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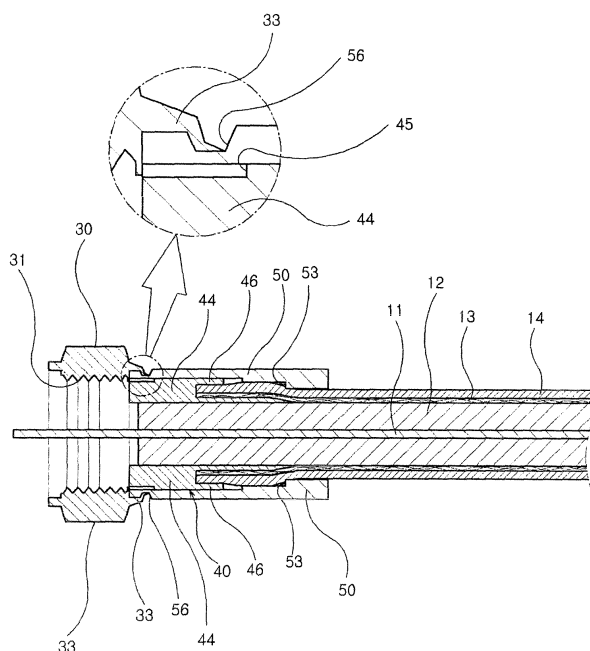
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(54) **Coaxial Cable Connector**

(57) The present invention is to provide a coaxial cable connector, which easily and firmly connects with a coaxial cable, prevents distortion of signals and is capable of re-use as it easily attaches to and detaches from the coaxial cable and provides for a coaxial cable connector connecting to a coaxial cable made of; a conductive sinew wire (11); an insulating layer (12) wrapping around and insulating the sinew wire (11) above; a conductive earthed layer (13) wrapping around the insulating layer (12) above; a conductive outer layer (14) wrapping around the earthed layer (13) above; where the connector comprises of; the above coaxial cable (10) penetrating

though its interior; a sleeve (50) with a projected part (53) formed on one inner-side of the radial form; an insert (40) which comprises a projected hook (44) formed to hook the upper part of the outer layer (14), and penetrates through the sleeve (50) into the coaxial cable (10); a connecting cap (30) which connects to the side of the above sleeve (50), and connects the coaxial cable (10) to an exterior terminal; where the insert (40) inserted into the interior of the above coaxial cable (10) extends the outer layer (14) outwards, so that separation of the sleeve (50) is prevented when the projected part (53) of the sleeve (50) is hooked held by the extended outer layer (14).

Figure 4



Description

[0001] The present invention relates to a coaxial connector.

[0002] Generally, a coaxial cable is used for transmitting video audio signals. Mostly, a terminal part, for connecting to a coaxial cable, is prepared in the terminal device for receiving video and audio signals (i.e. an AV device), and a connector is formed at the end region of the cable to connect with the terminal part mentioned above.

[0003] Figs. 1 and 2 are a disassembled perspective view, as assembled cross sectional view, respectively, of known connector. As illustrated, a coaxial cable; comprising of an insulating layer 12, an earthed layer 13 and an outer layer 14 is formed also with a cylindrical sinew wire 11 in the centre thereof. The coaxial cable connector comprises an insert 40, where the cable is inserted; a sleeve 50 for connecting the cable and the said insert 40, and a connecting cap 30 arranged for connecting the coaxial cable located within the said sleeve 50 to an external terminal device.

[0004] The insert 40 having the a sinew wire 11 and insulating layer 12 inserted therein via an inserting hole 41 inside the cylinder also offers two outer flanges 42, 43. The sleeve 50 can receive the insert 40 above, an earthed layer 13 and an outer layer 14 inserted into an inserting hole 41 inside the cylinder; a singular projection 52 can be by the inside the flange 43 of the insert 40 to prevent separation from the insert 40. The connecting cap 30 comprises a screw part 31 formed on the inside of a nut-form for connecting with an external terminal part; an annular retaining formation 32 is formed on the which engages the of the flange 43 of the insert 40 to prevent separation from the insert 40, and but which allows for rotation.

[0005] When joining the coaxial cable connector to the coaxial cable by connection, the coaxial cable is inserted into the inserting hole 51 of the sleeve 50 above, The sinew wire 11 and the insulating layer 11 of the coaxial cable are inserted into the inserting hole 41 of the insert 40, exposing the sinew wire 11 to the exterior of the connecting cap 30 above. The sleeve 50 and the coaxial cable inside are compressed by compressing the exterior of the sleeve 50 using a compressor to prevent separation of the earthed layer 13 and the outer layer 14 from the exterior of the insert 40 the sleeve 50.

[0006] However, during the process of connecting the coaxial cable connector to the coaxial cable, compressing the exterior of the sleeve 50 proves difficult and complicated, and distortion of signals carried by the cable can occur when excessive pressure is applied to the sinew wire 11 or the earthed layer 13 inside the coaxial cable.

[0007] Also, if the compressor compresses a point other than the sleeve 50 of the connector and causes distortion of conduction, the end region of the coaxial cable has to be cut out to allow for reconnection the connector.

If the sleeve 50 of the connector is already deformed, the connector becomes incapable of re-use and a new connector then has to be purchased.

[0008] The present invention seeks to provide for a coaxial cable connector having advantages over known such connectors.

[0009] In one aspect, the present invention seeks to provide a coaxial cable connector, where the connector easily and firmly connects to the coaxial cable, distortion of signals is prevented, and becomes re-usable as it is easily attached to and detached from the coaxial cable.

[0010] According to one aspect of the present invention there is provided a coaxial cable connector arranged for connecting to a coaxial cable comprising a conductive sinew wire; an insulating layer wrapping around and insulating the sinew wire; a conductive earthed layer wrapping around the insulating layer and an outer layer wrapping around the earthed layer; wherein the connector comprises a sleeve having an annular inward projection; an insert arranged to extend within the sleeve and arranged for receiving an end of the said outer layer and the insert having a formation for extending into and between the layers of the coaxial cable; a connecting cap of the cable arranged to connect to the said sleeve and to connect the coaxial cable to an exterior terminal; wherein the said formation of the insert serves to urge the outer layer outwardly so as to engage with the said annular inward projection of the sleeve for secure engagement therewith.

[0011] The invention therefore provides for a connector which easily and firmly connects with a coaxial cable, prevents distortion of signals and is capable of re-use as it easily attaches to and detaches from the coaxial cable.

[0012] Advantageously, the present invention refers to a coaxial cable connector comprising a sleeve with a projected part and an insert with a projected hook, where a connecting cap holds and prevents the insert from seceding. Differently to the previous connectors, the present connector connects with the coaxial cable without compressing the sleeve, allowing an easier connection and preventing distortion of signals.

[0013] Also, the present invention comprises of a part extended from the projected hook of the insert above to wrap around the outer layer of the coaxial cable, allowing a more firm connection between the insert and the cable by holding the sleeve with the outer layer extended from the insert and also preventing separation.

[0014] According to the present invention, when the coaxial cable is partially damaged, it can easily be disassembled by pulling the sinew wire, the insulating layer, and the earthed layer from the outer layer of the cable. The outer layer can also be easily separated from the connector, allowing the connector to be re-used on other part of the cable or on another coaxial cable.

[0015] The invention is described further hereinafter, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a disassembled perspective view of a part of a known connector;

Fig. 2 is a cross sectional view of the connector of Fig. 1;

Fig. 3 is a disassembled perspective view of the operative state of a connector embodying the present invention;

Fig. 4 is a cross sectional view illustrating the connected state of a connector embodying the present invention; and

Fig. 5 is another cross sectional view illustrating the connected state of a connector of Fig. 4.

[0016] The illustrated embodiment of the present invention relates to a coaxial cable connector connecting to a coaxial cable and in summary comprises a conductive sinew wire 11, an insulating layer 12 wrapping around and insulating the sinew wire 11, a conductive earthed layer 13 wrapping around the insulating layer 12, and an insulating outer layer 14 wrapping around the earthed layer 13. Further, the connector comprises the above coaxial cable penetrating through its interior and has a sleeve 50 with an inward annular projection 53 formed on one inner-side of a radial form; an insert 40 with a projected annular hook 44 formed to receive the end part of the outer layer 14, and penetrates through the sleeve 50 and with an annular beveled core into the coaxial cable 10; a connecting cap 30 which connects to the side of the above sleeve 50 and connects the coaxial cable 10 to an exterior terminal; where the insert 40 inserted into the interior of the above coaxial cable 10 serves to urge the outer layer 14 outwards, so that separation of the sleeve 50 is prevented when the projected part 53 of the sleeve 50 is caught by the extended outer layer 14.

[0017] The present invention also provides a coaxial cable connector comprising an extended part 46; formed on the projected hook 44 of the insert 40; to wrap around the outer layer 14 of the coaxial cable 10.

[0018] As mentioned, Fig. 3 is a disassembled perspective view of the operation state of the coaxial cable connector, Fig. 4 is a cross sectional view illustrating the connected state of the present invention, and Fig. 5 is another cross sectional view illustrating an operation state of the present invention.

[0019] As illustrated, the connector embodying the present invention comprises a sleeve 50 with a coaxial cable penetrating through the interior; an insert 40 inserted into the interior of the coaxial cable and a connecting cap 30 which connects with the above sleeve 50 and the terminal of an AV device.

[0020] With particular reference to Fig. 4, the insert 40 is cylindrical in form, and it includes the above-mentioned annular beveled core defining an inserting hole 41 in its interior, where a sinew wire 11 in the centre of the coaxial

cable and an insulating layer 12 wrapping around the sinew wire 11 are inserted, exposing the sinew wire 11 of the coaxial wire to the exterior of the insert 40. Also, a projected hook 44 is formed on the insert 40 to engage the outer layer 14 of the coaxial cable and wherein the projected hook 44 is formed on the extended part 46 of the insert 40 to extend around the outside of the outer layer 14. Therefore, the coaxial cable is more firmly installed to the insert 40 as the outer layer 14 of the coaxial cable is inserted into the above extended part 46. Further, on the lower part of the above projected hook 44 of the insert 40, a separation-preventing projection 45 is formed in the insert 40, so that separation of the insert 40 from the connecting cap 30 is prevented by hooking onto the screw part 31 as explained further below).

[0021] The above mentioned sleeve 50 is also cylindrical, and the coaxial cable is inserted into the inserting hole 51 formed on the inside. A projected part 53 formed on the lower section of the above sleeve 50, and a connecting groove 56 is formed along the cylinder form on an outer surface thereof to provide an annular recess for receipt of an engagement formation 33 of the connecting cap 30. Then, the projection 53 engages with the outer layer 14 which has been urged outwardly by the insert 40 inserted into the interior of the coaxial cable. The interior of the said sleeve 50, and in particular the annular beveled core, pressurizes diametrically the outer layer 14 toward the inner surface of the sleeve 50 and which is positioned by the projecting hook 44 of the insert 40. Therefore, the projected part 53 engages with the outer layer 14; extended out by the insert 40 inserted into the interior of the coaxial cable to prevent separation of the sleeve 50 from the coaxial cable. Also, as illustrated from a comparison between Figs. 4 and 5, the sleeve 50 is formed to be capable of moving backwards (to the right in the Figs.) from the coaxial cable so that separation preventing projection 45 of the insert 40 is caught by the screw part 31 of the connecting cap 30, and so more of the sinew wire 11 of the coaxial cable is then exposed from the connecting cap 30, easing the connection with an exterior terminal of an exterior device.

[0022] On the above connecting cap 30, a nut-form screw part 31 connecting with an exterior terminal is formed. Also, a combining part comprising the above-mentioned engagement formation 33 is formed so that a part of the connecting cap 30 encompasses the above sleeve 50, and is pressurized by a compressor to insert the combining part 33 to the connecting groove 56 of the sleeve 50 and fixing the connecting cap 30 on the sleeve 50. It also is possible to connect by a screw action since mutually cooperable screw threads can be formed on the interior of the connecting cap 30 and the exterior of the sleeve 50.

[0023] The exterior of the sleeve 50 and the connecting cap 30 can be formed hexagonally or by knurling.

[0024] The connecting process of the above described embodiment of the invention is as follows:

[0025] The coaxial cable is inserted into the sleeve 50,

after inserting insert 40 into the sleeve 50 and connecting the connecting cap 30.

[0026] As the above insert (in particular the annular bevelled core) is continuously inserted into the outer layer 14 of the coaxial cable and the projection 53 of the sleeve 50 and the insert 40 are compressed symmetrically with the outer layer 14 as the centre line, separation of the coaxial connector is effectively prevented. Also, the extended part 46 located so as to wrap around the outer layer 14 with the projecting hook 44 of the insert 40 is formed so that the insert 40 is more firmly installed to the outer layer 14, and so the coaxial cable can more firmly connect with the sleeve 50.

[0027] The invention is not limited by the descriptions and drawings of the illustrated embodiment and is capable of alteration within the range of its technical field. In particular it should be appreciated that the features of the invention described need not be provided only in the combination and configuration discussed.

layer wrapping around and insulating the sinew wire above; a conductive earthed layer wrapping around the insulating layer above; a conductive outer layer wrapping around the earthed layer above; where the connector comprises of; the above coaxial cable penetrating through its interior; a sleeve with a projected part formed on one inner-side of the radial form; an insert which comprises a projected hook formed to hook the upper part of the outer layer, and penetrates through the sleeve into the coaxial cable; a connecting cap which connects to the side of the above sleeve, and connects the coaxial cable to an exterior terminal; where the insert inserted into the interior of the above coaxial cable extends the outer layer outwards, so that separation of the sleeve is prevented when the projected part of the sleeve is hooked held by the extended outer layer.

Claims

1. A coaxial cable connector arranged for connecting to a coaxial cable comprising a conductive sinew wire; an insulating layer wrapping around and insulating the sinew wire; a conductive earthed layer wrapping around the insulating layer and an outer layer wrapping around the earthed layer; wherein the connector comprises a sleeve having an annular inward projection; an insert arranged to extend within the sleeve and arranged for receiving an end of the said outer layer and the insert having a formation for extending into and between the layers of the coaxial cable; a connecting cap of the cable arranged to connect to the said sleeve and to connect the coaxial cable to an exterior terminal; wherein the said formation of the insert serves to urge the outer layer outwardly so as to engage with the said annular inward projection of the sleeve for secure engagement therewith.
2. A coaxial cable connector as claimed in Claim 1, wherein the insert is provided with an annular beveled core for receipt of the sinew wire and insulating layer and insertion into the cable.
3. A coaxial cable connector as claimed in Claim 1 or 2, wherein the sleeve is arranged for longitudinal movement relative to the insert and the cable.
4. A coaxial cable connector as claimed in Claim 3 wherein the insert includes a formation for arresting movement of the connecting cap and thus that of the sleeve relative to the insert and cable.
5. A coaxial cable connector connecting to a coaxial cable made of; a conductive sinew wire; an insulating

Figure 1

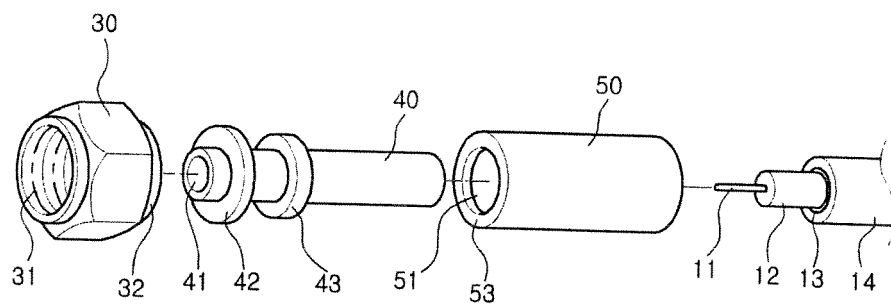


Figure 2

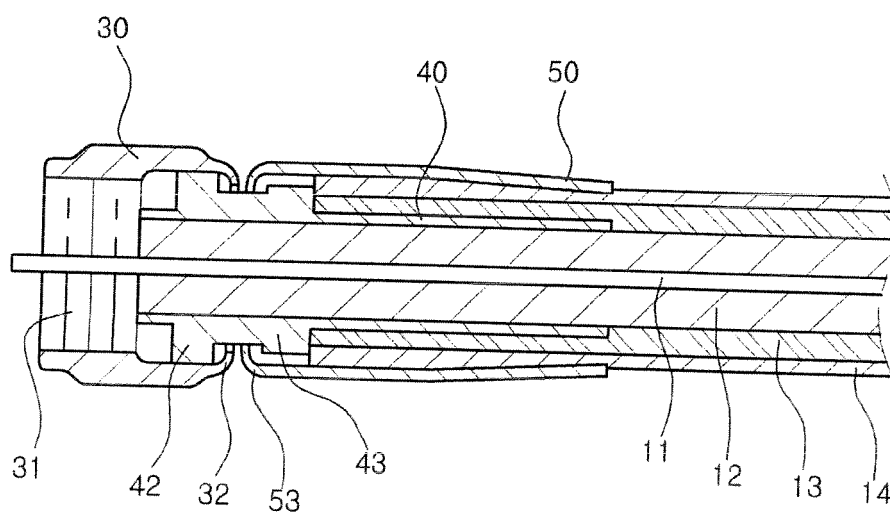


Figure 3

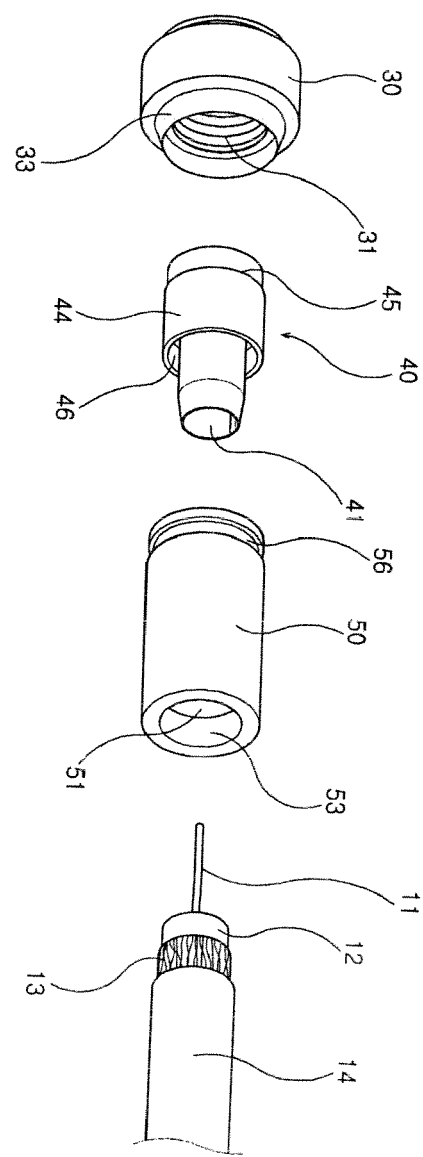


Figure 4

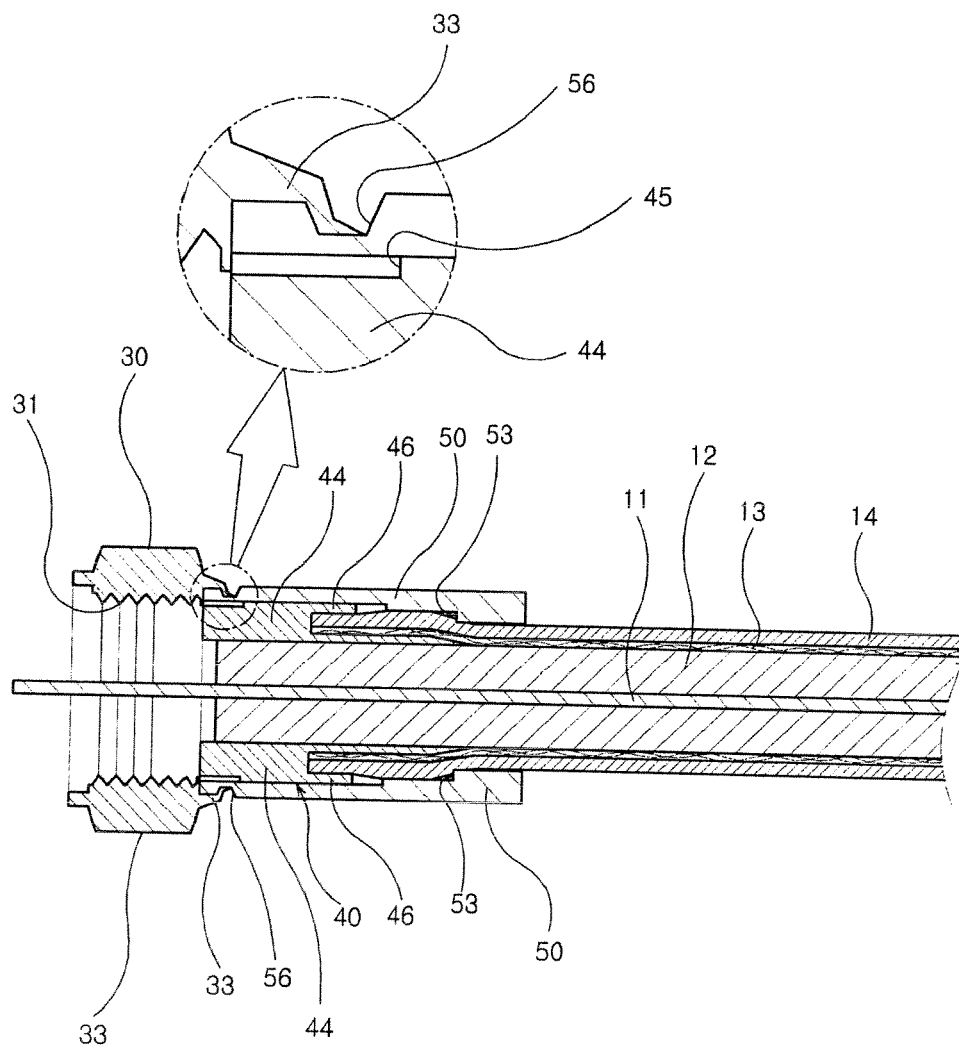
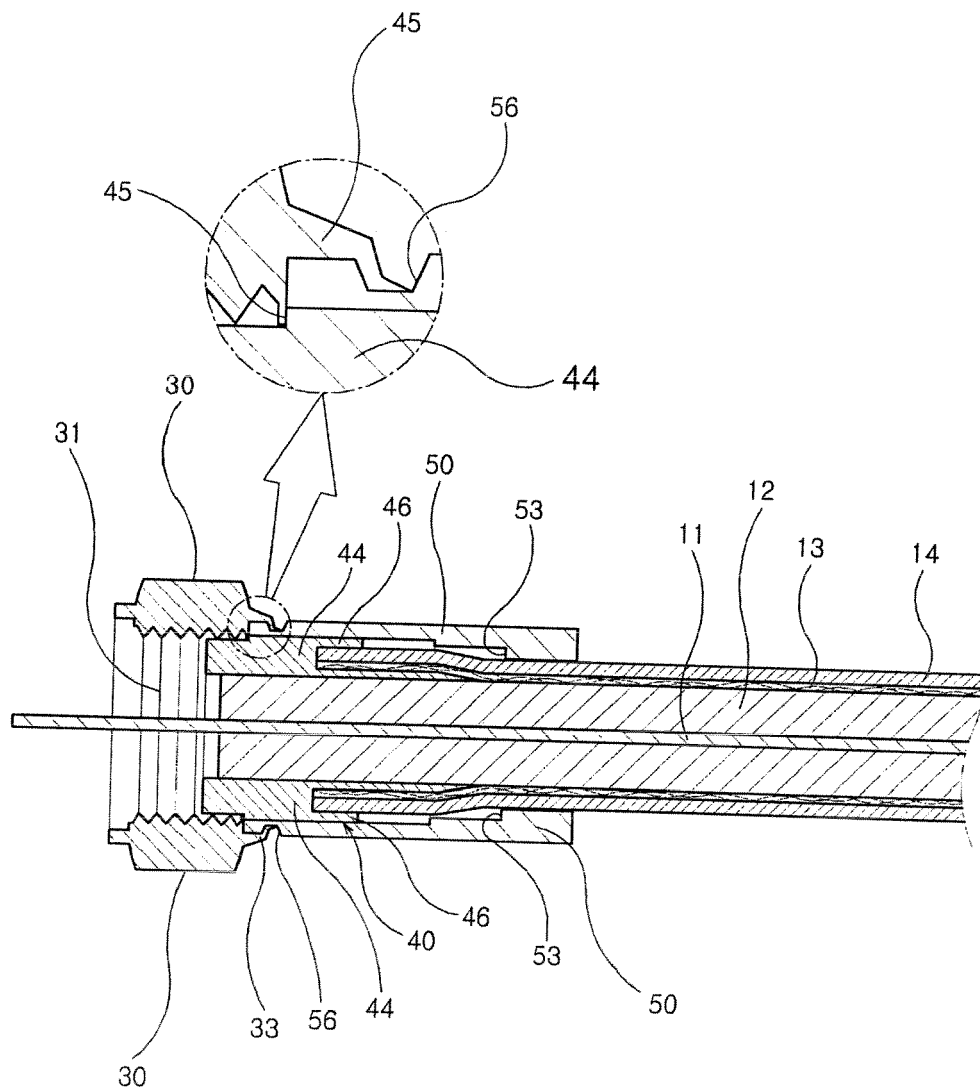


Figure 5





EUROPEAN SEARCH REPORT

Application Number
EP 08 16 2266

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 210 222 B1 (LANGHAM ARVIN L [US] ET AL) 3 April 2001 (2001-04-03) * the whole document *	1-5	INV. H01R9/05
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 January 2009	Examiner Corrales, Daniel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 16 2266

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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