

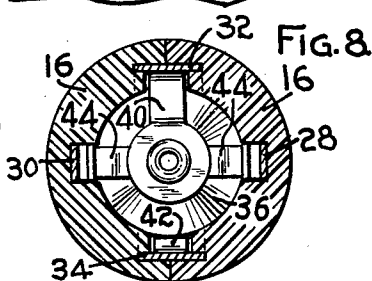
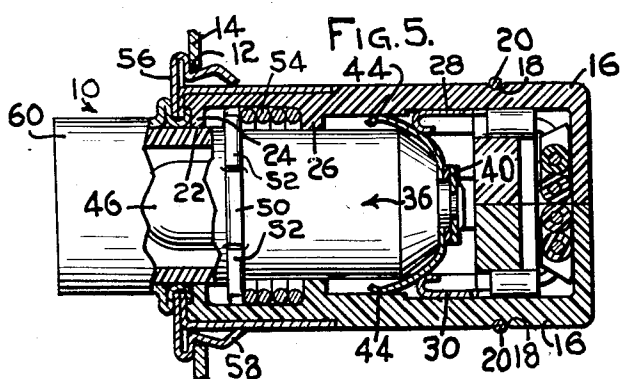
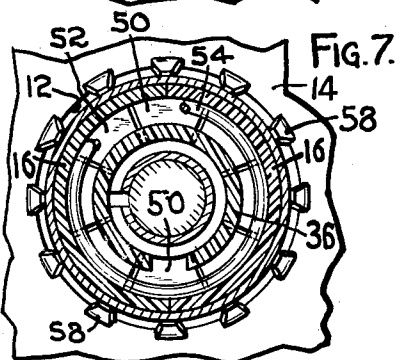
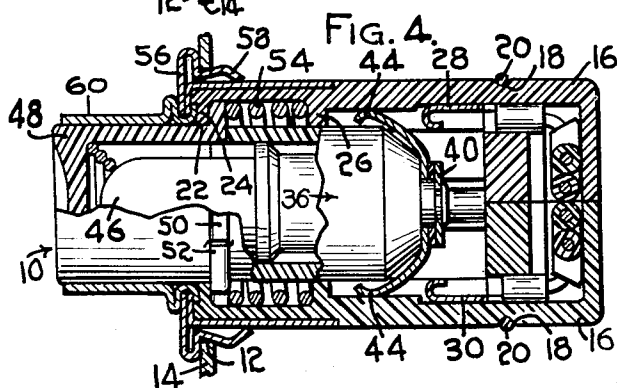
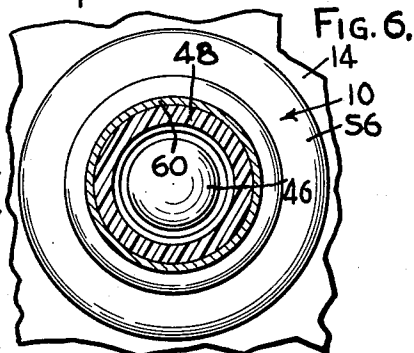
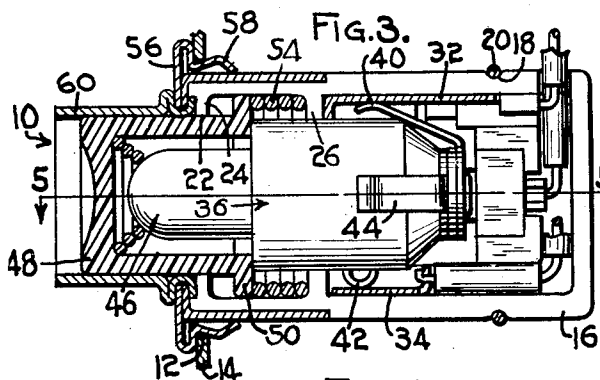
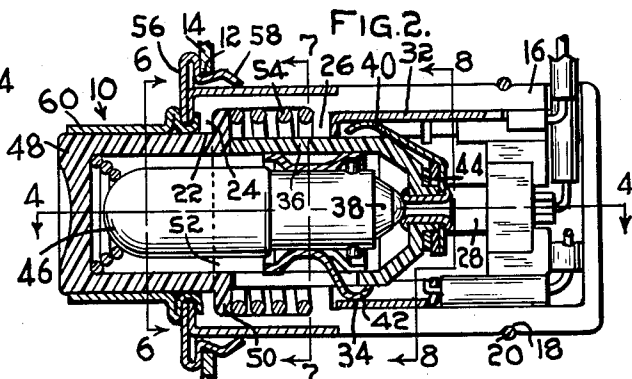
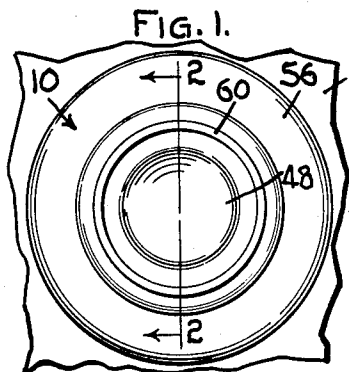
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R. W. FRASER ET AL

2,863,028

ELECTRICAL SWITCH ASSEMBLY AND INDICATOR

Filed March 21, 1955



INVENTORS:
ROBERT W. FRASER,
VINCENT R. HERTERICK,
Robert & Ross
ATTORNEY.

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2,863,028

ELECTRICAL SWITCH ASSEMBLY AND INDICATOR

Robert W. Fraser and Vincent R. Herterick, Waltham, Mass., assignors to United-Carr Fastener Corporation, Cambridge, Mass., a corporation of Delaware

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1 Claim. (Cl. 200—167)

This invention relates generally to electrical devices and has particular reference to an electrical switch of the push-button type.

In many types of electronic apparatus, particularly in the case of home appliances, such as automatic dishwashers and clothes washers, which operate through a predetermined cycle, it is desirable to provide a push-button switch to start the cycle, and it is also desirable to provide a pilot light to indicate when the apparatus is running and when the apparatus has shut itself off at the end of a cycle.

The object of this invention is to provide a combination push-button switch and pilot light assembly in which the pilot light is visible through the switch operating plunger.

A further object of the invention is to provide a push-button switch and pilot-light assembly in which a light transmitting operating plunger is provided with a pilot light projecting into the plunger and movable longitudinally therewith.

A further object of the invention is to provide a push-button switch and pilot-light assembly in which a switch housing is provided with a bulb carrier movable longitudinally therein having circuit completing means on the rear end thereof and operating plunger means disposed on the other end enclosing the pilot-light bulb and protruding from the housing.

Other objects of the invention will, in part, be obvious, and will, in part, appear hereinafter.

In the drawing:

Fig. 1 is a view in elevation of the front end of a switch embodying the features of the invention;

Fig. 2 is a view in section taken on line 2—2 of Fig. 1;

Fig. 3 is a view in section similar to Fig. 2 illustrating the operation of the switch when the plunger is depressed;

Fig. 4 is a view in section taken on line 4—4 of Fig. 2;

Fig. 5 is a view in section on line 5—5 of Fig. 3;

Fig. 6 is a view in section on line 6—6 of Fig. 2;

Fig. 7 is a view in section on line 7—7 of Fig. 2; and

Fig. 8 is a view in section on line 8—8 of Fig. 2.

Referring to the drawing, there is illustrated a push-button switch and pilot-light assembly 10 which are adapted for mounting into an opening 12 in a panel 14.

The switch 10 comprises an insulating body 16 which for convenience in manufacture and assembly may be molded in two pieces, each with an external groove 18 to receive a retaining ring 20.

The body 16 is provided with a front aperture 22, a front internal circumferential rib 24 adjacent the aperture 22, and a rear circumferential rib 26 spaced rearwardly of the rib 24. Suitable internal recesses are provided in the body to receive contacts 28 and 30 which are connected by lead wires to an external circuit to initiate the operation of apparatus controlled by the switch and contacts 32 and 34 which may be connected by lead wires to suitable points in an external circuit

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so that the contacts 32 and 34 are energized when the apparatus controlled by the switch is in operation.

To provide circuit completing means for cooperating with said aforementioned contacts, a bulb carrier 36 is disposed in the housing and is provided with means for receiving and making electrical contact with a pilot light 38. A pair of contacts 40 and 42 are disposed on the bulb carrier and extend laterally therefrom to complete an electric circuit between the bulb and the contact members 32 and 34, and a shorting contact 44 is disposed on the rear of the bulb carrier for completing an electric circuit between the contacts 28 and 30 under certain conditions as will appear hereinafter.

When the pilot light 38 is assembled in the bulb carrier 36, the bulb portion 46 thereof protrudes forwardly to enclose said bulb portion and to provide means for operating the switch, a plunger 48 is provided at the front of the bulb carrier, and in the preferred embodiment, the plunger is formed of transparent or translucent plastic. The plunger 48, which is hollow to receive the bulb portion 46, protrudes from the front of the housing through the aperture 22. The plunger 48 and the bulb carrier 36 are movable longitudinally in the housing within the circumferential ribs 24 and 26, respectively, and to limit such movement the plunger and the bulb carrier are each provided with a radial flange formed of individual segments 50 and 52, respectively, which are substantially the same size and separated by spaces at least as large as the segments so that the segments 50 and 52 may be disposed between each other. The resulting flange is thereby no thicker than the thickness of a single set of segments and makes the plunger non-rotatable in relation to the bulb carrier. Since the bulb carrier is non-rotatable in relation to the housing by reason of the contact members on the rear thereof projecting into the recesses in the housing, the plunger is thereby rendered non-rotatable in relation to the housing so that indicia disposed on the end thereof will be maintained in the desired orientation.

To urge the bulb carrier forwardly and the plunger into the extended position, a spring 54 is disposed about the bulb carrier between the flange segments 50 and 52 and the rearmost rib 26, so that the flange segments normally bear against the forward rib 24.

To provide means for assembly of the housing into the panel opening 12, a mounting ring 56 having a series of resilient shouldered attaching fingers 58 is assembled onto the housing for snapping engagement into the panel opening. A shield 60 is disposed on the mounting ring 56 and extends forwardly about the plunger, terminating short of the end thereof, to act as a guard against lateral forces which might damage the plunger. The distance from the end of the shield 60 to the end of the plunger is less than the distance the plunger must be moved inwardly to energize the switch, hence, the plunger shield 60 also serves to prevent accidental energizing of the switch.

In the illustrated embodiment the switch is designed to complete an electric circuit between contacts 28 and 30 when the plunger is depressed to start an electrical apparatus with the leads to the pilot-light contacts 32 and 34 being energized by the starting of said apparatus by means of external connections with the pilot light remaining on after the plunger is released. To this end the contact members 32 and 34 are sufficiently long, so that the contacts 40 and 42 make electrical contact therewith throughout the entire longitudinal movement of the bulb carrier. However, it will be evident that where another sequence of electrical connections is desired in the external circuit, appropriate modifications may be made to the contact members in the housing.

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Although in the illustrated embodiment the plunger 48 is formed of transparent or translucent material, it will be evident that it may also be formed of metal with apertures being provided to permit the pilot light to be visible.

Since certain other obvious modifications may be made in the scope of this invention, it is intended that all matter contained herein be interpreted in an illustrative and not in a limiting sense.

I claim:

A push button switch assembly comprising a housing, said housing having a central aperture at the forward end thereof and a pair of circumferentially extending internal ribs positioned inwardly from said aperture and in longitudinally spaced relation with respect to one another, a bulb carrier disposed in said housing, said carrier having a bulb receiving socket adjacent its innermost end, a plunger assembled to the opposite end of said bulb carrier and protruding from the aperture of said housing, said plunger enclosing a bulb to be positioned within said bulb receiving socket, said plunger and said bulb carrier having cooperating, radially extending, interlocking flange portions disposed between said pair of circumferentially extending rib portions of said housing and lying normally against the inner face of the forward circumferential rib, said plunger and bulb carrier being longitudinally movable in non-rotating relationship with respect to said housing and within said spaced circumferential ribs, a spring disposed around said bulb and between said interlocking flange portions

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and the rear circumferential rib of said housing biasing said bulb carrier and said plunger forwardly, a first pair of contacts secured to said housing adjacent the end remote from said apertured end for connection to an external circuit, a second pair of contacts secured to said housing adjacent the end remote from said apertured end and in spaced relation to said first pair of contacts for connection to an external circuit, and a third pair of contacts secured to said bulb receiving socket of said bulb carrier, said third pair of contacts being in sliding engagement with said second pair of contacts at all times whereby upon the rearward movement of said plunger and bulb carrier said third pair of contacts will engage said first pair of contacts to close a common external electrical circuit between each of said pairs of contacts thereby concurrently activating a cyclic operation of external electrical apparatus and the bulb when positioned in the bulb receiving socket, said circuit remaining energized when the plunger is released and until the predetermined cycle is completed.

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