Sept. 20, 1966 F. K. BOURHENNE 3,274,531

ELECTRICAL CONNECTOR

Filed March 16, 1964

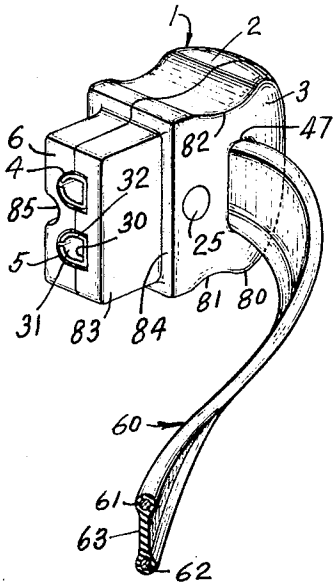


FIG. 1.

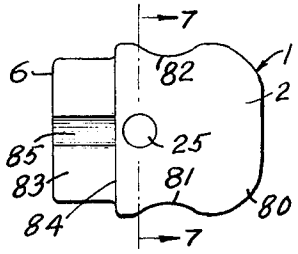


FIG. 2.

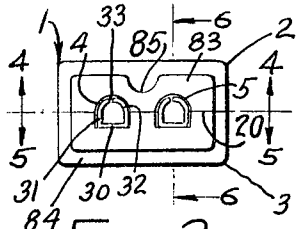


FIG. 3.

FIG. 4.

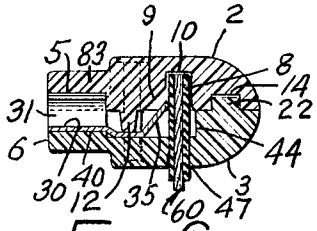
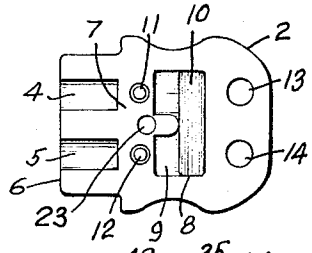


FIG. 6.



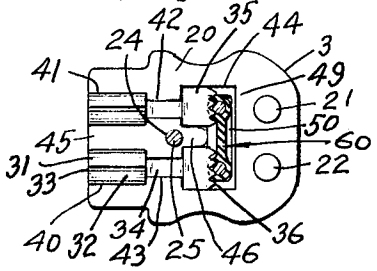


FIG. 5.

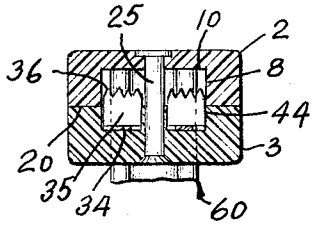
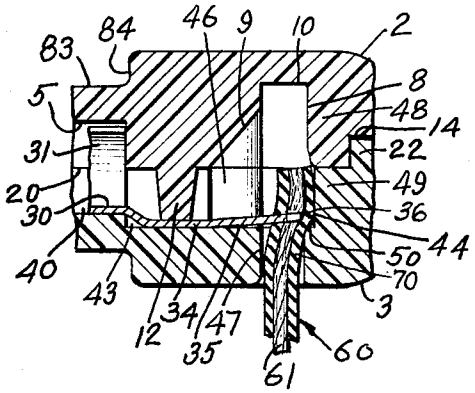


FIG. 7.

FIG. 8.



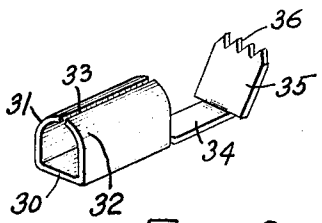


FIG. 9.

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ELECTRICAL CONNECTOR

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1 Claim. (Cl. 339—99)

The present invention relates to an electrical wiring device particularly adaptable for television antenna cable. The cable used for connecting a television antenna with a television set usually comprises a pair of spaced apart parallel wires separated a determined distance and encased within a plastic sheath such as polyethylene. For best results the pair of conducting wires are maintained at a given spacing. Stripping ends of the television cable to expose the wire conductors is often difficult of accomplishment without actually cutting the wires of the cable.

The present invention contemplates use of a socket member as well as a plug member, the socket member being so formed as to permit an end of a cable having two wires to be received within the socket member and to afford a connection with the two wires of the cable without having to first cut the cable to expose the wires. In other words, the insulation need not be stripped from the wires in the practice of the present invention.

An object of my invention is to provide a socket member for insulated cables having one or more wires and which socket member by its construction will afford positive contact with the wire or wires of the cable without prior stripping of the insulation from the wires.

A further object is the provision of a socket member or connector for electric insulated wires wherein the socket is adapted to receive therein the insulated wire when the insulated wire is moved inwardly of the socket member and which affords a contact with the wire when the wire is pulled in an opposite direction to hold the wire within the socket member and afford a good electrical connection between the socket member and the wire or wires.

Other objects include an electrical wiring device or socket member which is of simple construction, easily fabricated and assembled, inexpensive in cost of manufacture, facilitates easy connection between wires and the socket member within a minimum of time and which assures that the electrical connection is positive, will not become free and which is generally superior to socket devices or wiring devices now known to the inventor.

In the drawing:

FIGURE 1 is a perspective view partly in section showing the wiring device of the invention and a length of television cable connected thereto;

FIGURE 2 is a plan view of the outer surface of one part of the casing or housing of the wiring device;

FIGURE 3 is an elevation of the socket end of the casing or housing of the wiring device;

FIGURE 4 is a plan view looking in the direction of the arrows 4—4 of FIGURE 3 of one part of the casing or housing of the wiring device;

FIGURE 5 is an inside plan view looking in the direction of the arrows 5—5 of FIGURE 3, of a second part of the casing or housing;

FIGURE 6 is a sectional view on the line 6—6 of FIGURE 3;

FIGURE 7 is a fragmentary sectional view on the line 7—7 of FIGURE 2;

FIGURE 8 is a fragmentary sectional view on an enlarged scale, the view being similar to that of FIGURE 6, certain parts being in a moved position from that of FIGURE 6; and,

FIGURE 9 is a perspective view of a contact member used in the invention.

Referring now to the drawing, the casing or housing 1 comprises two parts 2 and 3, the casing part 2 being termed the upper part, while part 3 is known as the lower part. The upper and lower parts of the housing or casing are adapted to cooperate and the upper part 2 is provided with two half round grooves 4 and 5 on the inner plane face or surface of said part and which grooves extend from one end 6 inwardly to a wall 7. A transverse groove 8 is provided in the inner surface, the length of the groove being slightly greater than the width of a standard television cable and one bounding wall 9 of said groove is inclined from the inner wall surface of the part 2 toward the base wall 10 of the groove, as shown best in FIGURE 4. The inner wall surface of part 2 is provided with a pair of studs 11 and 12 and with a pair of shallow bores 13 and 14.

The lower casing part 3 has a plane inner surface 20 and the outline of the part conforms or matches in size the outline of part 2 thus when the parts 2 and 3 are in cooperation, as shown in FIGURES 1 and 3, the parts may be aligned. The plane surface 20 of part 3 is provided with a pair of studs 21 and 22 adapted to be received within the bores 13 and 14 of part 2 and in addition a rivet or screw and nut are provided for interconnecting the parts against separation. Thus, as shown in FIGURE 4, part 2 is provided with a transverse bore 23 in the wall 7 and a matching transverse bore is provided at 24 in part 3, there being a rivet passed between the two bores of the parts as shown in FIGURE 7 at 25.

Part 3 is formed to carry a pair of electrical contacts assuming use of the wiring device with television cable of the two wire conducting type. The contacts of the present invention are of the form shown in FIGURE 9 wherein the contact strip is formed to have a flat base 30, and a pair of wings 31 and 32 which are bent so as to provide a portion at substantially a right angle to the base followed by a curved portion which terminates in an edge. The terminating edges of the wings are spaced apart at 33. A reduced width plane neck portion extends beyond the socket portion and forms an offset extension of the base 30 as shown at 34. The neck portion in turn is provided with a prong 35 which is bent at an obtuse angle to the plane of the neck portion the prong terminating in a transverse sharp pointed serrated edge 36.

The inner face 20 of the lower casing half 3 is grooved to conform to the outline of the contact shown in FIGURE 9. In this regard the face 20 is grooved at 40 and 41 to accommodate a base 30 and the wings 31 and 32 for substantially one-half of the width of the wings as illustrated in FIGURES 6 and 8. The wings are substantially straight sided or at a right angle to the base for one-half the height of the wings. The remaining portion of the wings are curved to conform to the half-round grooves 4 and 5 of the upper half of the casing 2. Grooved portions are provided at 42 and 43 to accommodate the neck or connecting strips 34 and the grooves 42 and 43 lead to an enlarged groove 44. The form of the grooves provides a central wall 45, the surface of which lies in the same plane as the inner surface 20, which wall 45 extends into the groove 44 as indicated at 46. Thus when a contact of the type shown in FIGURE 9 is placed in position within the interconnecting grooves 41, 42 and 44, each contact, if there are more than one, is held separated by the dividing wall 45 and side play of a contact does not occur in the grooves. The lower casing part is provided with a slot 47 which is in alignment with the slot 10 when the upper and lower casing parts are in cooperative engagement as shown in FIGURE 8.

The width of groove **44** is greater than the width of groove **8** as indicated by end walls **48** and **49**, which walls are offset when the casing parts are joined together.

The operation, uses and advantages of my invention are as follows.

In the present instance, two contacts are utilized for the two part casing **1** and the contacts are arranged in parallel and placed within the grooves **41**, **42**, and **44** in one instance and **40**, **43** and **44** in the second instance. The upper casing part is joined to the lower casing part in such a manner that the studs **21** and **22** of the lower casing part enter the bores **13** and **14** of the upper casing part. The studs **11** and **12** are received in the grooves **42** and **43** and bear against the neck or connecting strips of the contacts as shown in FIGURE 8. Thus, such flexing as may occur in a contact occurs in the blade or prong **35** when flat cable of the type used for television antenna lead in, and shown at **60**, is passed through the slot **47** into the grooves **44** and **8** of the casing. As previously set forth, the television cable consists of two wires **61** and **62** held separated and in parallelism by an insulation sheath **63**. When this cable has an end passed through the slot **47** inwardly of the casing parts, the cable is pushed until it contacts the bottom wall **10** for slot **8**. The angularity assumed by the prong **35** relative to base **30** and the neck or connecting strip **34** is such as to bring the serrations **36** into engagement with the cable sheath as the cable is pushed inwardly of the casing. The angularity of the part **35** allows ready entrance of the cable into the casing but prevents withdrawal of the cable from the casing. Thus upon pulling outwardly upon the cable from the position of FIGURE 6, the part **35** will assume a greater obtuse angle relative to part **34** by penetration of the teeth **36** through the sheath for engagement with the electrical conductors or wires **61** and **62**. The fulcrum point is at the bight or angle between prong **35** and connecting strip **34** and as the cable is pulled outwardly of the casing the prong is moved in a clockwise direction to cause the sharp serrations **36** to penetrate the cable sheath and engage the wires or electrical conductors **61** and **62**. In fact, during such a revolution, the serrations approach close to the wall **49** and this approach will bend or deform the cable toward the wall **49**, as shown in FIGURE 8 at **70**. The enlarging of the slot **44** as to width and the narrow entrance slot **47** for the cable with the wall **49** offset relative to the slot **47**, together with the radius of movement allowed the prong **35** assures penetration of the cable sheath by the sharp pointed serrations **36**. Furthermore, the ledge at **50** assures that the prong **35** will not be revolved through a straight angle; that is, from a position wherein the connecting strip **34** and the prong lie in the same plane. Thus, I am at all times assured that the serrated portion **36** will penetrate the sheath of a wire or a sheath of cables for contact with the wires.

In addition to aligning the two casing parts as aforesaid, I likewise utilize the rivet **25** for securing the parts against separation, as shown in FIGURE 7.

The inclined wall **9** assures that when the cable is moved from the position of FIGURE 6 to that of FIGURE 8, the upper end of the cable may bend without wall interference.

If it becomes necessary or desirable to remove the cable from the two-part casing, the operator may push the cable inwardly which will move the end of the cable from the position of FIGURE 8 to that of FIGURE 6 and in so doing revolve the prong **35** upwardly whereupon a thin blade may be inserted through the slot **47** on the inner side of the cable for engagement with the part **35** to hold the same at its original obtuse angle. The wall **9**, due to its slope, will allow the prong to be moved to an angle greater than the original obtuse angle and thereby release the cable from engagement therewith.

In the construction of the casing, each part is provided with a head portion **80** and side concavities **81** and **82** which concavities are adapted to receive the fingers so that the casing may be gripped for ready application to a plug or removal from a plug. In addition, the casing is provided with a rectangular parallelopiped shaped portion **83** of reduced size, which extends from the base of the head portion thus providing an encircling shoulder between the base of the head portion and the portion **83** as shown at **84**. The portion **83** carries the metallic socket members and this portion is adapted to be received in or to engage a plug, not shown, which is provided with prongs for entering the sockets. In addition, the upper casing part **2** is provided with an elongated groove **85** for guiding the plug into cooperative engagement with the socket member.

I claim:

An electrical connector, for insulated wire cable, including: a casing, a flexible arm within said casing, said casing formed with a restricted cable entrance and with an enlarged cavity having an offset wall, said flexible arm designed to swing toward the restricted cable entrance to bend the cable out of line against the offset wall to effect a strain relief and a penetration of the insulation to contact the cable wire.

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