April 22, 1952 R. E. FARISH, JR 2,594,004

SHIELDED ELECTRICAL CONNECTOR

Filed Sept. 27, 1948

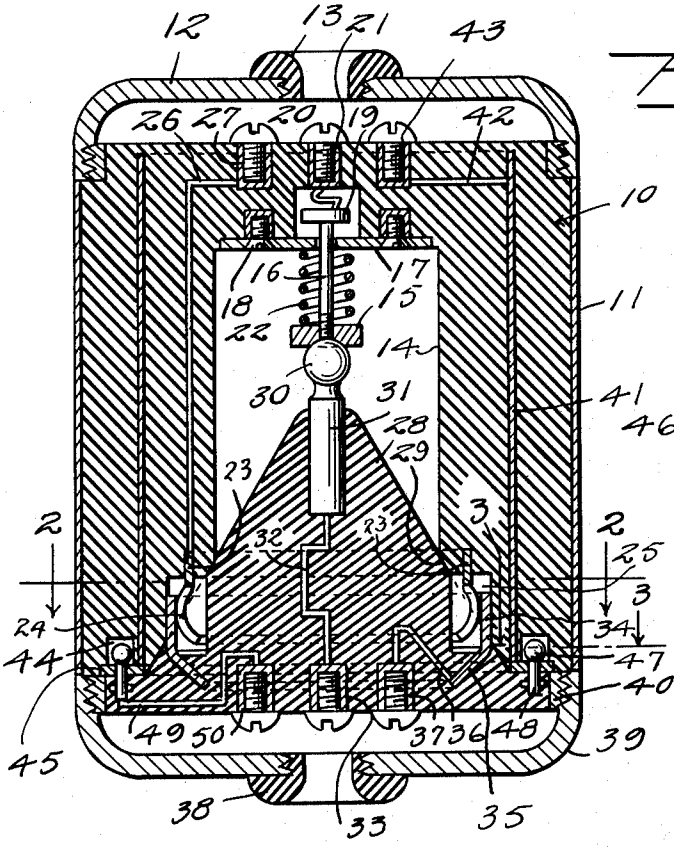


Fig. 1.

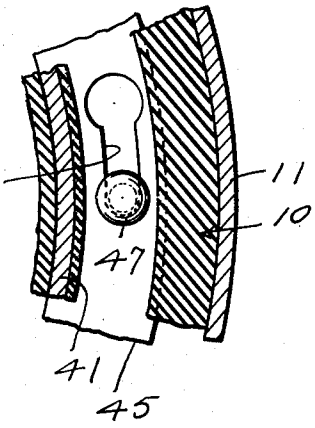


Fig. 3.

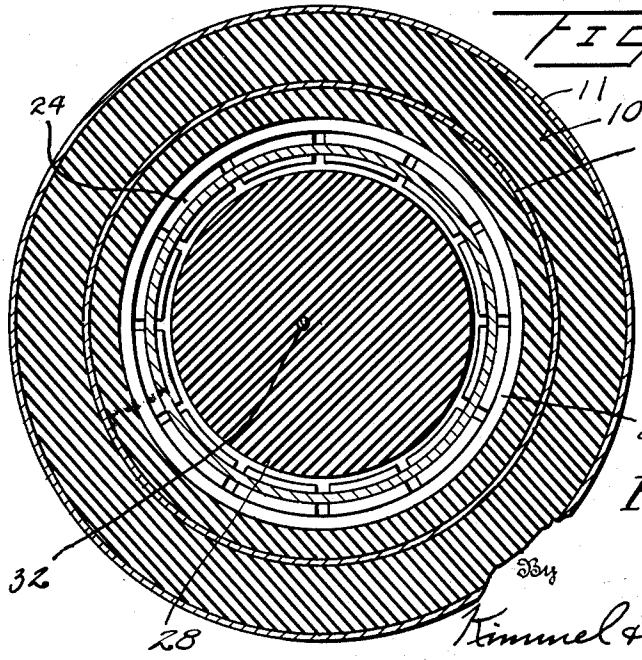


Fig. 2.

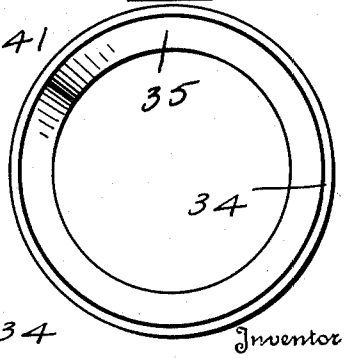


Fig. 4.

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SHIELDED ELECTRICAL CONNECTOR

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1 Claim. (Cl. 174—35)

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This invention relates to electrical connectors.

An object of this invention is to provide an electrical connector embodying three terminals, the connector being adaptable to use in radios between the microphone and transmitter and including a shield so that the radio circuit will be completely shielded.

Another object of this invention is to provide a connector of this kind including means for detachably coupling the separable parts together, the coupling means also providing separable contacts for the shielded circuit.

To the foregoing objects, and others which may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations, and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a longitudinal section of an electrical connector constructed according to an embodiment of this invention,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 1,

Figure 4 is an end elevation of the annular contact ring carried by one of the three connector parts.

Referring to the drawing, the numeral 10 designates generally an insulating body which may be enclosed in an outer jacket 11. The body 10 at one end thereof has mounted thereon a cap 12 having an opening within which an insulating bushing 13 is adapted to be positioned. The wires leading to the connector are adapted to be extended through the bushing 13 and to be connected to one set of terminals as will be hereinafter described.

The body 10 is formed with a centrally disposed socket 14 within which a spring-pressed contact member 15 is positioned. The contact member 15 is secured to a shaft 16 which extends through a plate 17 fixed by fastening means 18 to the inner end of the socket 14. The shaft 16 has fixed to its outer end a head 19 and a conductor 20 is connected between the head 19 and a central terminal 21. A spring 22 engages about the shaft 16 bearing at its inner end against the contact member 15 and bearing at its outer end against the plate 17 so as to constantly urge the contact member 15 inwardly.

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The body 10 has embedded therein adjacent the opposite end thereof a ring 23 which is formed of a plurality of bent connecting contact fingers 24 projecting into a counterbore 25 formed in the body 10. The ring 23 is connected by means of a conductor 26 to a second terminal 27 which is carried by the body 10 adjacent the terminal 21. A detachable plug 28 of conical configuration engages in a conical seat 29 formed in the body 10 and the plug 28 has fixed thereto a contact member 30 which is adapted to engage the spring-pressed contact member 15.

The contact member 30 includes a shank 31 which is embedded in the apex of the plug 28 and the shank 31 is connected by means of a conductor 32 to a terminal 33 carried by the outer end of the plug 28. A contact ring 34 having a reduced and bevelled anchoring portion 35 which is embedded in the plug 28 is adapted to engage in the chamber or counterbore 25 and to frictionally engage the connected spring fingers 24. The ring 34 is connected by means of a conductor 36 to a terminal 37 disposed adjacent the terminal 33 and the terminals 33 and 37 are adapted to be connected to a pair of electrical conductors which are extended through an insulating bushing 38 carried by a cap 39 attached to the outer flanged or base portion 40 of the plug 28.

The body 10 also has embedded therein a cylindrical shield member 41 which encircles the socket 14 and is connected by means of a conductor 42 to a terminal 43. The terminal 43 is disposed adjacent the two terminals 21 and 27. The body 10 is formed with an annular groove or channel 44 at the end thereof opposite from the terminals 21, 27 and 43 and a contact ring 45 is fixed to the adjacent end of the body 10 and is electrically connected with the cylindrical shield member 41 thereby providing a complete shield for circuits with terminals 21—33 and 27—50.

The annular contact member 45 is formed with at least a pair of keyhole slots 46 communicating with the channel 44 and a pair of headed locking members 47 carried by shanks 48 which are embedded in the flange 40 of plug 28 are adapted to detachably engage in the slots 46 so as to removably secure the plug 28 to the end of the body 10.

At least one of the coupling or locking members 47 is connected by means of a conductor 49 to a third terminal 50 disposed within the cap 39.

With a connector as hereinbefore described, a radio microphone and transmitter may be connected together by a complete shielding means

which includes the connector whereas heretofore the shielding means for the microphone and transmitter was broken at the connectors for the lines between the microphone and transmitter.

The above described shield is applicable to electrical devices such as small motors, hand power tools, refrigerators, drink boxes or the like where a third wire connection on ground is desirable.

In the use and operation of this connector, the terminals **21**, **27** and **43** are connected to a series of wires and the connectors **33**, **37** and **50** are connected to another series of wires. The plug **28** is inserted within the conical socket or seat **28** so that the contact member **30** will engage the spring-pressed contact **15**. At this time contact ring **34** will engage the spring contact fingers **24** and combined contact and locking members **47** will engage contact ring **45** and at the same time will detachably secure the cap **39** and plug **28** to the body **10**.

The connector herein disclosed will provide an explosion proof and dust-proof connector affording a polarized plug which is adaptable to either A. C. or D. C. current. The third connection may be used as a safety ground for tools or appliances. This connector is shock-proof and may be used as a convenience outlet for various appliances and will provide positive and locked connections which will prevent the separation of the connections while permitting the easy coupling or uncoupling of the connector parts.

What I claim is:

An electrical connector comprising an insulating body having a socket opening through one end thereof, said body having a tapering plug seat at the open end thereof and an annular channel between the ends of said seat, a spring-pressed contact in said socket centrally thereof,

a ring embedded in said body, a terminal electrically connected to said ring, resilient contact fingers carried by said ring and disposed in said channel, a conical plug engaging said seat, a contact at the peak of said plug engaging said spring-pressed contact, a contact ring carried by said plug engageable with said fingers, a terminal electrically connected to said contact ring, a cylindrical shield embedded in said body and circumscribing said socket, a contact ring fixed to one end of said shield and formed with at least a pair of keyhole slots, at least a pair of combined plug locking and contact members carried by said plug and engageable in said slots for detachably securing said plug in said seat on alignment thereof with said slots, a removable cap enclosing the outer end of said plug, and a second cap enclosing the other end of said body.

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