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(54) **ADAPTABLE LIGHTING ASSMBLY**

(57) Luminaire assembly adaptable to different connection elements that constitute its support, formed by a main body (1) with a first end (1.1) that includes the connection to the electrical supply and a second end (1.2) attached to the rear face (2.1) of a support (2) whose front face (2.2) comprises the light source (3), which com-

prises at least one adapter piece formed by two semi-cylindrical adapters (4) with a male threaded sector (5) on its outer surface, first fastening means for fixing to the main body (1), and second fastening means on the rear face (2.1) of the support (2), complementary to the first fastening means.

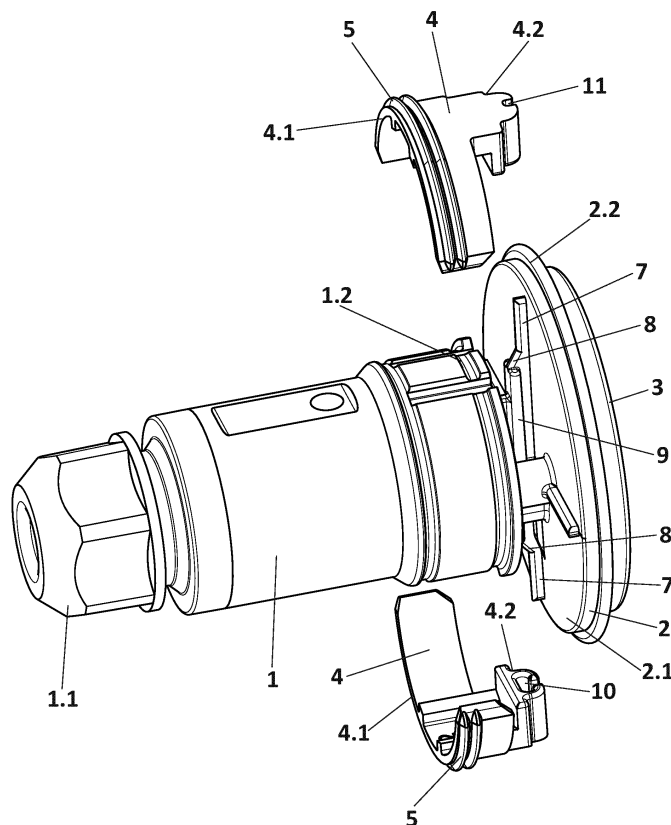


FIG. 3

Description

Technical field of the invention

[0001] The present invention relates to the technical field of lighting elements, intended for their fixed connection in, for example, niches made in a wall, by means of luminaire connection elements.

Background of the Invention

[0002] At present, lighting elements such as assemblies of luminaires are installed in connection elements prepared for it. Said connection elements are, in turn, inserted or installed in rooms prepared for this purpose in walls, floors, ceilings, etc., either directly or through other intermediate supports.

[0003] An example of this are the lights installed in swimming pools, where the housing niches for said lights are practiced in the walls thereof and are submerged when they are filled.

[0004] In general, luminaires, which currently incorporate LED-type optics, have a main body with a first end that includes the connection to the electrical supply and a second end connected to the rear face of a support whose front face includes the light source itself.

[0005] Thus, when installing and connecting these luminaires, this can be done, also generally, in various ways.

[0006] The first way to solve this connection is by embedding the luminaire in a support which in turn is inserted into the niche made in the wall. In this case, the main body has a smooth tube configuration that is accompanied by at least one joint that helps in the fixation between luminaire and support.

[0007] In other cases, the luminaire has, integrally to the main body, a male thread that shall have a size corresponding to a female threading area, existing in the connection element that serves as a support, for fixing the luminaire by threading one with the other.

[0008] The problem that arises in this sense is that there is not a single thread, but there are several sizes, the most common being 1.5" and 2", but they are not the only ones and therefore, the use of each luminaire is limited to luminaire connection elements that have a thread compatible with its thread.

[0009] Luminaires get damaged over time, they break down, wear out, and when it comes to having to replace them with a new one, the operator is limited by the original luminaire connection element in which it was installed. In other words, once the first installation has been carried out, this conditions the type of luminaires that can be used in the future, as these will have to be compatible with the support used.

[0010] Likewise, if you want to change any other element of the assembly, the need for the luminaire to be compatible with its support greatly limits the possibilities of material choice, making the compatibility of elements

from different manufacturers or even from the same manufacturer very difficult or sometimes impossible.

[0011] In the state of the art there are some elements that seek to solve these incompatibility problems. For example, there are tube-shaped adapters that have an external thread in such a way that with the internal thread they are adjusted to the thread of the luminaire and with the external one they are adjusted to the connection element that acts as a support, thus "expanding" the size of the luminaire so that it can be adapted to a larger housing. However, these adapters do not work if the luminaires have a smooth, non-threaded body.

[0012] On the other hand, as it is evident, as long as the luminaire has a diameter greater than that of the connection element that acts as a support, it cannot be installed.

[0013] Therefore, there are not known luminaires that allow their adaptation to any connection element, both smooth and threaded having various sizes.

[0014] In addition, even in cases where it is possible to find an adapter element with a smaller thread to a larger thread, the complications when installing it are great, as this forces the electrical disconnection of the luminaire in order to insert said adapter, which, as already said, consists of your threaded tube, at the end where it is connected to the cable and, once said tube is threaded to the body of the luminaire, said cables are reconnected.

[0015] It is therefore necessary to find a way to solve this problem, so as not to have to depend on the type of connection, but rather that it may be possible to adapt any luminaire to the type of connection of its connection element.

Description of the invention

[0016] The adaptable luminaire assembly presented herein solves all the problems of the state of the art described above and, in general, is formed by a main body with a first end that includes the connection to the electrical supply and a second end connected to the rear face of a support whose front face includes the light source.

[0017] This luminaire assembly also comprises an assembly of adapter pieces for different sizes of existing female connection elements, that is, adapter pieces for connection elements whose female thread has a size of 1.5 inches, adapter pieces for connection elements whose female thread has a size of 2 inches, etc.

[0018] Each one of said adapter pieces, however, is formed by two semi-cylindrical adapters where each one of them in turn comprises a male threaded sector on its outer surface, and some first fastening means for its fixation to the main body.

[0019] It also comprises second fastening means located on the rear face of the support, complementary to the first fastening means. These second fastening means are such that, once the two semi-cylindrical adapters are fixed on them, they are displaced one with respect to the other by a distance equivalent to one thread pitch of the

male sector so that, although split, the thread has continuity and with said two coupled adapters, the luminaire can be screwed into the connection element that acts as a support in the same way that it would be screwed if the adapter element were complete, that is, cylindrical as in the current state of the art.

[0020] Thus, this luminaire assembly does not initially present any type of thread integral with its body, which is why it is perfectly valid to be installed in a smooth tube connection element, but also, in case of requiring its installation in a connection element being fixed by threading, only the adapter pieces formed by the two semi-cylindrical adapters shall be fitted to the body of the luminaire, thus presenting a suitable male thread for threading into the female thread of the connection element.

[0021] It is therefore a luminaire assembly adaptable to any type of connection element, being able to transform it from a luminaire with a smooth tube connection to a larger connection by means of a thread, coupling the semi-cylindrical adapters, or transform it from a luminaire with a specific thread connection to a different thread connection or even a smaller connection, for smooth pipe.

[0022] Furthermore, when the luminaire is connected, as each of the adapter pieces are formed by two semi-cylindrical adapters, this allows their placement or removal without the need for electrical disconnection of the luminaire as is currently the case in the state of the art.

Brief description of the drawings

[0023] In order to help a better understanding of the features of the invention, according to a preferred example of a practical embodiment thereof, a series of drawings is provided as an integral part of said description wherein, with an illustrative and nonlimiting nature, the following has been represented:

Figures 1.1 and 1.2.- Show respective perspective views of the luminaire comprised within the adaptable luminaire assembly of the present invention.

Figure 2.- Shows a perspective view of an adapter piece formed by the two semi-cylindrical adapters according to a first embodiment of the invention.

Figure 3.- Shows a perspective view of the adaptable luminaire assembly in the position prior to fixing the two semi-cylindrical adapters of figure 2.

Figure 4.- Shows a perspective view of the adaptable luminaire assembly with the two semi-cylindrical adapters of figure 2 already fixed to the main body.

Figure 5.- Shows an elevation view of the assembly of the previous figure and two details showing the second fastening means for the luminaire assembly.

Figure 6.- Shows an elevation view of the adaptable luminaire assembly of the invention without an adapter piece, for a first preferred embodiment of the invention.

Figure 7.- Shows an elevation view of the adaptable luminaire assembly of the invention with the semi-cylindrical adapters of Figure 2 fixed to the main body.

Figure 8.- Shows a perspective view of an adapter piece formed by the two semi-cylindrical adapters according to a second embodiment of the invention.

Detailed description of a preferred embodiment of the invention

[0024] In view of the figures provided, it can be seen how the adaptable luminaire assembly of the invention is formed by a main body (1) with a first end (1.1) that includes the connection to the electrical supply and a second end (1.2) attached to the rear face (2.1) of a support (2) whose front face (2.2) comprises the light source (3).

[0025] This luminaire assembly also comprises an adapter piece for 1.5-inch threads according to a first possible embodiment of the invention, which is formed by two semi-cylindrical adapters (4) where each of them in turn comprises a male threaded sector (5) on its outer surface, first fastening means for fixing to the main body (1), and second fastening means located on the rear face (2.1) of the support (2), complementary to the first fastening means present on the adapter piece.

[0026] As shown in Figure 7, these second fastening means are such that, once the two semi-cylindrical adapters (4) are fixed on them, they are displaced relative to each other by a distance equivalent to one thread pitch (6) of the male threaded sector (5).

[0027] In this first embodiment of the invention, as can be seen in Figures 3 to 7, the second fastening means are formed by two diametrically opposed guiding elements.

[0028] As shown in Figures 3, 5 and 6, each guide element comprises a first part located on the periphery or outermost area of the rear face (2.1) of the support (2), having constant height that constitutes a guide (7) for the introduction of each one of the semi-cylindrical adapters (4).

[0029] In addition, each guiding element also comprises a second part located towards the center of said rear face (2.1) of the support (2), that is, towards the center or interior thereof, composed of an inclined section (8) such that it separates from said rear face (2.1) at different distances (a, b) in each of the guiding elements.

[0030] When the semi-cylindrical adapters (4) are fitted on these inclined sections (8), since each one is separated by a certain distance (a, b) with respect to the rear face (2.1) of the support (2), different in both cases, it is

when one of the semi-cylindrical adapters (4) is offset from the other by a distance equivalent to one thread pitch (6).

[0031] As this offset distance is equivalent to a thread pitch (6), there is continuity in the threads of both male threaded sectors (5) of the semi-cylindrical adapters (4), allowing the threading in a female threaded area of a connection element of the luminaire.

[0032] In addition, in this embodiment of the invention, the second part of each guide element comprises an element for fitting the first fastening means, formed by an area with a larger section than that of the inclined section (8), arranged therefrom.

[0033] As shown in Figures 3, 5 and 6, in this case, the area with the largest section is formed by two cylinders (9) parallel to the guide (7) and symmetrical with respect to it.

[0034] Likewise, in this embodiment, the first fastening means are formed by a groove (10) suitable for adjusting the fitting element inside it, in this case the cylinders (9) and has a through slit (11) along said groove (10), suitable for sliding the guide (7) through it.

[0035] In this way, in the semi-cylindrical adapter (4) that presents a greater offset and therefore is more separated from the rear face (2.1) of the support (2), the guide (7) is inserted in this slit (11) and protrudes therefrom, as shown in Figure 8, while in the other semi-cylindrical adapter (4), the guide (7) remains embedded in the slit (11) without protruding, so the semi-cylindrical adapter (4) is flush with the rear face (2.1) of the support (2).

[0036] In this preferred embodiment of the invention, in which the adapter piece of Figure 2 is used, the male threaded sector (5) of each semi-cylindrical adapter (4) is located at one end (4.1) thereof and the first fastening means are arranged at an opposite end (4.2) of said semi-cylindrical adapter (4). In this case, this semi-cylindrical adapter (4) is suitable for a 1.5" thread.

[0037] However, in other embodiments with different adapter pieces such as the one shown in Figure 8, intended for 2-inch connection elements, each semi-cylindrical adapter (4) has a flat sheet (12) perpendicular to the male threaded sector (5), located towards the inside of the semi-cylindrical adapter (4), in a central section of the male threaded sector (5), and the first fastening means are located on said flat sheet (12), as can be seen in Figure 8.

[0038] Furthermore, in the case where the luminaire shall be adapted to a smooth-tube luminaire connection element in which there is no thread, the semi-cylindrical adapters (4) would simply not be fixed to the main body (1) of the luminaire, as shown in Figures 1.1 and 1.2 and, it would be equally valid for this other case. In this case, an O-ring made of flexible material is incorporated to mechanically fix the body of the light with the smooth tube of diameter 50mm by interference, and by means of additional adapters it is possible to fix the luminaire to any diameter greater than 50mm.

Claims

1. Assembly of adaptable luminaire, formed by a main body (1) with a first end (1.1) that includes the connection to the electrical supply and a second end (1.2) attached to the rear face (2.1) of a support (2) whose front face (2.2) comprises the light source (3), **characterized in that** it comprises

- at least one adapter piece formed by two semi-cylindrical adapters (4) where each one of them in turn comprises a male threaded sector (5) on its outer surface, and first fastening means for fixing to the main body (1), and;

- second fastening means located on the rear face (2.1) of the support (2), complementary to the first fastening means;

wherein said second fastening means are such that, once the two semi-cylindrical adapters (4) are fixed on them, they are offset relative to each other by a distance equivalent to one thread pitch (6) of the male threaded sector (5).

2. Assembly of adaptable luminaire, according to claim 1, **characterized in that** the second fastening means are formed by respective diametrically opposed guide elements.

3. Assembly of adaptable luminaire, according to claim 2, **characterized in that** each guiding element comprises a first part located on the periphery of the rear face (2.1) of the support (2), having constant height that constitutes a guide (7) for the introduction of each of the semi-cylindrical adapters (4) and, a second part located towards the center of said rear face (2.1) of the support (2), composed of an inclined section (8) that separates from said rear face (2.1) at different distances (a, b) in each of the guiding elements.

4. Assembly of adaptable luminaire, according to claim 3, **characterized in that** a second part of each guiding element comprises an element for fitting the first fastening means, formed by an area with a greater section than that of the inclined section (8) arranged therefrom.

5. Assembly of adaptable luminaire, according to claim 4, **characterized in that** the area with the largest section is formed by two cylinders (9) parallel to the guide (7) and symmetrical with respect to it.

6. Assembly of adaptable luminaire, according to claims 2 to 5, **characterized in that** the first fastening means are formed by a groove (10) suitable for the adjustment of the fitting element inside and has a through slit (11) along said groove (10), suitable for

the sliding of the guide (7) through it.

7. Assembly of adaptable luminaire, according to any of the preceding claims, **characterized in that** the male threaded sector (5) of each semi-cylindrical adapter (4) is located at one end (4.1) thereof and the first fastening means are arranged at an opposite end (4.2) of said semi-cylindrical adapter. 5
8. Assembly of adaptable luminaire, according to any of claims 1 to 6, **characterized in that** each semi-cylindrical adapter (4) has a flat sheet (12) perpendicular to the male threaded sector (5), located towards the inside of the semi-cylindrical adapter (4), in a central section of the male threaded sector (5), and the first fastening means are located on said flat sheet (12). 10 15

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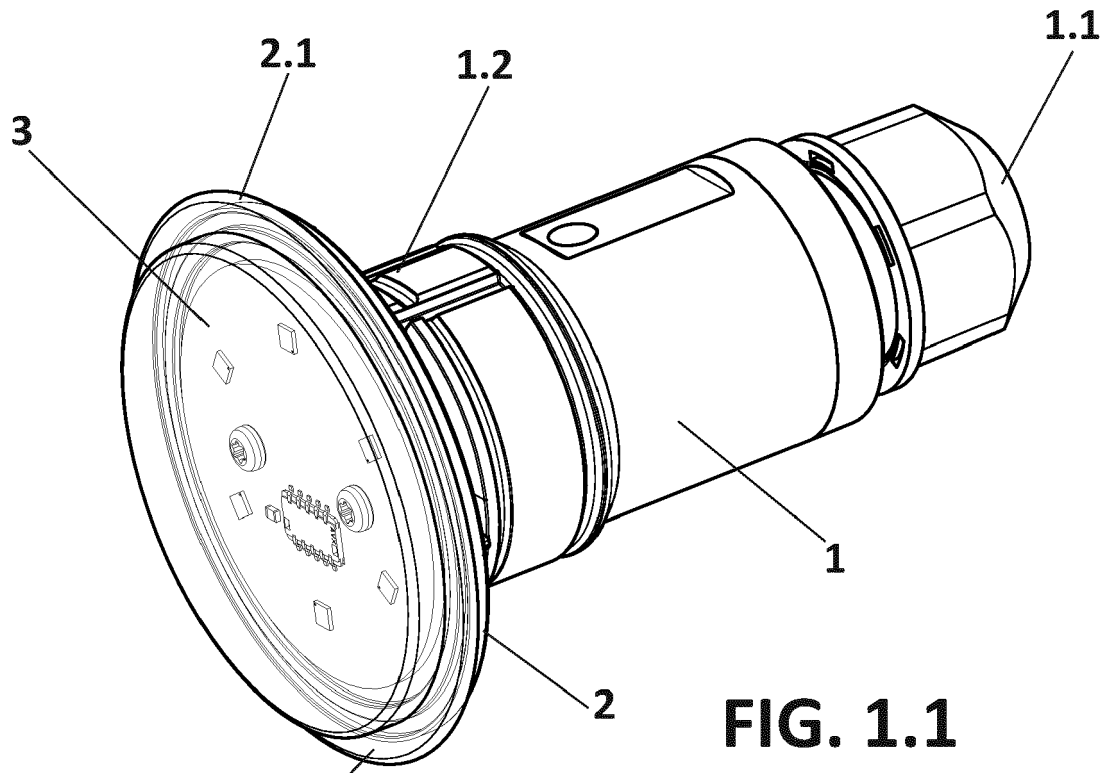


FIG. 1.1

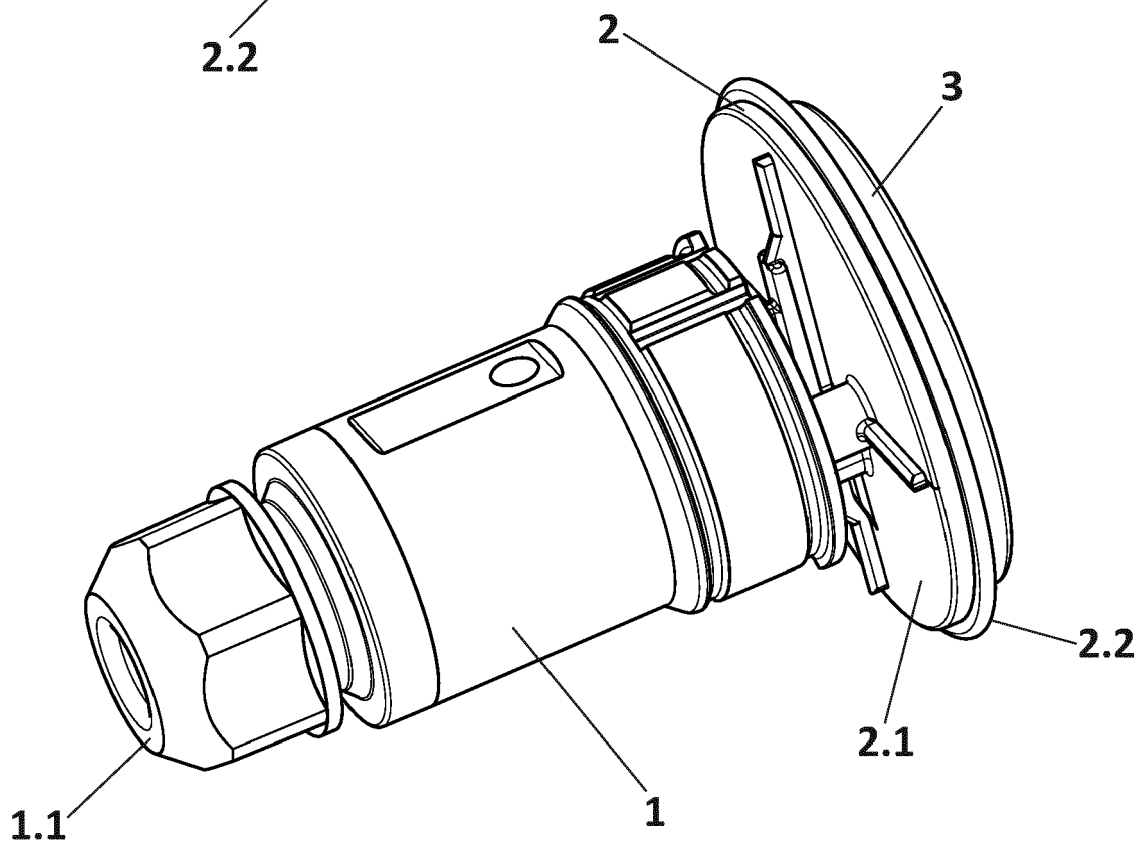


FIG. 1.2

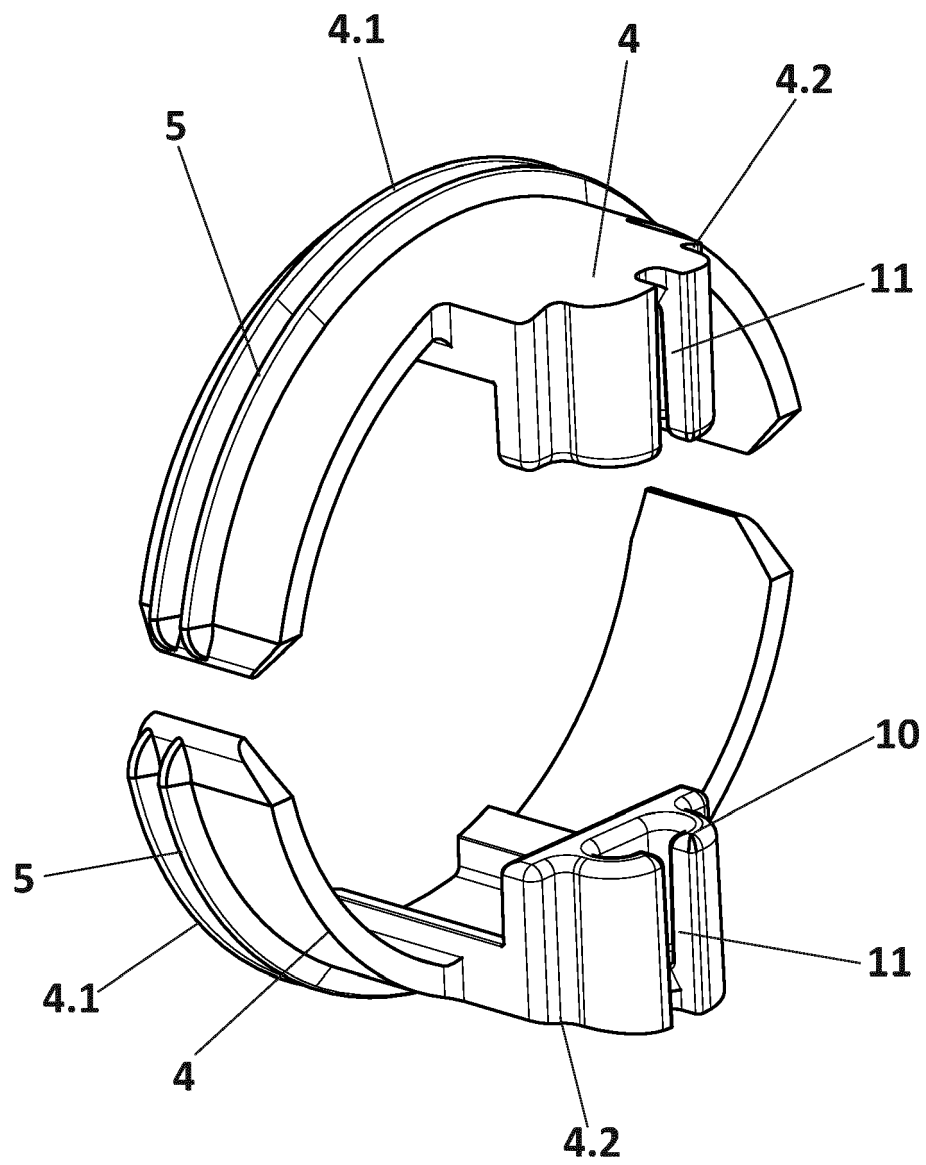


FIG. 2

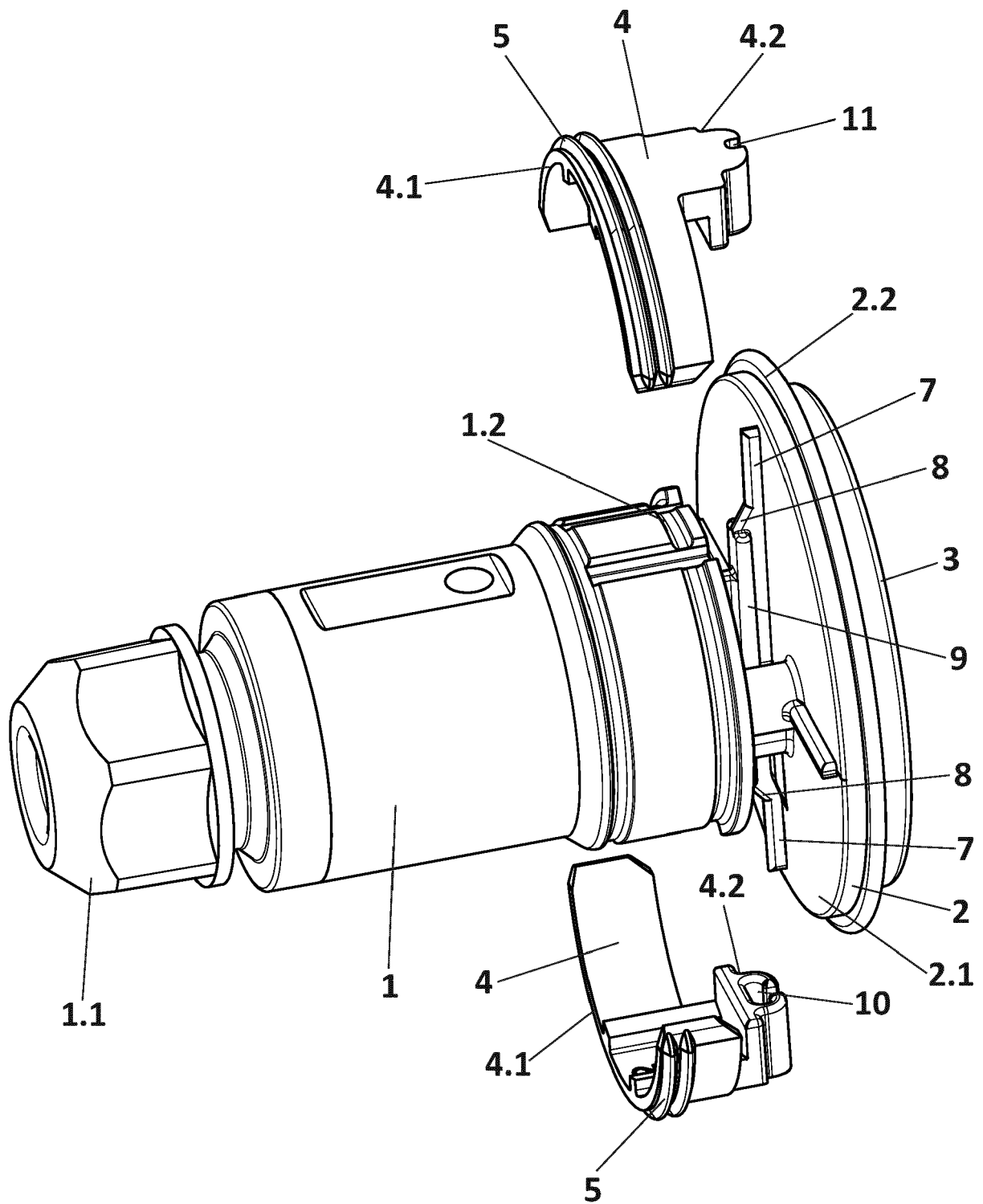


FIG. 3

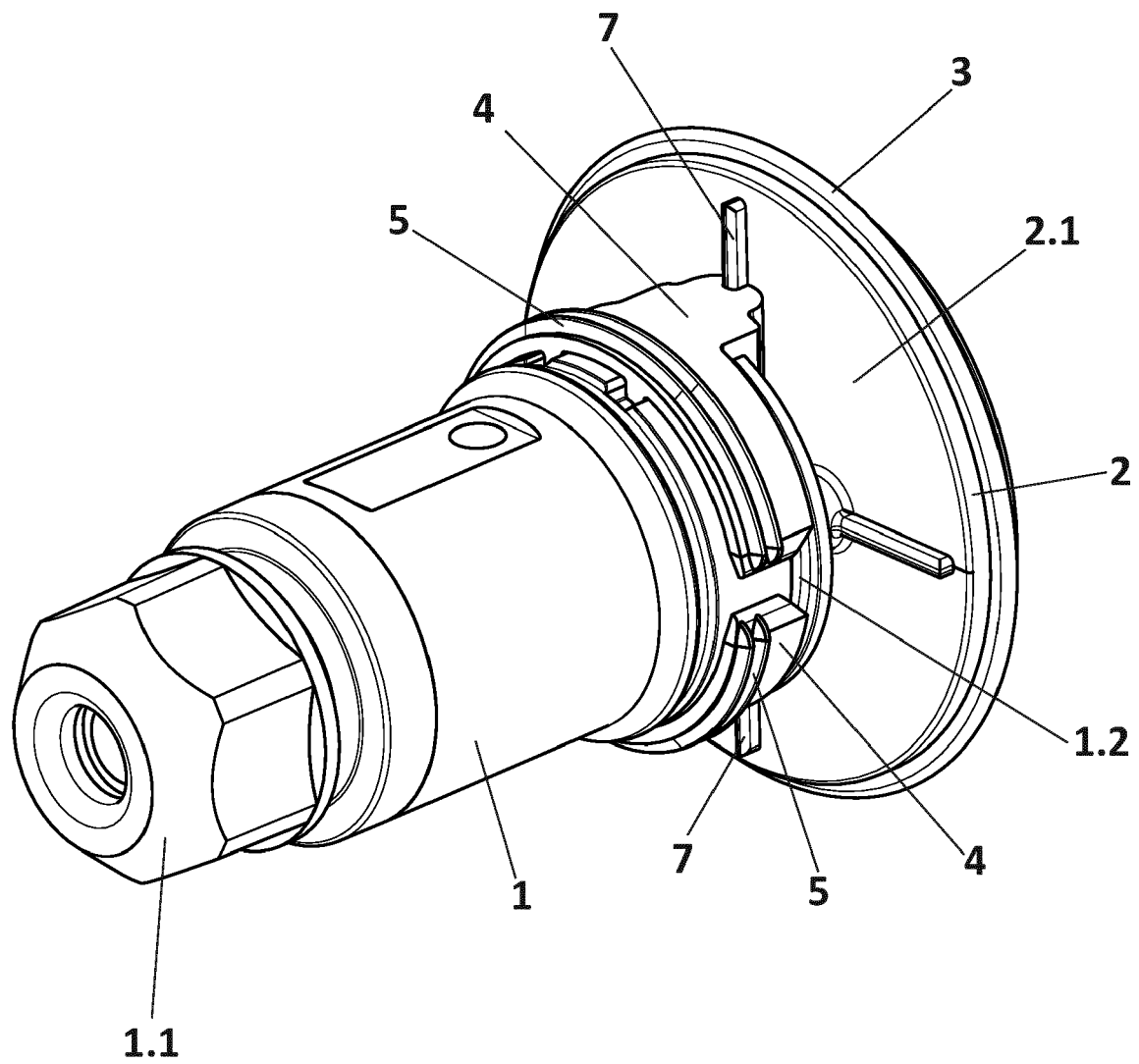
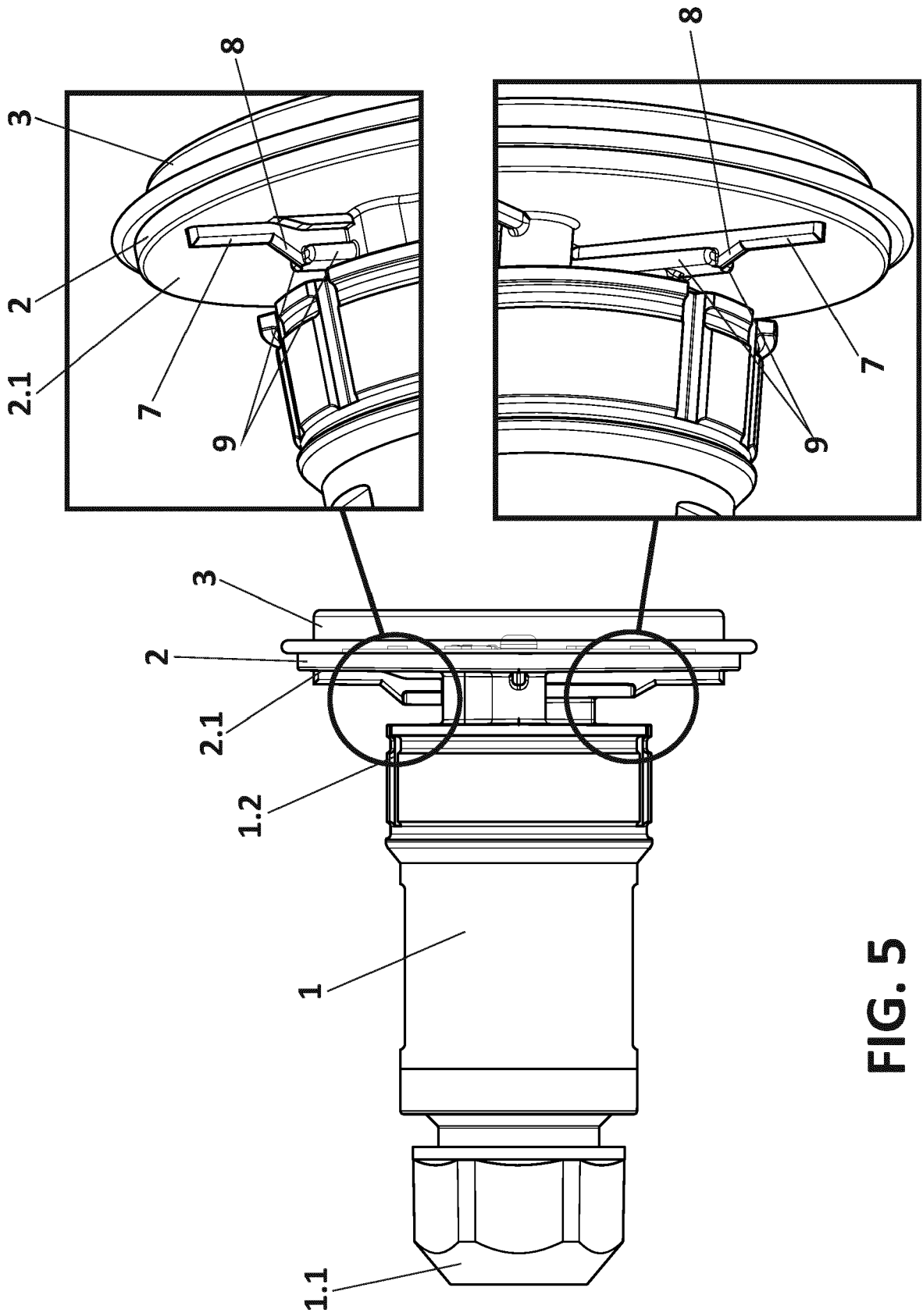
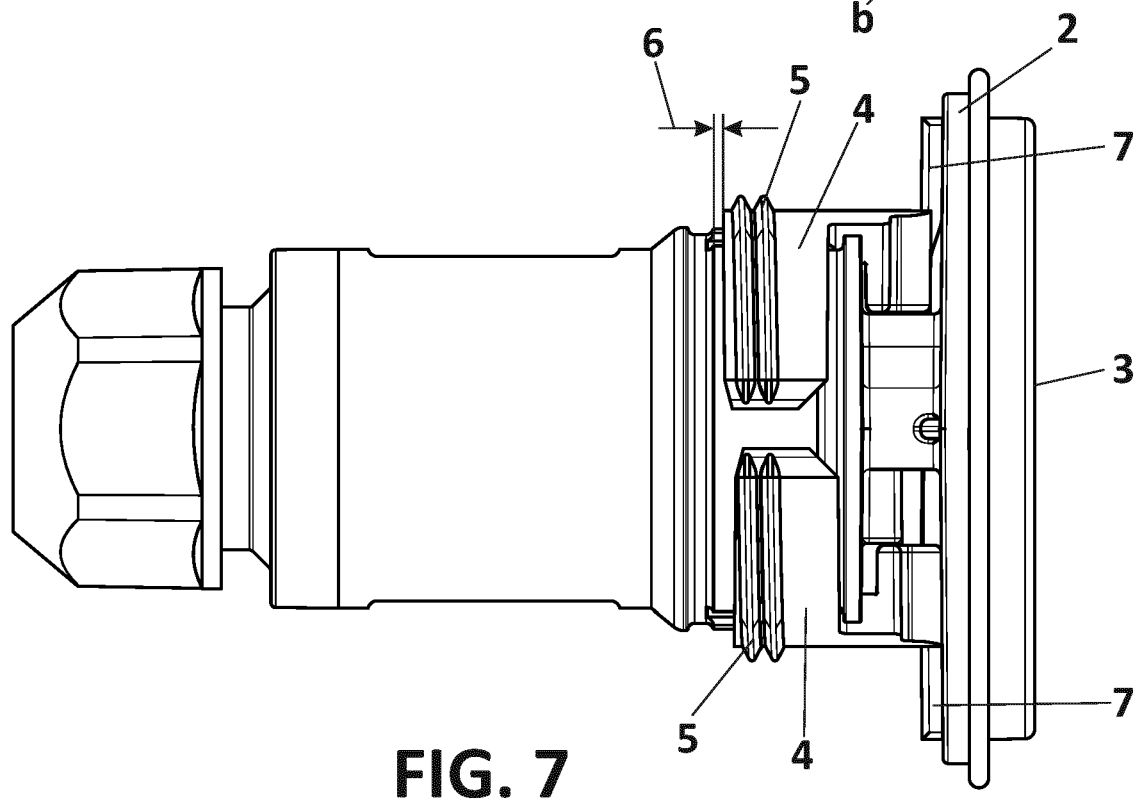
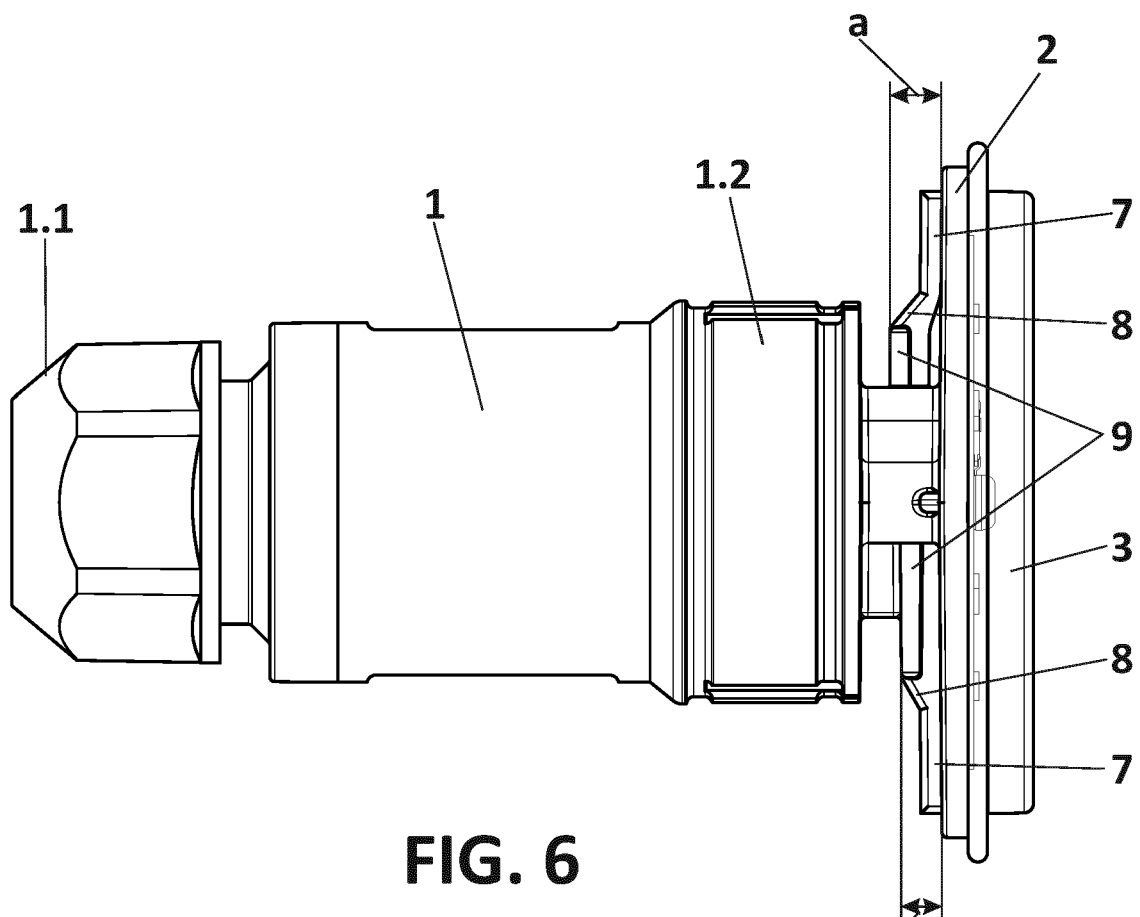


FIG. 4





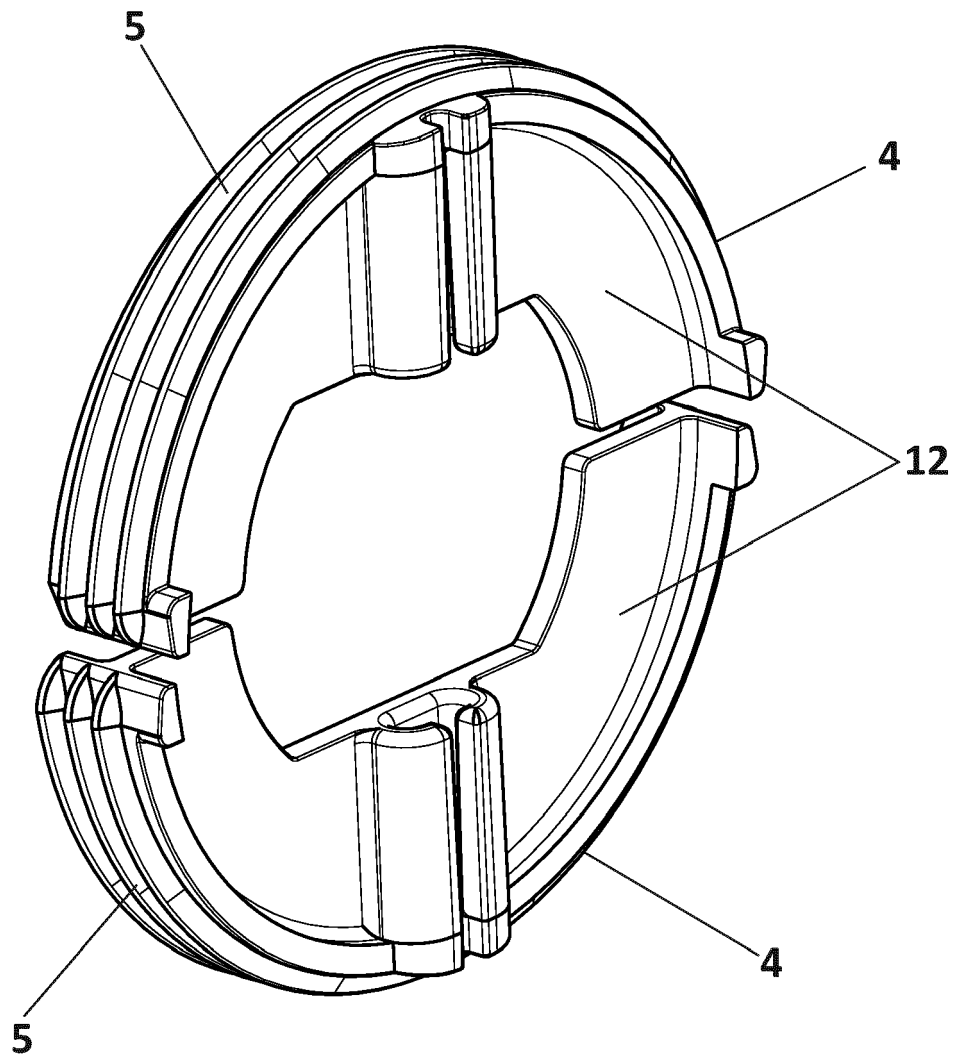


FIG. 8



EUROPEAN SEARCH REPORT

Application Number

EP 21 38 2628

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 3 653 812 A1 (SACOPA SA [ES]) 20 May 2020 (2020-05-20) * paragraph [0022] - paragraph [0036] * * figure 6 *	1-8	INV. F21V21/04 ADD. F21W131/401
A	US 2012/106149 A1 (BOA STEVE [CA]) 3 May 2012 (2012-05-03) * paragraph [0020] - paragraph [0043] * * figure 1 *	1-8	
A	US 10 938 245 B1 (SANSON JOHN CLIFFORD ET AL) 2 March 2021 (2021-03-02) * column 4, line 12 - column 13, line 25 * * figures 1a,b *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			F21V F21W
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 December 2021	Examiner Blokland, Russell
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 21 38 2628

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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21-12-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3653812 A1	20-05-2020	EP 3653812 A1	20-05-2020
		ES 1224394 U	05-02-2019
US 2012106149 A1	03-05-2012	NONE	
US 10938245 B1	02-03-2021	US 10938245 B1	02-03-2021
		US 2021075262 A1	11-03-2021