Oct. 3, 1939. N. B. WHITE 2,174,811

CONNECTOR

Filed March 25, 1938

Fig. 1

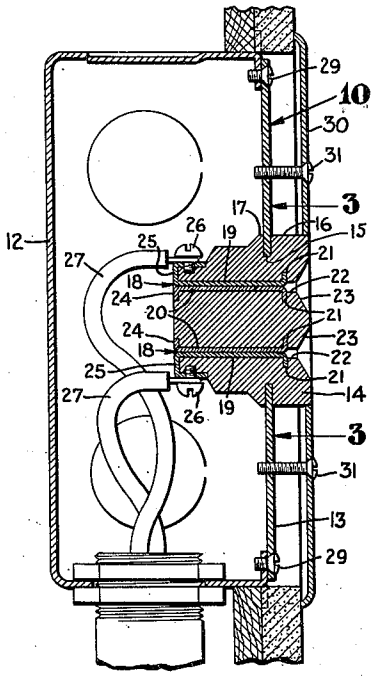


Fig. 2

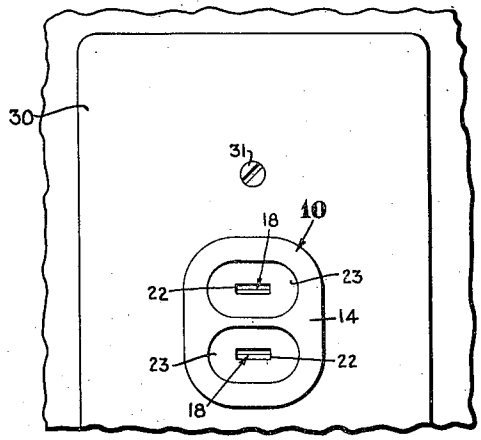


Fig. 3

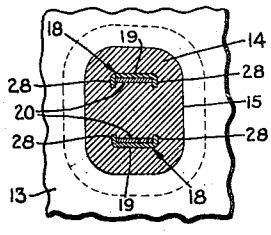


Fig. 5

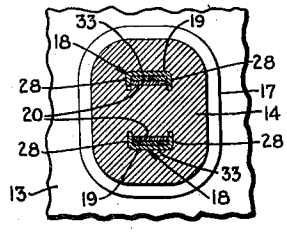


Fig. 6

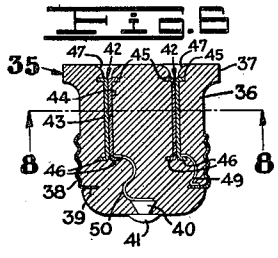


Fig. 4

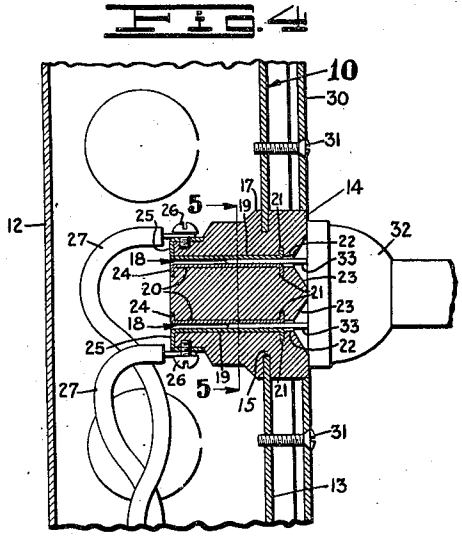


Fig. 7

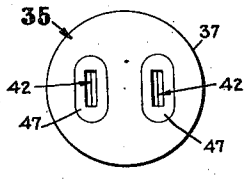
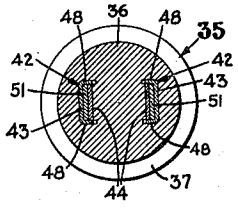


Fig. 8



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CONNECTOR

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3 Claims. (Cl. 173—330)

This invention relates to improvements in electrical plug receptacles.

The general object of the invention is to provide an improved receptacle adapted to receive an electrical plug connector.

Another object of the invention is to provide a plug receptacle having the body thereof formed of resilient and flexible electrical insulation material.

A further object of the invention is to provide an improved plug receptacle including a body portion formed of resilient electrical insulation material and having contact members therein adapted to be resiliently urged into engagement with the contact portions of a plug member by the elasticity of the resilient body material.

Other objects and the advantages of my invention will be apparent from the following description taken in connection with the accompanying drawing, wherein:

Fig. 1 is a section through an electrical outlet box showing one embodiment of my improved plug receptacle operatively mounted therein;

Fig. 2 is a fragmentary front view of the device shown in Fig. 1;

Fig. 3 is a fragmentary section taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary view similar to Fig. 1 showing an electrical connector plug operatively engaging the receptacle;

Fig. 5 is a fragmentary section taken on line 5—5 of Fig. 4;

Fig. 6 is a section through a screw plug receptacle embodying the features of my invention;

Fig. 7 is a front view of the device shown in Fig. 6; and

Fig. 8 is a section taken on line 8—8 of Fig. 7 showing the contacts of a plug member positioned in the receptacle.

Referring to the drawing by reference characters I have indicated one form of my invention generally at 10 and have shown it operatively mounted in a standard wall outlet box 12. As shown the device 10 includes a metal face plate 13 and a receptacle body portion 14 which is made of a suitable resilient, flexible electrical insulation material such as rubber.

The face plate 13 has an aperture 15 through which the body 14 projects forwardly and rearwardly therefrom in enlarged shoulder portions 16 and 17 respectively. At the time the body 14 is formed the face plate 13 is preferably molded therein.

The body 14 has a pair of spaced metal contact members 18 therein each of which includes an outer member 19 and an inner member 20. The members 19 and 20 terminate at a distance spaced inward from the front face of the body where they include oppositely directed flange portions 21 which serve to anchor the members in the body.

Extending forward from each of the contacts 18 the body 14 has an aperture 22 therein opening into an enlarged, tapered recess 23 which opens through the front face of the body. At the rear of the body the members 20 each includes an inwardly directed flange portion 24 and each of the members 19 includes a U-shaped portion 25 bent back upon the body and threaded to receive a screw 26 for securing an electrical conductor wire 27 thereto.

As clearly shown in Figs. 3 and 4 the members 19 each includes inwardly directed side flange portions 28 which overlie the sides of their associated members 20 and act as guides. At the time the body 14 is formed the contact members 18 are preferably molded therein or the body may be formed with thin slits therein which would be stretched open at a later time and the contact members 18 inserted therein.

The face plate 13 is provided with threaded apertures to receive screw members 29 or other fastening means to secure it to the outlet box 12. The plate also has a trim plate 30 therein which is held in place by screws 31.

In Fig. 4 I have shown a standard type of electrical connector plug 32 which includes spaced flat plug contacts 33 operatively engaging the receptacle member 10. In operation the contacts 33 of the plug 32 are inserted in the receptacle apertures 22 and engage the receptacle contacts 18. Upon further inward movement of the plug the contacts 33 thereof force the members 19 and 20 of the contacts 18 apart against the action of the resiliency of the body 14 which action after the plug contacts are inserted tightly clamps the members 19 and 20 to the plug contacts 33 thereby preventing accidental removal of the plug from the receptacle under normal conditions but will allow the plug to be pulled from the receptacle when the plug is subjected to an abnormal strain thus preventing damage to the cord, the plug or the receptacle.

In Fig. 6 I have shown my invention embodied in a screw plug receptacle 35 which is adapted to be inserted, for example, in a standard threaded light socket. The device 35 includes a body portion 36 which is formed of a resilient electrical insulation material such as rubber and includes an enlarged front gripping flange 37.

Intermediate the front flange 37 and the rear the body 36 has a threaded metal shell 38 thereon which includes an inturned flange portion embedded in the body. In the center of the rear face the body 36 has a metal member 40 embedded therein which includes an enlarged contact head 41 extending beyond the rear face of the body.

The body 36 has a pair of metal contact members 42 therein each of which includes an outer member 43 and an inner member 44. The contacts 43 terminate at a distance spaced inwardly from the front face of the body where the members 43 and 44 include oppositely directed flange portions 45.

The inner ends of the contacts 42 terminate a predetermined distance inward from the shell flange 39 where the members 43 and 44 include oppositely directed flange portions 46. Extending forward from each of the contacts 42 the body has an outwardly flared recess 47 therein.

As clearly shown in Fig. 8 the outer members 43 each includes inwardly directed side flange portions 48 which overlie the sides of their associated members 44. As shown in Fig. 6 the member 43 of one of the contacts 42 is connected by a resilient metal member 49 to the shell 38 and the member 44 of the other contact 42 is connected by a resilient metal member 50 to the center contact member 40. At the time the body 36 is formed the shell 38, the center contact 40, the contacts 42 and the connector members 49 and 50 are preferably molded therein.

When the constant members such as indicated at 51 in Fig. 8 of a plug connector (not shown) are inserted in the screw plug receptacle 35 the action and result is the same as previously described in connection with the receptacle 10. With my invention the plug is held firmly in place at all times. When it is desired to remove the plug the cord attached thereto may be pulled even from a sharp angle whereupon the plug will be released.

From the foregoing description it will be apparent that I have provided a novel plug receptacle which is simple in construction and highly efficient in use.

Having thus described my invention I claim:

1. In an electrical receptacle device, a body made of one piece of molded resilient electrical insulation material, a pair of spaced metal contacts in said body, each of said contacts including a pair of members forced into engagement by the resilient body material, one of said members of each pair having side flanges extending beyond the adjacent member of the pair to form a guide at each side thereof, said body having a recess disposed in alignment with each contact and adapted to receive a companion electrical connector, one of said members of each pair at the end remote from said recess having a flange thereon engaging the outer end of said body, the other one of each of the pair of members having a flange, said last mentioned flanges each having an inwardly directed portion, said inwardly directed portion being disposed on the outside of said body and having a threaded aperture therein.

2. In an electrical receptacle device, a body made of one piece of molded resilient electrical insulation material, a pair of spaced metal contacts in said body, each of said contacts including a pair of independently formed metal members, each of said members comprising a plane body portion with the body portions of each pair of members forced into engagement throughout their length by the resilient body material, one of said members of each pair having side flanges directed towards the adjacent member of the pair to form a guide at each side thereof, said body having a recess disposed in alignment with each contact and adapted to receive a companion electrical connector, one of said members of each pair having a flange extending at right angles thereto, said last mentioned flanges each having an inwardly directed portion, said inwardly directed portion being disposed on the outside of said body and having a threaded aperture therein.

3. In an electrical receptacle device, a body made of one piece of molded resilient electrical insulation material, a metal face plate having an aperture therein which is of less size than the adjacent portion of said body, said body being molded with the face plate therein, a pair of spaced metal contacts in said body, each of said contacts including a pair of independently formed metal members, each of said members comprising a plane body portion with the body portions of each pair of members forced into engagement throughout their length by the resilient body material, one of said members of each pair having flanges extending beyond the side of the adjacent member of the pair to form a guide at each side thereof, said body having a recess disposed in alignment with each contact and adapted to receive a companion electrical connector, one of said members of each pair at the end remote from said recess having a flange thereon extending at right angles thereto and engaging the outer end of said body, the other one of each of the pair of members having a flange extending at right angles thereto, said last mentioned flanges each having an inwardly directed portion, said inwardly directed portion being disposed on the outside of said body and having a threaded aperture therein.

NORMAN B. WHITE.