention, what I claim is:

1. In a switch, a substantially U-shaped frame having an opening in the body portion, an insulating support mounted on the legs of said frame, spaced contacts having

means for connecting lead wires thereto mounted on said support, an operating member mounted to slide between said legs having a finger piece projecting through said opening and provided with a cam surface to operate one of said contacts.

2. In a switch, a frame comprising a plate having parallel legs extending substantially normal to the plane of the plate, said plate being provided with an opening, an operating member mounted to slide at the inner side of said plate and having a finger piece extending through said opening, an insulating support mounted on and carried by said legs at the inner side of said operating member, a pair of spaced contacts including means for connecting lead wires mounted on said insulating support at the side thereof opposite said operating member, one of said contacts being a spring contact tending to move away from the other contact and having a cam surface, and said operating member having a surface to cooperate with said cam surface to force the spring contact in engagement with the other contact.

3. In a switch, a substantially U-shaped frame comprising a plate having an opening and spaced legs extending laterally from said plate, an operating member comprising a sliding block having a finger piece in said opening, said frame having ears engaging the opposite side of the block to retain it in the frame, a pair of spaced contacts carried by said legs, and cooperating means on said block and one of the contacts to operate said contact.

4. In a switch, a substantially U-shaped frame having an opening in the portion joining the legs thereof, a block of insulating material mounted to slide in said frame having a finger piece in said opening and provided with a cam surface on its opposite side, an insulating support mounted on the legs, a pair of switch contacts mounted on said support and having means for attaching lead wires, one of said contacts being a spring contact movable toward and from the other contact and provided with a cam surface adapted to coact with that of the block for shifting said contact.

5. In a switch, a substantially U-shaped frame having an opening in the portion joining the legs thereof, an insulating block mounted to slide in said frame having a finger piece in said opening, lugs on said frame engaging the block to guide and hold it in the frame, an insulating support mounted on the legs, spaced contacts mounted on said support having means for attaching lead wires, one of said contacts comprising a spring contact, and cooperating cam surfaces on the block and said latter contact for operating it.

6. In a switch, a substantially U-shaped frame having an opening in the portion join-

ing the legs thereof, an insulating block mounted to slide in said frame between the legs thereof and having a finger piece in said opening, said block having a cam surface and a straight surface at one side of said cam surface, a movable spring contact mounted by said frame and engaging said block and having a cam surface to cooperate with that of the block for shifting the contact and having a substantially straight surface to engage that of the block after shifting of the contact to hold it in position, and another contact for engagement by the spring contact.

7. In a switch, a substantially U-shaped frame, having an opening in the portion joining the legs thereof, an insulating block mounted to slide in said frame and having a finger piece in said opening, lugs struck from the legs of said frame and engaging the inner surface of the block to guide and hold it in the frame, an insulating support mounted on the legs, spaced contacts mounted on said support having means for attaching lead wires, one of said contacts comprising a spring contact, and cooperating cam surfaces on the block and said latter contact for operating it.

In testimony whereof I affix my signature.

HARVEY HUBBELL, JR.