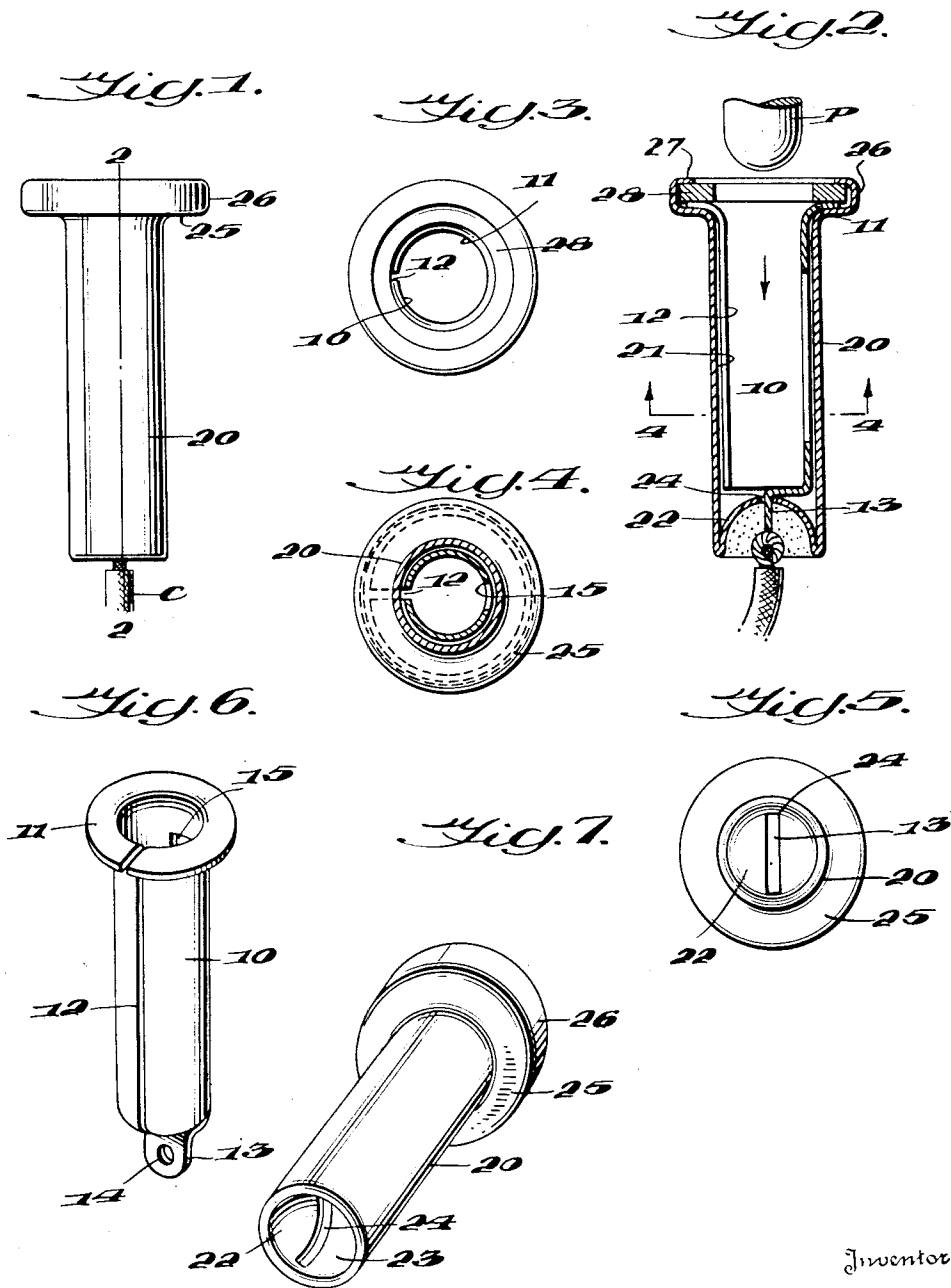


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ELECTRICAL CONNECTOR
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ELECTRICAL CONNECTOR

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The present invention relates to electrical connectors, and more particularly to socket connectors for the reception of a plug connector part, and aims generally to improve existing devices of that type.

One of the objects of the present invention is the provision of an improved connector of such construction that will avoid the occurrence of corona discharge which is detrimental to many electrical circuits.

A further object of the invention is the provision of a connector part, such as a socket part, that will have a housed or concealed connection with a circuit conductor and which will not present any sharp edges promoting the occurrence of corona discharge in high voltage circuits.

A further object of the invention is the provision of a simple and economical connector of relatively small diameter and radius of curvature that will be substantially corona-preventing when used in high frequency radio apparatus.

A still further object of the invention is the provision of an improved two-part connector for condenser terminals in television receivers.

The above and other objects of the invention will be apparent to persons skilled in the art from a consideration of the accompanying drawings and annexed specification illustrating one preferred embodiment of the invention.

In the drawings:

Fig. 1 is an enlarged side elevation of a connector part according to one preferred embodiment of the invention;

Fig. 2 is an enlarged vertical central sectional view of the connector as taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged plan view of the connector shown in Fig. 1;

Fig. 4 is an enlarged horizontal sectional view of the connector as taken on the line 4—4 of Fig. 2;

Fig. 5 is an enlarged bottom plan view of the connector as viewed from the terminal end thereof;

Fig. 6 is an enlarged detail perspective view of the plug-engaging clip part of the connector; and

Fig. 7 is an enlarged detail perspective view of the casing part of the connector.

The body of the connector comprises a clip or terminal-engaging part 10 adapted to make a slip connection with a tight friction fit with a terminal prong P which may be an electrode terminal of an electronic component. The part 10 conveniently may be in the form of an elongated sleeve having an outwardly flaring flange 11 at one end to provide an entering throat for the terminal prong P. Preferably, the sleeve is split longitudinally, as at 12, and has a normal internal diameter less than the diameter of the prong P so that a tight slip fit electrical connector with the prong P is effected. The connector part 10 thus provides a resilient split sleeve adapted to have substantially continuous surface contact peripherally with the prong P.

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The primary function of the connector is to provide a slip fit, frictionally engaging connection between the terminal prong P and another conductor of the circuit which may be an insulating circuit conductor C.

Preferably, the conductor C is electrically connected to the connector by a standard form of connection used in the trade, as for example, a soldered connection. For this purpose, the clip or part 10 may be provided with a longitudinally extending blade-like tab or wiring terminal 13 which may be apertured as at 14 to receive a looped core of the conductor C in accordance with customary practice. If desired, a portion of the sleeve 16 opposite the split or gap 12 may be slotted as at 15 to add resilience to the clip.

In high voltage circuits, such as those employed in television radio apparatus, wherein high voltages are commonly employed, there is serious danger of corona discharge at the connector. Although various factors have been advanced as to the cause of corona discharge, it is generally accepted that the presence of sharp edges and points is one of the primary factors contributing to the occurrence and extent of corona discharge. Particularly, corona discharge occurs wherein an exposed edge portion of the cross sectional dimensions is presented.

Accordingly, when the connector is employed in high voltage circuit tending to develop corona discharge, the clip or prong-engaging part 10 is encased within a shell or holder 20 of conductor material, and which completely and continuously encases the prong-engaging portion of the clip 10.

The holder or shell 20 preferably is formed as an elongated sleeve open at one end to provide a bore 31 to receive the clip or prong-engaging part 10. The opposite end of the shell or holder 20 is closed by an end wall 22 preferably concaved within the side walls of the shell to provide a recess 23. The edges joining the side walls of the shell and concaved end wall are rounded and smooth and are devoid of sharp edges.

The concaved end wall 22 is preferably provided with a flange 24 to provide a shoulder for the clip or prong-engaging part 10. The flange 24 is preferably formed with a recess 25 to receive the clip or prong-engaging part 10. The flange 24 is preferably formed with a recess 25 to receive the clip or prong-engaging part 10.

vided with a transverse slot 24 of a size to receive and pass the blade-like wiring terminal 13 so that the apertured portion 14 will be positioned in the recess 23 outside of the concaved end wall when the part 10 is positioned in the shell 20. Thus the end wall serves as a partition between the clip-receiving bore 21 and the recess 23, both of which are confined within the limits of the length of the shell or holder 20.

The diameter of the bore 21, i. e. the internal diameter of the shell, is preferably greater than the outer diameter of the body portion of the clip or sleeve so that a clearance exists between the shell 20 and the clip. The upper end portion of the shell 20 is provided with an outwardly extending annular flange 25 providing a shoulder upon which the clip flange 11 is loosely supported. The flange 25 preferably is formed with a peripheral wall 26 adapted to be clinched or upset inwardly, as at 27, over a spacer member or washer 28 outwardly of the clip flange 11 so as to hold the parts 10 and 20 in assembled relation while permitting relative expansion of the clip flange 11 on the shell flange 25. The clip or terminal-engaging part 10 is thus assembled and housed within the shell or holder 20 being restricted from axial displacement therefrom by the inwardly turned flange 27 and secured against relative rotation therewith by reason of the blade-like terminal 13 disposed in the transverse slot 24.

The soldered connection between the core of the conductor 6 with the terminal 13 of the connector is thus separated from the prong-receiving part of the connector by the end walls 22 which serves as a partition therebetween. In making this soldered connection, it is desirable that the solder fill the recess 23, thus constituting a seal for the joint between the terminal 13 and conductor C and avoiding any sharp points or projections such as promote the occurrence of corona.

It will be apparent to persons skilled in the art that the connector of the present invention is extremely simple in construction and economical in the cost of manufacture as compared with existing connectors adaptable for preventing corona discharge in high voltage connectors. The provision of a two-part connector is particularly advantageous both from the standpoint of manufacture as well as assembly.

Furthermore, as will be apparent, the liability of corona discharge at the connector is reduced to a minimum. This is due to the fact that the entire connector part 10, including the resilient prong-engaging portion as well as the terminal connection with the other conductor is completely housed within and surrounded by a continuous annular surface devoid of any sharp points or edges.

The shell 20, being of electrically conductive material, provides a continuous conductor shielding surface around the connector, thus eliminating substantially any tendency or extent of corona discharge.

While I have illustrated and described my invention with reference to one preferred embodiment thereof, I do not intend that it be limited thereto, as the scope of the invention is best defined in the appended claims.

I claim:

1. A two-piece electrical connector compris-

ing a connector part having an expansible sleeve portion open at one end for the reception of and frictional engagement with a terminal prong, a wiring terminal portion at the opposite end of said part for soldered attachment to a conductor and a corona discharge retarding tubular casing enclosing said connector part, said casing having continuous, curved, and smooth exterior surfaces surrounding the expansible sleeve and wiring terminal portion of said part, and having a partition wall adjacent one end dividing the interior of said casing into two bores, said expansible sleeve portion being disposed in one of said bores and said wiring terminal portion extending through said partition wall into the other of said bores, said other bore providing a recess adapted to be filled with solder to enclose completely the wiring terminal portion of said connector part.

2. An electrical connector comprising a connector part having a terminal prong-receiving portion at one end for frictional engagement with a terminal prong and a wiring terminal portion at the opposite end of said part for soldered attachment to a conductor and a corona discharge retarding tubular casing enclosing said connector part, said casing having continuous, curved, and smooth exterior surfaces surrounding the prong-receiving portion and the wiring terminal portions of said part and having a partition wall adjacent one end dividing the interior of said casing into two bores, said prong-receiving portion being disposed in one of said bores and said wiring terminal portion extending through said partition wall into the other of said bores, said other bore providing a recess adapted to be filled with solder to enclose completely the wiring terminal portion of said connector part.

3. A substantially corona free connector for high voltage radio-receiving apparatus and the like comprising a connector part having a terminal prong-receiving portion at one end for frictional engagement with a terminal prong and a wiring terminal portion at the opposite end of said part for soldered engagement to a conductor and a corona discharge retarding tubular casing enclosing said connector part, said casing having continuous curved and smooth exterior surfaces surrounding the prong-receiving and wiring terminal portions of said part, one end of said casing being inwardly curved providing thereby a partition wall adjacent one end of said part dividing the interior of said casing into two bores, said prong-receiving portion being disposed in one of said bores and said wiring terminal portion extending through said partition wall into the other of said bores, said other bore providing a recess adapted to be filled with solder to enclose completely the wiring terminal portion of said connector part.

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