Oct. 23, 1951 A. HAFKE 2,572,335

ELECTRIC SWITCH STRUCTURE

Filed June 9, 1949

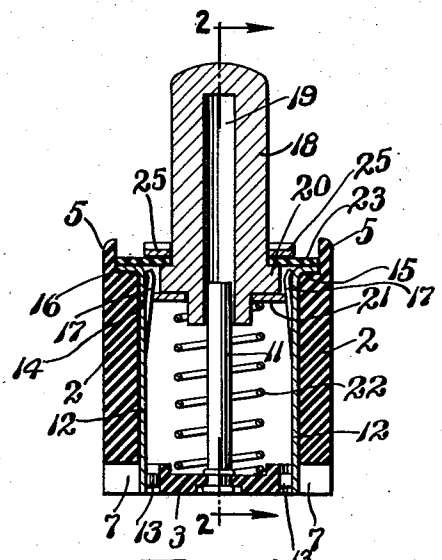


FIG. 1.

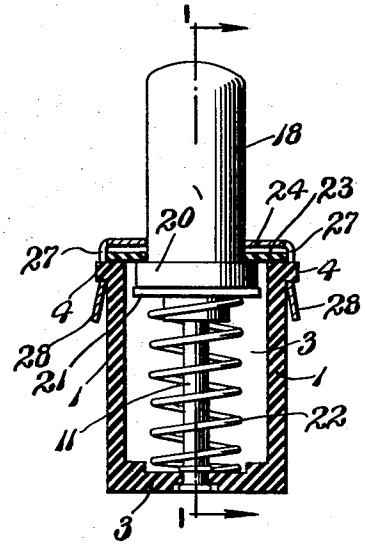


FIG. 2.

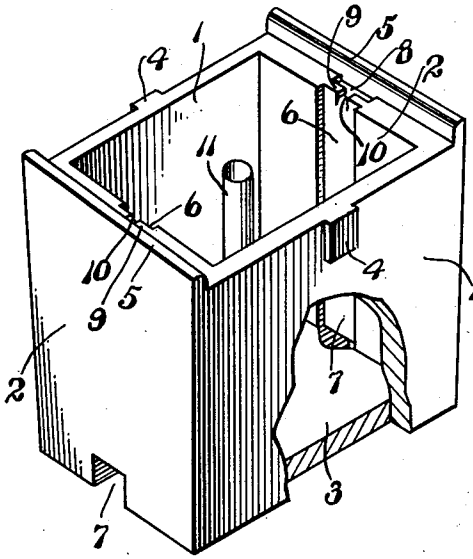


FIG. 3.

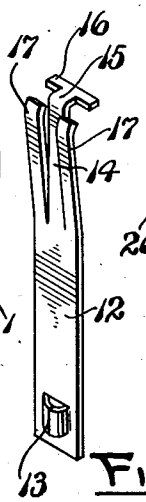


FIG. 4.

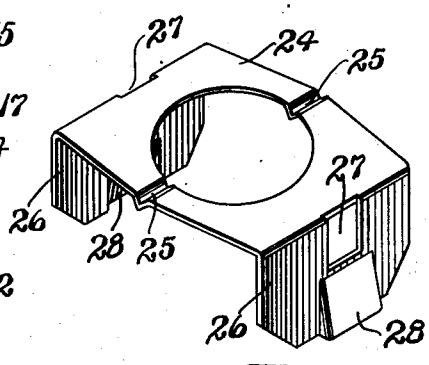


FIG. 5.

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Patented Oct. 23, 1951

2,572,335

UNITED STATES PATENT OFFICE

2,572,335

ELECTRIC SWITCH STRUCTURE

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Application June 9, 1949, Serial No. 97,966

2 Claims. (Cl. 200—168)

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This invention relates to an electric switch having a novel structure, one which is economical to make, is particularly simple and easy to assemble, and effective in use.

It is an object and purpose of the invention to provide a switch having the advantages stated, an understanding of a preferred structure of which may be had from the following description, taken in connection with the accompanying drawing, in which:

Fig. 1 is a vertical section through the switch substantially on the plane of line 1—1 of Fig. 2.

Fig. 2 is a similar vertical section at right angles to the section shown in Fig. 1, substantially on the plane of line 2—2 of Fig. 1.

Fig. 3 is an enlarged perspective view of the body of insulating material forming a part of the switch.

Fig. 4 is a perspective view of one of the contact members, two of which are used mounted within the body, and

Fig. 5 is a perspective view of the retaining cap or cover of the switch.

Like reference characters refer to like parts in the different figures of the drawing.

The body of the switch is a hollow cup-like member of insulating material having parallel spaced sides 1, parallel vertical ends 2 and a bottom 3 substantially closing one end of the body. From each of the sides 1, near its upper end, a lug 4 extends outwardly integral with the sides. From each of the ends 2 a lip 5, for the full length of each end, extends upwardly at the outer edge portions of each end as shown. At the inner side of each end, a shallow rectangular groove or slot 6 extending vertically for the height of each end is made, at its lower end connecting with an opening 7, one at each end of the bottom 3. Such opening 7 is through the full width of each end 2 and through the bottom 3, projecting partially into the bottom as shown in Fig. 1.

At the upper edge of each end 2, a recess 8, having a length equal substantially to the width of the groove 6, is made. The recess 8 is of narrow width and is separated from the upper end of the adjacent groove 6 by a narrow rib 9 which, between its ends, is cut away or recessed to provide a connecting slot 10 between the upper end of the groove 6 and its associated recess 8. The body thus provided is of insulating material and is molded as a single integral member or element of the switch structure.

A post 11 in the form of a rod is permanently connected at its lower end to the bottom 3 and extends upwardly, terminating substantially at

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or a short distance below the upper edges of the sides and ends of the switch body.

Two contact members 12 of metal are used with the switch. Each is made of flat metal having a width and thickness substantially equal to the width and depth of the groove 6. Each at its lower end is provided with two inwardly struck ears 13 which are received in the inwardly extending portions of the openings 7 made in the edges of the bottom 3 (Fig. 1). When thus located with the vertically extending contact members 12 filling the grooves 6, the lower ends of said members 12 reach the underside of the bottom 3. Electric wires, in the use of the switch, are connected with the ears 13 so that a circuit for carrying current may be completed when a bridging connection is made between the two members 12 one located at each end of the body.

At the upper end of each of the contact members 12 the metal is vertically slit in two substantially vertical parallel lines between its side edges, leaving a narrow somewhat elongated tongue 14 in the same plane with the major portion of the contact member 12. The tongue at its upper end is bent outwardly at right angles for a short distance, as indicated at 15, and terminates in a cross head 16. The recesses 8 and the slots at 10 receive the cross heads 16 and outwardly bent parts 15, with the upper sides of said parts 15 and 16 substantially flush with the upper edges of the ends 2 of the body. The metal which is left at each side of the tongue 14 has upper free end portions which are bent and permanently offset inwardly, providing a pair of contacts 17 at the upper end portions of each of the contact members 12, directly opposite each other within the body and offset to extend toward each other, being offset progressively greater distances toward the upper end of the switch body.

A manually operable switch member 18, of a generally cylindrical form, preferably, has a longitudinal axial opening 19 from its lower end toward but terminating short of the upper or outer end thereof. Near the lower or inner end the switch member 18 is somewhat enlarged to provide an annular integral collar 20 below which it is reduced in diameter as shown. A contact plate 21 of metal has a circular opening so that it may be placed over the lower projecting end of the switch member 18 and come against the under side of the collar 20 and adjacent the portions of the member 18. Such switch member is inserted into the body, the rod 11 entering the lower end of the opening 19 for

guiding the movements of the switch member. A coiled compression spring 22 is disposed around the rod 11 between the bottom 3 and the contact member 21. The length of the plate 21 is such that in its upper position, opposite end edges come against the contacts 17 of both members 12, bridging the gap between them for completing an electric circuit. Upon pushing downwardly at the outer end of the switch member 18, the contact plate 21 is moved out of engagement with the contacts 17 and the circuit is broken.

A plate of insulating material 23 of a size to cover the upper open end of the body 1, its ends fitting between lips 5, has a circular opening through which the upper portion of the switch member 18 above the collar 20 freely passes. It is placed in position to close the switch body, as shown in Figs. 1 and 2, and holds the contact members 12 in place, bearing against the upper sides of the parts 15 and 16.

It is releasably secured in position by a metallic latching member 24. The member 24 is made of thin resilient or spring metal, having a width somewhat less than the distance between the lips 5, and a length substantially equal to the distance between the outer sides of the sides 1 of the body. Between its ends it is formed with transverse generally V-grooves 25 and centrally it is provided with an opening for the passage therethrough of the outer portion of the switch member 18. At each end a wing 26 is provided with an opening for the passage therethrough of the outer portion of the switch member 18. At each end a wing 26 is bent to extend inwardly along the outer side of each of the sides 1, each wing having an opening 27 to receive a lug 4, below which the metal is pressed outwardly and downwardly at an outward incline as indicated at 28. Such retaining member may be forced into latching position with the lugs, its wings 26 being snapped thereover. The bottoms of the ribs made at the grooves 25 press upon the upper side of the plate 23 and, in the connection with the lugs 4, the retaining member is bent or strained so that when it is connected with said lugs 4, a continuous spring pressure is exerted upon plate 23 to hold the assembled parts in secure connection and eliminate any lost motion.

To break the circuit it is merely necessary to push inwardly upon the switch member 1. When released, such member will return to its outer position by reason of the spring 22 and the circuit will be completed.

The structure is an economical one. The parts are easily fabricated and their assembly is of an especially simple order.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a switch, a hollow body of insulating material, open at its upper end and having vertical spaced sides, two opposed sides of the body at the inner sides thereof each having a shallow vertical groove, each of said grooved sides at the upper end thereof and at its upper portion having an upwardly extending lip, and each of said grooved sides at its upper edge within the lip having a recess, a metallic contact member located in each groove, each at its upper end terminating in an outwardly turned head received in the adjacent recess, a plate of insulating material over the upper end of the body between said lips holding said heads in said recesses, and means releasably securing said plate in place, said plate being adapted to have associated therewith a movable switch member for operative association with said contact members to make electric connection therebetween when in one position, and to break said electric connection when moved from said position.

2. In a switch, a hollow body of insulating material open at its upper end and having vertically spaced sides, two opposed sides each at its upper edge having a recess therein, metallic contact members located vertically, one at the inner side of each of said sides of the body and having a laterally bent upper end portion received in the recess at the upper edge of the associated side, a plate of insulating material covering the open upper end of the body and extending over the upper end portions of said contact members, thereby holding them in the recesses, means for preventing movement of said cover plate relative to the upper ends of said contact members, and a detachable, resilient retaining member releasably connected at its ends to the sides of the body and yieldingly bearing against the upper side of said cover plate, said cover plate and resilient connecting means having aligned openings adapted for passage therethrough of a movable switch member adapted to make bridging connection between said contacts when in one position and break said bridging connection when in another position.

ARTHUR HAFKE.

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