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H. HUBBELL

CANOPY SWITCH

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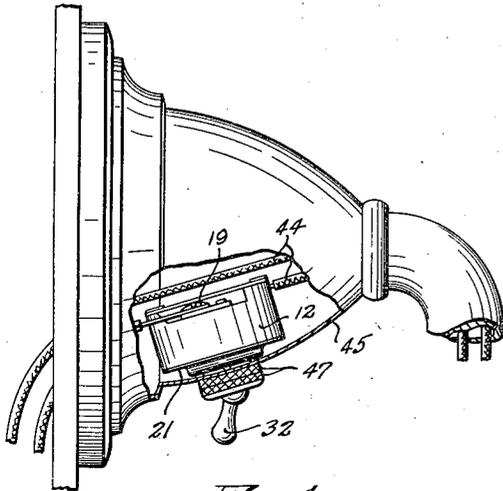


Fig. 1.

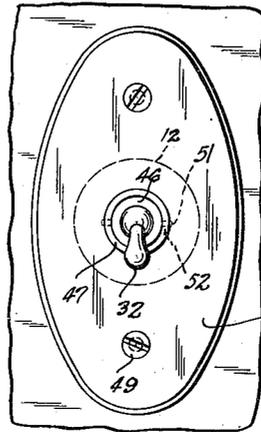


Fig. 2.

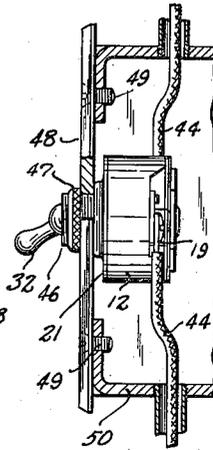


Fig. 3.

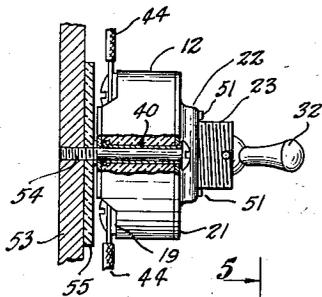


Fig. 4.

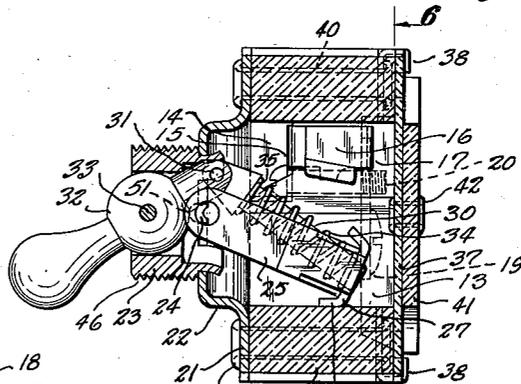


Fig. 5.

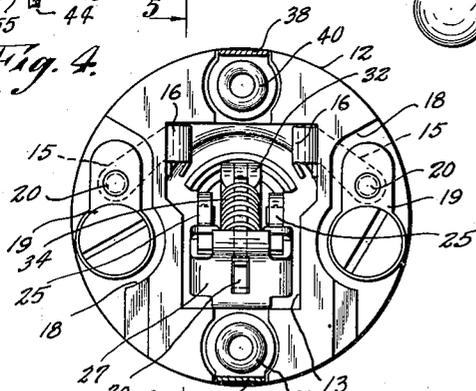


Fig. 6.

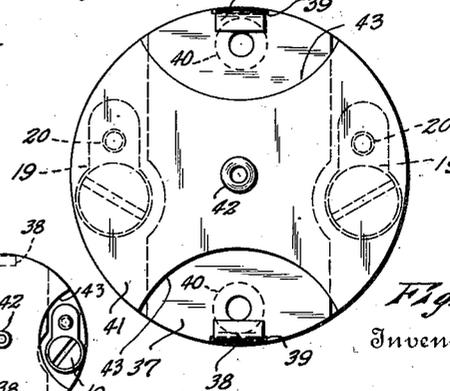


Fig. 7.

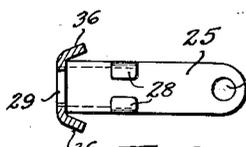


Fig. 9.

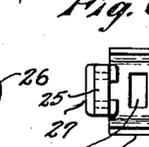


Fig. 10.

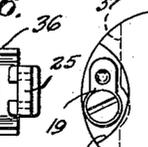


Fig. 11.



Fig. 12.

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## UNITED STATES PATENT OFFICE.

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## CANOPY SWITCH.

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This invention relates to electrical switches, and particularly to a so-called canopy switch, although, it is not of course, confined to use as a canopy switch, and it is an object of the invention to provide a toggle switch which may be used as a canopy switch.

It is also an object of the invention to provide an improved and simplified construction of switch with improved and simple means for mounting the switch in a canopy or secure it to a similar support, and it is a further object of the invention to provide a construction which may be easily and quickly assembled, and in which the various elements are easily accessible for inspection and repair.

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 side elevation of a canopy for a light fixture with a portion thereof broken away showing my improved switch in position.

Fig. 2 is a front elevation of a face plate with my improved switch attached thereto.

Fig. 3 is a side elevation of the plate of Fig. 2 shown in position over a wall box, the wall box being shown in section.

Fig. 4 is a partial plan view and partial section indicating how my improved switch may be mounted on a panel board or the like.

Fig. 5 is a vertical section through the device on an enlarged scale, the section being substantially on line 5-5 of Fig. 6.

Fig. 6 is a section substantially on line 6-6 of Fig. 5.

Fig. 7 is a rear elevation of the device looking from the right of Fig. 5, and showing the binding posts covered by the protecting plate.

Fig. 8 is a view similar to Fig. 7 on a smaller scale showing the plate turned to a position to expose the binding posts, and

Figs. 9, 10 and 11 are detail views of the movable switch element.

Referring more particularly to Figs. 5 to 11 my improved switch comprises a body member 12 of insulating material having a chamber 13 therein opening both through the front and rear of the body member.

The body member is provided with recesses 14 in the front wall thereof in which the extensions 15 of stationary contacts 16 are mounted. The contact portions of these elements project into the chamber 13 and are bent upon themselves at 17 to provide spring contacts. The body member is provided in its rear face with recesses 18 in which binding posts 19 are mounted, the binding posts being connected with the stationary contacts 16 by rivets or screws 20 passing through the body member and these elements. In the present case the screws pass through the extensions 15 and are threaded into the plate of the binding posts. It thus serves to secure these elements to the body member and also to form an electrical connection between them.

Mounted on the front of the body member is a plate 21 which covers the opening to the chamber 13 in the front of the body member and carries the movable switch element and the operating means therefor. It also carries means for mounting the device in a canopy or the like. This plate is practically the same shape and size as the body member and is preferably cupped in the center at 22 to provide a little more room for the switch mechanism. This cupped portion has an opening in which a tubular supporting element 23 is mounted, and the sides of the opening are also provided with pivot studs 24 for the switch element. This element is of improved construction and comprises a pair of supporting members 25 of insulating material, such as a suitable fibre, and they are pivoted on the studs 24 by means of openings 26. At their free ends they carry the movable contact member 27 which is a piece of sheet metal formed substantially as shown in Figs. 9, 10 and 11. It is bent to substantially U-shape with clips 28 on the side members thereof arranged to be bent around the edges of the supporting members 25, and to more securely fasten the contact to these members the edges of the members are provided with notches through which the clips extend. The connecting portion of the contact is provided with an opening 29 for passage of a bar 30 forming one member of the toggle operating mechanism. This bar 30 is also made of insulating material and is pivoted at 31 to a pivoted operating lever 32, which lever is pivoted at 33 in the tubular member 23, and a compression spring 34 embraces this bar and reacts at its

opposite ends against the contact 27 and the shoulder 35 on the bar 30. It will thus be seen that the contact 27, which is adapted to engage the stationary contacts 16 and to bridge these contacts to close the circuit, is entirely insulated from the operating lever 32 and the plate 21. The contact 27 is also preferably provided with laterally inclined ears 36 to engage the inner walls of the chamber 13 and limit the movements of the contact element in opposite directions. The operation of this toggle will be clear from the drawing. Movement of the free end of the lever 32 upwardly, as viewed in Fig. 5, will compress the spring 34 until the pivot 31 passes through the center of the switch element when the spring will throw the free end carrying the contact 27 upwardly with a snap action to bring the contact into engagement with the stationary contacts 16. Operation in the opposite direction is a mere reversal of this operation.

The rear of the chamber 13 is closed by a plate 37 preferably of insulating material as a suitable fibre. This plate, however, is not of sufficient width to cover the binding posts 19 and it is secured in position by suitable metal clips 38 secured to the body member and bent over the opposite ends of this plate. The ends of the plate are provided with notches 39 through which these clips pass. The clips are preferably secured to the body member by tubular rivets 40 which extend through these clips, the body member and the plate 21, so that they secure the plate 21 as well as the clips 38 to the body member. I also mount an insulating plate 41 on the plate 37 as by a rivet 42 at the centers thereof. This plate is provided with notches 43 in the sides thereof, which, when the plate is turned to the position shown in Fig. 8, will expose the binding posts 19 to allow for easy attachment of the lead wires 44. After the wires have been connected this plate may be turned to the position shown in Fig. 7 to cover the binding posts and prevent accidental short circuits or grounds by objects which might come in contact therewith.

For mounting the device in a canopy 45 as shown in Fig. 1, or similar elements, the tubular member 23 is externally threaded as shown at 46, and this member may be extended through an opening in the side of the canopy as shown in Fig. 1, and is clamped in position by means of nuts 47 threaded on the tubular member, the outer portion of the cup 22 engaging the inside of the canopy. Lead wires may be connected to the binding posts and thus there is a convenient switch provided for whatever fixture with which the canopy is associated. In Figs. 2 and 3 I have shown the device as mounted in a face plate 48 which is secured by the usual screws 49 over the opening in the front of a wall box 50. The switch is secured to this plate,

however, in the same manner as it is secured to the canopy as indicated in Fig. 1, that is, by passing the tubular member 23 through an opening in the plate and clamping it in position by nuts 47. In this case, however, as the plate is of greater thickness than the walls of the canopy, one of the nuts 47 may be omitted. To prevent turning of the element in the plate lugs 51 are formed in the outer wall of the cupped portion 22 which are seated in notches 52 in the rear wall of the face plate.

It may be that it is not convenient for the use for which the switch is employed to mount it in a plate or canopy, as shown in Figs. 1, 2 and 3, but it is preferred to mount it on the front of a panel. Such a mounting is shown in Fig. 4. The panel is shown at 53 and the switch is mounted on the panel by means of screws 54 passing through the tubular rivets 40, which rivets are employed to secure the front plate 21 and the clips 38 to the body member. In this latter arrangement it is preferred to mount an insulating plate 55 between the rear of the body member and the panel.

It will be apparent from the foregoing description that I have provided a toggle switch which may be employed as a canopy switch, and which is equally adapted to be mounted in a face plate or the like, and that the act of mounting is a simple one of merely passing the threaded element 23 through an opening in the canopy or plate and clamping it thereto by the nuts 47. It will also be apparent that the device is extremely simple and that the various live elements are thoroughly insulated from any of the mountings or switch operating mechanism. The movable switch element and the toggle operating mechanism therefor may be assembled on the plate 21 and mounted as a complete assembly in the body member. By removing the rear plates 37 and 41 the mechanism is exposed for inspection and repair.

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

1. In a device of the character described, a body of insulating material having a chamber therein open at the front and rear, said body being provided with recesses on the front and rear ends, stationary contacts mounted in the front recesses, binding posts in the rear recesses and connected to the contacts, a plate secured to the front of the body, an insulating plate secured to the rear of the body to close said chamber, a movable contact pivoted to the first mentioned plate and arranged to engage the stationary contacts, and means for shifting the movable contact.

2. In a device of the character described, a body member of insulating material having a chamber therein, spaced contacts in said chamber, a movable contact adapted to

bridge the stationary contacts, a plate secured to said body member, a threaded element secured to said plate, means coacting with said element to secure the body to a support, a pair of insulating members hinged to the plate and secured to opposite sides of the movable contact, and means including a spring for swinging said members on their pivots.

3. In a device of the character described, a body member of insulating material having a chamber therein, spaced contacts in said chamber, a movable contact adapted to bridge the stationary contacts and of substantially U-shape, a plate secured to the body member, a threaded tubular element secured to said plate, means coacting with said element to secure the body to a support, a pair of insulating members hinged to said plate, means for securing the sides of the movable contact to said members, and means including a spring between said members and a rocking lever mounted in the tubular element for swinging said members on their pivots.

4. In a device of the character described, a body member of insulating material having a chamber therein, spaced contacts in said chamber, a movable contact adapted to bridge the stationary contacts and of substantially U-shape, said contact having an opening in its connecting portion, a plate secured to the body member, a pair of supporting members hinged to the plate and composed of insulating material, means for securing the sides of the movable contact to said members, a pivoted lever, a bar of insulating material pivoted to said lever and extending through said opening and a compression spring embracing the bar.

5. In a device of the character described, a body member of insulating material having a chamber therein, spaced contacts in said chamber, a plate secured to the body member, a movable switch element pivoted to the plate comprising a substantially U-shaped contact adapted to bridge the stationary contacts and having clips on the sides thereof, and a pair of supports for said contact made of insulating material pivoted to the plate and having notches in their opposite side edges to receive said clips, a pivoted lever, and a spring operated toggle connecting said lever and the switch element.

6. In a device of the character described, a body member of insulating material having a chamber therein, spaced contacts in said chamber, a plate secured to the body member, a movable switch element pivoted to the plate comprising a substantially U-shaped contact adapted to bridge the stationary contacts and having clips on the sides thereof, and a pair of supports for said movable contact made of insulating material pivoted to the plate and having notches in

their opposite side edges to receive said clips, said U-shaped member having an opening in the central portion thereof, a pivoted lever, a bar of insulating material pivoted to said lever and extending into said opening, and a compression spring embracing said bar.

7. In a device of the character described, an insulating body member having a chamber extending therethrough from front to rear, stationary contacts in said chamber, a movable switch element for bridging said contacts, a plate over the front of the chamber, means carried by the plate for operating said element, clips on the rear end of said body, an insulating plate secured over the rear of said chamber by said clips, and tubular rivets extending through the plate, the clips and body member to secure them together, said rivets being adapted for passage of screws to mount the device.

8. In a device of the character described, an insulating body member having a chamber therein, stationary contacts in said chamber, a movable switch element for bridging said contacts, a plate on which said element is mounted, means for securing the plate to the front of the body member, an externally threaded tubular member secured to the plate adapted to extend through an opening in a canopy or the like and be secured thereto by a nut threaded thereon, and an operating lever for the switch element mounted in said tubular member, said tubular member extending beyond the plate in position to form stops to engage the lever and limit the movements thereof in opposite directions.

9. In a device of the character described, an insulating body member having a chamber therein opening through the front and rear walls thereof, a plate secured to the front of the body, a threaded tubular member secured to the plate adapted to extend through an opening in a canopy or the like and be secured thereto by a nut threaded on said member, said body being also provided with recesses in the front and back thereof, stationary contact elements in the front recesses and extending into said chamber, binding post elements in the back recesses, electrically conductive securing means extending through said elements and the body member to secure them to said member, a movable switch element for bridging the stationary elements, means for operating the movable element, and an insulating plate secured to the rear of the body to close the rear opening to said chamber.

10. In a device of the character described, an insulating body member provided with a chamber opening through the back thereof, switch elements mounted in said chamber, binding posts secured to the back of the body member and connected to said elements, an insulating plate secured to the

- body member and covering the opening to said chamber, and a second insulating plate pivoted to the first plate and arranged to turn on its pivot to and from a position 5 over the binding posts.
11. In a device of the character described, an insulating body member provided with a chamber opening through the back thereof, switch elements mounted in said chamber, an insulating plate, and metal clips se- 10 cured to the body member and arranged to engage said plate to secure it over the opening to said chamber.
12. In a device of the character described, 15 an insulating body member provided with a chamber opening through the front and back thereof; stationary contacts in said chamber, a plate arranged to cover the front of said chamber, a plate arranged to cover the back of said chamber, clips for securing the back 20 plate to the body member, rivets extending through the front plate, body member and clips to secure them together, a movable switch element pivoted to the front plate, a pivoted lever, and operating means con- 25 necting the lever and switch element.
13. In a device of the character described, an insulating body member, contacts carried thereby, binding posts mounted on the rear 30 of the body member and connected with the contacts, and an insulating plate pivotally mounted on the body member and arranged to be turned to and from a position over the binding posts.
- In testimony whereof I affix my signa- 35 ture.

HARVEY HUBBELL.