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ELECTRIC PLUG

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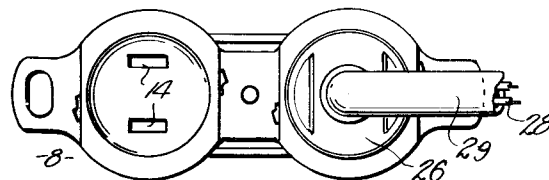


Fig. 1.

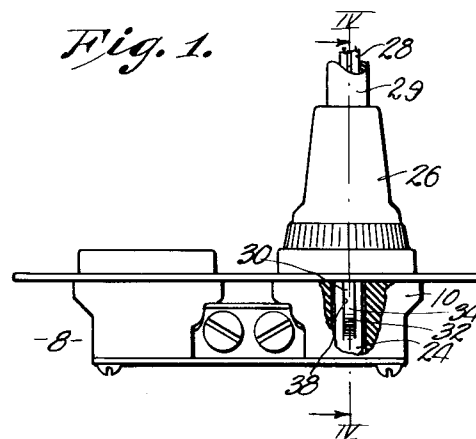


Fig. 2.

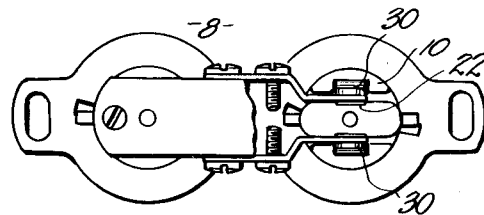


Fig. 3.

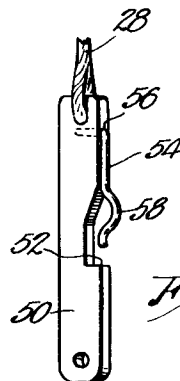


Fig. 6.

Fig. 4.

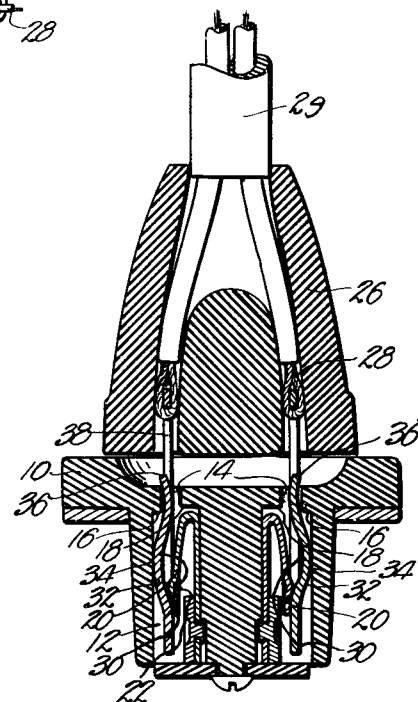
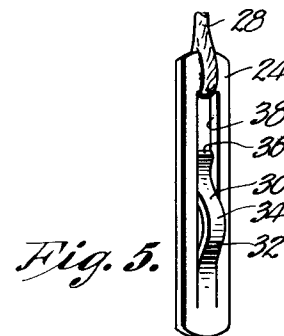


Fig. 5.

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ELECTRIC PLUG

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1 Claim. (Cl. 173—361)

This invention relates to attaching elements in the nature of a plug employed in securing one end of an electric extension to the standard socket, and the primary object is to provide such an electric plug with means for positively holding the same in place against accidental movement.

One of the important aims of the instant invention is to provide a plug for electrical extensions with a pair of specially formed blades, each of which coacts with the conductor terminal in the plug so that a retaining force is exerted tending to releasably lock the blade in place and having the further merit of establishing a positive connection so that the flow of energy will not be interrupted as the cord is moved or manipulated.

Another important feature of this invention is to provide in a plug for attaching electric extensions to standard receptacles, a blade whereon is created a crimped finger, the hump forming said crimp being approached by a downwardly and outwardly extending portion on each side thereof so that an outward force in a line perpendicular to the major plane of the blade is exerted when the same is confined within the receptacle.

Another object of the invention is the provision of a plug for electrical extensions wherein is mounted a pair of blades each of which has a finger struck therefrom and each of which has a crimp or hump pressed therein and extending laterally therefrom intermediate its ends; one end of said finger being rigid with the blade, while the other end thereof is free and disposed within a perforation formed in the blade per se.

Other objects of the invention including specific structural details of two forms of the plug, will appear during the course of the following specification, referring to the accompanying drawing wherein:

Figure 1 is a top plan view of a standard double receptacle having an electric plug therein which is made in accordance with this invention.

Fig. 2 is a side elevation of the same with parts of the receptacle broken away to reveal the specific nature of one of the blades of the plug.

Fig. 3 is an inverted plan view of the receptacle showing the blades of the plug in position against the conductor terminals of the receptacle.

Fig. 4 is an enlarged longitudinal central sectional view through the plug and receptacle, taken on line IV—IV of Fig. 2.

Fig. 5 is a detailed perspective view of one of the plug blades showing the same entirely re-

moved from association with other parts of the plug; and,

Fig. 6 is a perspective detailed view of a plug blade made to embody a modified form of the invention.

Efforts have heretofore been expended to produce a satisfactory electric plug and attention has been especially directed to the blades of the plug and their cooperation with the standard receptacle. The plugs now available on the market have blades which establish a tendency to work out of the receptacle and others have blades which are plain and which do not create the desired contact to the end that current does not pass from receptacle to plug and therefore, the assembly becomes useless.

The receptacle 8, illustrated herewith, is of the conventional type and has a body of insulating material 10 provided with a recess 12 and a pair of spaced apart openings 14 in communication with the recess.

Shoulders 16 and 18 are at the zone of juncture between openings 14 and 12 and a pair of conductor terminals 20 are within recess 12. These terminals are not standard in that some receptacles 8 have the terminals 20 thereof disposed as illustrated in Fig. 4, while others have the terminals along the inner wall of body 10 opposite from the position just mentioned. In practically all of the receptacles, however, shoulders 16 and 18 are present and if both are not built into the receptacle, there is always at least one shoulder at the zone of juncture between opening 14 and recess 12.

Conductor terminals 20 are usually in the nature of a U-shaped metallic strip, one leg of which is free to move laterally, and this leg customarily has an embossment 22 struck outwardly therefrom to engage a suitable coating part formed on the blades of plugs now in use. Regardless of the nature of receptacle 8, the unique plug embodying this invention, will coact in such a manner as to establish a definite grip when the parts are together.

Each blade 24 projects longitudinally from the body 26 of the plug and one end thereof is attached to a conductor 28 of extension 29. Body 26 must be formed of insulating material so that blades 24 are held in spaced relation, the distance therebetween being substantially the same as the distance between openings 14.

In the instance illustrated in Figs. 1 to 5 inclusive, blade 24 comprises a flat strip of conducting material which should have enough resiliency to allow the specially formed finger 30 to

flex when blade 24 is moved into the receptacle. Finger 30 is formed by striking the same outwardly from blade 24 and simultaneously crimping the same transversely to present a hump 32, the peak 34 of which is to one side of the major plane of blade 24.

Downwardly and outwardly extending portions of finger 30 are on each side of hump 32 and join peak 34 with that part of finger 30 which lies in the plane of blade 24. The free end 36 of finger 30 lies within perforation 38 and the marginal end of finger 30 is arched reversely from the direction of arch of hump 32.

There is a pair of oppositely facing shoulders on one side of finger 30, one shoulder being on each side of peak 34 or hump 32. There are shoulders formed on the other side of finger 30 and the double crimping of this finger presents gripping means which is apparent to one skilled in the art, but which will be further described during an explanation of the operation.

Blades 24 cooperate to the extent of having the humps 32 thereof extending outwardly in opposite directions when the plug is assembled. An illustrated embodiment of a modified form of the invention is seen in Fig. 6 wherein blade 50 has a perforation 52 therein that is in the form of a notch extending inwardly from one edge of the blade. Finger 54 of this blade has one end secured as at 56 to the edge and the free end thereof is disposed within notch 52. A hump 58 overlies notch 52 and is of the same general contour as hump 32 in that there is a downwardly and outwardly extending portion on each side of the peak thereof. This blade 50 is secured to one of the conductors of plug in the usual way.

When a plug having the form of blade 50 shown in Fig. 6, is used, the blades are moved into openings 14 until the inclined portion of hump 58 is reached. Additional inward force upon the plug will cause finger 54 to flex and the free end thereof move into notch 52 whereupon frictional engagement between the opposite walls of body 10 of the receptacle will be established. The friction upon blade 50 will be along one longitudinal edge thereof and upon the peak of hump 58.

When a plug having the form of blade 24, illustrated in Fig. 4, is introduced into the standard receptacle, fingers 30 of the blade may be flexed as the humps 32 pass through openings 14. When in place, fingers 30 will assume a relation with the elements of receptacle 10 which will preclude accidental displacement. This relation is seen in Fig. 4 but it is important, and is better understood when it is recognized that peaks 34 of humps 32 are in frictional engagement with the inner wall of body 10 as the sides of blades 24 opposite from humps 32 are held against conductor terminals 20.

One of the shoulders of each of the two fingers 30 underlies an embossment 22 of a conductor terminal 20. One of the opposite facing shoulders on the convex side of each finger 30 underlies shoulder 16 of body 10, and the plug may be removed only by exerting a force sufficient to move the free ends of fingers 36 inwardly as these shoulders 16 ride over the downwardly and outwardly extending portions of humps 32 between

the free ends 36 and peaks 34. Conversely, when the plug is moved into receptacle 8, fingers 30 of blades 24 engage the walls of body 10 forming openings 14 along the downwardly and outwardly extending portions of humps 32 between peaks 34 thereof and their fixed ends.

Embossments 22 are relatively small and fit into perforations 38 of blades 24 and against one of the shoulders of the fingers. In such position, embossments 22 cooperate with one of the shoulders on the opposite side of fingers 36, which is in engagement with shoulder 16 of body 10 in releasably locking the plug in an operative position.

The form of fingers 30 precludes any tendency for the plug to work out of receptacle 8 and all forces tending to hold the blades 24 in position are in a direction perpendicular to the major plane of blades 24.

If the form of receptacle 8 is such as to receive the entire length of fingers 30 into recess 12, the free ends of these fingers will not engage any projection that would prevent dis-engagement of the plug. The ends of fingers 30 are protected against such accidents because of their position within perforations 38 of the blades.

From the foregoing, it will be clear to one skilled in the art that electric plugs having physical embodiments other than those illustrated and described may be made to embody the invention without departing from the spirit thereof and scope of the appended claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

A plug for a standard electrical receptacle provided with a pair of spaced apart cavities opening inwardly from one side thereof, each cavity having an outer side wall and a pair of spaced inwardly extending abutments forming a blade entrance opening, said plug comprising a body of insulating material; a pair of flat, perforated blades of single thickness metal extending outwardly from said body; and a resilient finger struck from each blade intermediate its side edges, said fingers being joined to the respective blades near the free ends of the latter, each of said fingers having an arch, the hump of which projects outwardly from one side of the major axis of the blade adjacent to the fixed end of the finger to engage an outer side wall of a cavity, a lower portion of the inner arcuate surface of the hump forming a shoulder and being positioned to engage and underlie a contact on the receptacle, the upper outer surface of the hump also serving as a shoulder and being positioned immediately below and in contact with one of said abutments while said lower portion engages the contact whereby said upper outer surface and said lower portion cooperate to resist outward movement of the blade, a second arched portion formed on and adjacent to the free end of each finger and having a curve reverse to that of the other arch, said second arched portion being positioned to lie between said abutments when the plug is inserted in the receptacle.

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