June 20, 1939. O. SCHNEIDER 2,163,412

SHIELDED CONNECTOR DEVICE

Filed July 8, 1936

Fig. 1

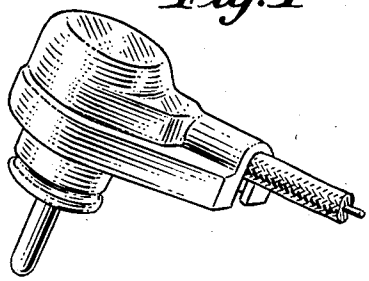
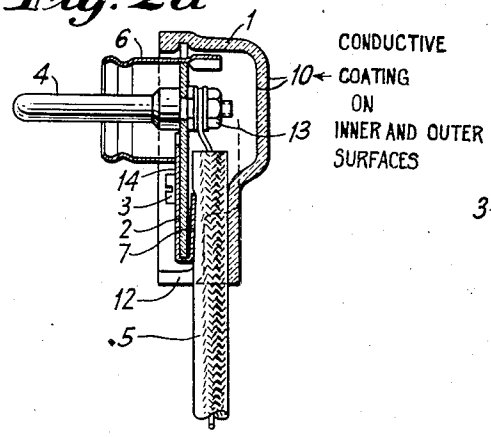


Fig. 2a



CONDUCTIVE COATING ON INNER AND OUTER SURFACES

Fig. 2b

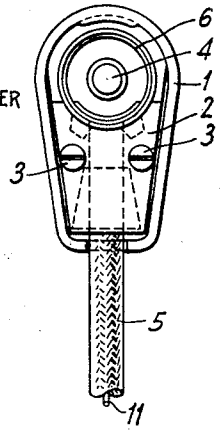
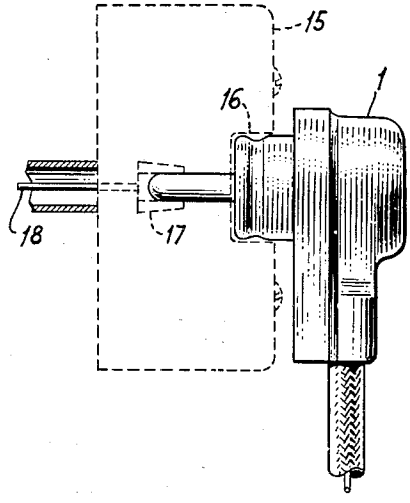


Fig. 3



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Patented June 20, 1939 2,163,412

UNITED STATES PATENT OFFICE

2,163,412

SHIELDED CONNECTOR DEVICE

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Application July 8, 1936, Serial No. 89,610
In Germany August 2, 1935

2 Claims. (Cl. 173—330)

In the installation of radio lines or conductors, special care must be taken so that they will not become subject to extraneous disturbing electrical fields. For this reason so-called shielded leads or lines have been adopted in practive. In such shielded connections of the kind in question, more particularly in broadcast installations for the antenna feeder or downlead, it is necessary that the shielding means all the way from the pick-up conductor, that is to say, the receiving aerial to the receiver proper should not present any break. Inasmuch as the use of such shielded lines or downleads has of late become popular also for installations in rooms or under similar conditions, the latter had to be adapted to the power or lighting circuits that are usually present. The radio lead, that is to say, more particularly the antenna lead, is then installed most preferably in a fixed or stationary manner and is thus brought to a socket, whence connection is established with the receiving set proper by way and means of a flexible cable fitted with a connector plug.

Now, if such a socket and plug connector device is to preclude all risks of the line being throughout safeguarded from actions of extraneous disturbing fields, then a galvanic or conducting connection must be provided between the shielding means of the fixed line and the flexible cable and socket connection. In other words, the problem arises to provide a plug and socket connection which will assure galvanic or conducting union between the two shielding means, while in addition the lead for the radio frequency energy at this point will be protected from disturbing influences.

The present invention discloses a shielded plug connection which establishes a metallic junction between the shielding means of the lead and the shielding means of the cable and plug, such that the entire line or downlead will be throughout surrounded and safeguarded by a shield.

The plug is so designed that a bipartite shell or casing made of metal insures the desired connection between the shields. The plug shell properly so-called consists preferably of an insulation material capable of being sprayed; internally, it is provided with a metallized coat applied by spraying methods known in the prior art, so as to provide a shield. This top part is closed by a metallic base plate or a plate bearing a metallized layer to which the plug contact is fastened. The RF lead is in the form of a concentric or co-axial central conductor whose shield should be connected with the case. This connection between the shield of the lead and the shell or envelope of the plug is insured by the pressing on of the metallic base plate. Satisfactory union between the shield and the socket is insured preferably by a cylindrical appendage piece which is introduced into a matching bush of the socket. Locking by spring cam pieces in the socket and a suitable part in the shell contact of the plug prevent inadvertent loosening of the contact when the cable is touched and moved, say in dusting or cleaning.

Inasmuch as such a shielded flexible cable is very liable to change its capacity values when subject to flexure, etc., the shield is made of a comparatively large diameter so that it is not particularly suited for sharp bends and flexing. However, because of the fact that it is often necessary in practice to bring the flexible cable away from the socket at right angles, it will be seen that the standard type of socket construction is frequently unsuited. Hence, the present invention discloses a plug whose prong is disposed angularly in reference to the cable that is led away so that, upon the plug being inserted, the flexible cable may, for instance, be led in downward direction without incidental flexing thereof, in fact, it will then be subject only to tractive efforts.

For a better understanding of the invention, reference is made to the accompanying drawing, in which;

Fig. 1 is a perspective view of a plug connection embodying the invention,

Fig. 2*a* is a sectional view and Fig. 2*b* a rear view of the device of Fig. 1 and,

Fig. 3 is a side view of the plug as inserted in a wall socket.

As shown, a hollow plug member 1 has an opening at its rear side in which is seated a base or mounting plate 2, these members being formed of any suitable insulation material. As shown the main plug member is coated on both its inner and outer surfaces with a metallic coating 10. The central conductor 11 of the cable which is to be connected to the radio device such as a receiver, is enclosed in a metallic shield 5, both these members entering the plug through an aperture 12 formed in one end thereof. As shown the cable 11 is secured to the end of the plug connector or prong 4 as by means of the nuts 13, the lower nut also serving to secure connector 4 rigidly to the plate 2. Attaching screws 3 pass into the main body of the plug and secure plate 2 in position and also an overlying metallic plate 14 which has an end 7 turned under the lower

end of plate 2 to make contact with shield 5 and retain it in position in the plug. To form an effective connection between shield 5 and the socket 15 of the plug a cylindrical hollow contact ring 6 is provided which surrounds the prong 4 but is insulated therefrom. Contact ring 6 engages the sides of an opening 16 in the socket or casing 15 thereby providing a conductive connection between the latter and shield 5. When in position, the end of plug 4 may enter a bushing or sleeve 17 by inward or outward pressure application to ensure satisfactory connection with the shielded antenna lead 18 which may enter the casing from the rear. The plug device described cannot be mistaken or used for a power or lighting circuit plug so that damages and injuries to the receiver are prevented.

Having described my invention, what I claim as novel and desire to secure by Letters Patent is:

1. A connector device for connecting the conductor of a shielded transmission cable to electrical apparatus comprising a cup-shaped casing of insulation material, means for shielding said casing comprising a coating of a metallic substance on at least one of the surfaces of the casing, a closure for said casing comprising a metallic plate mounted within the casing, a plug mounted on said plate but insulated therefrom whereby the plug is insulated from the coating on said casing, means within said casing for receiving the shielded cable and connecting the inner conductor thereof to the plug, a metallic contact cylindrical member secured to said metallic plate and surrounding but insulated from said plug, and a conductive connection within said casing between the shielding means of the cable and the coating of metallic substance to provide continuity between the cable surrounding means and the metallic coating.

2. A connector device for joining a conductor in one shielded cable to a conductor in another shielded cable and at the same time provide a shielded joint and conductive connections between the shielding means of the two cables and the shielding means of the joint comprising a plug connected to the end of the first named conductor which is to be joined to the other conductor, a cooperative plug receptacle connected to the end of said other conductor that is to be joined to the first named conductor, a cup-shaped casing for said plug composed of insulating material, a coating of metallic shielding material on said casing, means for securing said plug to said casing comprising a metallic cover member for the cup-shaped casing, said plug being insulated from said cover member and means supported by said cover member in cooperation with said cup-shaped casing providing a conductive connection between the shield of the first cable and the metallic layer on the casing, a cylindrical member supported on said cover member and electrically connected thereto, said cylindrical member being positioned so as to surround but not contact said plug, said receptacle including means for contacting said cylindrical member when the plug is inserted in the receptacle for providing a conductive connection between the cylindrical member and the shield of said second conductor.

OSKAR SCHNEIDER.