Nov. 14, 1939. E. S. SCHOTT 2,180,020

ELECTRICAL OUTLET AND PLUG

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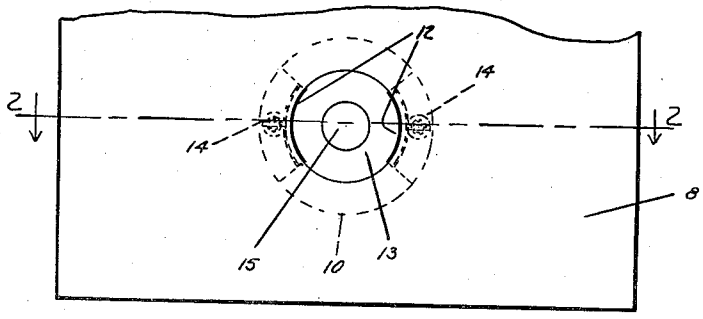


Fig 1

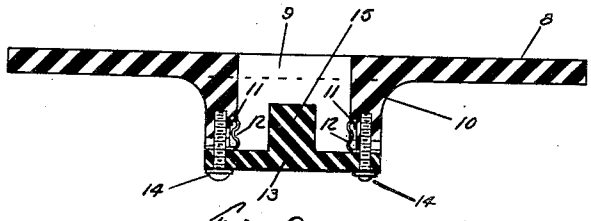


Fig 2

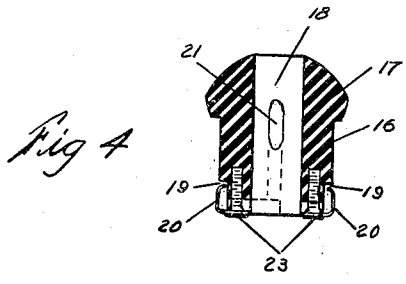


Fig 4

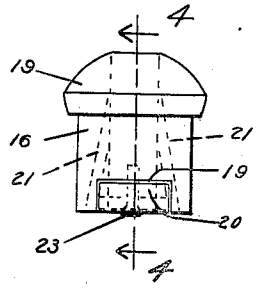


Fig 3

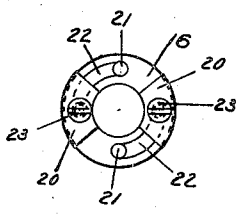


Fig 5

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ELECTRICAL OUTLET AND PLUG

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1 Claim. (Cl. 173—330)

The present invention relates to an electrical wall outlet and prongless plug therefor and has for an object the provision of a device whereby lamps and appliances may be quickly connected without requiring special positioning of the plug relative to the outlet or receptacle.

Another object of the invention is to provide a device of this character wherein the plug may be inserted into the wall outlet or other receptacle without the necessity of a predetermined rotary adjustment of the plug relative to its outlet, thereby enabling easy electrical connection to be made even in relatively inaccessible or poorly visible locations.

A further object of the invention is to provide an outlet structure for a prongless plug, so arranged as to protect users against accidental shock or short circuiting by the insertion of the finger or other unintended objects into the outlet.

A further object of the invention is to provide a structure of this kind which is relatively inexpensive and which is capable of ready assembly into the wiring circuit and to the conductors of electrical appliances.

A still further object of the invention is to provide a safe and convenient plug and outlet combination which also serves as an electrical switch by the mere rotary adjustment of the plug in the outlet.

These and other objects are attained by the means described herein and exemplified in the accompanying drawing, in which:

Fig. 1 is a top plan view of a wall outlet member embodying the present invention.

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

Fig. 3 is a side elevational view of a prongless plug of the invention.

Fig. 4 is a view taken on line 4—4 of Fig. 3.

Fig. 5 is an end view of the prongless plug illustrated in Fig. 3.

The use of present day electrical plug and outlet connections for lamps and electrical appliances entails tedious manipulation of the plug especially when visibility is poor or when accessibility is difficult.

The present invention obviates the difficulties mentioned by providing a prongless plug adapted to cooperate with an outlet which receives the plug regardless of the rotary adjustment of the latter, the outlet having contacts disposed in diametrically opposed relation within an annular recess occasioned by the projection of an insulating center prong from the rear of the receptacle toward the face thereof.

Referring now to the drawing, a wall plate 8 of insulating material is provided with a socket bore 9 which extends through an integral boss 10 on the rear of the plate. The wall of the bore 9 has a pair of diametrically opposed recesses 11 which seat the upstanding arcuate portions 12 of a pair of contacts which are L-shaped in cross-section in order to overhang the end of the boss 10. A closing member 13 is secured over the rear end of the boss by screws 14 which are preferably of the washer-head type and which screws threadedly engage the overhanging ends of contacts 12 and the boss 10. The contacts are thus secured in position and screws 14 serve to make electrical connection between the contacts and the customary house wiring (not shown). Plate 8 is secured to the customary wall box in known manner.

From the foregoing, it will be apparent that the finger or any other solid object which is thrust through the opening of bore 9 will encounter the central upstanding insulating prong or stud 15 which is integral with the closing member 13 so that it is impossible to complete an electrical circuit between the opposed contacts 12 without a specially formed conductor member. The tops of contacts 12 are disposed below the top or forward level of insulating prong 15. In its preferred form, the contact members 12 are corrugated or grooved in order to provide slight resiliency or good frictional contact for connection with the plug which will now be described.

The plug comprises a tubular insulating member 16 with an enlarged head portion 17, the bore 18 in the plug is of a diameter to slidably receive the insulating prong 15 of the outlet. The exterior wall of tubular member 16 is recessed at diametrically opposite sides as at 19 and a pair of contacts 20 seat in said recesses and have turned over portions overhanging the end of the tubular member 16. Extending divergently from the wall of bore 18 to the end of the plug is a pair of diametrically opposed bores 21 through which the separate conductor wires are led, from the inside of bore 18 to the end of the plug. Shallow grooves 22 extend from the exposed ends of bores 21 around the end of the plug where the bared ends of the wires (not shown) are looped in known fashion and disposed either above or below the overhanging portions of contacts 20. Screws 23, preferably of the flat-head type, serve to secure the contacts to the plug member 16 and also to hold the conductor wires for electrical appliances. From an inspection of Figs. 1, 3 and 5, it will be apparent that the complementary contacts each extend over approximately 80° of the circumference of the respective supporting members and are

spaced from each other on the same supporting member about 100° apart from their adjacent edges. In as much as the plug forms a snug sliding fit there is a slight resilient binding of contracts **20** on the contact portions **12**, the physical connection of the inserted plug in the outlet is sufficient to prevent accidental separation but is still slight enough to enable the plug to be pulled from its seat rather than to cause an appliance to be tipped over or pulled from a table if the connecting wire is accidently pulled or kicked. The frictional binding of the contacts **20** on the inside of the bore **9** permits rotational adjustment of the contacts **20** to a non-contacting relation with the contacts **12**, thereby permitting a switching action by the mere rotation of the plug in its socket through an angle of about 90°.

When the plug is to be inserted in a receptacle that is disposed in a poorly accessible or a poorly visible location, the user may safely feel for the exact location of bore **9** without danger of receiving an electrical shock. The plug may be inserted into the bore without initially regarding the location of the contacts, and after the plug is securely seated, electrical connection is established by giving the plug a quarter turn, if the contacts were not brought together by the act of seating the plug. For such electrical appliances as are not provided with a switch, the rotational adjustment of the plug in the bore performs the function of switching the current on and off without necessitating removal of the plug.

What is claimed is:

In a safety electrical outlet and plug the combination of an insulating plate having a boss on the rear face thereof, said plate and boss having a cylindrical bore therethrough, the wall of the bore being undercut at diametrically opposed points near the end of the boss, an end member secured by screws over the end of the bore, L-shaped contacts each having one portion rigidly clamped between the boss and said end member and the remainder yieldably closing an undercut portion of the wall of said bore, an insulating prong on the end member projecting axially into the bore beyond the tops of the contacts, and a plug member for said outlet comprising a tubular insulating body insertable in the bore and interiorly receiving said prong at its end, and contacts yieldably mounted on diametrically opposite sides of the plug at the end thereof for coaction with the contacts in the bore.

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