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# EUROPEAN PATENT APPLICATION

21 Application number: 88106241.8

51 Int. Cl.4: H01R 17/12

22 Date of filing: 20.04.88

30 Priority: 23.09.87 IT 8560787

43 Date of publication of application:  
19.04.89 Bulletin 89/16

64 Designated Contracting States:  
AT DE ES FR GB IT

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54 Adaptor for plugs connected with co-axial cables.

57 The adaptor for co-axial plugs of the invention presents two metal contact elements (20, 30) included in a base support (40; 62) made of plastic material. The old-type plug is inserted within the transversal space (50) in the connecting element.

The adaptor has two contact elements, one of them (30) connecting with the earth and presenting at least two partially cylindrical surfaces facing each other (31) and a transversal cylindrical element (33) surrounding and receiving within its interior the external part of the old-type plug, and yet another central contact element (20) receiving and transmitting the signal and presenting a central cylindrical metal part (21) and an appendix in the shape of a fork (23) or of a cylindrical tube (24), so as to establish a sure contact with the central element of the old-type plug.

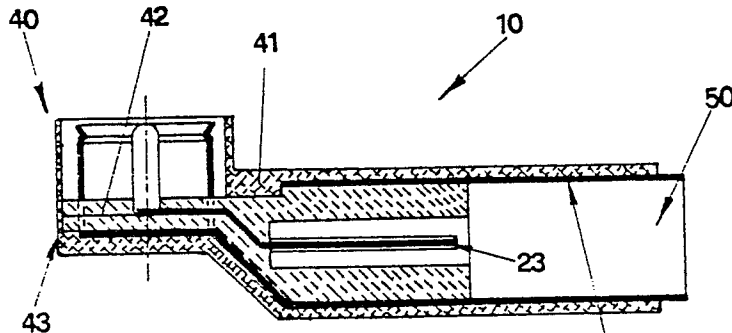


FIG. 1

## ADAPTOR FOR PLUGS CONNECTED WITH CO-AXIAL CABLES

The invention concerns an adaptor for plugs connected with co-axial cables, such as for instance antenna cables.

A recent variation in the international standardization of plugs for antenna cables has led to the replacement of the co-axial gudgeon pins having a cylindrical shape with a central metal contact protruding from the co-axial cylindrical element connected with the earth, with other types of plugs having the two co-axial contacts concentric with each other and inserted in the same annular space.

For this reason the need to create an adaptor gudgeon pin has arisen; it will allow the employment of old cables already complete with the connecting gudgeon pin foreseen by the previous standardization.

In fact one of the drawbacks lamented by the operators of this branch concerns the fact that the cables, which have already been wired and equipped with gudgeon pins connected with the antennas can not be employed with the connections of the new types of car radios which foresee a new type of antenna socket suited to be connected with the plug foreseen by the new standardization.

Therefore, with the purpose of using the already pre-assembled cables without having to replace the plugs with the old gudgeon pins, the invention foresees the realization of an adaptor allowing the use of the cables with the old type gudgeon pins for the connection with the car radios, and, at any rate, with those sets which foresee the new-type plugs.

The above-mentioned purposes are achieved with the realization of an adaptor for co-axial plugs which, in accordance with the claims, is characterized in that it presents two metal contact elements included in a basic support made of plastic material, wherein the contact connecting the earth presents two or more partially cylindrical equal surfaces, and a transversal cylindrical element which surrounds and receives the external part of a co-axial plug and wherein the central element receiving and transmitting the signal presents a metal part, inserted centrally within the transversal cylindrical element, and having a shape, such as to establish a sure contact with the central element carrying the signal.

According to a preferred form of execution of the invention, said metal part has the shape of a fork. According to another form of execution, said metal part has the shape of a tube.

Other characteristics and details will be better understood from the description of a preferred form of execution, which is given by way of example

only, but is not meant to limit the scope of the invention, such as it is represented in the enclosed tables of drawings, where:

- Fig. 1 is a cross-section of the adaptor of the invention;

- Fig. 2 shows the two metal elements constituting the adaptor;

- Fig. 3 is a variation of the metal elements of Fig. 2;

- Fig. 4 is a cross-section of the execution variation of the adaptor of the invention.

With reference to the mentioned Figures, the adaptor is indicated with 10 as a whole and it presents two metal elements, indicated with 20 and 30 as a whole, which carry the antenna signal and the earth connection respectively. In Fig. 2 it can be observed that the metal contact element 20 is made starting from a single thin sheet, cut and bent, so as to obtain the cylindrical element 21, connected at its base with a flat plate 22 and ending with an appendix in the shape of a fork 23, bent double and shaped so as to make easier the insertion of the central element of the gudgeon pin to be inserted therein. The metal element 30 is also made starting from a flat sheet, cut and bent, and it presents two partially cylindrical surfaces 31, connected with a round base, which is connected through a flat thin plate 32 with another cylindrical element 33 having an axis which is perpendicular to the axis of the two semi-cylindrical surfaces 31. Cylinder 33 is made by bending the original flat sheet, so as to obtain a tube, and it receives the external part of the co-axial gudgeon pin, so as to insure the contact with the earth.

Fig. 3 shows a construction variation of the metal contact element 20, wherein fork 23 is replaced by a tube-shaped cylinder 24, equally elastic and equally capable of insuring a good contact with the part of the old-type gudgeon pin carrying the signal.

In practise, the two elements 20 and 30 are separately pre-shaped and are then inserted into unit 40, made of plastic material and manufactured, in fact, in two subsequent phases. The first moulding concerns part 42, which is moulded open in two halves, so as to allow the easy insertion of contact 20. After contact 20 has been inserted into the plastic part 42, a second moulding is carried out, in that the previously assembled part and the metal contact 30 are set under the injection press. With the moulding of plastic part 41 the two metal contacts 20 and 30 are blocked within the basic support 40, and the adaptor 10, represented in Fig. 1 is thus obtained.

The plastic element 40 can also be moulded in a single step rather than in two phases.

It can be observed how, with the shape of the metal contact elements, as it has been described, and with the subsequent moulding of plastic element 40, a space 50 is obtained, wherein the old-type gudgeon pin, which needs to be adapted to the new-type connection, can easily be lodged.

In fact the earth connection between the gudgeon pin and the adaptor is obtained through the contact on surface 33, while the transmission of the signal is performed with the contact between the central element of the pin and fork 23 or tube 24.

It has, therefore, been observed how the adaptor element of the invention achieves the purpose for which it has been produced and how easily it is made.

An execution variation made on the basis of the same inventive idea is represented in Fig. 4, where it can be observed that the co-axial plug 60 is made without the external plastic protection.

Such variation foresees the realization of the co-axial plug 60 by connecting together the metal contact elements 20 and 30 moulding only the internal plastic part 62 and doing everything else exactly in the same way which has previously been seen and described for the realization of the co-axial plug 10.

It can be observed that the variation represented in Fig. 4 is realized by using the metal contact elements 20 and 30 represented in Fig. 2. At any rate, it is obvious that such representation has been made by way of example only, since this construction variation of the adaptor of the invention can also be realized by using the metal contact elements 20 and 30 represented in the variation of Fig. 3.

The lack of the external plastic protection wrapping the metal element 30 allows the realization of a cheaper adaptor 60. In fact, its realization allows a saving in plastic material, to which the saving resulting from a speedier execution of the injection moulding and a lower cost of execution of the corresponding moulds must be added. This, however, does not decrease the electric efficiency of the adaptor, since the non-protected metal element (30) is connected with the earth when the adaptor is in use.

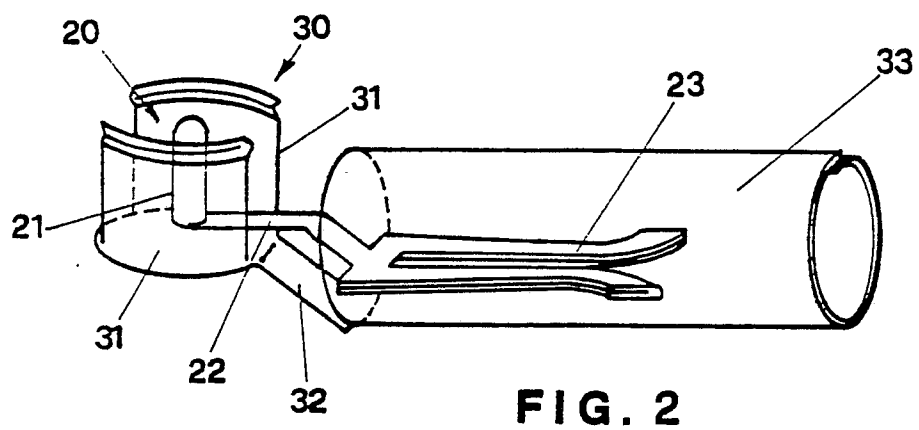
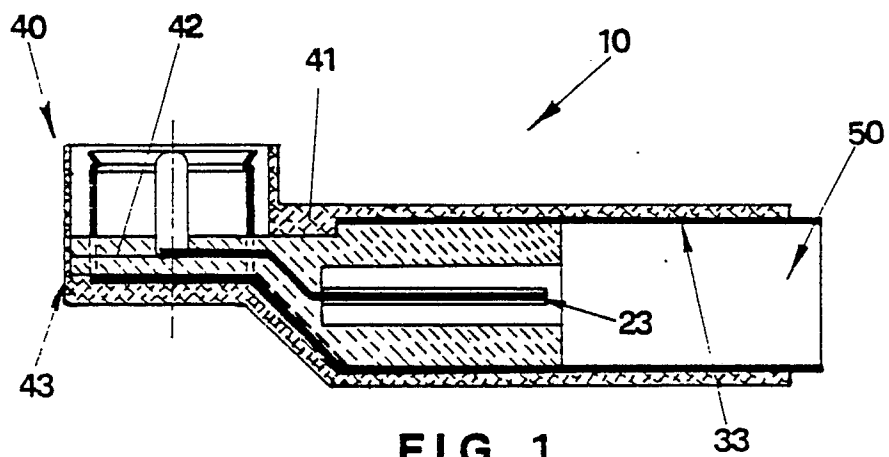
During the manufacturing process variations of a construction nature can be applied. They will, however, not exceed the scope of the invention, such as it is defined in the following claims.

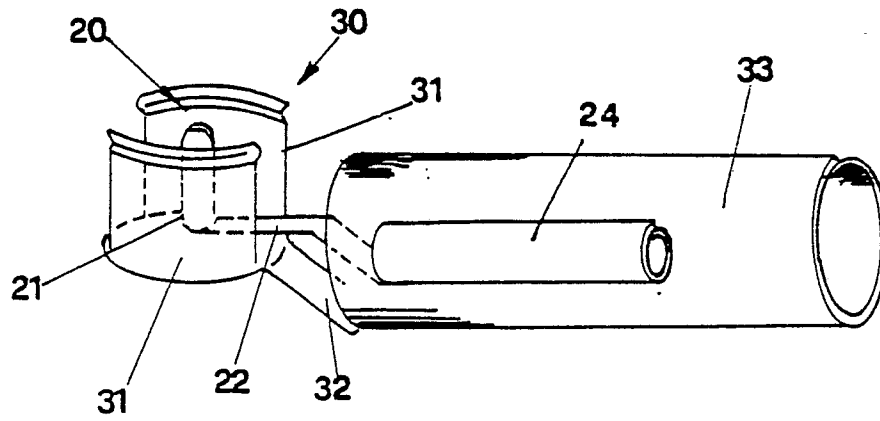
## Claims

1) An adaptor (10, 50) for co-axial plugs, characterized in that it presents two metal contact elements (20 and 30) included in a base support (40, 62) made of plastic material, wherein the contact element (30) connecting with the earth presents at least two partially cylindrical surfaces (31), facing each other, and a transversal cylindrical element (33) surrounding and receiving in its interior the external part of the co-axial plug, and wherein the central element (20) receiving and transmitting the signal presents a metal part, inserted centrally within the transversal cylindrical element (33), having a shape, such as to establish a sure contact with the central element of the gudgeon pin carrying the signal.

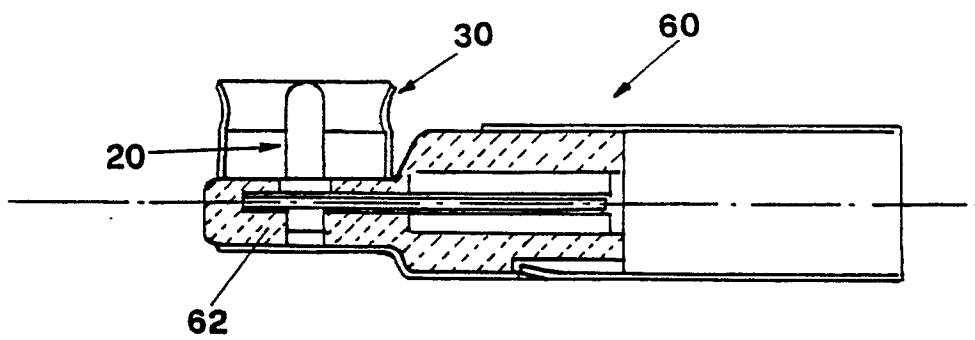
2) An adaptor (10; 50) according to claim 1, characterized in that the metal part inserted centrally within the transversal cylindrical element (33) has the shape of a fork (23).

3) An adaptor (10; 50) according to claim 1, characterized in that the metal part inserted centrally within the transversal cylindrical element (33) has the shape of a cylindrical tube (24).





**FIG. 3**



**FIG. 4**