

Sept. 8, 1936.

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2,053,386

ELECTRIC PUSH PLUG

Filed Oct. 6, 1933

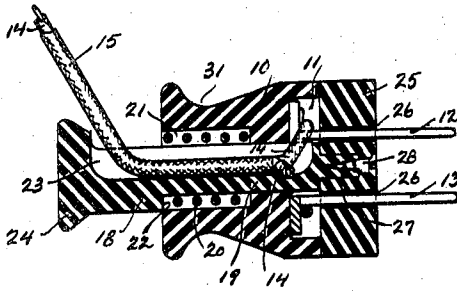


Fig. 1.

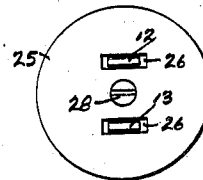


Fig. 2.

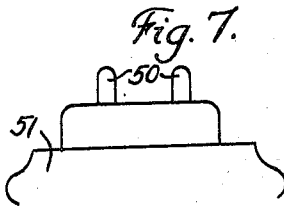


Fig. 7.

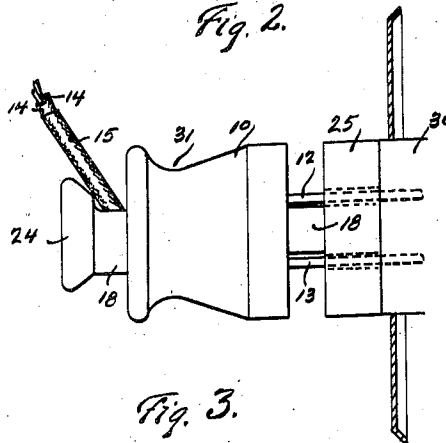


Fig. 3.

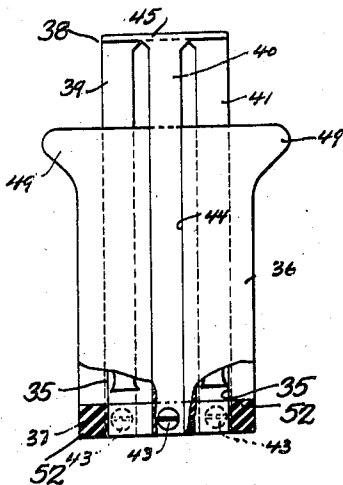


Fig. 4.

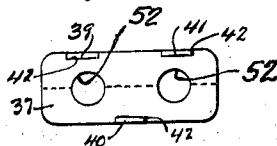


Fig. 5.

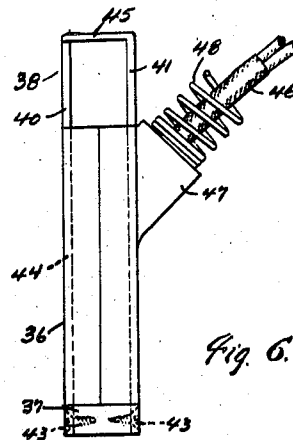


Fig. 6.

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2,053,386

ELECTRIC PUSH PLUG

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Application October 6, 1933, Serial No. 692,400

3 Claims. (Cl. 173—361)

My invention relates in general to electric connectors, and more particularly to push plugs used in connection with electrical outlet sockets or with electrical appliances such as electric irons, toasters, and the like.

It is well known that the ordinary push plugs of the art may be easily forced into place, but they are not fitted for easy withdrawal from the engaging parts. Such plugs are, therefore, many times withdrawn by seizure of the cable or extension cord which causes a strain on the connections of the cable with the plug and rapid deterioration of the cable adjacent the plug. The strain placed upon cables under these conditions is such that many times the strands of the cable are broken or short circuits result.

One of the principal objects of my invention has been to provide means actuated from the plug itself whereby the plug may be easily separated from the engaged parts.

Moreover, in creating my device I have sought to retain the form of the ordinary push plugs and still provide a means for readily separating such plugs after they are in contact with their connectors.

Specifically, my device is so constructed that it may be easily separated from the coacting contacts by a straight axial pull.

Furthermore, my device is simple in design and of few parts.

The above objects and advantages have been accomplished by the device shown in the accompanying drawing, of which:

Fig. 1 is a side, sectional view of a cap plug embodying my invention.

Fig. 2 is an end view thereof.

Fig. 3 is an exterior view showing the cap plug in use.

Fig. 4 is a side elevation of a plug of the type used in connection with irons, toasters, and other similar electrical appliances.

Fig. 5 is a bottom plan view of this device.

Fig. 6 is an edge elevation thereof.

Fig. 7 is a fragmentary view of an electric appliance, showing the contact pins thereof.

Referring to the form of invention shown in Figs. 1 to 3, 10 represents the body of the cap plug which is provided in its forward face with a recess 11 for the reception of the inner ends of the contact prongs 12 and 13. This recess also provides for the accommodation of the wires 14 of the cable 15 and the fastening means for securing such wires to the prongs.

Slidably mounted within the body part 10 of the plug is an ejector plunger 18. This plunger is

provided with a reduced portion 19 which passes through a suitable aperture formed in the plug and about which is arranged a helical spring 20. The spring is disposed within a counterbore 21 formed in the body 10 of the plug and the outer end of the spring bears against the shoulder 22 formed by the reduced portion 19. Formed in the plunger 18 is a longitudinal groove 23 which extends from the head 24 of the plunger inwardly to a point where it communicates with the recess 11. Within this groove 23 is disposed the cable 15. Arranged at the front of the plug 10 is an ejector plate 25. This plate is provided with slots 26 which pass over the contact prongs 12 and 13 and it is carried by the projecting end 27 of the ejector plunger. A screw 28 serves to hold the plate in place upon this end of the plunger. In the normal position of the parts, as shown in Fig. 1, the helical spring 20 will serve to keep the plunger in its outward position and the ejector plate in contact with the forward end of the body 10. The prongs 12 and 13 of my device are made of such length that they protrude beyond the outer face of the ejector plate a standard distance when the plate is in the position shown in Fig. 1.

When the device is to be operated to withdraw a plug from an outlet socket member, as illustrated in fragmentary manner at 30 in Fig. 3, the fingers of the hand are engaged with an annular groove 31 formed in the body 10 of the plug and the thumb is placed upon the head 24 of the ejector plunger. By pulling on the fingers, the body carrying the prongs 12 and 13 is drawn outwardly, as shown in Fig. 3, toward the head 24 and away from the plate 25 which is pressed tightly against the outlet 30. The prongs are thus withdrawn from springing engagement and electrical contact with the coacting parts of the outlet and the plug may then be easily removed from the outlet.

Referring to the form of device shown in Figs. 4 to 6, this is the well known type of plug which is used in connection with electrical appliances where the contact pins 50 are carried by the appliance 51 (diagrammatically represented in Fig. 7), and are designed to pass through the contact openings 35 formed in the bottom of the plug. In this form, 36 represents the body of the plug and 37 the ejector plate which is provided with openings 52 therethrough which register with the contact openings 35. Such ejector plate is located in front of the plug. The plunger 38 in this form may be made of sheet metal and provided with three parallel legs 39, 40 and 41. The leg 40 is arranged at one side of the body and the

legs 39 and 41 at the opposite side thereof. The extreme outer ends of these legs are preferably let into recesses 42 formed in the edges of the plate and are secured thereto by means of screws 43. The body of each of these legs is preferably set into a suitable groove 44 formed in the faces of the body 36 and so fitted as to have slidable engagement therewith. The legs are preferably formed as a part of a cross piece 45 which provides the head of the plunger for engagement with the thumb of the operator.

When my invention is applied to this form of plug, the cable 46 is passed into the body of the plug from the side thereof, and between the legs 39 and 41, and preferably through an extension 47 carried by the body and arranged between these legs. This extension supports the customary wire coil protecting sleeve 48. If desired, a spring (not shown) may be employed under the head 45 for returning the ejector plate 37 to the position shown in the drawing. Such a spring is, however, not absolutely necessary since when the plug is being used and is placed over the contact pins, the ejector plate, if not already in contact with the end of the body 36, will be forced in contact therewith as the plug is pushed into engagement with the contact pins. In this form, as in the previous form, when it is desired to remove the plug, the fingers of the hand detaching the plug are engaged with the projections 49 on the body and the thumb is pressed upon the head 45 of this plunger which, when pressed, causes a relative movement of the ejector plate and the body 36, whereby the body 36 is pulled away from the ejector plate and out of engagement with the contact pins of the electrical appliance.

From the foregoing it will be evident that plugs of the type shown in Figs. 4 to 6 may be conveniently detached from any appliance, such as a heated waffle iron, without causing discomfort to or burning of the hands.

Where I use the term electric connection in the appended claims, I mean either the outlet 30, as shown in Fig. 3, of the form of invention shown in Figs. 1, 2, and 3, or the contact pins 50 which are provided on electric irons, toasters, and waffle irons.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims, and I do not, therefore, wish to be limited to the exact embodiment herein shown and described, the form shown being merely a preferred embodiment thereof.

Having thus described my invention, what I claim is:

1. An electrical plug comprising a body carrying suitable electric contacts, a plunger slidably carried by the body and provided with a plurality of legs engaging the outside surfaces of the body, and an ejector plate carried by the plunger and arranged in front of the body, said plate being of substantially the same cross-sectional area as the body and being secured to the legs, whereby when pressure is applied to the plunger, the plug may be easily detached from the electric connection.

2. An electrical plug comprising a body carrying electric contacts and provided with longitudinal grooves in its opposite outside walls, a plunger slidably carried by the body and provided with a plurality of oppositely arranged legs movable within the grooves of the body, and an ejector plate carried by the plunger, said ejector plate being of substantially the same cross-sectional area as the body and arranged in front thereof whereby when pressure is applied to the plunger the plug may be easily detached from the electric connection.

3. The combination with an electric connection of an electric plug, male and female electric contacts carried by the connection and the plug, a body for the plug, a plunger slidably carried by the body, and an ejector plate carried by the plunger and arranged in front of the body, said plate having openings for passage over the male contact members, whereby when pressure is applied to the plunger, the plug may be easily detached from the electric connection.

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