(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 117 119 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
11.01.2023 Bulletin 2023/02

(21) Application number: **21382623.3**

(22) Date of filing: **08.07.2021**

(51) International Patent Classification (IPC):
H01R 4/30 *(2006.01)* ***H01R 4/36*** *(2006.01)*
H01R 9/24 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
H01R 4/305; H01R 4/36; H01R 9/2416

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) ELECTRICAL CONNECTOR

(57) The invention corresponds to the technical field of electrical connectors having electrically conductive connections which trap the cable inside by means of a screw and comprising a body (1) with at least two electrically conductive connections (2), each having at least a first hole (3) for the insertion of one of the conductors (4) of the cable (5), and at least a second threaded hole (6) intersecting with the first hole (3) for the insertion of a screw (7) for fixing the said conductor (4), wherein for each of the two electrically conductive connections (2) the body (1) comprises an access channel (8) to the first hole (3) such that the conductor (4) can be inserted into the said access channel (8) from the same direction in which the screw (7) is inserted during assembly.

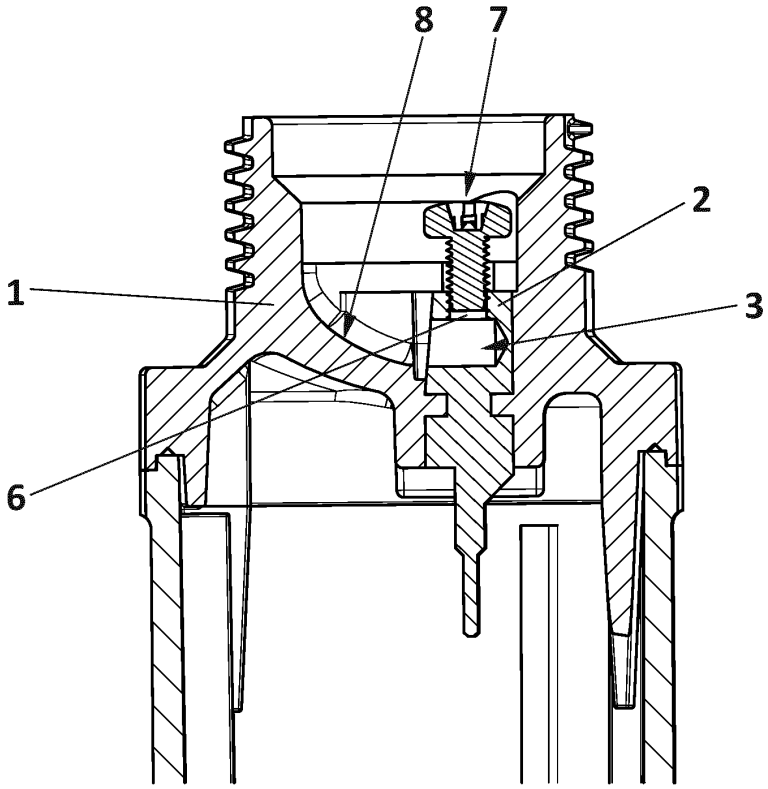

FIG. 2

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Description

Technical field of the invention

[0001] The present invention corresponds to the technical field of electrical connectors, which feature electrically conductive connections for insertion of the cable conductors which are trapped inside by means of a screw.

Background to the Invention

[0002] At present, the existing electrical connectors can be very varied, in terms of shape and dimensions, but they are all based on the introduction of the conductors of a cable inside electrically conductive or electrical connections, using screws as a way of trapping the conductors inside these connections.

[0003] The electrical connection is arranged in such a way that it has a hole in a certain direction, oriented towards one side of the connector, so that one of the conductors of the cable can be inserted through it, and there is a second hole perpendicular to the previous one, through which a screw is screwed which fixes the said conductor in position inside the connection.

[0004] This implies the need to have access to both sides of the connector, the first side to be accessed to insert the cable and the second side to be accessed to insert a screwdriver to screw and fix the cable conductor in the electrical connection.

[0005] This is a disadvantage, as having to allow free access on two sides of the electrical connector, both for cable and screw access, conditions the design of the connector, and these sides cannot be used for other functions.

[0006] In addition, for submerged connectors, this is also a disadvantage, as the more sides of the electrical connector have access to its interior, the less watertight it will be able to offer, so it would be advantageous if everything could be done from a single side, thus minimising access to the interior of the connector. However, given that the direction of the trapping screw must be perpendicular to the direction of the conductor to be fixed, this is not possible.

[0007] There is no known electrical connector in the state of the art that poses this problem, much less a solution to it, using the same side for the introduction of the cable and its trapping, thus making the rest of the sides available for other functions, such as sealing the connector.

Description of the invention

[0008] The electrical connector presented here comprises a body with at least two electrically conductive connections, each with at least a first hole for the insertion of one of the conductors of the cable, and at least a second threaded hole intersecting with the first hole for the insertion of a screw for fixing the said conductor.

[0009] In this electrical connector it is satisfied that, for each of the two electrically conductive connections, the body comprises an access channel to the first hole such that the conductor can be inserted into this access channel in the same direction in which the screw is inserted.

[0010] The electrical connector proposed here is a significant improvement on the state of the art.

[0011] This is because a connector is obtained with which it is possible to introduce the cable conductors in the same direction and sense as the subsequent screwing for trapping them. This allows both operations to be carried out from the same side, leaving the remaining sides of the electrical connector free, so that they can be used for other functions, such as making the connector more watertight.

[0012] Thanks to the access channel for access to each first hole, and the shape of this channel, it is possible for the conductor to adopt the same direction and sense as the screw for trapping the conductor, when it is inserted into the connector, and then turn before it is inserted into the first hole, which must remain perpendicular to the screw, so that the conductor can be fixed inside the connector by means of the screw.

[0013] Therefore, a very efficient electrical connector is achieved, in which only one of its sides is used to make the conductor connections and the fixing of the conductors, thus allowing greater freedom of use of the rest of the sides.

Brief description of the drawings

[0014] In order to assist in a better understanding of the features of the invention, in accordance with a preferred example of a practical embodiment thereof, a series of drawings is provided as an integral part of this description, in which the following is shown for illustrative and non-limiting purposes:

Figure 1.- Shows a perspective view of an electrical connector for a preferred embodiment of the invention.

Figure 2.- Shows a second sectional view of an electrical connector for a preferred embodiment of the invention.

Figure 3.- Shows a perspective view of an example assembly of the electrical connector of the invention.

Figures 4.1 and 4.2.- Show top plan and perspective views respectively, showing the access channel to each first orifice according to a preferred embodiment of the invention.

Detailed description of a preferred embodiment of the invention

[0015] In view of the figures provided, it can be seen how, in a preferred embodiment of the invention, the electrical connector proposed here comprises a body (1) with at least two electrically conductive connections (2), each of which comprises at least a first hole (3) for the insertion of one of the conductors (4) of the cable (5), and at least a second threaded hole (6) that crosses or intersects the first hole (3) for the insertion of a screw (7) for fixing the said conductor (4).

[0016] As shown in the figures, the body (1) of this electrical connector further comprises an access channel (8) to the first hole (3) for each of the two electrically conductive connections (2), such as to allow the conductor (4) to be inserted in the same direction in which the screw (7) is inserted. In other words, the access channel (8) and the second threaded hole (6) are accessible from the same side of the body (1).

[0017] Thus, as can be seen in figure 3, during the assembly process, it will only be necessary for the electrical connector to have one side free, specifically the assembly side through which the screws (7) for fixing each of the conductors (4) of the cable (5) are inserted, because in order to insert the latter into the corresponding first holes (3) of the electrically conductive connections (2), this will be done through the corresponding access channels (8), which will guide the respective conductors (4) from said face to the interior of said first holes (3).

[0018] Therefore, a very efficient electrical connector is achieved, in which only one of its sides is used to make the conductor connections and the fixing of the conductors, thus allowing greater freedom of use of the rest of the sides.

[0019] In this preferred embodiment of the invention, the access channel (8) is curved and extends from a plane above the second threaded hole (6).

[0020] Likewise, as can be seen in Figures 2, 4.1 and 4.2, in this preferred embodiment, the access channel (8) is provided in the wall of the body (1). In other embodiments, not shown, the access channel (8) may be independent of the body (1) wall.

[0021] In this preferred embodiment of the invention, as shown in Figures 1 and 2, the first hole (3) is perpendicular to the second threaded hole (6). This achieves the same way of trapping the conductor (4) of the cable (5) by means of the screw (7) traditionally used, what varies being the way of accessing the first hole (3) in the area before it.

[0022] As can be seen in Figures 4.1 and 4.2, in this preferred embodiment of the invention, the cross-section of the access channel (8) decreases as it approaches the first hole (3) to facilitate guidance. That is to say, in the area of the entrance, it has a greater cross-section or width to allow the conductor (4) to be inserted, but this then decreases as it approaches the first hole (3), to facilitate its insertion.

[0023] In this case, moreover, the curvature of the access channel (8) has a paraboloid shape.

[0024] In other embodiments, each access channel (8) is closed and the entrance to it is parallel to the entrance of the second threaded hole (6).

[0025] According to another aspect, in other embodiments, the electrical connector comprises a warning light device indicating that the cable (5) is connected to the connector.

[0026] In other embodiments, this electrical connector may also include, in the access channel (8), a device for cutting the insulation of the cable (5), so that it can be opened prior to insertion into the first hole (3).

Claims

1. Electrical connector, comprising a body (1) with at least two electrically conductive connections (2), each with at least a first hole (3) for the insertion of one of the conductors (4) of the cable (5), and at least a second threaded hole (6) intersecting with the first hole (3) for the insertion of a screw (7) for fixing the said conductor (4), **characterised in that** for each of the two electrically conductive connections (2) the body (1) comprises an access channel (8) to the first hole (3) such as to allow the conductor (4) to be guided for its insertion into said first hole (3) from the same direction in which the screw (7) is inserted.

2. Electrical connector according to claim 1, **characterised in that** the access channel (8) is curved and extends from a plane above the second threaded hole (6).

3. Electrical connector according to any of the preceding claims, **characterised in that** the access channel (8) and the second threaded hole (6) are accessible from the same side of the body (1).

4. Electrical connector according to any of the preceding claims, **characterised in that** the access channel (8) is provided in the wall of the body (1).

5. Electrical connector according to any one of claims 1 or 2, **characterised in that** the access channel (8) is independent of the body (1) wall.

6. Electrical connector according to any of the preceding claims, **characterised in that** the first hole (3) is perpendicular to the second threaded hole (6).

7. Electrical connector according to any one of the preceding claims, **characterised in that** the cross-section of the access channel (8) decreases as it approaches the first hole (3).

8. Electrical connector according to any one of the preceding claims, **characterised in that** the curvature of the access channel (8) has a paraboloid shape.

9. Electrical connector according to any one of the preceding claims, **characterised in that** each access channel (8) is closed and the entrance to it is parallel to the entrance of the second threaded hole (6).

10. Electrical connector, according to any of the preceding claims, **characterised in that it** includes a lighting device to warn of the connection of the cable (5) in the connector.

11. Electrical connector, according to any of the preceding claims, **characterised in that** the access channel (8) includes a device for cutting the insulation of the cable (5), for opening it prior to insertion into the first hole (3).

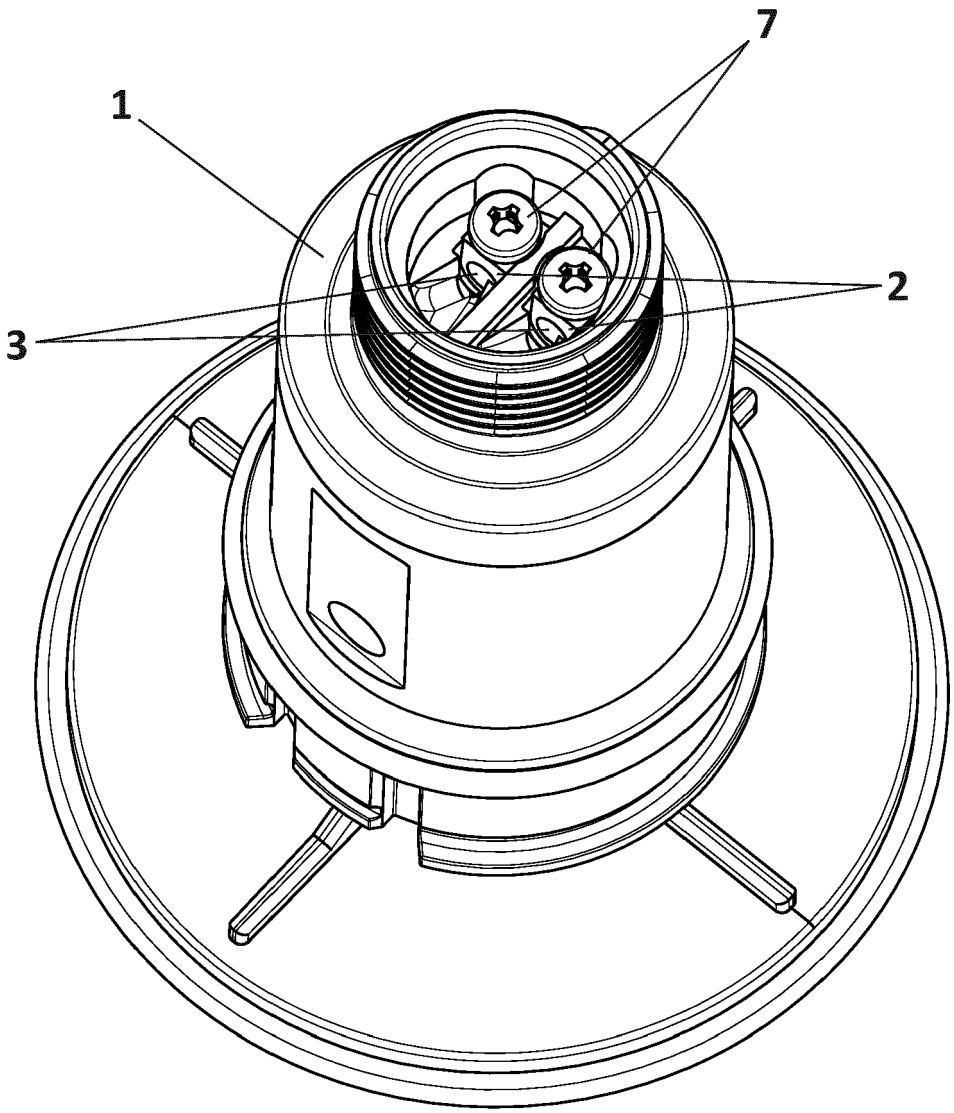

FIG. 1

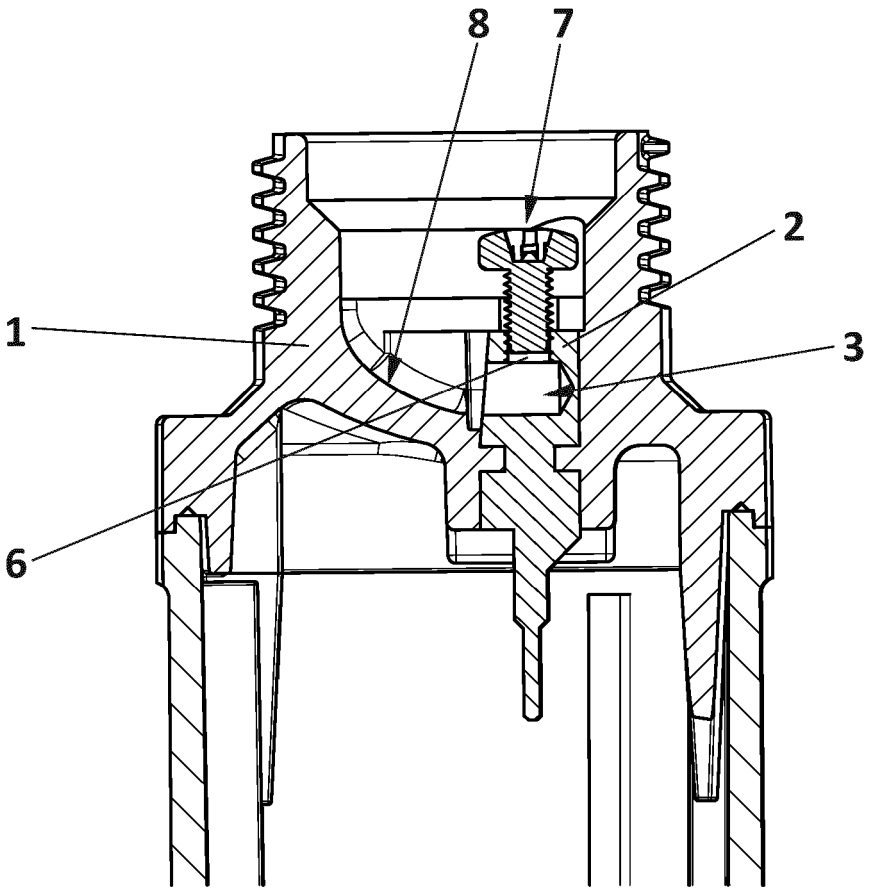

FIG. 2

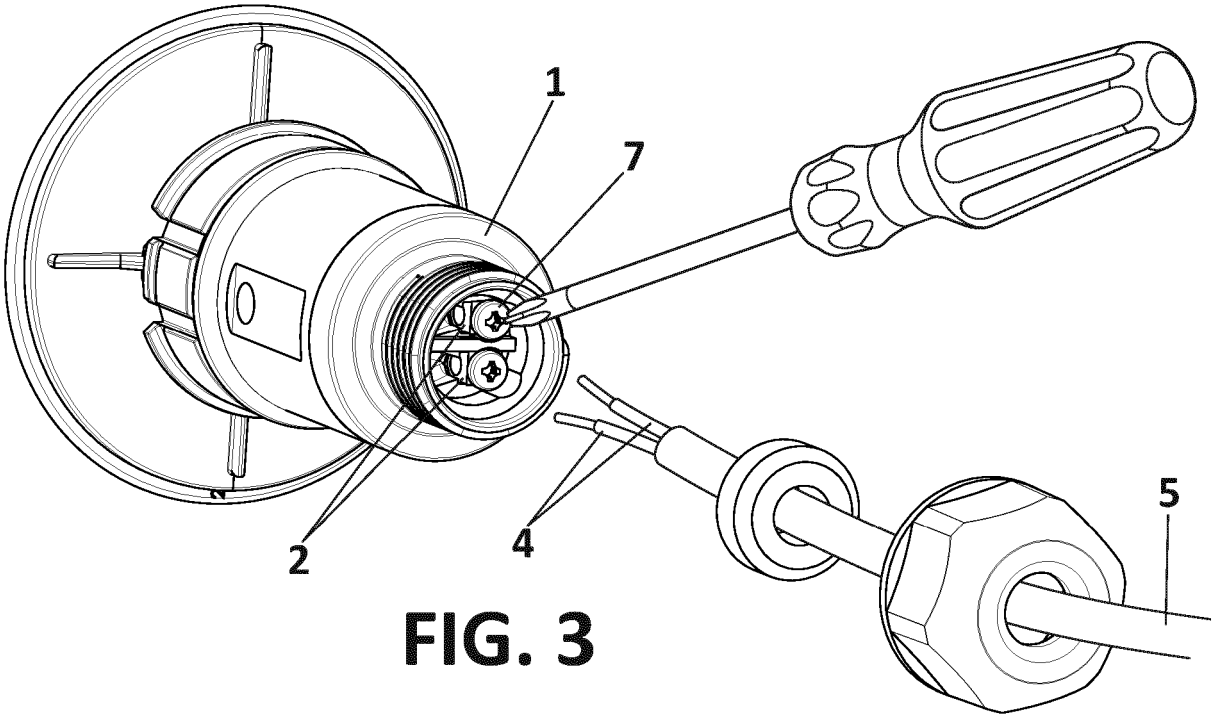

FIG. 3

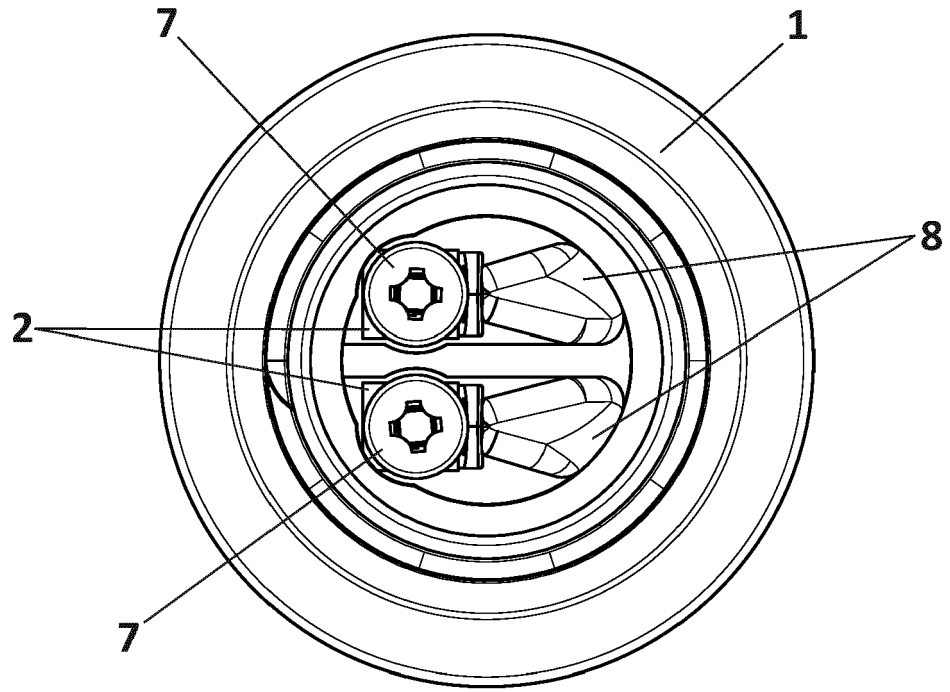

FIG. 4.1

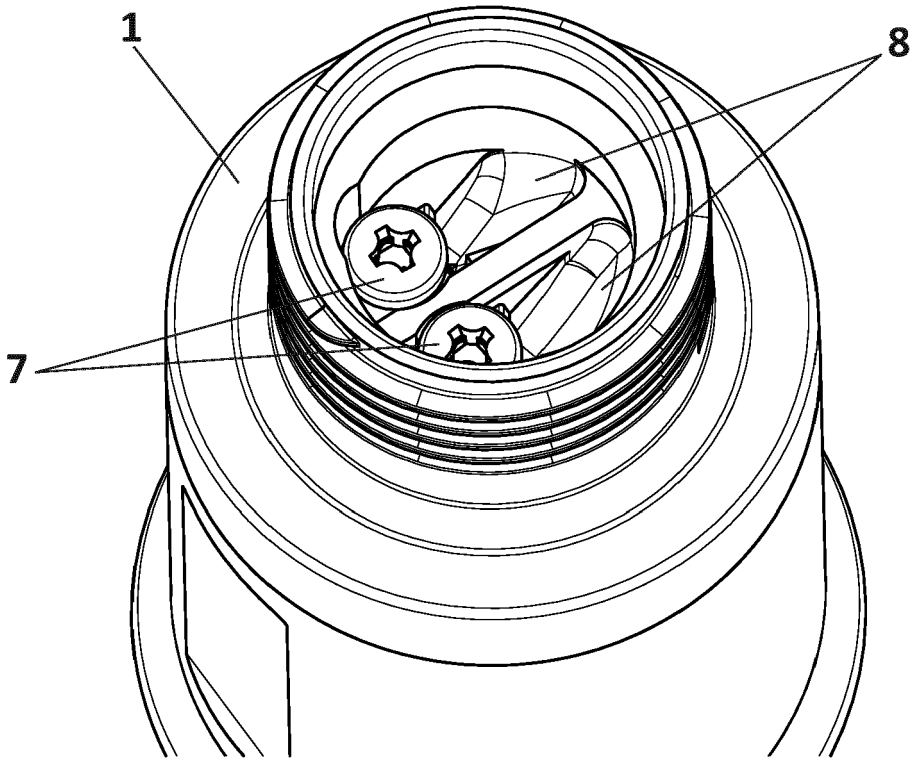

FIG. 4.2

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EUROPEAN SEARCH REPORT

Application Number
EP 21 38 2623

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	WO 2009/062523 A1 (SIEMENS AG [DE]; PURI WERNER [DE]) 22 May 2009 (2009-05-22) * the whole document *	1-11	INV. H01R4/30 H01R4/36 H01R9/24
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X	US 5 192 234 A (HENG JEAN-PAUL [FR] ET AL) 9 March 1993 (1993-03-09) * abstract; figures 1-5 *	1-11	
			TECHNICAL FIELDS SEARCHED (IPC) H01R

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 December 2021	Georgiadis, Ioannis

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EPO FORM 1503 03.82 (P04C01)

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