

Dec. 5, 1933.

E. M. WILLIAMS

1,938,309

ELECTRICAL OUTLET OR SWITCH

Filed Dec. 20, 1930

2 Sheets-Sheet 1

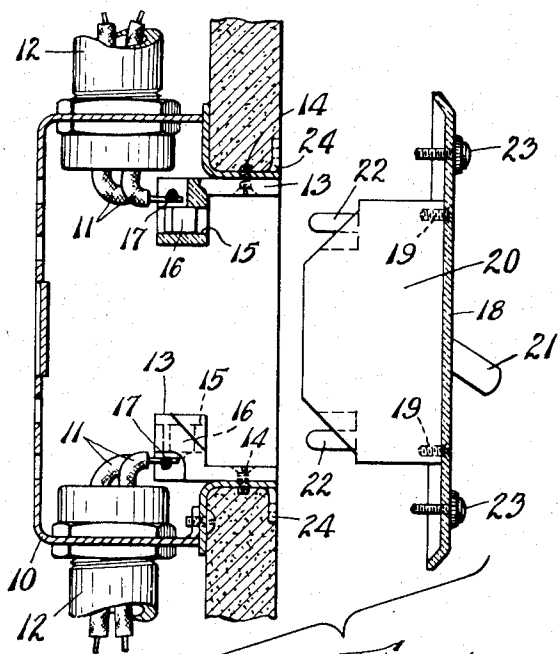


Fig.-1

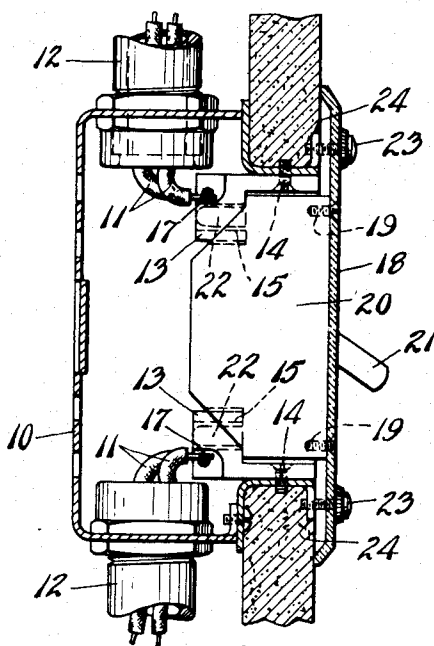


Fig.-2

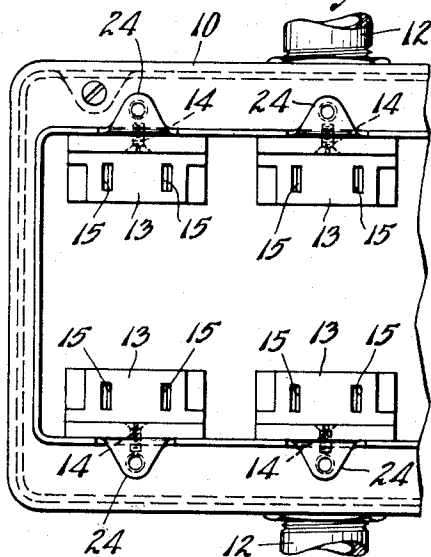


Fig.-3

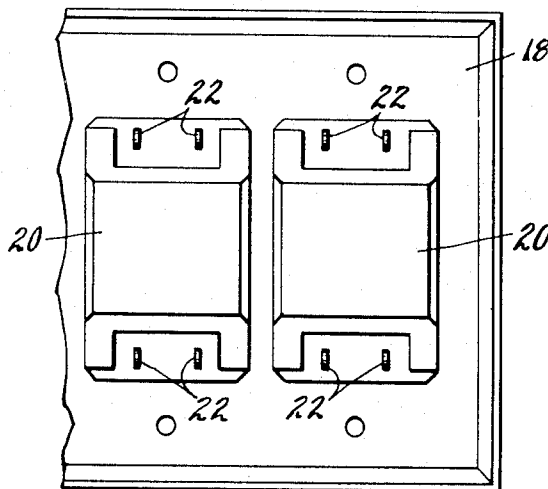


Fig.-4

INVENTOR

EMRYS M. WILLIAMS

BY

*Chas. A. Barrow*

ATTORNEYS

Dec. 5, 1933.

E. M. WILLIAMS

1,938,309

ELECTRICAL OUTLET OR SWITCH

Filed Dec. 20, 1930

2 Sheets-Sheet 2

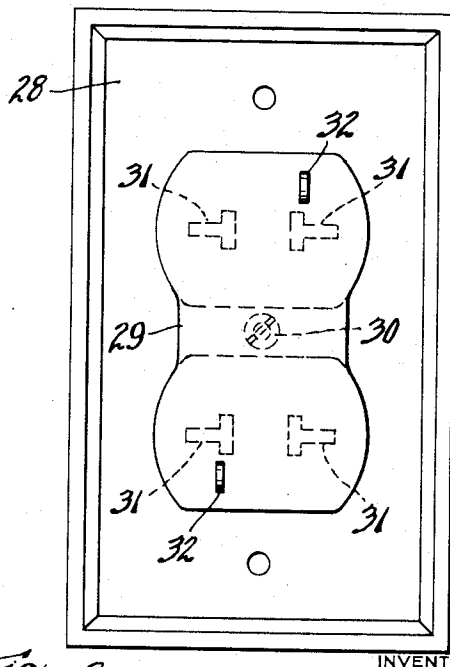
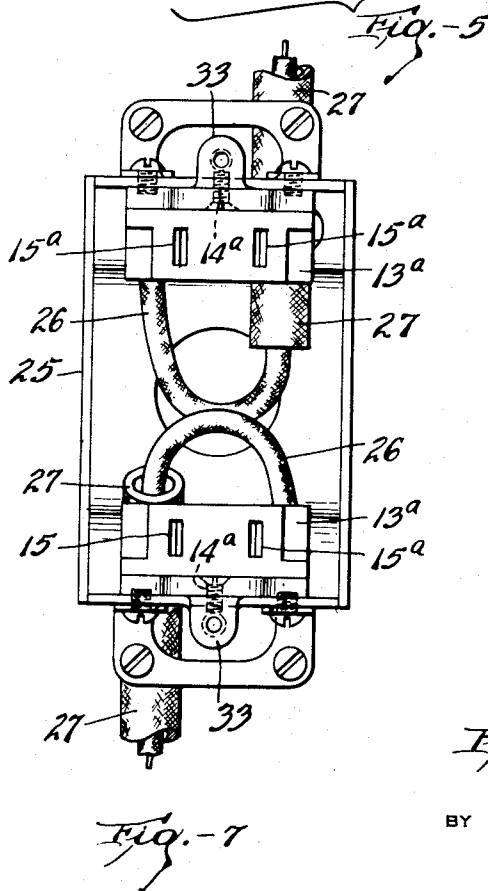
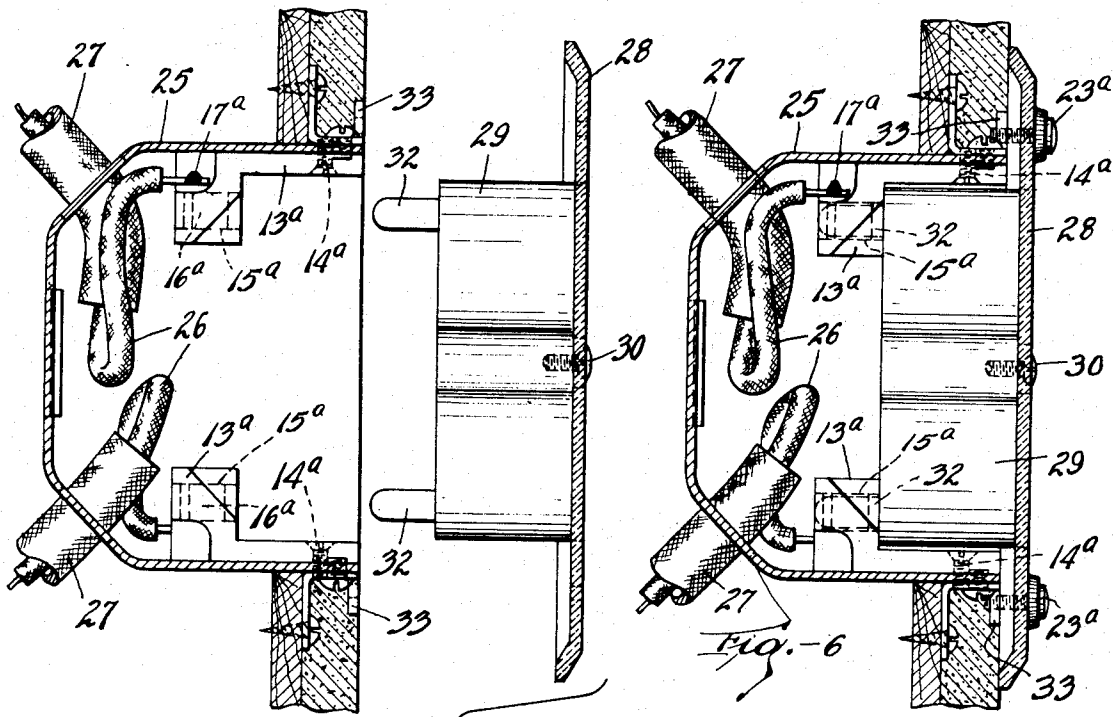


Fig. -8

INVENTOR

EMRYS M. WILLIAMS

BY

Chas. Barrow

ATTORNEYS.

## UNITED STATES PATENT OFFICE

1,938,309

## ELECTRICAL OUTLET OR SWITCH

Emrys M. Williams, Akron, Ohio

Application December 20, 1930

Serial No. 503,789

3 Claims. (Cl. 247—20)

This invention relates to electrical outlets or switches and more especially to outlets or switches of the flush type, and the chief objects of the invention are to provide ready accessibility to the operative mechanism of a switch; to provide for easy mounting and removal of the outlet or switch constructions without disconnecting the wires leading into the outlet box; to provide for easy repair or replacement of defective or worn parts; and to provide an improved electrical outlet and switch construction which easily may be substituted for outlets or switches of standard design.

Further objects contemplated are the provision of electrical switches or outlets in which the lead-in wires are permanently affixed; to avoid loose, high-resistance connections which waste current and result in poor reception when a radio receiving set is connected to such a circuit; to permit switch or outlet to be removed and replaced without disconnecting the current thereto, and to other switches or outlets on the same circuit; to avoid the hazards connected with operations upon a switch or outlet with the current on; to permit persons with no knowledge of electricity to make changes in switches or outlets in perfect safety; and to eliminate breakage of lead-in wires at entrance to the box, this breakage resulting from the bending of the lead-in wires incidental to repairing or replacing the electrical mechanism in present types of switches and convenience-outlets.

Heretofore in the construction of buildings, it has been the practice to set the electrical switch, plug and other outlet boxes in the wall with the ends of the leads bunched in the boxes, then to finish the walls as by plastering or the like and finally to set in the switches, plugs or other outlets. Frequently the plaster is filled into the switch or outlet boxes which are covered and are not located after the building is finished and short circuits are likely to occur in the outlet boxes when electricity is supplied the building. In accordance with the present invention the lead-in wires are first connected to contact points in the boxes and accordingly such short circuits cannot result, and the switches, plugs or other outlets are arranged to be inserted into the boxes with contact members thereon adapted to engage with the contact points in the box, the switches, plugs or other outlets being readily mounted, removed and replaced without disturbing the connections to the contact points in the box.

Of the accompanying drawings:

Figure 1 is a vertical section through an electrical switch embodying the invention in its pre-

ferred form, separable parts thereof being shown in separated condition;

Figure 2 is a section of the structure shown in Figure 1, the separable parts being shown in associated, operative position;

Figure 3 is a front elevation of the switch box or receptacle with the escutcheon plate removed therefrom;

Figure 4 is a rear elevation of an escutcheon plate and switch mechanism mounted thereupon;

Figure 5 is a vertical section through an electrical outlet, separable parts thereof being shown in separated condition;

Figure 6 is a section of the structure shown in Figure 5, the separable parts being shown in associated, operative position;

Figure 7 is a front elevation of an outlet box with the escutcheon plate removed therefrom; and

Figure 8 is a rear elevation of an outlet box escutcheon plate and mechanism mounted thereon.

Referring to Figures 1 to 4 of the drawings, 10 is a metal switch box or receptacle of the type employed where the electric conductor wires 11, 11 are carried in metal conduits 12, the open, front face of the box being flush with the wall behind which the box is mounted. Mounted in the top and bottom of the box 10, in front of the incoming wires 11, are respective terminal blocks 13, 13 of porcelain, "Bakelite", or similar dielectric material secured to the box by screws 14, 14. Each terminal block 13 is formed with sockets or recesses 15, 15 of rectangular cross-section extending from front to rear of the block, and molded into said sockets are respective spring-metal clips 16 which have integral portions extending to the surface of the dielectric structure and constituting terminals to which the conductor wires 11 may be attached as by soldering as at 17. Although a plurality of upper and lower terminal blocks 13 are shown, it will be obvious that any number may be used without departing from the spirit of the invention.

The switch structure includes an escutcheon plate 18 of metal, bakelite, or other suitable material, and secured to the back of said plate by screws 19, 19 are housing 20, 20 of dielectric material containing the movable mechanism of respective switches, the operating levers 21 of which project from the front of the escutcheon plate. Extending rearwardly from the housings 20 are blade-like electric connector members 22, 22 for the switch mechanism therein, and said connector members are arranged symmetrically with relation to the sockets 15 so as to fit there-

in when the escutcheon plate is mounted upon the front of the switch box 10, as is shown in Figure 2, and to make electrical connection with the respective terminal clips 16 in said sockets.

- 5 Although the separable parts of the structure so interfit as to remain normally in assembled relation, the parts preferably are secured together by screws 23, 23 which pass through the escutcheon plate from the front thereof and are  
10 threaded into respective ears 24, 24 formed on the upper and lower margins of the box 10 at the front thereof. The arrangement prevents accidental or malicious removal of the escutcheon plate, especially by children.
- 15 Figures 5 to 8 inclusive show the invention as it is embodied in electric outlets. The outlet box 25 thereof is of the type usually employed where the electric conductor wires 26 are brought to it in flexible conduits 27 of insulating material.
- 20 Mounted in the top and bottom of the box 25 are terminal blocks 13<sup>a</sup>, 13<sup>a</sup> which are identical with the terminal blocks 13 of the switch structure, and are similarly connected with the conductor wires 26, the box being of a size which requires but one  
25 upper and one lower terminal block.

- The outlet is provided with the usual escutcheon plate 28, and mounted upon the back thereof is a dual socket member 29 such as is provided for receiving the usual plugs attached to service cords  
30 (not shown). The socket member 29 is secured to the escutcheon plate by a screw 30, and said plate is formed with the usual apertures 31, 31 to admit the plug terminals to the socket member. Projecting rearwardly from the dual socket 29 are  
35 electric connector members 32, 32 which are similar in form and function to the members 22 of the switch structure, the members 32 being arranged to fit within the sockets 15<sup>a</sup> of the respective terminal blocks 13<sup>a</sup> when the escutcheon  
40 plate 28 is mounted upon the front of the outlet box 25, as is clearly shown in Figure 6. The escutcheon plate is secured to the outlet box by screws 23<sup>a</sup>, 23<sup>a</sup> threaded into ears 33, 33 formed on the upper and lower margins of the box 25 at  
45 the front thereof.

- It will be observed that the screws 14, 14<sup>a</sup> which hold the terminal blocks 13, 13<sup>a</sup> in their respective boxes 10, 25 are positioned relatively close to the front of said boxes. The arrangement is  
50 such that previously installed boxes of standard design easily may be drilled and tapped in situ for the screws 14, 14<sup>a</sup> so that conversion of prior installations into the improved structures em-

bodied in this invention readily may be effected.

The invention may be modified within the scope of the appended claims which are not limited wholly to the specific construction shown and described. It will be understood, of course, that  
80 either of the types of boxes shown or other suitable boxes may be used for either the switch, plug or other outlets, the showing in the drawings being merely illustrative of how the invention may be embodied in either type of outlet box.

What is claimed is:

1. In electrical apparatus, the combination of a box adapted to be mounted in a wall or panel and having electrical terminals permanently secured therein to which electrical power leads extending into the box may be permanently attached, an escutcheon plate for covering said box and overlying the joint between said box and the wall or panel, and a removable electrical conducting unit inserted in said box with contact  
90 members thereon engaged with said terminals, said unit being attachable to said terminals or separable therefrom without disturbing the connection of the power leads thereto and being retained in said box by said escutcheon plate.

2. In electrical apparatus, the combination of a box adapted to be mounted in a wall or panel and having electrical terminals permanently secured therein to which electrical power leads may be permanently attached, a removable electrical  
105 conducting unit receivable in the box and having elements for contacting with said terminals when said unit is inserted in the box, said terminals and said elements adapted to be slidably engaged, and an escutcheon plate for covering the box and for  
110 retaining said unit in place therein, said unit being unsecured to the box except by engagement of the elements and terminals whereby the unit is readily removable and replaceable upon removal of the escutcheon plate.

3. In electrical apparatus, the combination of a box adapted to be mounted in a wall or panel and having electrical terminals secured therein to which electrical power leads may be permanently attached, a removable electrical conducting unit  
120 receivable in the box and having elements for contacting with said terminals when said unit is inserted in the box, and an escutcheon plate for covering the box and for retaining said unit in place therein, said unit being unsecured to the  
125 box whereby the unit is readily removable and replaceable upon removal of the escutcheon plate.

EMRYS M. WILLIAMS.

55

130

60

135

65

140

70

145

75

150