United States Patent

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[33] **Great Britain**
[31] **46,269**

[54] **ELECTRICAL SWITCH HAVING INTEGRAL OPERATING MEMBER AND BODY**
1 Claim, 3 Drawing Figs.

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[51] **Int. Cl.** **H01h 9/02**
[50] **Field of Search** ..... 200/168 C, 172

[56] **References Cited**
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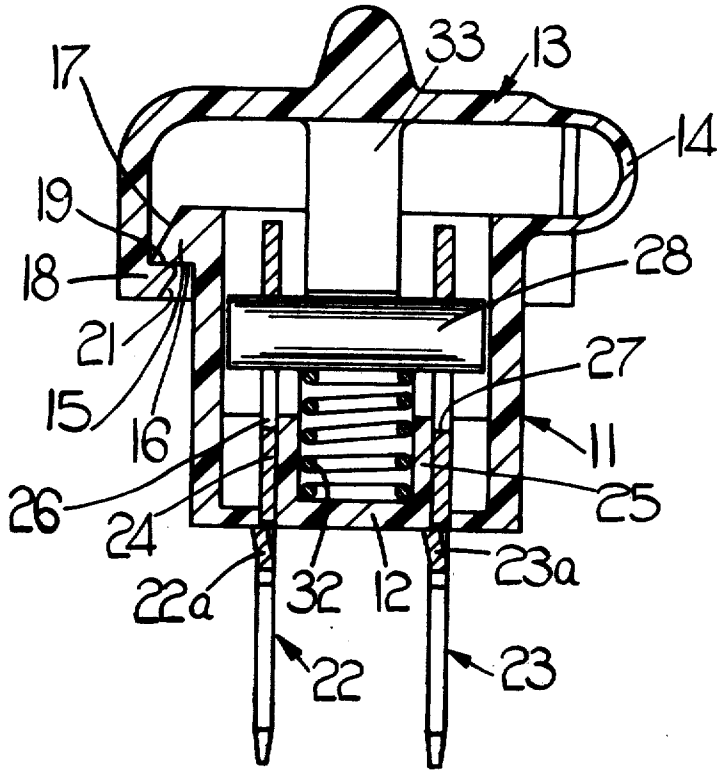
ABSTRACT: An electrical switch includes a body carrying fixed contacts. A movable contact is engageable with the fixed contacts, and an operating member is movable relative to the body to move the movable contact. The operating member and the body are molded integrally with one another, and are interconnected by a flexible neck integral with the body and the operating member, the neck permitting the relative movement between the body and the operating member when the operating member is moved to operate the movable contact.



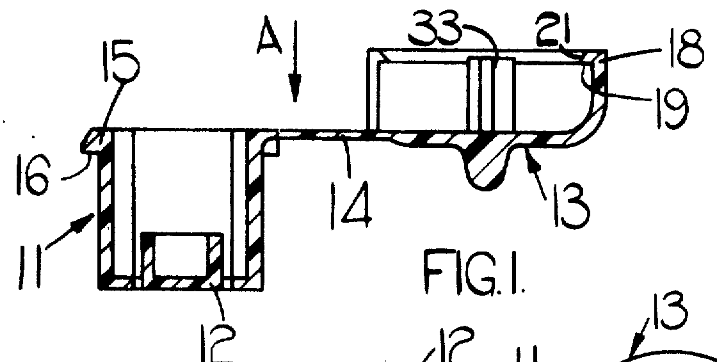


FIG. 1.

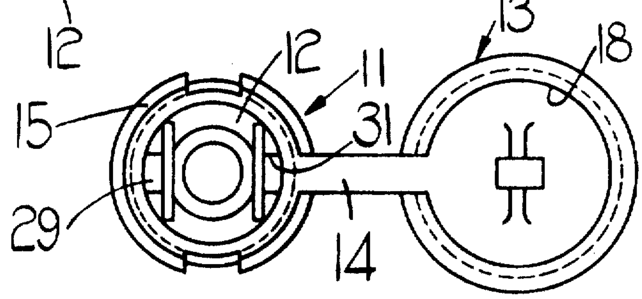


FIG. 2.

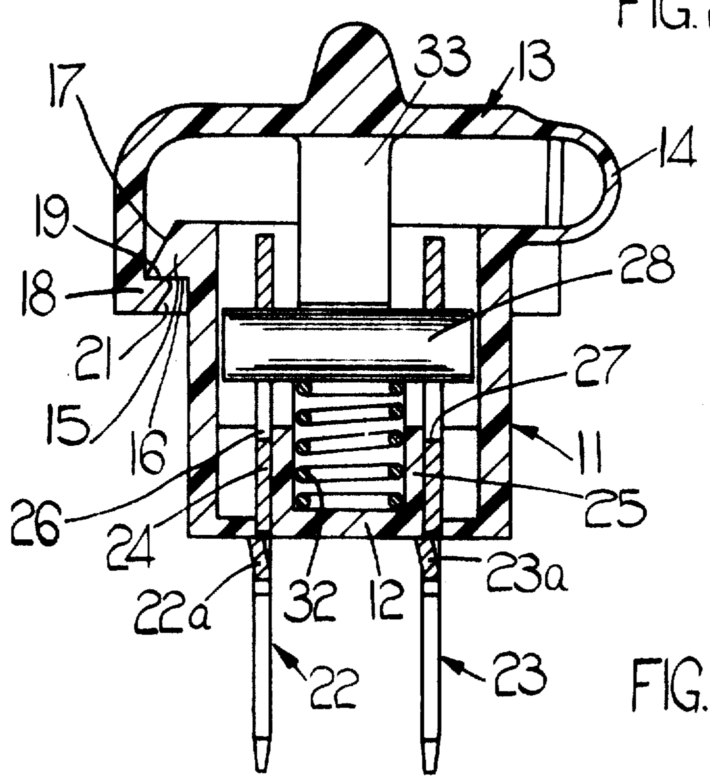


FIG. 3.

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ELECTRICAL SWITCH HAVING INTEGRAL OPERATING MEMBER AND BODY

This invention relates to electrical switches of the kind comprising a body, fixed contacts carried by the body, a movable contact engageable with the fixed contacts, and an operating member movable relative to the body to move the movable contact.

According to the invention, in a switch of the kind specified the body and the operating member are molded integrally with one another and are interconnected by a flexible, integral portion which permits said relative movement between the body and the operating member.

One example of the invention is illustrated in the accompanying drawings wherein:

FIG. 1 is a sectional view of the body and operating member of a switch prior to the assembly of the switch,

FIG. 2 is a view in the direction of arrow A in FIG. 1, and

FIG. 3 is an enlarged sectional view of the assembled switch.

Referring to the drawings, the switch includes a hollow cylindrical body 11 which is molded in synthetic resin material, and which is closed at one end by an integral base 12. The switch further includes an operating member 13 which is molded integrally with the body 11, and which is connected to the body 11 by an integral, flexible neck 14, extending from the end of the body 11 remote from the base 12. At its end remote from the base 12, the body 11 is formed with an integral, outwardly extending flange 15 which defines with the body 11 a downwardly presented shoulder 16. The surface of the flange 15 remote from the base 11 is cut away to define a peripherally extending ramp surface 17.

The operating member 13 is in the shape of a cylindrical cup, the inner diameter of which is substantially equal to the outer diameter of the flange 15. The periphery of the open end of the member 13 is formed with an integral, inwardly directed peripheral flange 18 which defines with the inner wall of the member 13, an inwardly presented shoulder 19. The base of the flange 18 opposite the shoulder 19 is cut away to define a ramp surface 21.

Extending through the base 12 of the body 11, parallel to the axis of the body 11, are a pair of spaced, conductive, terminal strips 22, 23 respectively. Each of the strips 22, 23 includes a pair of shoulders (not shown) which engage the inner surface of the base 12, and a resilient tag 22*a*, 23*a* respectively which engages the outer surface of the base 12 to lock the terminal strips 22, 23 in position. Within the body 11, the strips 22, 23 engage respective walls 24, 25 integral with the base 12, the walls 24, 25 serving to support the strips 22, 23 in spaced parallel relationship. Within the body 11 the strips 22, 23 are formed with respective, rectangular holes 26, 27 through which a conductive roller 28 extends. The width of the holes 26, 27 is greater than the diameter of the roller 28, and the ends of the roller 28 are engaged in respective channels 29, 31 in the wall of the body 11, the channels 29, 31 serving to guide the roller 28 for axial movement with the roller 28 out of contact with the sides of the holes 26, 27. The walls 24, 25 extend beyond the lower edges of the holes 26, 27, and so prevent the roller 28 engaging the lower sides of the holes 26, 27. Thus, the roller 28 can only engage the upper sides of the holes 26, 27 to complete an electrical circuit between the strips 22, 23. The portions of the strips 22, 23 projecting from the outer surface of the base 12 are shaped to define blade connectors, and a compression spring 32 extends between the blade 12 and the roller 28, and urges the roller 28 upwardly, into contact with the upper walls of the holes 26, 27 so as to complete an electrical circuit between the strips 22, 23.

In order to assemble the switch, the strips 22, 23, which constitute the fixed contacts of the switch, the roller 28 which constitutes the movable contact of the switch, and the spring 32 are engaged with the body 11, and the operating member 13 is positioned with respect to the body 11, so that the ramp surface 21 of the operating member 13 engages the ramp surface 17 of the body 11. The operating member 13 is then moved towards the base 12, so that the ramp surfaces 21, 17 slide relative to one another and the operating member 13 is engaged as a snap fit with the body 11, the shoulder 19 of the operating member 13 engaging the shoulder 16 of the body 11. The operating member 13 is formed with an integral, axially extending spigot 33 which, when the operating member 13 is engaged with the body 11, engages the roller 28.

The switch is a normally closed switch, and is urged to its normally closed position by the spring 32, and by the resilience of the neck 14 interconnecting the body 11 and the operating member 13. In the closed position of the switch the roller 28 bridges the terminal strips 22, 23, and the shoulder 19 is engaged with the shoulder 16. In order to open the switch, the operating member 13 is depressed towards the base 12 against the action of the neck 14, and the spring 32, to move the roller 28 out of contact with the strips 22, 23, the flange 15 riding on the inner surface of the operating member 13, to guide the operating member 13 during such axial movement.

In one practical embodiment of the switch, the switch is connected in the brake light circuit of a road vehicle, so that the brake lights of the road vehicle are energized in the closed position of the switch. The switch is mounted adjacent the brake pedal of the road vehicle, so that the operating member 13 is depressed by the brake pedal of the vehicle when the brake pedal is in its inoperative position. Thus, when the brake pedal of the vehicle is operated, the operating member 13 is released and the switch is closed under the action of the spring 32 to energize the brake lights.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. An electrical switch comprising a body, fixed contacts carried by the body, a movable contact engageable with the fixed contacts, and an operating member movable relative to the body to move the movable contact, the body and the operating member being molded integrally with one another, and being interconnected by a flexible, integral portion which permits said relative movement between the body and the operating member to move the movable contact.