Oct. 19, 1937. F. TAUBNER 2,096,386

ELECTRIC SWITCH

Filed Sept. 15, 1933

Fig. 1

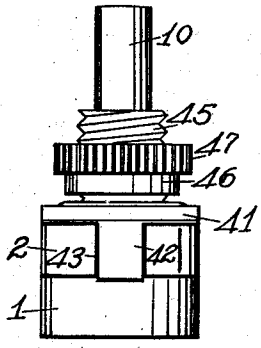



Fig. 2

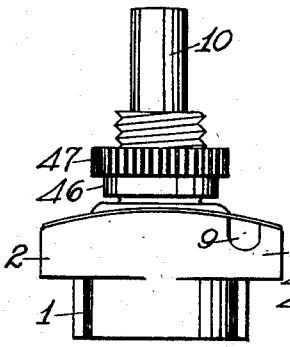



Fig. 3

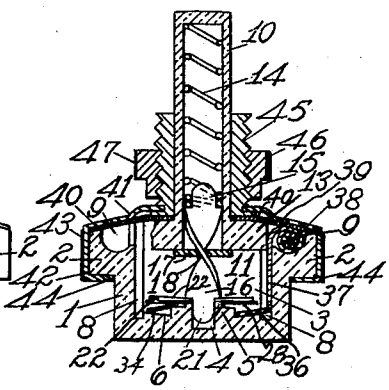



Fig. 4

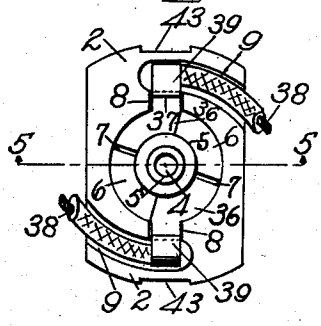



Fig. 6

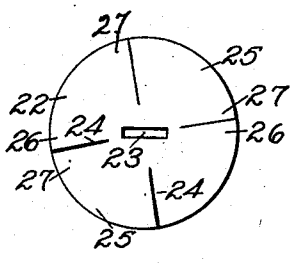



Fig. 8

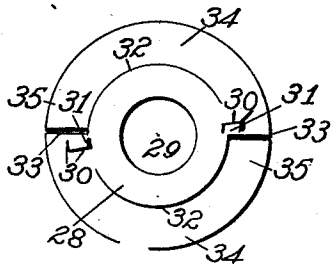



Fig. 5

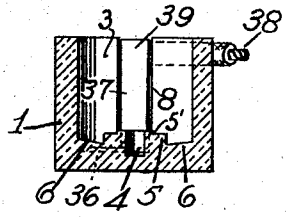



Fig. 7

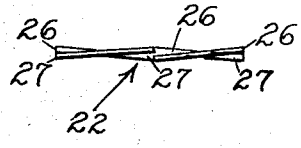



Fig. 9

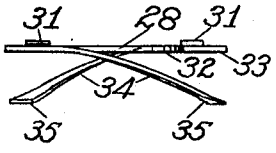



Fig. 10

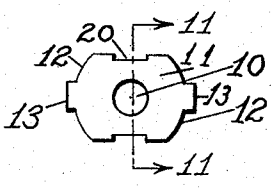
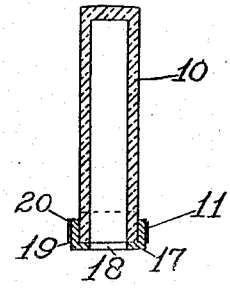



Fig. 11




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## ELECTRIC SWITCH

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Application September 15, 1933, Serial No. 689,545

8 Claims. (Cl. 200—64)

This invention relates to a switch of the push button type that is especially useful as a canopy switch, but is not restricted to this particular use.

The invention will be understood from the description in connection with the accompanying drawing in which Fig. 1 is a side view of an illustrative embodiment of the invention; Fig. 2 is a similar view at right angles to Fig. 1; Fig. 3 is a vertical section through the device; Fig. 4 is an end view of the body portion of the device; Fig. 5 is a section along the line 5—5 of Fig. 4; Fig. 6 is a plan view of one of the switch operating members; Fig. 7 is an edge view of Fig. 6; Fig. 8 is a plan view of the switch or circuit closing member; Fig. 9 is an edge view of Fig. 8; Fig. 10 is an end view of the push button and Fig. 11 is a longitudinal section through the push button.

In the drawing reference character 1 indicates a base or housing of insulating material. The housing is provided with extensions 2 on opposite sides at one end and a recess 3 that is circular in cross section extends axially into the body 1 to contain the switch or circuit closing member and other parts. A bearing hole 4 for a switch operating member is provided in a circular extension 5 at the center of the bottom of the recess 3. Stepped or toothed surfaces 6 are also provided at the bottom of the recess 3 around the projection 5, each one of these surfaces being sloped circumferentially from one end to the other so as to leave a shoulder 7 (Fig. 4) at the end of each surface 6. Four of such surfaces are shown. Axially extending grooves 8 are provided along opposite sides of the recess 3 extending to the bottom of this recess. Curved recesses 9 for wires are provided in the face of the body 1 and extensions 2 on opposite sides of the recess 3. The sides of the inner ends of the recesses 9 communicate with the upper ends of the grooves 8.

The push button 10 comprises a hollow stem and an enlarged end 11. The outer edges 12 (Fig. 10) of the enlarged end 11 are rounded to fit the recess 3 and these edges are provided with extensions 13 which project into the grooves 8 when the push button is in place.

A compression spring 14 is located in the stem of the push button 10. One end of this spring bears against the end of the opening in this stem and the other end is reduced in diameter to surround the reduced end 15 of a twisted flat metal strip 16. This end of the spring bears against shoulders on the strip 16 at the reduced end 15. A metal plate 17 closes the opening in the push button 10 and has a slot 18 through which the metal strip 16 passes. The plate 17 is provided with extensions 19 (Fig. 11) that can be bent to fit into notches 20 on the enlarged end 11 of the push button 10 to retain this plate 17 in place.

The lower end 21 of the twisted metal strip 16 is reduced to fit in the hole 4. A circular switch operating member 22 is provided with a rectangularly shaped hole 23 at its center through which the reduced end 21 of the strip 16 extends. The member 22 is slit along radial lines 24 and each quadrant 25 thereby formed is slightly twisted so as to have one cut metal edge 26 projecting above the upper surface of this member and the other cut metal edge 27 projecting below the lower surface of this member.

A circular switch or circuit closing member 28 of thin metal has a circular opening 29 fitting around the reduced end 5' of the projection 5 at the bottom of the recess 3. The member 28 is slit along the line 30 on opposite sides and the metal is struck up to form cut metal end lugs 31 against which the edges 27 of the member 22 press to turn this switch member. Circular slits 32 and radial slits 33 at the ends of the slits 32 are provided to form spring contacts 34 that are bent downwards so that their ends 35 will make contact with the flat metal contacts 36 that lie upon alternate surfaces 6 in the bottom of the recess 3 and cover them when the switch 28 is in circuit closing position.

Each contact 36 is connected by a metal strip 37, with which it is preferably integral with an electric wire 38. The strips 37 rest in the bottoms of the grooves 8 and the upper ends are bent, as shown at 39 around the wires 38.

A plate 40 of insulating material is provided at the end of the body or housing 1 and has a central hole through which the push button 10 passes. A metal plate 41, having substantially the same shape as the plate 40, is provided at opposite ends with extensions 42 to be placed in recesses 43 in the ends of the extensions 2. The ends of the extensions 42 are bent to extend some distance along the under-side of the extensions 2, as shown at 44, to keep the plate 40 securely in place.

An externally threaded tube 45 is secured to the metal plate 41 by one end passing through a hole at the center of the plate 41 and being rolled or spun in place. A nut 46 with a knurled flange 47 is screwed upon the tube 45.

The device may be attached to a canopy by unscrewing the nut 46 and passing the tube 45 through a hole in the canopy and then clamping the device against the canopy by applying and tightening the nut 47.

When the switch or circuit closing member 26 is in such a position that the spring contacts 35 are in contact with the contacts 36 at the bottom of the recess 3 the circuit is closed through the switch. By pushing the push button 10 longitudinally the twisted metal strip 16 is turned because the plate 17 is attached to the push button 10 and the extensions 13 sliding in the grooves 8 prevent the push button from turning, while the slot 18 in the plate 17 causes the strip 16 to turn. The turning of the strip 16 causes the switch operating member 22 to turn and the edges 27 of the member 22 contacting with the lugs 31 of the switch 28 cause this switch to turn circumferentially. This causes the ends 35 of the spring contacts 34 to move circumferentially along the contacts 36 until they snap off of the ends of these contacts on to the uncovered surfaces 6 of insulating material. The axial length of the recess 3 and the twist in the strip 16 are such that the push button 10 reaches its extreme inward movement about the time the contacts 35 have been moved off of the contacts 36.

The spring 14 keeps the switch operating member 22 pressed against the switch 28, but permits it to be turned backwards to permit the edges 27 to snap over the lugs 31 on the switch.

When the pressure is removed from the push button 10 the spring 14 returns it to its outermost position. During this time the strip 16 and member 22 are turned in the reverse direction a sufficient distance to cause the next edges 27 of the member 22 to rest behind the lugs 31 preparatory to moving the switch 28 again. During this reverse movement the switch 28 is prevented from turning backwards because the ends 35 rest behind the shoulders 7 at the bottom of the recess 3. The circuit is closed by pushing the push button again.

I claim:

1. In a switch, an elongated body of insulating material having a recess therein, contact terminals extending into said recess to a position near one end of said body, a rotary switch to close a circuit between said terminals, wires at the other end of said body, connections between said wires and terminals lying in grooves along sides of said recess, and switch operating means cooperating with said grooves for rotating said switch.

2. In a switch, an elongated body of insulating material having a recess therein, contact terminals located at the bottom of said recess, a rotary switch to close a circuit between said terminals, wires at the end of said body near the open end of said recess, connections between said wires and terminals lying in grooves along sides of said recess, and switch operating means cooperating with said grooves for rotating said switch.

3. In a switch, a body of insulating material having a recess therein having longitudinally extending grooves, electric conductors in said grooves and a push button having extensions slidable in said grooves.

4. In a switch, a body of insulating material having a recess therein having longitudinally extending grooves, electric conductors in said grooves, a push button having extensions slidable in said grooves, a rotatable switch in said recess, and means to cause said switch to rotate when said push button is operated.

5. In a push button switch, a push button, a rotatable switch, means to cause said switch to rotate when said button is pushed, said means comprising a spring in said push button and a twisted strip extending loosely into said push button and being pressed by said spring.

6. In a switch, an elongated body of insulating material having an axially extending recess therein, said recess having axially extending grooves, contacts and a contact bridging member in said recess, a push button adapted to enter said recess and move toward the bottom thereof when it is operated and having extensions slidable in said grooves, and means operated by said push button for making and breaking contact between said contacts and contact bridging member.

7. In a switch, an elongated body of insulating material having an axially extending recess therein, said recess having axially extending grooves, contacts and a contact bridging member in said recess, a hollow push button adapted to enter said recess and having extensions slidable in said grooves, a plate having a slot therein attached to said push button, a twisted strip passing through said slot into said push button, and an operating member for said bridging member to which said strip is connected.

8. In a switch, an elongated body of insulating material having an axially extending recess therein, said recess having axially extending grooves, contacts and a contact bridging member in said recess, a hollow push button adapted to enter said recess and having extensions slidable in said grooves, a plate having a slot therein attached to said push button, a twisted strip passing through said slot into said push button, an operating member for said bridging member to which said strip is connected, and a spring in said push button to keep said strip connected to said operating member.

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