Jan. 24, 1950 E. P. BRUS 2,495,206

ELECTRICAL PLUG

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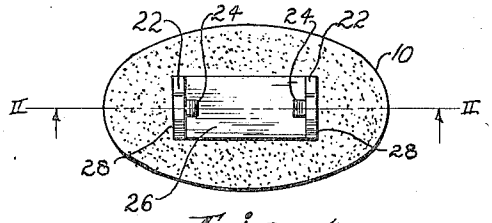


Fig. 1.

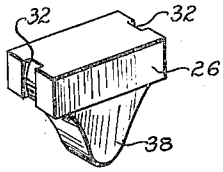


Fig. 5.

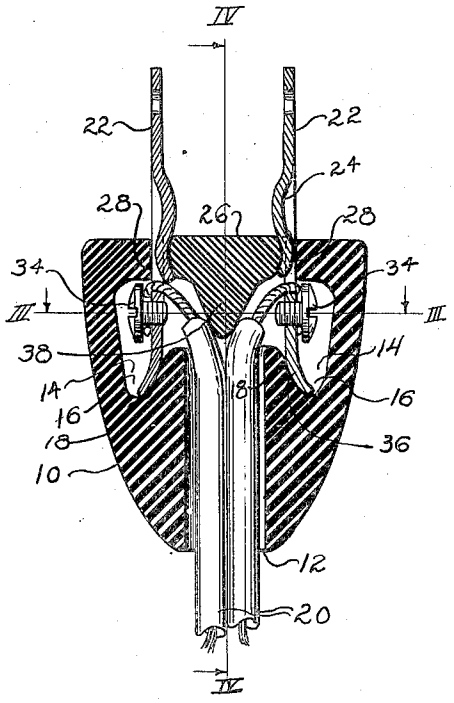


Fig. 2.

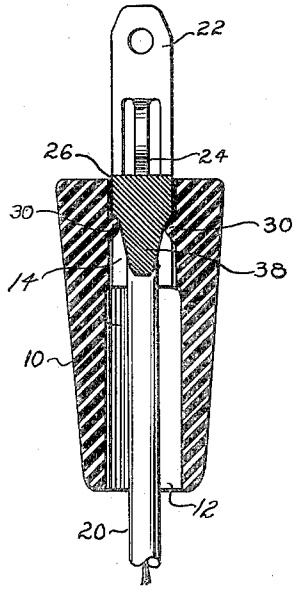


Fig. 4.

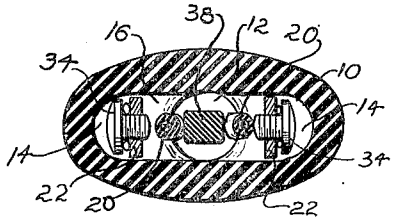


Fig. 3.

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ELECTRICAL PLUG

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1 Claim. (Cl. 173—361)

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This invention relates to plug connectors for electric current conductors and has for its primary aim to provide a plug connector of the replaceable type wherein the prongs that form a part of the plug, may be conveniently disconnected from the cord and the cord replaced, if the same becomes useless due to breakage or loss of insulation.

One of the important aims of this invention is to provide a plug of the aforementioned character, wherein the body thereof is formed of a single piece of molded substance and the prongs are movable to and from an operative position in the body by the employment of extremely simple and effective parts, including a tongue integral with each prong and a plug that cooperates with the said tongues.

It is well-known in the art that the relatively small and substantially unitary plug connectors that have herefore been employed, are so constructed as to preclude their being disconnected from the cord if the latter should become worn. Waste and useless expense is therefore incurred when a non-replaceable plug is used on extensions, all to the end that the saving in manufacturing costs is not justified and the inconvenience experienced by the user is so often realized that he will purchase a plug that may be reassembled when a new extension is needed, rather than the unitary, factory assembled, sealed plug that is now available.

One of the primary aims of this invention is, therefore, to provide a plug connector that will embody all of the desirable features and characteristics of the small unitary plug, but which will, at the same time, be capable of having the cord, forming a part of the complete assembly, renewed and replaced from time-to-time with ease and convenience and without detrimental effect to any of the parts forming the connector.

Specific contours of the various inter-related parts, the manner in which they are caused to move quickly to place, and the interlocking features of the component members are all objects of the invention, the importance whereof will become apparent during the course of the following specification, referring to the accompanying drawing, wherein:

Fig. 1 is a top plan view of a replaceable plug connector for electric current conductors, made in accordance with the present invention.

Fig. 2 is a longitudinal central sectional view through the same, taken on line II—II of Fig. 1.

Fig. 3 is a cross sectional view taken on line III—III of Fig. 2.

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Fig. 4 is a longitudinal cross sectional view taken on line IV—IV of Fig. 2; and

Fig. 5 is a perspective view of the locking plug showing the same entirely removed from association with the remaining members of the connector.

In the form of the invention chosen for illustration, body 10 is of molded substance and may be of any material that is of a non-conducting nature with respect to the electric current which is to pass through the hereinafter described prongs and conductors.

Body 10 is unitary and provided with a longitudinal opening 12 that passes completely through the body from one end to the other. A pair of opposed lateral cavities 14 communicate with opening 12 intermediate the ends of body 10, as clearly illustrated in Fig. 2. Each of these cavities 14 is extended longitudinally to form a recess 16, which is in overlapping relation with opening 12. That portion of body 10 which forms recess 16 or the bottom of cavity 14, is inclined downwardly and outwardly as at 18 to provide a guide face substantially underlying the enlarged end of opening 12 at one end of body 10.

The cross sectional area of the enlarged portion of opening 12 at one end of body 10, is great enough to have a small portion of each recess 16 underlie the mouth or enlarged entrance of opening 12, and this mouth is substantially rectangular in shape as illustrated in Fig. 1. The remaining part of opening 12 may be round in cross sectional form, so long as it is of a size capable of receiving the two insulated conductors 20.

Two prongs 22, each having a resilient tongue 24 struck therefrom and formed as clearly shown in Fig. 2, are extended into the mouth of opening 12 to have their inner ends lie respectively in recesses 16. Tongues 24 are undulated or curved at their free ends to receive plug 26 therebetween when the prongs 22 lie against edges 28 of the mouth portion of opening 12. The width of this mouth portion of opening 12 is substantially the same as the width of prongs 22 and when plug 26 is in the position illustrated in Figs. 1, 2 and 4, prongs 22 will be held apart and the end of opening 12 completely closed.

Shoulders 30 integral with body 10 along two opposed sides of the mouth portion of opening 12, underlie the longitudinal opposed edges of plug 26, as clearly shown in Fig. 4. This interengagement between shoulders 30 and plug 26 as well as the snug interfitting of tongues 24 and plug 26, as clearly shown in Fig. 2, precludes accidental

displacement of the plug when the connector assembly is in use.

Notches 32 in plug 26 receive the marginal ends of tongues 24 and only the resiliency of these tongues is employed in holding plug 26 in place as a closure for the mouth or enlarged portion of opening 12.

Each prong 22 has a connecting screw 34 extending into tapped openings respectively, and these screws 34 are to the outer side of prongs 22 when the connector is assembled as illustrated in Fig. 2. The inner ends of prongs 22 are curved downwardly and outwardly as at 36 to guide the inner ends of said prongs into their respective recesses 16 and further, to move connecting screws 34 to a point beneath that part of body 10 which forms the top of cavities 14. The outward curvature of portions 36 is such as to have the inner ends of prongs 22 a distance apart great enough to strike inclined faces 18 when the prongs 22 are held together and moved into the end of opening 12. When in the condition illustrated, boss 38 of plug 26 will lie between electrical conductors or wires 20 and a self-interlocking group of members is established, the disassembling of which may be accomplished by the user of the equipment, whether he be skilled or not.

When conductors 20 are to be secured to connecting screws 34, they are threaded through the opening in prong 22 that is left below the ends of tongues 24 and thence around connecting screws 34, all as seen in Fig. 2.

Complete separation and adequate insulation is provided between the bared lengths of conductors 20 and between prongs 22 when the replaceable plug connector is assembled as above set forth.

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

In a connector plug of the character described; a body having an opening extending longitudinally therethrough, the walls of said opening adjacent one end of said body including a pair of vertical opposed flat surfaces, said body being further provided with a pair of cavities communicating with said opening, each cavity being provided adjacent its lower end with a wall portion which extends at an angle upwardly and inwardly towards said opening to form a prong-end wedging surface; a pair of spaced elongated prongs supported in said body with the lower end of each prong positioned in a respective cavity and in contact with said inclined wedging surface, the outermost faces of said prongs being in contact with said flat surfaces and the other end of each prong projecting from said body; a plug interposed between said spaced prongs, the sides of said plug adjacent said flat surfaces each being provided with an elongated notch having a bottom surface vertically opposed to the adjacent flat surface, each of said bottom surfaces being convexly curved toward the adjacent flat surface; an elongated resilient tongue integrally formed on the projecting end of each prong and extending into said opening, said tongues being bent inwardly and biased toward said plug, the portion of each tongue positioned within said opening being provided with a section opposite the corresponding adjacent flat surface, each of said sections being concavely curved to form a surface complementary to the convexly curved bottom surface of each notch, said curved tongue sections being adapted to engage the curved bottoms of said notches and support said plug, said inclined wedging surfaces of said cavities serving to force the said prongs into contact with said opposed flat surfaces.

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