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A. R. JOHN

2,247,386

CABLE CONNECTOR

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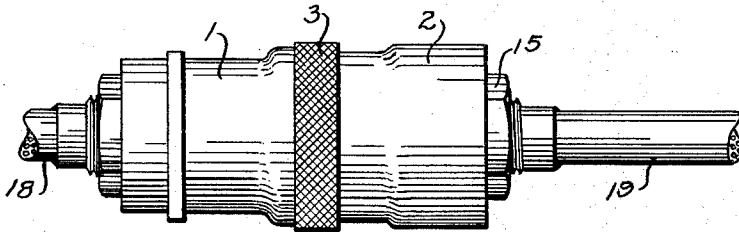


FIG. 1.

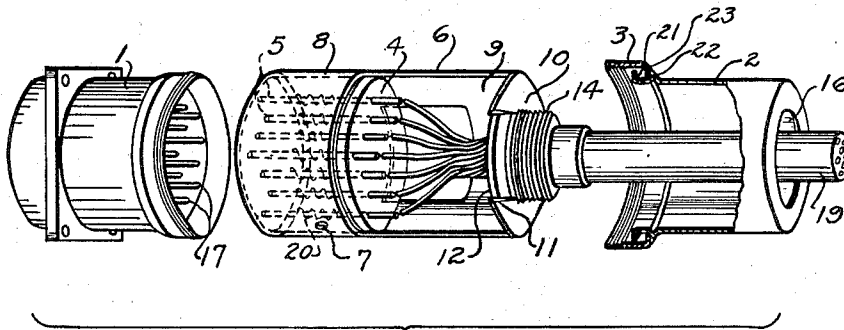


FIG. 2.

FIG. 3.

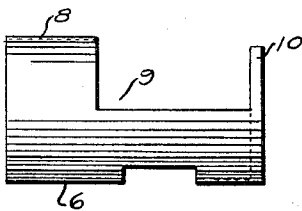
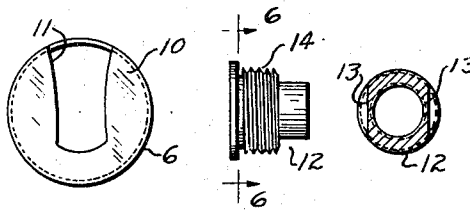


FIG. 4. FIG. 5. FIG. 6.



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## UNITED STATES PATENT OFFICE

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## CABLE CONNECTOR

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Application March 12, 1940, Serial No. 323,563

3 Claims. (Cl. 173—328)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a plug and jack for use in making an electrical coupling between one or more sets of wires in circuit.

The invention more particularly relates to electrical connectors in which the mating connector elements are housed and shielded within separate complementary metallic shield members.

It is an object of this invention to provide a sealed plug which may be readily assembled and disassembled without the use of special tools.

It is another object of this invention to provide a plug to which the cable wiring may be soldered prior to assembly.

It is another object of this invention to provide an electrical connector which is dustproof and dampproof and which can be assembled and disassembled without twisting of the cables.

It is another object of this invention to provide an electrical connector which not only permits ready inspection of the solder contacts but also permits circuit and continuity tests with the plug in partially disassembled condition but operatively connected with the associated equipment.

It is a further object of this invention to provide an assembly by which the cable wires and contact-sleeve retainer can be removed from the rear end of the plug assembly.

Other objects of invention will become apparent from the following description taken in connection with the accompanying drawing:

Figure 1 is an elevational view of the assembled plug and jack;

Figure 2 is an exploded perspective view of the plug and jack;

Figure 3 is an elevational view of the inner sleeve member;

Figure 4 is an end elevational view of the inner sleeve member showing the ferrule-receiving slot;

Figure 5 is an elevational view of the ferrule;

Figure 6 is a cross-sectional view of the ferrule taken along the lines 6—6 of Figure 5.

Referring to the drawing, the jack member is composed of housing 1 which contains male connector elements referred to generally as 17. These connector elements are suitably separated by insulating material (not shown) and have soldered thereto the wires of the cable referred to generally as 18. Housing 1 is suitably fastened to plug housing 2 by collar 3, threaded to correspond with threads on housing 1. Collar 3 is loosely carried by housing 2 between flange 21

and rib 22. Plug 4, formed of suitable insulating material, is adapted to retain connector elements generally referred to as 5. These connector elements have soldered thereto at one end thereof the individual wires of the cable 19. The other ends of the connector elements are split for frictionally receiving connector elements 5, and resiliently held together by coil spring 20. Sleeve 6 is formed with a tubular plug-receiving portion 8 and a longitudinal sectional portion 9 formed in the shape of a trough by cutting away part of the tube. This trough portion is somewhat longer than the plug 4, so that the plug can be removed therefrom with the wires soldered to the connectors without breaking the soldered connection. Plug 4 is suitably held in the tubular portion of sleeve 6 by set screw 7. Sleeve 6 also has an end plate member 10 having a radial slot 11 therein for laterally slidably receiving a ferrule 12, soldered to cable 19. The ferrule is provided with straight side portions 13 which cooperate with the sides of slot 11 to prevent rotation of the ferrule when operatively positioned with respect to the sleeve 6. The ferrule is threaded at 14 to receive nut 15 which locks the sleeve to the housing and seals the cable-receiving opening 16 in the housing.

In disassembling the device, starting with the parts as shown in Figure 1, collar 3 is unscrewed from housing 1. Since extended relative movement between collar 3 and housing 2 is prevented by flange 23 cooperating with flange 21 and rim 22, rotation of collar 3 initiates separation of connectors 17 and 5. Complete separation is effected by pulling housing 1 away from the plug assembly. Nut 15 is then unscrewed and housing 2 slid along cable 19, uncovering sleeve 6. Screw 7 is then removed from tubular portion 8 of sleeve 6, ferrule 12 slid laterally out of slot 11, and plug 4 slid longitudinally into space 9 of the sleeve 6. Contact plug 4, with the wires of the cable 19 soldered thereto, is then removable from inner sleeve 6 by lateral movement thereof.

When assembled, plug 4 is snugly received in and positioned by tubular portion 8 of sleeve 6, thereby firmly holding the connector elements 5 in position when forced into engagement with corresponding connectors 17. Since the ferrule 12 is soldered or otherwise fastened to the exterior of cable 19, positioning of the ferrule in slot 11 of end member 10 prevents relative twisting between the cable and plug 4, thereby preventing breaking the wires of cable 19 or their connection to the connector elements.

It is to be understood that the above descrip-

tion, taken in connection with the accompanying drawing, is by way of illustration only, it being intended to limit the scope of the invention only by the appended claims.

I claim:

1. In a sealed cable connector of the type having a jack unit and a socket unit and means for sealingly connecting the units, one of the said units comprising: a housing having a cable-receiving opening therein, a connector plug, 10 a connector-plug-positioning sleeve having a trough portion of greater length than said connector plug, a tubular connector-plug-receiving portion attached thereto at one end thereof and a radially slotted end portion attached to the 15 other end thereof, a cable, a cable-receiving ferrule positioned in the slot of said end portion and received in said cable-receiving opening, and means for sealingly connecting said ferrule and cable to said housing.

2. In a cable connector, an assembly including:

a housing; a sleeve member having a tubular portion, a radially slotted end portion, and a trough portion therebetween; a contact-retainer plug of less length than the length of said trough portion and operatively positioned in said tubular portion; a cable; a cable-receiving ferrule non-rotatably received in the radial slot of said end portion; and means sealingly connecting said ferrule and cable to said housing.

3. In a cable connector, an assembly including a housing; a sleeve member received in said housing, said sleeve member including a tubular portion, a radially slotted end portion, and a trough portion therebetween; a contact-retainer plug of less length than the length of said trough portion and operatively positioned in said tubular portion; a cable; and cable-carrying means receivable in the radial slot of said end portion for fastening said sleeve to said housing.

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