Nov. 17, 1936. E. O. ERICSON 2,061,190

ELECTRIC PLUG CONNECTER

Filed Aug. 15, 1929

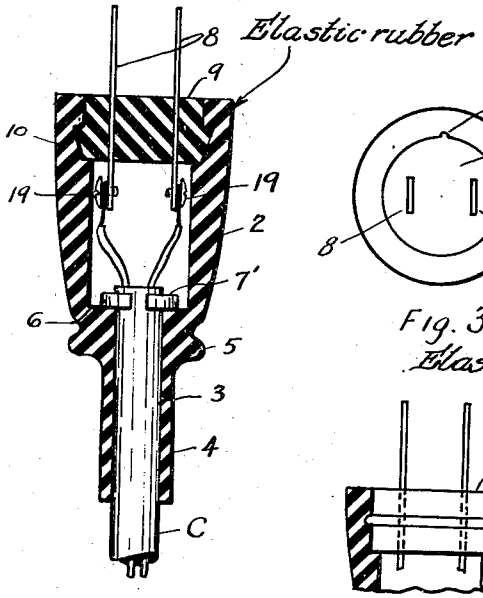


Fig. 1

Fig. 3

Fig. 4

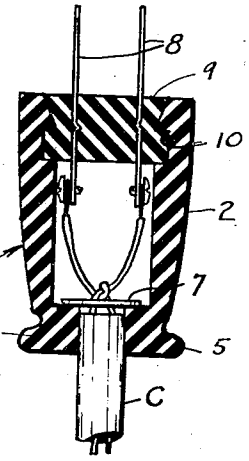


Fig. 2

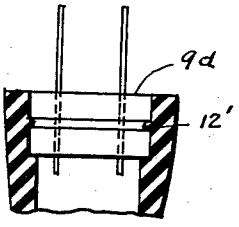


Fig. 5

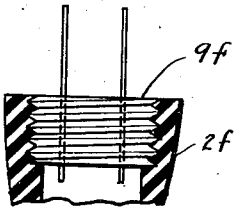


Fig. 6

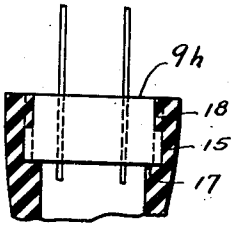


Fig. 8

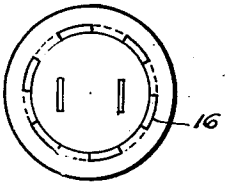


Fig. 9

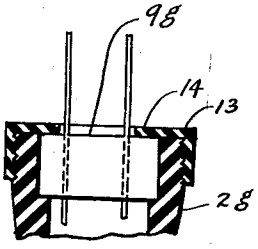


Fig. 7

Edward O. Ericson

INVENTOR

BY

Ray Oberlin & Ray

ATTORNEYS

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ELECTRIC PLUG CONNECTER

Edward O. Ericson, Cleveland Heights, Ohio

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2 Claims. (Cl. 173—361)

Connecters such as are employed for portable electric devices, are customarily of molded composition, and are subject to the objection of breakability, such difficulty occasioning more or less annoyance and delay and in some instances danger. Where the contact prongs are secured by riveting moreover, the leverage is often such as to spring the prong out of alignment, thus resulting in annoyance to the user, and frequently breakage in efforts at straightening. A construction avoiding such difficulties, and making possible a durable and well-sealed connecter is accordingly of fundamental importance and highly desirable.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain structure embodying the invention, such being illustrative however of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is an axial sectional view of a connecter in accordance with the present invention; Fig. 2 is a similar view of a modification; Fig. 3 is an end view of the same; Figs. 4, 5, 6, 7, and 8 are axial sectional views of modified forms, portions being broken away; and Fig. 9 is an end view of the construction shown in Fig. 8.

Referring more particularly to the drawing, there is shown a connecter having a shell 2 with an opening 3 to receive the conductor cable or cord. While the shape of the shell may vary considerably, ordinarily a generally conoidal form is desirable, the cord-admitting opening being at the apex end. For the further protection of the cord adjacent the point of entry, I contemplate in some instances applying also an extension sleeve 4 of flexible character. Preferably, this is in the form of a soft rubber extension, and where the entire shell 2 is made up of soft rubber or cushion rubber, as is usually desirable, such sleeve may be an integral extension from the apex end of the shell member. For ease of handling, it is desirable also in most cases to shape the end of the shell with a finger-grip enlargement 5.

Where the entire shell is made up of cushion rubber, the inlet opening for the cord will afford resiliency such as to effectively seal against the cord, thereby preventing chance entry of moisture. If the shell be made of material other than cushion rubber, a rubber bushing may be employed if desired to effect such sealing.

For relieving the conductor cable or cord of strain onto the contact connections in event that the cord be forcibly pulled, strain-relieving means may be incorporated with the cord, a ledge or internal shoulder 6 being desirably provided for this purpose within the shell, and the cord may be knotted so as to engage thereagainst, or a washer 7 may be carried on the cord and retained by a knot therein, or a ring 7' may be clamped tightly upon the cable or cord such as to seat against the shoulder 6 when drawn back into normal position.

The contact prongs 8, of suitable metal, for instance brass, are carried by a prong-supporting block 9. While such prong-carrying block may be of metal if desired, the prongs being suitably insulated in passing therethrough, by use of a suitably tough insulating bushing material, preferably the entire block is made of insulative material, as rubber, "Bakelite", fiber, etc., and the prongs may be effectively secured therein as the block is formed. By forming the contact-carrying block with the prongs anchored thereto, a highly advantageous separable unit is had, permitting changes, repairs or renewals without requirement of scrapping the entire shell also. Additional means to prevent relative turning may be provided if desired, as for instance a groove on one member to receive a projection of the other member. For example, the projection 20 may be on the prong-carrying block, and the groove or recess in the shell. I further contemplate sealing the device by engagement of the prong-carrying block with the shell, such as to exclude moisture, dirt, etc. Where the shell is of cushion rubber, a lip or inwardly directed ledge 10 may be provided near the end of the shell such that the contact carrying block 9 may be shoved into the end of the shell and snapped back of the slightly resilient lip and be held tightly therebeyond. In the event of necessity of removal, the point of a screw driver or the like can be forced down in between the block and the shell to allow of prying action and the block may be lifted up and out. The precise form of the interengaging surfaces of the block and the shell may of course vary, and as shown for instance in Fig. 4, the prong-carrying block may have a bead 12 to seat into a corresponding groove in the shell. Or vice versa, as in Fig. 5, the bead 12' may be provided on the shell, and the groove on the block 9d. Where the shell is made up of nonresilient material, a screw

threaded engagement, as in Fig. 6, may be provided, the block 9*f* and the shell 2*f* being respectively screw threaded. Or, the shell may be threaded externally, as in Fig. 7, a cap 13 being correspondingly screw threaded to engage the shell 2*g*, the cap 13 having an inwardly directed flange 14 to overlie the prong-carrying block 9*g*. Again, if desired, a bayonet-type of engagement may be had, the prong-carrying block 9*h* having peripheral projections 15 adapted to enter slots 16 (see Figs. 8 and 9), to seat down upon the ledge 17, and thereupon by a short arcuate turn, the projections 15 may be located behind the shell-digitations 18. Where such non-elastic shells are employed, the material may be of any convenient composition, "Bakelite", hard rubber, or if desired, metal may be effectively applied, the arrangement of my improved mounting particularly favoring safe insulative connection.

In the initial assembly of my improved plug, the electric cable or cord C is inserted through the opening 3 of the shell and is drawn through sufficiently to allow the manipulation of knotting or applying the strain-carrying element or abutment, and the ends of the conductors are secured to the respective inner ends of the prongs 8 by suitable means, as for instance, screws 19. The prong-carrying block is now moved back into position within the shell, snapping back into place if the shell be of elastic material, or being screw threadedly or rotatively positioned in the case of the non-resilient material shells. At the same time, the cord is drawn back, taking out the slack to the point of engagement between the strain-carrying element and the ledge 6 of the shell. The plug is now effectively sealed.

Other modes of applying the principle of the invention may be employed, change being made as regards the details disclosed, provided the means stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. An electric plug connecter, consisting of a plurality of metal prong members formed at one end as plug jacks and having at the other end terminals to receive conductor wires, an elastic hollow rubber support-body and means received in said hollow body for spacing and anchoring said metal prongs, including a block embedding and enclosing said metal prongs with the jack ends projecting from one side and the terminals projecting from the other side of said block, the thickness of said block being sufficient to anchor said prongs to said block, the terminal ends of said prong members standing free within the hollow chamber of the support body.

2. An electric plug connecter, consisting of a plurality of metal prong members formed at one end as plug jacks and having at the other end terminals to receive conductor wires, an elastic hollow rubber support-body and means received in said hollow body for spacing and anchoring said metal prongs, including a block embedding and enclosing said metal prongs with the jack ends projecting from one side and the terminals projecting from the other side of said block, the thickness of said block being sufficient to anchor said prongs to said block, the terminal ends of said prong members standing free within the hollow chamber of the support body, and wedging means on said block for spreading the support-body for entry of the block when assembled.

EDWARD O. ERICSON.