June 9, 1942. E. BOTUCK 2,285,561

SWITCH MANIPULATING MEANS

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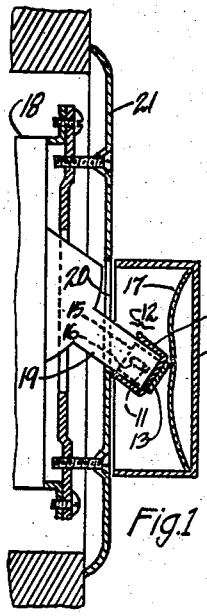


Fig.1

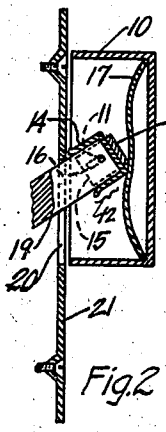


Fig.2

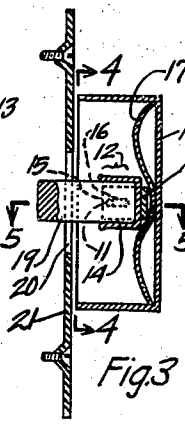


Fig.3

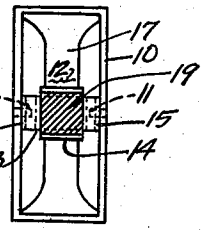


Fig.4

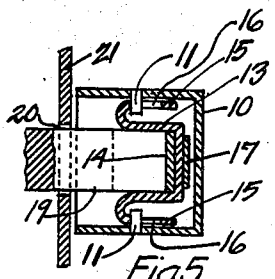


Fig.5

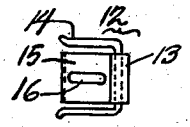


Fig.6

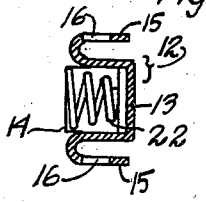


Fig.7

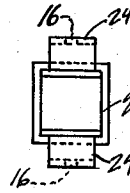


Fig.8

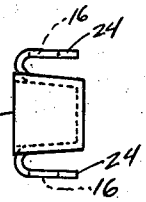


Fig.9

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SWITCH MANIPULATING MEANS

Eli Botuck, New York, N. Y.

Application April 9, 1941, Serial No. 387,586

11 Claims. (Cl. 200—172)

This invention relates to electric switches and more particularly to means for manipulating said switches.

The usual wall type of switch is provided with a snap spring toggle mechanism operable by means of an inconveniently short handle protruding through a slot in an escutcheon or wall plate. The present invention provides means whereby the handle is more conveniently operated. It also enhances the external appearance of the switch.

Other objects and advantages will become apparent upon further study of the description and drawing, in which:

Fig. 1 is a section through the manipulating means in its lower position showing also portions of a toggle switch.

Fig. 2 is a section taken similarly to Fig. 1 with more parts of the switch omitted and shows the manipulating means in its upper position.

Fig. 3 is a section taken similarly to Fig. 2 and shows the manipulating means in its middle position.

Fig. 4 is a view looking along the line 4—4 of Fig. 3.

Fig. 5 is a section taken to an enlarged scale along the line 5—5 of Fig. 3.

Fig. 6 is an elevation of the attaching means shown by itself, said means being turned at right angles from its position shown in Fig. 5.

Fig. 7 is a section through an attaching means provided with a spiral spring, said means being shown by itself.

Fig. 8 is a plan view of a tapered attaching means shown by itself, and

Fig. 9 is an end elevation of the attaching means of Fig. 8.

The form of the device shown in Figs. 1–6 comprises a sheet metal housing 10 provided with pivot pins 11 projecting inward from opposite side walls. Mounted on pivot pins 11 is the attaching means denoted in its entirety by the numeral 12. Attaching means 12 is formed of two substantially U-shaped resilient members 13 and 14 set at right angles to each other, one within the other, the heads of the members where they cross being attached to each other as by welding. A rivet, not shown, through the members where they cross, also could be used to fasten them together instead of welding. Member 13 has a flange or wing 15 extending from the outer end of each leg back in a direction substantially parallel to the leg. Each flange 15 is provided with a slot 16 for slidably and pivotally mounting it on a pin 11. Extending from one end of housing 10 to the other in a longitudinal direction and between attaching means 12 and the front wall of the housing, is a plate spring 17 normally pressing back against said means.

The switch 18 shown in the drawing is the well known toggle switch having a pivotally mounted handle 19 which projects through a slot or opening 20 in escutcheon plate 21.

The switch manipulating device is attached to handle 19 by pressing the attaching means 12 over said handle, spreading apart somewhat against their resilience the legs of members 13 and 14. This causes a friction grip of attaching means 12 to handle 19. With handle 19 turned down, as in Fig. 1, pivot pin is located in the forward end of slot 16, and the head ends of members 13 and 14 flex spring 17 so that the latter tends to maintain attaching means 12 and housing 10 in the position set. With handle 19 turned up, as in Fig. 2, pivot pin is again located in the forward end of slot 16 and the head ends of members 13 and 14 flex spring 17 so that the latter tends to maintain attaching means 12 and housing 10 in the position set. In passing from the down position of Fig. 1 to the up position of Fig. 2, as shown by Fig. 3, housing 10 may be moved parallel to escutcheon plate 21 by causing pivot pins 11 to travel rearward in slot 16, or in other words allowing means 12 while it is pivoting about pins 11 also to have a motion of translation toward the forward wall of the housing. This travel is resisted to a certain extent my spring 17. Spring 17 is a light spring although the drawing shows it thick for clarity. Usually the weight or pressure of the hand against housing 10 in throwing it from upper to lower position substantially keeps it from moving in an arc away from escutcheon plate 21, means 12 traveling forward, said motion being permitted by the change in position of pins 11 in slots 16. Besides holding housing 10 firmly in its upper and lower positions, spring 17, when the device is separated from handle 19, normally holds means 12 away from the forward wall of the housing, helping in pressing the open end of means 12 over the end of handle 19.

While the drawing shows a slot 16 in each of wings 15, the device can be constructed without the slot, just a hole being provided in the wings to fit the relative position shown for pin 11 in Fig. 1. Under these conditions, when the handle of the switch is thrown from one of its extreme positions to the other, housing 10 and attaching means 12 are moved in the arc of a circle instead

of substantially parallel to escutcheon plate 21, as when slots 16 are provided.

In the form of attaching means shown in Fig. 7, in addition to members 13 and 14 a helical spring 22 is mounted in the cup formed by said members. Spring 22 is tapered toward its place of attachment to the head of member 14. With this construction, instead of using the resilience of members 13 and 14 frictionally to grip handle 19, spring 22 is forced over the projecting end af the handle.

In the attaching means illustrated in Figs. 8 and 9 instead of using separate members 13 and 14, a one piece cup 23 is used which is tapered, the small end being at the closed or forward end of the cup. Wings 24, having slots 16, are provided extending from opposite sides of cup 23.

It will be readily understood that various other forms of attaching means can be used in addition to those disclosed and still come within the scope of the invention. Further, box or housing 10 need not necessarily be of the square type shown but may have other forms and also come within the scope of the invention.

I claim:

1. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means having a member for gripping the projecting portion of the handle, and a housing over said member, said housing being open on its side toward the escutcheon plate, said member being pivotally mounted in the housing to accommodate the swinging of the handle when the housing is moved opposite the escutcheon plate to throw the handle into its positions for opening and closing the switch.

2. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means having a substantially cup-shaped member with its open end toward the plate and formed to slip over the projecting end of the handle and to hold frictionally thereon, a housing for said member, said member being pivotally mounted in the housing to accommodate the swinging of the handle when the housing is moved opposite the escutcheon plate to throw the handle into its positions for opening and closing the switch.

3. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means having a member for gripping the projecting portion of the handle, a housing for said member, and means for mounting the member in the housing, said mounting means permitting a pivotal motion and a motion of translation of the member with respect to the housing to accommodate the swinging of the handle when the housing is moved substantially parallel to the escutcheon plate to throw the handle into its positions for opening and closing the switch.

4. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means comprising a spring member and a housing over said member, the latter being formed to be slipped against its resiliency over the projecting portion of the handle, means for pivotally mounting the member in the housing to accommodate the swinging of the handle when the housing is moved opposite the escutcheon plate to throw the handle into its positions for opening and closing the switch.

5. The combination with an electric switch having an escutcheon plate and a swingably mounted handle for opening and closing the switch, said handle projecting through an opening in the escutcheon plate, of a housing outside the escutcheon plate, and means pivotally mounted in the housing for attaching the housing to the projecting portion of the handle, said means accommodating the swinging of the handle when the housing is moved opposite the escutcheon plate to throw the handle into its positions for opening and closing the switch.

6. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means having a member for gripping the projecting portion of the handle, a housing for said member, the latter being provided with slots on opposite sides thereof, and oppositely disposed pins projecting inward from the walls of the housing, said pins slidably and pivotally engaging said slots for accommodating the swinging of the handle when the housing is moved substantially parallel to the escutcheon plate, to throw the handle into its positions for opening and closing the switch.

7. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means having a member for gripping the projecting portion of the handle, a housing for said member, resilient wings extending from opposite sides of said member in a direction substantially parallel to said sides, each wing being provided with a slot, and oppositely disposed pins projecting inward from the walls of the housing, said pins slidably and pivotally engaging said slots for accommodating the swinging of the handle when the housing is moved substantially parallel to the escutcheon plate to throw the handle into its positions for opening and closing the switch.

8. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means comprising a tapered helical spring for gripping the projecting portion of the handle, a member upon which the spring is mounted, and a housing over said member and spring, said member being pivotally mounted in the housing to accommodate the swinging of the handle when the housing is moved to throw the handle into its positions for opening and closing the switch.

9. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means comprising a pair of substantially U-shaped resilient members, one set within the other with their heads substantially at right angles to each other and fastened together forming substantially a cup adapted to slip over the projecting end of the handle and to hold frictionally thereon, and a housing for said cup, said cup being pivotally mounted in the housing to accommodate the swinging of the handle when the housing is moved to throw the handle into its positions for opening and closing the switch.

10. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means comprising a pair of substantially U-shaped resilient members, one set within the other with their heads substantially at right angles to each other and fastened together forming substantially a cup adapted to slip over the projecting end of the handle and to hold frictionally thereon, a housing for said cup, and resilient wings extending from opposite sides of one of said members in a direction substantially parallel to said sides, each wing being provided with a slot, and oppositely disposed pins projecting inward from the walls of the housing, said pins slidably and pivotally engaging said slots for accommodating the swinging of the handle when the housing is moved substantially parallel to the escutcheon plate to throw the handle into its positions for opening and closing the switch.

11. Electric switch manipulating means for throwing the swingably mounted handle of a switch, said handle projecting through an opening in the escutcheon plate of the switch, said means comprising a member for gripping the projecting portion of the handle, a housing over said member, said member being pivotally mounted in the housing to accommodate the swinging of the handle when the housing is moved opposite the escutcheon plate to throw the handle into its positions for opening and closing the switch, and a spring in the housing engaging said member yieldingly resisting the rotation of the member with respect to the housing.

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