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(54) **THREADED CONNECTOR FOR COAXIAL CABLES**

(57) The present invention relates to a connector for coaxial cables, comprising a head (2) to connect with an implementation device and a tubular body (3) provided with an inner thread (4) for threaded coupling on a coaxial

cable (1) to be connected, and wherein the body (3) incorporates on the outer portion one or more formations by way of fins (5) that extend longitudinally with respect to said body (3).

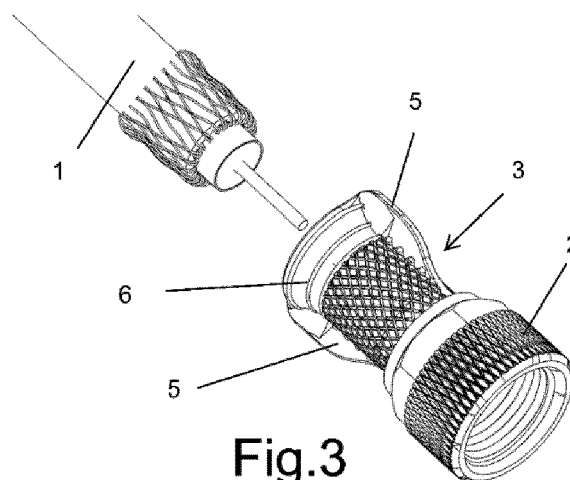


Fig.3

Description

Technical field

[0001] The present invention relates to the connection of coaxial cables that are used to transport the electrical signals of electronic devices, proposing a connector intended for said connections, with which advantageous features are obtained for the handling of the assembly of the connections in suitable safety conditions.

State of the art

[0002] The coaxial cables that are used to transport electrical signals of electronic devices consist of a concentric composition formed by a central conductor and a tubular shield that is usually made up of a mesh braided with conductive wires, with a layer of insulating material between both conductors and a cover that is also insulating around the whole assembly.

[0003] Conventionally, said coaxial cables are connected to the implementation devices through connection ports that ensure mechanical retention and electrical connection, there being a type of connection port with which the coaxial cable does not need any connector, the implementation device being that which has the means for connection, by means of flanges, clamps, screws, springs, etc., while other types of connection ports require the incorporation of a connector at the end of the coaxial cable to establish coupling with respect to the connection port incorporated in the implementation device.

[0004] The connectors that are arranged in the coaxial cables for coupling with respect to the ports of the implementation devices are, in turn, made up of a central conductor, which can be the same as the coaxial cable or a metal tip that is electrically connected to said central conductor of the coaxial cable, and a tubular outer conductor that is electrically connected to the shielding of the coaxial cable, the connector having at one end a coupling means for coupling to the port of the implementation device and at the other end a coupling means for coupling to the coaxial cable.

[0005] The means of the connector for coupling with the coaxial cable may be, for example, compression or crimping, requiring the use of tools, or it may be of a type that does not require tools, for example, threaded coupling or locking washers.

[0006] Threaded coupling connectors for coupling to coaxial cables have a coupling head for coupling to the device with respect to which the connection has to be established and a body for coupling to the coaxial cable, said coupling body for coupling to the coaxial cable having an inner thread, while the exterior has a surface with a rough configuration in order to be able to exert the necessary effort with the fingers to perform the assembly threading on the coaxial cable without the need to use tools.

[0007] An example of a threaded coupling connector is disclosed in patent document EP0549090A2.

[0008] However, the coupling assembly of the connector with respect to the coaxial cable requires a rotational movement for the threading and an axial thrust for the linear advance on the coaxial cable, since the outer cover of the coaxial cables does not have sufficient consistency in order for the linear advance of the coupling to be produced only by the rotation of the thread, which requires strong pressure to be applied with the fingers on the rough outer surface of the body of the connector, making the assembly of the coupling difficult.

Object of the invention

[0009] In accordance with the present invention, a connector for coaxial cables is proposed, the embodiment of which has been developed with features that facilitate handling for the assembly of the threaded coupling on the coaxial implementation cable, minimising the pressure effort that must be made with the fingers on the body of the connector to achieve a safe and effective coupling.

[0010] This connector object of the invention comprises at one end a coupling head for coupling to the implementation device to which it has to be connected and at the other end a tubular coupling body for coupling to the coaxial cable to be connected, said tubular body having an inner thread, while on the outer portion it incorporates projections that serve as a support to exert with the fingers the rotation force in the coupling assembly on the coaxial cable with respect to which the connector has to be incorporated.

[0011] Said projections on the outer portion of the body of the connector comprise formations by way of fins that extend longitudinally with respect to the body of the connector.

[0012] A connector is thus obtained which, for handling the assembly on the coaxial cable to which it has to be coupled, allows the fingers to be supported on the formations by way of fins to exert the rotation force for the threaded assembly of the coupling of the connector on the coaxial implementation cable, thereby minimising the pressure that must be applied with the fingers on the body of the connector.

[0013] Furthermore, it is intended that the projections incorporated by the connector on the outer portion thereof comprise an additional formation by way of an annular projection that protrudes radially outwards, in particular, at the end of the body of the connector. This formation by way of annular projection serves as a support to exert with the fingers the linear advance force in the coupling assembly on the coaxial cable, in addition to the rotation force that is exerted with the fingers on the formations by way of fins that serve as a support to exert the rotation force with the fingers. In this way, the pressure that must be applied with the fingers on the body of the connector is also minimised in the direction of linear advance.

[0014] The number of formations by way of fins on the

outer portion of the body of the connector, as well as the configuration of said formations by way of fins and the positioning thereof on the body of the connector, can be variable, while the formation by way of annular projection of the end of the body of the connector can also have a variable configuration and be continuous or discontinuous in the circumference of the end of the body of the connector, an embodiment being intended in which said formation by way of a radial projection determines a substantially conical aperture or opening with a substantially conical inlet surface towards the inside of the body of the connector, which facilitates the insertion of the coaxial cable for its entry into the connector in the coupling assembly. In this context, "substantially conical" is understood as funnel-shaped to facilitate the insertion of the cable, intending that it may be conical, preferably convex, without ruling out that it may be straight or concave.

[0015] An embodiment is also intended in which the formations by way of fins extend beyond the end of the body of the connector, over the body of the connector and/or from the end of said body. In particular, it is intended that the formations by way of fins extend beyond the end of the body of the connector, determining protruding formations that are configured by way of a spanner for nuts, with which the head of other connectors in the coupling on the implementation devices of the connections can be tightened or loosened.

[0016] As such, the connector object of the invention has very advantageous features for the threaded coupling assembly on coaxial cables, taking on a life of its own and preferential nature with respect to conventional connectors with said function.

Description of the figures

[0017] An embodiment according to the invention is described below by way of non-limiting example referring to the following figures.

Figure 1 shows an exemplary embodiment of a connector for coaxial cables, according to the object of the invention, viewed from the side.

Figure 2 is a perspective view of the same connector for coaxial cables seen from the insertion part of the coaxial cable to be connected.

Figure 3 is an exploded perspective view of the connector for coaxial cables in a correlative coupling position with respect to a coaxial cable to be connected. Figures 4, 5 and 6 show other exemplary embodiments of the connector for coaxial cables, according to the invention, with different configurations of the formations by way of outer fins of the body of the connector.

Figure 7 shows an exemplary embodiment of the connector for coaxial cables, according to the object of the invention, with the formation by way of annular projection of the end of the body of the connector only partially occupying the circumferential contour

of said end of the body of the connector.

Figure 8 is a profile view of an exemplary embodiment of the connector for coaxial cables, according to the invention, with formations axially projecting beyond the end of the body of the connector, determining by way of a spanner for nuts.

Detailed description of the invention

[0018] The object of the invention relates to a connector for coaxial cables (1) of those used for the transport of electrical signals of electronic devices, comprising a head (2) for the connection, generally by threaded coupling, to the device on which the connection is to be established, and a tubular body (3) intended for coupling on the coaxial cable (1) to be connected, said body (3) internally having a thread (4) to establish the coupling on the coaxial implementation cable (1) by threaded assembly.

[0019] According to the invention, the body (3) of the connector incorporates support projections for the fingers on the outer portion to facilitate the rotation and linear advance action in the threaded coupling assembly of the connector on the axial implementation cable (1), comprising for this purpose formations by way of fins (5) that extend longitudinally on said body (3) of the connector and a formation by way of annular projection (6) that protrudes radially outwards at the end of the body (3) of the connector.

[0020] With this structure, the formations by way of fins (5) allow the support of the fingers in order to exert the rotation force on the threaded coupling assembly of the connector on the coaxial implementation cable (1) and to do so there may be one or more of said formations by way of fins (5), a preferred embodiment being intended with two formations by way of fins (5) located in diametrically opposite positions on the body (3) of the connector, although such an embodiment is not limiting, since with a single one or another number of such formations by way of fins (5) on the body (3) of the connector, the function of facilitating the action of rotation for the threaded coupling of the connector on the coaxial implementation cable (1) is also achieved.

[0021] The formations by way of fins (5) can also have different configurations, for example, an ergonomic configuration to favour the support of the fingers and thus be able to apply the rotation force more comfortably and using less effort, or a symmetrical configuration, such as in the example of figure 5; said formations being able to extend over the entire length of the body (3) of the connector, as in the example of figure 4, or only a partial extension over said body (3) of the connector, as in the examples of figures 1 and 2.

[0022] Furthermore, the aforementioned formations by way of fins (5) can extend straight in the longitudinal direction of the body (3) of the connector or they can extend with a certain obliquity and have curves, as in the example of figure 6.

[0023] In the structural aspect, the aforementioned formations by way of fins (5) can be of the same material as the connector and be formed together with it, but they can also be overlaid and be attached to the body (3) of the connector by any fastening means.

[0024] The formation by way of annular projection (6) of the end of the body (3) of the connector is preferably intended, where appropriate, with a concave shape on the outer portion facing the external surface of the body (3), to facilitate the support of the fingers in the thrust action to exert the linear advance force of the connector in the assembly coupling on the coaxial implementation cable (1), accompanying in said action the rotation movement of the threading.

[0025] Said formation by way of annular projection (6) is also preferably intended occupying the entire circumferential contour of the end of the body (3) of the connector, as in the examples of figures 1 to 6, but it can also have a formation that only partially occupies the circumferential contour of the end of the body (3) of the connector, as in the example of figure 7.

[0026] In any case, this formation by way of annular projection (6) of the end of the body (3) of the connector determines on the inner portion a substantially conical aperture (7) that facilitates the insertion of the coaxial implementation cable (1) in the connector, for the assembly coupling between the two.

[0027] Furthermore, as shown in figure 8, an embodiment is intended wherein the body (3) of the connector is extended with formations (8) that protrude axially at the end, preferably extending from the formations by way of fins (5), without this embodiment being limiting, configuring said protruding conformations (8) by way of a spanner for nuts, which can be used, for example, to tighten or loosen the threaded assembly of other connectors in their coupling to the devices with respect to which they have to be connected.

[0028] The formations by way of fins (5), intended to support the fingers in the action of the threaded coupling assembly of the connector on the coaxial cable (1) to which it has to be connected, and the formation (6) by way of annular projection, intended to support the fingers in the thrust action for the linear advance of the connector on the coaxial cable (1), are, however, compatible with other conventional features of connectors of this type to facilitate the action with the fingers on the connector for the threaded mounting thereof on the coaxial implementation cables (1), such as, for example, the configuration of the outer surface of the body (3) of the connector with a pattern of projections and/or recesses (9) to facilitate the gripping thereof, for example knurled, or other forms of roughness.

Claims

1. A connector for coaxial cables, comprising a head (2) to connect with an implementation device and a

tubular body (3) provided with an inner thread (4) for threaded coupling on a coaxial cable (1) to be connected, **characterised in that** the body (3) incorporates on the outer portion one or more formations by way of fins (5) that extend longitudinally with respect to said body (3).

2. The connector for coaxial cables, according to claim 1, **characterised in that** the formations by way of fins (5) extend over the entire length of the body (3).
3. The connector for coaxial cables, according to claim 1, **characterised in that** the formations by way of fins (5) only extend over part of the length of the body (3).
4. The connector for coaxial cables, according to one of claims 1 to 3, **characterised in that** the formations by way of fins (5) extend with a certain obliquity over the body (3).
5. The connector for coaxial cables, according to one of claims 1 to 4, **characterised in that** there are two formations by way of fins (5) located in diametrically opposite positions on the body (3).
6. The connector for coaxial cables, according to one of claims 1 to 5, **characterised in that** the formations by way of fins (5) are made of the same material as the connector and are formed using it.
7. The connector for coaxial cables, according to one of claims 1 to 5, **characterised in that** the formations by way of fins (5) are overlaid and are attached to the body (3) by a fastening means.
8. The connector for coaxial cables, according to one of the preceding claims, **characterised in that** it comprises a formation by way of an annular projection (6) that protrudes radially outwards with respect to the tubular body (3).
9. The connector for coaxial cables, according to claim 8, **characterised in that** the formation by way of annular projection (6) is arranged at the end of the tubular body (3).
10. The connector for coaxial cables, according to claim 9, **characterised in that** the formation by way of annular projection (6) determines in the inner portion a substantially conical aperture (7) for entry into the body (3).
11. The connector for coaxial cables, according to one of claims 8 to 10, **characterised in that** the formation by way of annular projection (6) has a concave shape on the outer portion facing the external surface of the body (3).

12. The connector for coaxial cables, according to one of claims 8 to 11, **characterised in that** the formation by way of annular projection (6) occupies the entire circumferential contour of the body (3). 5
13. The connector for coaxial cables, according to one of claims 8 to 11, **characterised in that** the formation by way of annular projection (6) only partially occupies the circumferential contour of the end of the body (3). 10
14. The connector for coaxial cables, according to one of claims 1 to 13, **characterised in that** the body (3) is extended with formations (8) that protrude axially at the end, which are configured by way of a spanner for nuts. 15
15. The connector for coaxial cables, according to one of claims 1 to 14, **characterised in that** the body (3) has an outer surface configured with a pattern of projections and/or recesses (9) to facilitate the gripping thereof. 20

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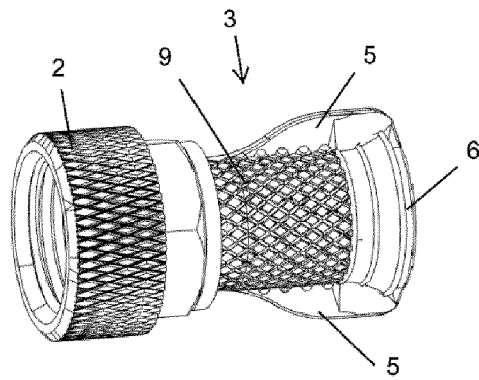


Fig.1

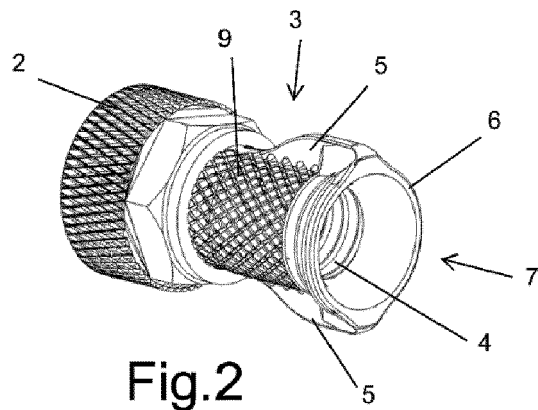
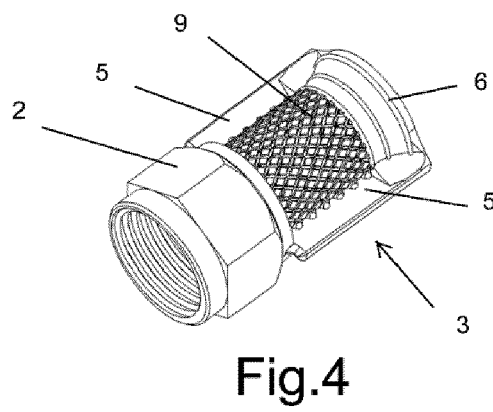
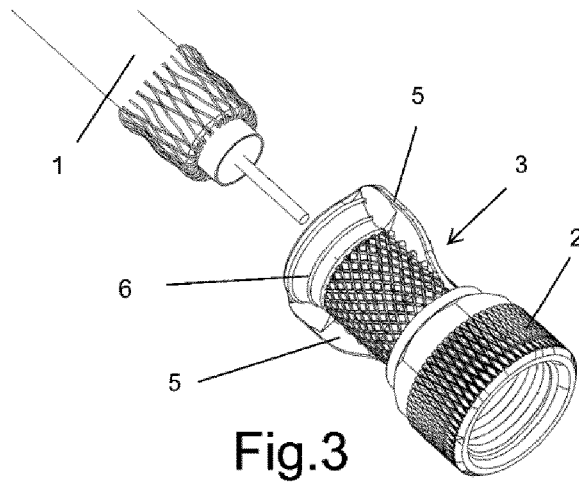


Fig.2



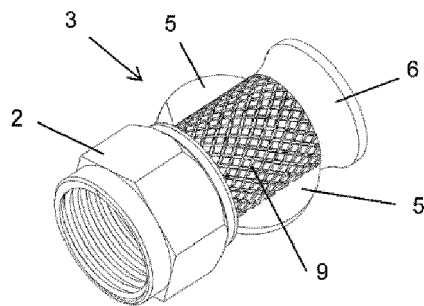


Fig.5

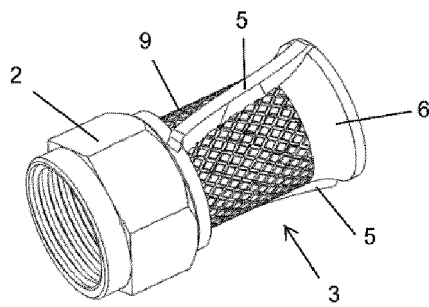


Fig.6

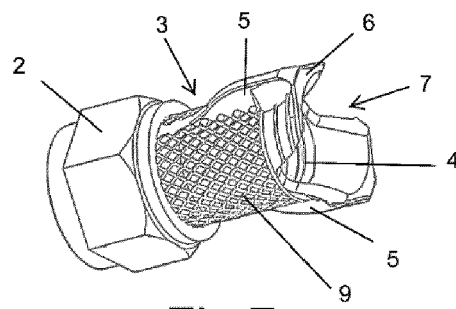


Fig.7

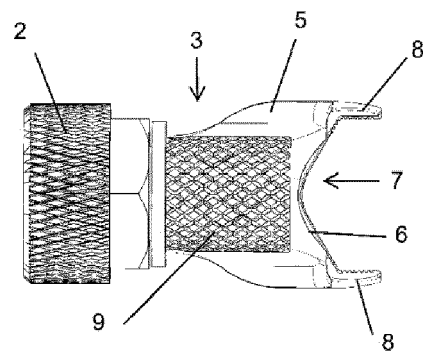


Fig.8



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Application Number

EP 22 18 5307

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The present search report has been drawn up for all claims			

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EPO FORM 1503 03.82 (P04C01)

Place of search	Date of completion of the search	Examiner
The Hague	9 December 2022	Skaloumpakas, K
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		

**ANNEX TO THE EUROPEAN SEARCH REPORT
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