

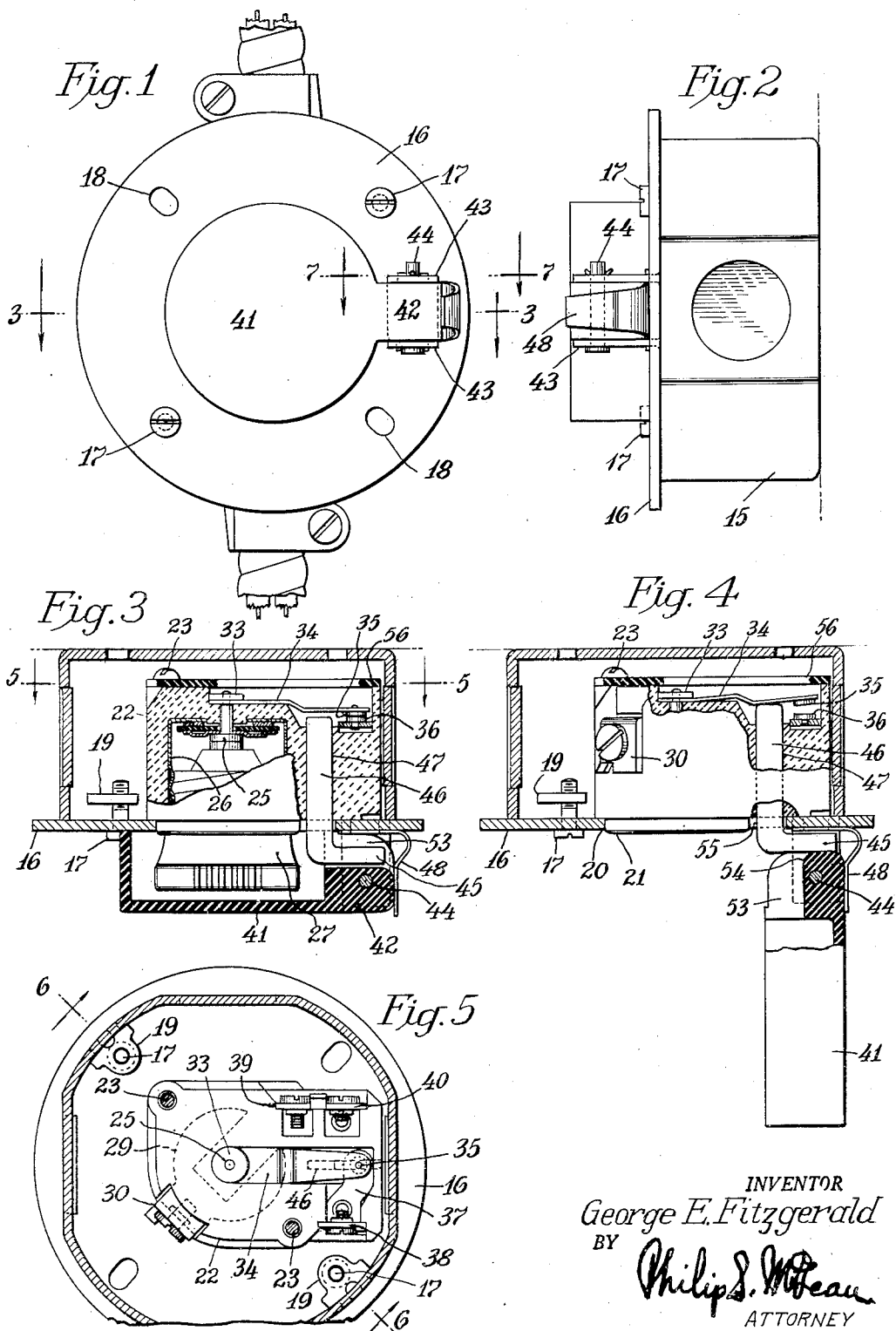
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G. E. FITZGERALD
ENCLOSED FUSED SWITCH

2,465,078

Filed July 2, 1946

2 Sheets-Sheet 1



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March 22, 1949.

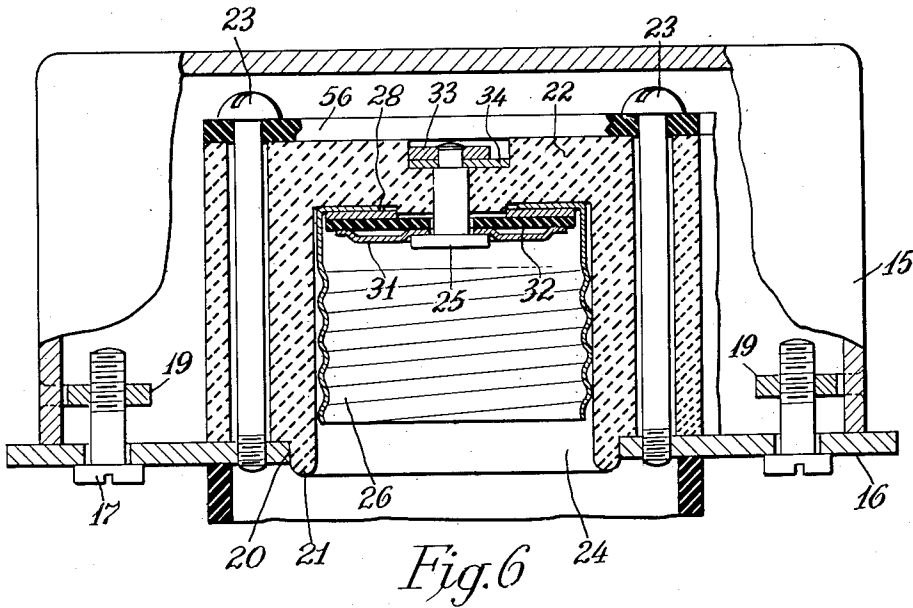
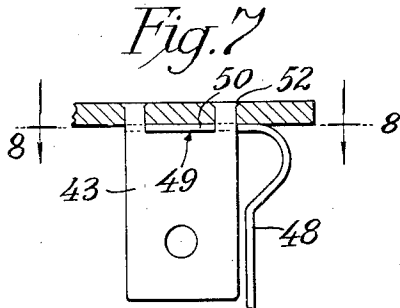
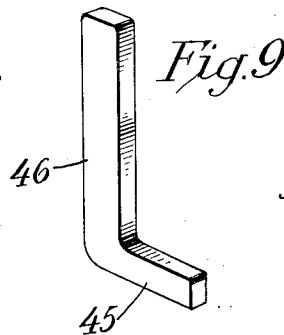
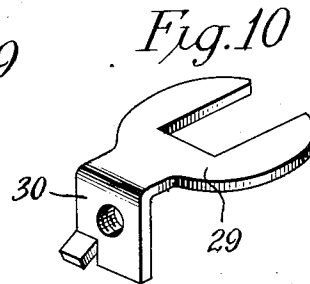
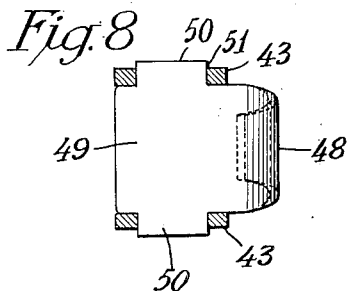
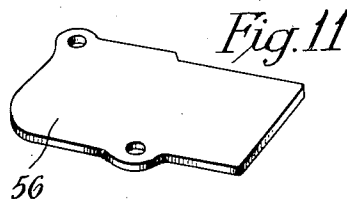
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2,465,078

ENCLOSED FUSED SWITCH

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2 Sheets-Sheet 2



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ENCLOSED FUSED SWITCH

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1 Claim. (Cl. 200—50)

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The invention disclosed relates to fused switches.

Special objects of the invention are to provide an enclosed fused switch adapted to be combined and used with an ordinary outlet box.

In attaining this general purpose it is an object of the invention to provide the switch-fuse combination in small enough form for installation in an outlet box while retaining all desirable and essential characteristics as to ruggedness of construction and proper current carrying and insulating qualities.

Other special objects of the invention are to provide a device of the character indicated which will be positive in action, safe in use and generally practical and desirable.

Further objects are to provide a safety fused switch such as indicated which can be readily assembled and combined with an ordinary outlet box and which can be produced and installed at low cost.

Other desirable objects and the novel features through which the purposes of the invention are attained are set forth or will appear in the course of the following specification.

The drawings accompanying and forming part of the specification illustrate a present commercial embodiment of the invention. Structure and arrangement, however, may be modified and changed in various ways, all within the true intent and broad scope of the invention as hereinafter defined and claimed.

Fig. 1 in the drawings is a plan view of the invention as applied to and incorporated in an ordinary outlet box;

Fig. 2 is a side elevation of the same;

Figs. 3 and 4 are cross sectional views on substantially the plane of line 3—3 of Fig. 1, showing first the normal position of parts with the fuse cover closed and the switch in closed circuit condition, and secondly the fuse cover open and the switch in open circuit condition;

Fig. 5 is a sectional view as on substantially the plane of line 5—5 of Fig. 3;

Fig. 6 is an enlarged broken sectional view as on substantially the plane of line 6—6 of Fig. 5;

Figs. 7 and 8 are part sectional views illustrating details of the cover holding spring, Fig. 7 appearing as on line 7—7 of Fig. 1 and Fig. 8 as on line 8—8 of Fig. 7;

Fig. 9 is a perspective view of the switch operating plunger;

Fig. 10 is a perspective view of the screw shell terminal member of the fuse socket;

Fig. 11 is a similar view of the back cover for the switch parts.

In the drawings an outlet box is shown which is of usual construction except for the cover, and which latter is shown as modified to carry the switch and fuse mechanism.

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The box body is designated 15. The cover 16 is shown secured to the box body in the usual manner by screws 17 which can be passed through openings 18, in either one of two angularly related positions, into engagement with screw lugs 19 on the inner wall of the box body.

The cover is shown as having a central, circular opening 20 for the projecting annular flange 21 of the insulating fuse and switch base 22. Screws 23, Fig. 6, extending through the base into the cover, secure the base in fixed, non-rotatable relation on the back of the cover.

As shown more fully in Figs. 3 and 6, the base has a central fuse socket 24 containing center and screw shell contacts 25, 26, for an ordinary screw base fuse plug 27.

The screw shell contact is shown in Fig. 6 as having a base flange 28 engaged by a bifurcated terminal 29 extended, as shown in Fig. 10, and formed into a circuit terminal lug 30.

The center contact is shown in the form of a headed stud securing metal and insulating washers 31, 32, in holding engagement over the terminal member 29.

At the back of the base the center terminal stud is shown as riveted over a washer 33, to secure the switch spring 34. The latter is shown in Figs. 3 and 4 as carrying a contact 35 at its free end for cooperation with a contact 36 on a stationary terminal member 37. The latter is indicated in Fig. 5 as having an angularly bent screw terminal lug 38.

It will be clear from the description thus far that the fuse and switch can be connected in series relation by simply connecting the wires at one side of a circuit with the terminals 39 and 40, Fig. 5. The other side of the circuit may be carried through the box but for practical reasons, since the armored cables are usually terminated at the box, this continuous side of the circuit may be carried through by attaching the wires at that side to the two, interconnected screw terminals 39, 40, on the opposite side of the base from the fuse and switch terminals.

Protection of the fuse and operation of the switch is effected by a fuse cover 41, shown of insulating material hingedly mounted on the front of the box cover and arranged in its opening and closing movements to effect opening and closing movements of the switch.

In the present illustrated embodiment the fuse cover 41 is formed with a projecting hinge lever portion 42 engaged between lugs 43 staked in up-standing relation on the cover 16 of the box and carrying the hinge pin 44.

This leverage extension is shown in Figs. 3 and 4, arranged to engage the angularly extended head 45 of a plunger element 46 guided through an opening 47 in the base, to engage and operate the movable switch spring 34.

To hold the fuse cover in either the closed or the open position and, accordingly, the switch is either closed or open circuit condition, spring means are provided consisting, in the illustrated embodiment, of a spring arm 48 engageable with the end or over the upper surface of the hinge extension 42.

This cover holding spring is shown in Figs. 7 and 8 as an integral angular extension of a spring base plate 49 of a size fitting between the hinge lugs 43 and having projecting portions 50 at its opposite edges extending through base openings 51 in said lugs and whereby said spring base will be rigidly held to the cover plate when said hinge lugs are staked or otherwise secured on the cover plate at 52.

To accommodate the angular head portion of the switch actuating plunger, the leverage portion of the fuse cover is shown as slotted in its intermediate portion at 53 and the outer edge of this slotted part is shown as rounded at 54 to serve as a cam for smooth operating engagement with the plunger.

To provide passage for the switch actuating plunger through the cover plate, the latter is shown as notched outwardly from the central aperture at 55.

The switch operating plunger may be cut or otherwise formed out of flat insulating material, substantially as shown in Fig. 9, and the guide passages 55 and 47 in the cover plate and fuse base be shaped as parallel sided openings to receive and loosely guide this member.

To protect the current carrying parts on the back of the fuse base, a cover 56 (Fig. 11) of flat insulating material may be secured over the back of the base beneath the heads of the mounting screws 23.

In the normal, usual or closed position, the fuse and switch parts are fully covered and protected. The hollow fuse cover may fit closely over the projecting annular lip of the fuse socket or receptacle, as shown, and be held firmly closed against the face of the cover plate by the power of the spring 48.

On opening the cover the head of the fuse is exposed, and in this cover opening movement the switch is opened to disconnect the fuse receptacle from the circuit. Consequently the fuse can be removed with entire safety and be replaced by a new fuse, and these re-fusing acts cannot be performed until the fuse socket is cut out of circuit.

The form of switch illustrated is designed for an alternating current circuit. This simple form of switch takes up small space and is therefore a contributing factor to the mounting of the entire fuse and switch mechanism in an ordinary, small outlet box. The fuse cover is the only projecting part on the face of the outlet box and the extent of such projection may be relatively small since the cover need be only heavy enough to serve as an insulating handle for operating the switch.

The entire mechanism being mounted on the cover of the outlet box and held only by the two through screws, enables quick, easy and inexpensive assembly. Wiring, unwiring and inspection are easily accomplished upon simply removing the two screws holding the cover plate to the box body.

What is claimed is:

An enclosed switch and fuse combination applicable as a single unit to an outlet box of conventional design and comprising a flat outlet box cover plate having means enabling the same to be mounted over an ordinary outlet box in place of a usual outlet box cover, said cover plate having an opening in the central portion of the same through which a fuse may be inserted or removed, an insulating base on the back of said cover plate of a size to enter within an ordinary outlet box, a fuse receptacle at the front of said insulating base and exposed through said opening in the cover plate, a switch on the back of said insulating base connected with said fuse receptacle and including a movable switch contact disposed at one side of said fuse receptacle, an actuating member extending from the front of said cover plate into operative relation with said movable switch contact, a hollow fuse cover hinged over the front of said cover plate in position to cover the opening in said cover plate and the projecting end of a fuse inserted in said fuse receptacle, said hinged fuse cover engaging the outer end of said operating member at the front of the cover plate to effect actuation of the same upon opening and closing of the switch cover on the front of the cover plate and means for retaining the fuse cover in its open and closed positions.

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