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

(11) **EP 4 075 056 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.10.2022 Bulletin 2022/42

(21) Application number: **22165877.6**

(22) Date of filing: **31.03.2022**

(51) International Patent Classification (IPC):
F21V 21/04 *(2006.01)* ***F21S 8/02*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
F21V 21/043; F21S 8/026

(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

(30) Priority: **12.04.2021 DK PA202100363**

(71) Applicant: **Daxtor A/S**
8600 Silkeborg (DK)

(72) Inventor: **Dahl, Torben**
8600 Silkeborg (DK)

(74) Representative: **Larsen & Birkeholm A/S**
Banegårdspladsen 1
1570 Copenhagen V (DK)

(54) **A FIXTURE**

(57) The invention relates to a fixture for fixation of a downlight in a hole in a ceiling or a wall. The fixture comprises an annular flange, having a centre axis, an inner side and an outer side, said annular flange being for abutment around the hole so that the annular flange lies substantially coaxially with the hole while the flange encloses the hole, which flange comprises means for attaching e.g. a ceiling lamp in the form of a spot. The fixture also comprises, a support member having a centre axis, an inner side, and an outer side, said support member being for abutment on the other side of the hole, said support member having fastening means being mutually adapted for complementary fastening means on the annular flange. The support member is configured to form at least two configurations, the first configuration being an annular member having a flat bottom that defines a - essentially - circular unbroken surface with a first outer circumference. The first configuration being for abutment around the hole such that the annular member is substantially coaxial with the hole. The second configuration being an element defining a second outer circumference, smaller than the first outer circumference, the first and second configurations being adapted such that the support member can be passed through a hole when it forms the second configuration and at least partially encircles the same hole when it forms the first configuration as an annular element.

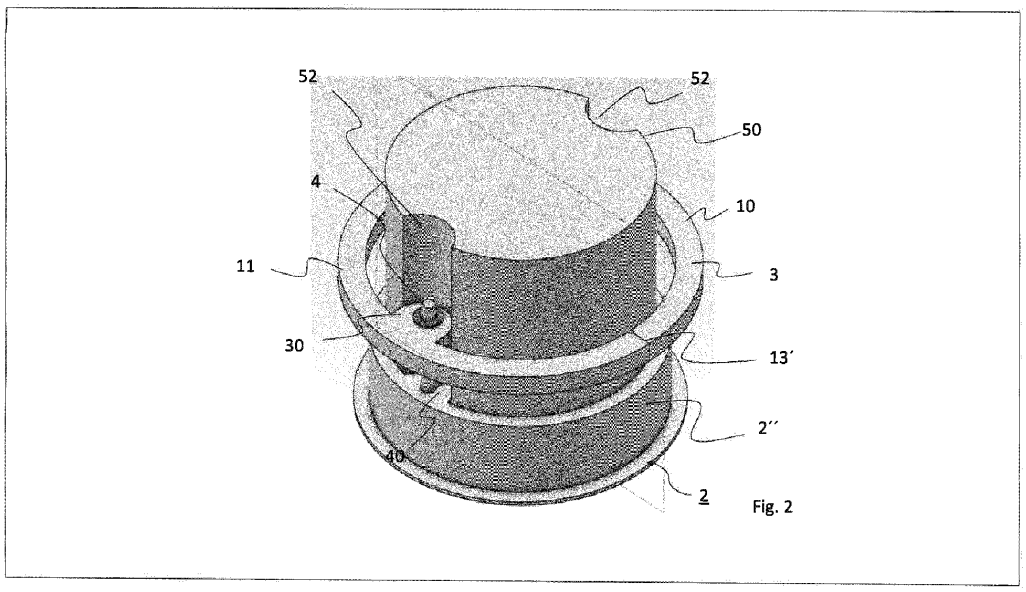

Fig. 2

EP 4 075 056 A1

Description

Technical field of the invention

[0001] This invention relates to a fixture for e.g. fixation of a downlight in a hole in a ceiling or a wall, which fixture comprises: an annular flange, having a center axis, an inner side, and an outer side, said annular flange being for abutment on one side of the ceiling or wall around the hole so that the annular flange lies substantially coaxially with the hole while the annular flange encircles the hole; a support member having a centre axis, an inner side, and an outer side, said support member being for abutment on the other side of the ceiling or wall around the hole; fastening means provided on said support member; fastening means provided on said annular flange being mutually adapted to said fastening means on the support member such that the support member and the annular flange can be assembled in a releasably manner.

[0002] There are various types of fixtures available, and fixtures can be used to attach many types of items, including lamps, spotlights, and downlights. Downlights are very popular for multiple reasons including aesthetics, options available for lighting arrangements, as well as amount of light output.

[0003] The downlights fixtures heretofore known suffer from several disadvantages, which include being difficult to use, being difficult to install, being unduly complex, being limited in application and being difficult to remove.

[0004] Downlights fixtures are usually designed with a circular support member (but it may well be, for example, square) which is inserted into a hole in a ceiling designed for that purpose. The support member is designed for this with a flange facing the ceiling when the support member is inserted into the hole. The support member is attached to the ceiling structure by means of the flange, which engages firmly with the one side of the ceiling/ceiling structure, and an "unfoldable tab" that engages with the other side. Usually, there are two tabs on a support member.

[0005] When lamps, such as spotlights, are to be installed in the ceilings of buildings, this is done by drilling a hole/opening in the ceiling and then attaching the lamp in the hole. In modern buildings, the upper side of the ceilings are covered and protected by an airtight membrane and this membrane is pierced when drilling holes.

[0006] In the known systems, these membranes are not fixed/patched at the holes and thus leaks are often created when lamps/spots are installed. This has a negative influence on the indoor climate, as the leaks often lead to moisture problems and unintentional heat transport.

Background of the invention

[0007] It is the object of the invention to remedy one or more of these problems and / or to create an alternative solution.

Summary of the invention

[0008] This is achieved in that, the support member is manipulatable between a first and a second configuration, the first configuration being as an annular member having a flat bottom that defines an - essentially - circular unbroken surface, the first configuration being for abutment on one side of the ceiling or wall around the hole so that the support member lies substantially coaxially with the hole while the support member encircles the hole, the first and second configurations being adapted such that the support member can be passed through a hole when it forms the second configuration and encircles the same hole when it forms the first configuration as an annular member.

[0009] The barriers on the top of ceilings are usually made as a plastic/rubber membrane. By making the support member with a flat bottom extending all the way around the hole, this bottom can thus be laid on top of the membrane whereby the membrane is pressed down against the upper side of the ceiling when the annular flange and the support member are clamped against each other using their fastening means.

[0010] In an embodiment of the invention, the complementary fastening means in the support member comprise at least one projection on the inner side and the complementary fastening means in the annular flange comprise at least one projection on the inner side.

[0011] By making the fastening means such that they comprise projections on the inner side of the annular bodies, it is achieved that the annular flange and the support member can be clamped against each other by clamping the projections against each other and thereby i achieve that these means may also be located on the inner side of these annular bodies.

[0012] Accordingly, these means will not penetrate and destroy a seal between the fixture, membrane, and ceiling.

[0013] In an embodiment of the invention, the complementary fastening means in the support member and the annular flange each comprise two projections situated offset 180 degree from each other on the inner sides of their annular bodies,

[0014] By this, an evenly distribution of forces is achieved.

[0015] In an embodiment of the invention, the fastening means comprise at least one releasable screw connection between a projection in the support member and a projection in the annular flange.

[0016] A screw connection provides both a strong clamping and a connection that can be assembled and disassembled using conventional hand tools.

[0017] In an embodiment of the invention, the projection(s) in the annular flange and the projection(s) in the support member are adapted such that they can be clamped together by means of conventional cable ties having a tape section with teeth that engage with a pawl located in the cable ties head.

[0018] In an embodiment of the invention, the projection(s) in the support member comprises a hole being adapted such that a head of a conventional cable tie can be mounted in said hole by running the tape section through the hole until the head is caught in the hole. The projection (s) in the annular flange preferably comprises a pawl mechanism being adapted for engagement with the teeth of a conventional cable tie having a head capable of being caught in the hole in the projection(s) in the support member.

[0019] By performing the projection in the annular flange in this way, cable ties can be mounted in the support member before the support member is inserted through a hole in the ceiling. The cable ties are set so that the head of these is caught in the hole while the tape section has a downward direction through the hole when the support member is mounted on the top of the hole. Subsequently, the annular flange can thus be easily mounted and clamped against the support member by pressing the annular flange against the support member while the tape section of the cable ties is similarly pulled past the pawl mechanism in the annular flange

[0020] In an embodiment of the invention, a cable tie is made detachable by means of a removable support in the annular flange being adapted such that it is capable of abutting against the smooth side of a cable tie.

[0021] By making such a support removable, the teeth of the cable tie can be easily taken out of engagement with the pawl by simply removing this support, after which the fixture can be separated and removed from a ceiling where it is mounted.

[0022] In an embodiment of the invention, the support member comprises two circular pieces, which are hinged together such that the hinge enables the ends opposite the hinge to be moveable towards and away from each other and where the second configuration is obtained when the ends of the two circular pieces are moved together.

[0023] Two circular pieces hinged together is a simple and well proven solution.

[0024] In an embodiment of the invention, the two circular pieces are essentially identical semi-circular pieces. This will provide an evenly distribution of forces towards an underlaying membrane and thereby also an airtight connection.

[0025] In an embodiment of the invention, the ends - opposite the hinge - of the two parts are connected via a circular guide in one part, which extends inside a guide-groove in the other part. The circular guide and the guide-groove may be provided with surfaces made plane to entail an airtight connection between fixture and membrane.

[0026] In an embodiment of the invention, the two circular pieces are connected to spring means such that the support member will be in its second configuration when the two circular pieces are not affected by external forces. This entails an easy installation since the installer does not have to expand the support member after insertion through the hole.

[0027] In an embodiment of the invention, the spring means comprise a spring being functionally located between the ends of the two circular pieces and the spring being a compression spring which presses the ends away from each other. By placing the spring as far as possible from the hinge, the largest torque arm is obtained which in turn means that this location entails that the spring can be minimized

[0028] In an embodiment of the invention, the spring lays inside the guide-groove. This location protects the spring.

[0029] In an embodiment of the invention, the fixture comprises spring means being functionally located in the hinge and the spring means working against that the ends are moved towards each other. This is a well proven and simple construction.

[0030] In an embodiment of the invention, the fixture comprises a support member formed of resilient material.

[0031] By making the support member resilient, a very tight connection is obtained as the elastically deformable support member can also absorb small irregularities that may occur on the upper side of a ceiling. Thereby an increased chance of air tightness of the membrane seal at the hole is obtained, even when the ceiling is irregular.

[0032] In an embodiment of the invention, the support member is formed of resilient material such that the support member can be changed between the first and the second configuration by elastic deformation of the support member.

[0033] By making the support member elastically deformable, is achieved that the support member can be passed through a hole more easily. At the same time, a very tight connection is obtained as the elastically deformable support member can also absorb small irregularities that may occur on the upper side of a ceiling. Thereby an increased chance of air tightness of the membrane seal at the hole is obtained even when the ceiling is irregular.

[0034] Other embodiments are recited in the dependent claims.

Brief description of the figures

[0035]

Figure 1 shows in perspective an embodiment of the invention provided with a casing shown in cross section.

Figure 2 shows in perspective an embodiment of the invention provided with a casing.

Figure 3 shows in perspective an embodiment of the invention.

Figure 4 shows in perspective an embodiment of the invention provided with fastening means in form of

cable ties.

Figure 5 shows in perspective a projection provided with a lock for a cable tie.

Figure 6 shows in perspective a lock for a cable tie.

Figure 7 shows in perspective another embodiment of the invention provided with fastening means in form of cable ties.

Figure 8 shows in perspective the embodiment shown in figure 6 seen from another angle.

Detailed description of the invention

[0036] It should be noted that embodiments and features described in the context of one of the aspects of the present invention also apply to the other aspects of the invention.

[0037] An embodiment of the present invention will now be described in more detail in the following with references to the figures.

[0038] In figure 1 is shown a fixture1 for fixation of a downlight in a hole in a ceiling or a wall. The embodiment shown in Figure 1 is shown with a casing 50 for a downlight (not shown) inserted. The casing 50 is shown in cross section without one half, thereby the fastening means 30, 4 can be seen.in the right side of the figure.

[0039] The fixture comprises: an annular flange 2, having a centre axis (y), an inner side 2'and an outer side 2", said annular flange being for abutment around a hole so that the annular flange lies substantially coaxially with the hole while the annular flange encloses the hole. The annular flange is for placement on the underside of a ceiling and the annular flange may be provided with means 29 for attaching e.g., a ceiling lamp in the form of a spot. In the shown embodiment these means comprise threads 29. The fixture further comprises, a support member 3 having a centre axis y, an inner side 3' and an outer side 3".

[0040] When lamps, such as spotlights, are to be installed in the ceilings of buildings, this is done by drilling a hole in the ceiling and then attaching the lamp to/in the hole.

[0041] The fixture according to the invention includes a support member and an annular flange that are independent. These elements each comprise mutually adapted fastening means, by which it is achieved that the annular element can be assembled with the support member and also, disassembled again. These elements are to be placed on either side of a surface and the actual attachment of the fixture to the surface takes place when the support member and the annular flange are moved towards each other by means of the fastening means, whereby they are both pressed against the surface. The fixture, according to the invention, is therefore not fixed in a hole, but instead around a hole, which gives a stronger fastening/construction. Since both, the annular member and the support element are annular elements, the fixture when mounted thus forms a very strong "opening" in which much more than lamps can be mounted and dismounted. If the fixture is used on / in a surface as e.g. a ceiling where the upper side is covered by a membrane, as explained below, the fixture will entail an airtight mounting of items in the fixture.

[0042] In modern buildings, the upper part of the ceiling is normally protected by a membrane that is airtight and this membrane is pierced when drilling holes. In the known systems, these membranes are not subsequently fixed/patched at the holes and thus leaks are created at the lamps/spots. This has a negative influence on the indoor climate, as the leaks often lead to moisture problems and unintentional heat transport.

[0043] The support member 3 is configured to form at least two configurations. The first configuration is as an annular member having a flat bottom 3‴ that defines a circular essentially unbroken surface with a first outer circumference. The first configuration being for abutment around the hole such that the annular member is substantially coaxial with the hole.

[0044] As can be seen in Figure 1, the underside 3‴ of the support member 3 is formed with a planar surface which makes it suitable for - in a sealing manner - pressing a membrane down against a surface on the upper side of a ceiling. But of course, it - and the fixture - can be used in holes/openings with or without a membrane. The fixture can also be used in holes/openings in other surfaces, such as a wall.

[0045] The second configuration being as an element defining a second outer circumference smaller than the first outer circumference. The first and the second configurations being adapted such that the support member can be passed through a hole when it forms the second configuration and at least partially encircles the same hole when it forms the - "bigger" - first configuration as an annular member. The support member comprises fastening means 30 being mutually adapted to complementary fastening means 40 (shown in figure 2) on the annular flange 2. Thereby, the annular flange can be mounted on the support member and when these elements are fastened together, they will be able to form an airtight joint around a membrane and further form a durable and strong fixture on which, for example, lamps can be installed.

[0046] In the embodiment shown in figures 1, 2 and 3 is shown a hinge 13'. The support members shown in these figures all comprise two circular pieces 10, 11, which are joined by a hinge 13'. The hinge 13' enables the ends 20, 21 opposite the hinge 13' to be moveable towards and away from each other. The second configuration of the support member is obtained when the ends 20, 21 of the two circular pieces 10, 11 are moved together. Preferably, but not necessarily, the two circular pieces are essentially identical semi-circular pieces.

[0047] In figures 1 and 2 is shown an embodiment,

wherein, the ends 20, 21- opposite the hinge 13' - of the two parts are connected via a circular guide 22 provided on one part 10, which extends inside a guide-groove 14 in the other part 11. The circular guide 22 and the guide-groove 14 are mutually adopted such that the circular guide slides inside the guide-groove 14 when the support member is manipulated between the first and the second configurations. The guide-groove 14, the circular guide 14' and the circular pieces 10,11 are preferably provided with bottom surfaces made plane, which entails an air-tight connection between the support member, the upper side of a hole and a membrane. In this context, the words "bottom surfaces" are to be understood as the surfaces that are to be clamped against / meet the upper side of a ceiling. the words can of course also be understood as the surfaces to be clamped against a membrane placed on the upper side of a ceiling.

[0048] In the embodiment shown in figure 3 are the two circular pieces connected to each other by spring means such that the support member will be in its second configuration when the two circular pieces are not affected by external forces. The spring may be situated between the two ends opposite the hinge 13. However, in the shown embodiment in figure 3 the spring 13 is connected to the two pieces at the hinge 13', such that a movement in the hinge will elastically bend/deform the spring. In the embodiment shown in figure 3 the spring 13 is laying in groves provided in the undersides of the two circular pieces 10, 11 at the hinge. The spring 13 in the shown embodiment is an elastic rubber or plastic piece fastened to the two circular pieces by e.g. moulding or glue. The spring 13 may thus be the part holding the two pieces together at the hinge and further also enabling the functionality of the hinge.

[0049] In another embodiment (not shown in the figures), a spring is functionally located between the ends of the two circular pieces. In figures 1 and 3, these ends are shown with a guide-groove 14 and a circular guide, respectively. The guide-groove 14 is provided with an end wall 14'. The spring may be situated in the circular guide 14 such that the spring is compressed when it is pressed against the end wall 14' by the end of the circular guide 22, when the circular guide enters the guide-groove 14. This entails that the support member will be in its first configuration when not affected by external forces.

[0050] When a fixture as shown in figure 1 is to be installed in a ceiling, this is done by performing the following steps, but not necessarily in sequence:

- drilling a hole sized such that, the support member can pass through the hole when it is in its second configuration and encircle the hole when it is in its first configuration
- ensuring that the support member is in its second configuration
- while being in its second configuration, passing the support member through the hole
- manipulating the support member to its first configuration
- placing the support member around the hole
- placing the annular member around the hole on the side opposite the side where the support member surrounds the hole
- bringing the mutually adapted fastening means on the annular member and the support member into a position wherein they can be clamped together
- clamping the annular member and the support member together.

[0051] If the fixture is fastened to a roof provided with a membrane, the fastening of the fixture preferably involves the step of:

- placing the membrane between the ceiling and the support member

[0052] In figure 2 is shown an embodiment of the invention wherein, the complementary fastening means 30 in the support member and the complementary fastening means in the annular flange 40, each comprises at least one projection on the inner side of their annular bodies. As can be seen, the flanges in this embodiment are used as a guide for thereto adopted indentations 52 in a casing 50. Such casing 50 is used especially when light sources such as spotlights are to be installed in environments where the spots can come in contact with insulation materials. The casing 50 thus prevents direct contact between spots and insulation, thereby reducing the risk of fire.

[0053] In the shown embodiment, the casing 50 and the fixture 1 are further mutually adopted with locking means, which prevent the casing from being released by pushing it through the fixture. These locking means, which are not seen in figure 2 can be a flange 51 as shown in figure 1.

[0054] As also indicated in figure 3, the fastening means 30 provided on the support member 3 may comprise two projection 30 situated offset 180 degree from each other on the inner side, and the annular member 2 may comprise two complementary projections 40. This provides a very good an even distribution of forces between the parts.

[0055] As best seen in figures 1 and 3, the fastening means may comprise releasable screw 4 connections between the projections 30 in the support member 3 and the projections 40 in the annular flange 2.

[0056] However, as seen in figure 4, the projection(s) in the annular flange and the projection(s) in the support member may be adapted such that they can be clamped together by means of conventional cable ties having a tape section with teeth that engage with a pawl located in the conventional cable ties head. The functionality of cable ties having a tape section with teeth and a head provided with a pawl is well known to persons skilled in the art and will therefore not be explained further in this application.

[0057] In figure 4 is shown a preferred embodiment of the invention having fastening means utilizing cable ties. In this embodiment, the projection (s) 30 in the support member comprises a hole being adapted such that a head 60 of a conventional cable tie 61 can be mounted in said hole by running the tape section through the hole until the head is caught in the hole. The projection(s) 30 in the annular flange comprises a pawl (not shown) being adapted for engagement with the teeth of a conventional cable tie having a head capable being caught in the hole in the projection(s) 30 in the support member 3.

[0058] Figure 4 shows a bridge-like object 63 connecting the lower parts of the two cable ties 61, 62 used in this embodiment. The purpose of this bridge-like construction 63 is to act as a guide, and it is used to push the support member against the annular flange while the tape section of the cable ties runs through it. The bridge-like construction 63 thus has no means, which engage with the teeth of the cable tie and accordingly it can after use be removed from the cable ties by simply pulling it in the opposite direction, i.e. in the direction corresponding downwards in the figure. By performing the projection in the annular flange 30 in this way, cable ties can be mounted in the support member 3 before the support member is inserted through a hole in the ceiling. The cable ties are set so that the head of these is caught in the hole while the tape section has a downward direction through the hole when the support member is mounted on the top of the hole. Subsequently, the annular flange 2 can thus be easily mounted and clamped against the support member by pressing the annular flange against the support member while the tape section of the cable ties is similarly pulled past the pawl mechanism in the annular flange.

[0059] To the left in figure 4 is shown a support 70 situated at the lower end of the projection 40.

[0060] This support is seen in greater details in figure 5. In figure 5 the support 70 is placed in a hole 32 in the projection 40 in the annular member 2. The hole 32 is provided with guide means 66,67 and has an upper edge 33 and a lower edge (not shown).

[0061] The hole 32, the guide means 66, 67 and the support 70 are made such, that a cable tie which runs through the hole 32 with its backside against the support 69 and its tip - which is facing in the same direction as the tip 64 of the support - will be locked against movement in the direction opposite the direction of the tip 64. This is achieved by the lower edge of the hole being adapted such that it will act as a conventional pawl and accordingly engage with the cable tie's teeth as long as the smooth backside of the cable tie is supported - and thereby presses its frontside-teeth against the edge.

[0062] The support 70 is in an embodiment of the invention adapted such that it can be removed by pulling it in the direction "w" as shown in figure 6. In the same figure is also shown that the support may preferably be provided with bottom flanges 68, 69 that will engage with the underside of the opening 32.

[0063] This mechanism that enables removal of support 70 will be explained with reference to figure 5, The support 70 is fastened/locked in the hole 32 by the tip 64 being locked by a lock 65. The lock 65 engages with the underside of the tip 64. The tip 64 is made such that the tip 64 is removeable from the support 70, provided it is subject to a sufficient pulling force in the direction "w". Once the tip is removed from the support 70, the support 70 is easily removed from the hole 32 by continuously pulling it in the direction "w". When the support 70 is removed the locking connection between the cable tie's teeth and the lower edge is also removed and accordingly, the annular flange 2 and the support member 3 will no longer be fastened together. A fixture according to this embodiment is therefore easily removed from the hole once the support is pulled out.

[0064] In an embodiment of the invention, the fixture comprises a support member formed of resilient material.

[0065] Figures 4, 7 and 8 show embodiments of the invention, where the support member 3 is made of resilient material.

[0066] In the embodiment shown in figures 7 and 8, the support member 3 and the annular flange 2 are assembled by means of cable strips / cable ties. In this embodiment, the annular flange is an integral part of a housing 74 for a spotlight. However, the underlaying idea/invention is the same, namely a two-part fixture gripping on each side of a surface. The support member 3 is - as also in the embodiment shown in figure 4 - made of an elastic/resilient material. It is best seen in figure 8 that the support member 3 comprises a cylindrical part 34 provided with a protruding flange 33. Normally the protruding flange is made elastic, such that it - during deformation - can be passed through an opening with a diameter corresponding to approximately the diameter of the cylindrical part 34 and once the protruding flange 33 has passed through, the protruding flange 33 will act as a "barb" when the support member 3 is pulled towards the annular flange 2 by means of the cable ties 61. The housing is provided with a guide 71, 73 for a cable tie and as best seen in figure 7 the housing is also provided with a lock 63 for a cable tie 61. The lock 63 is as also best seen in figure 7 situated a (short) distance from the guide 73. This entails release since the distance is adapted such that a tool - as a plier- can cut the cable tie 61 between the guide and the lock.

[0067] The embodiment shown in figures 7 and 8 is particularly advantageous when the fixture is to be used in a hole in a ceiling plate since all the parts can be mounted from one side, usually below and mounting of a fixture as shown in figures 7 and 8 normally comprise the following steps, however not necessarily in this order:

- drilling a hole with diameter adapted such that the housing 74 can be passed through the opening of the hole, while the annular flange 2 cannot
- passing the support member 3 - while it is elastically deformed - through the hole

- mounting cable ties in the support member with their heads locked in thereto adapted holes in the projections 30
- when the support member is passed through the hole, the support member is released such that it returns to its unstressed state without deformation
- the housing 74 and the support member are connected by means of the cable ties 61 which are passed through the locks 63 provided with pawls
- the housing is inserted through the hole and the support member and
- the annular flange 2 are guided towards each other and locked by means of the cable strips in an engagement, where the ceiling plate is clamped between the support member 3 and the annular flange 2.

[0068] By making the support member resilient, a very tight connection is obtained as the elastically deformable support member can also absorb small irregularities that may occur on the upper side of a ceiling. Thereby an increased chance of air tightness of the membrane seal at the hole is obtained even when the ceiling is irregular.
[0069] In an embodiment of the invention (not shown in the figures), the fixture comprises a support member formed of resilient material such that the support member can be changed between the first and the second configuration by elastic deformation of the support member.
[0070] By making the support member elastically deformable, is achieved that the support member can be passed through a hole more easily.

Claims

1. A fixture for fixation of e.g., a downlight in a hole in a ceiling or a wall, which fixture comprises:

• an annular flange, having a center axis, an inner side, and an outer side, said annular flange being for abutment on one side of the ceiling or wall around the hole so that the annular flange lies substantially coaxially with the hole while the annular flange encircles the hole;
• a support member having a centre axis, an inner side, and an outer side, said support member being for abutment on the other side of the ceiling or wall around the hole;
• fastening means provided on said support member;
• fastening means provided on said annular flange being mutually adapted to said fastening means on the support member such that the support member and the annular flange can be assembled in a releasably manner

characterized in that,
the support member is manipulatable between a first and a second configuration, the first configuration being as an annular member having a flat bottom that defines an - essentially - circular unbroken surface, the first configuration being for abutment on one side of the ceiling or wall around the hole so that the support member lies substantially coaxially with the hole while the support member encircles the hole, the first and second configurations being adapted such that the support member can be passed through an hole when it forms the second configuration and encircles the same hole when it forms the first configuration as an annular member.

2. A fixture according to claim 1, wherein, the fixture comprises a support member formed of resilient material.

3. A fixture according to claim 1 or 2, wherein, the fixture comprises a support member formed of resilient material such that the support member can be changed between the first and the second configuration by elastic deformation of the support member.

4. A fixture according to any of the claims 1-3, wherein, the complementary fastening means in the support member and the complementary fastening means in the annular flange comprise at least one projection on the inner side of their annular bodies.

5. A fixture according to claim 4, wherein, the complementary fastening means in the support member and the annular flange each comprise two projections situated offset 180 degree from each other on the inner sides of their annular bodies,

6. A fixture according to any of the claims 1-5 wherein, the fastening means comprise at least one releasable screw connection between a projection in the support member and a projection in the annular flange.

7. A fixture according to any of the claims 1-6, wherein, the projection(s) in the annular flange and the projection(s) in the support member are adapted such that they can be clamped together by means of conventional cable ties having a tape section with teeth that engage with a pawl located in the conventional cable ties head.

8. A fixture according to any of the claims 1-7, wherein,

• the projection (s) in the support member comprises a hole being adapted such that a head of a conventional cable tie can be mounted in said hole by running the tape section through the hole until the head is caught in the hole
• the projection(s) in the annular flange comprises a pawl being adapted for engagement with

the teeth of a conventional cable tie having a head capable being caught in the hole in the projection(s) in the support member.

9. A fixture according to claim 8, wherein, the cable tie is made detachable by means of a removable support in the annular flange being adapted such that it is capable of abutting against the smooth side of a strip.

10. A fixture according to any of the claims 1-9, wherein, the support member comprises two circular pieces, which are hinged together such that the hinge enables the ends opposite the hinge to be moveable towards and away from each other and where the second configuration is obtained when the ends of the two circular pieces are moved together.

11. A fixture according to claim 10, wherein, the ends - opposite the hinge - of the two parts are connected via a circular guide in one part, which extends slidable inside a guide-groove in the other part.

12. A fixture according to claim 10-11, wherein the two circular pieces are connected to spring means such that the support member will be in its second configuration when the two circular pieces are not affected by external forces.

13. A fixture according to claim 12, wherein, the spring means comprise a spring being functionally located between the ends of the two circular pieces and the spring being a compression spring, which presses the ends away from each other.

14. A fixture according to claim 12 or 13, wherein, the spring lays inside the guide-groove.

15. A fixture according to any of the claims 10-14, wherein, the fixture comprises spring means being functionally located in the hinge and the spring means work against that the ends are being moved towards each other.

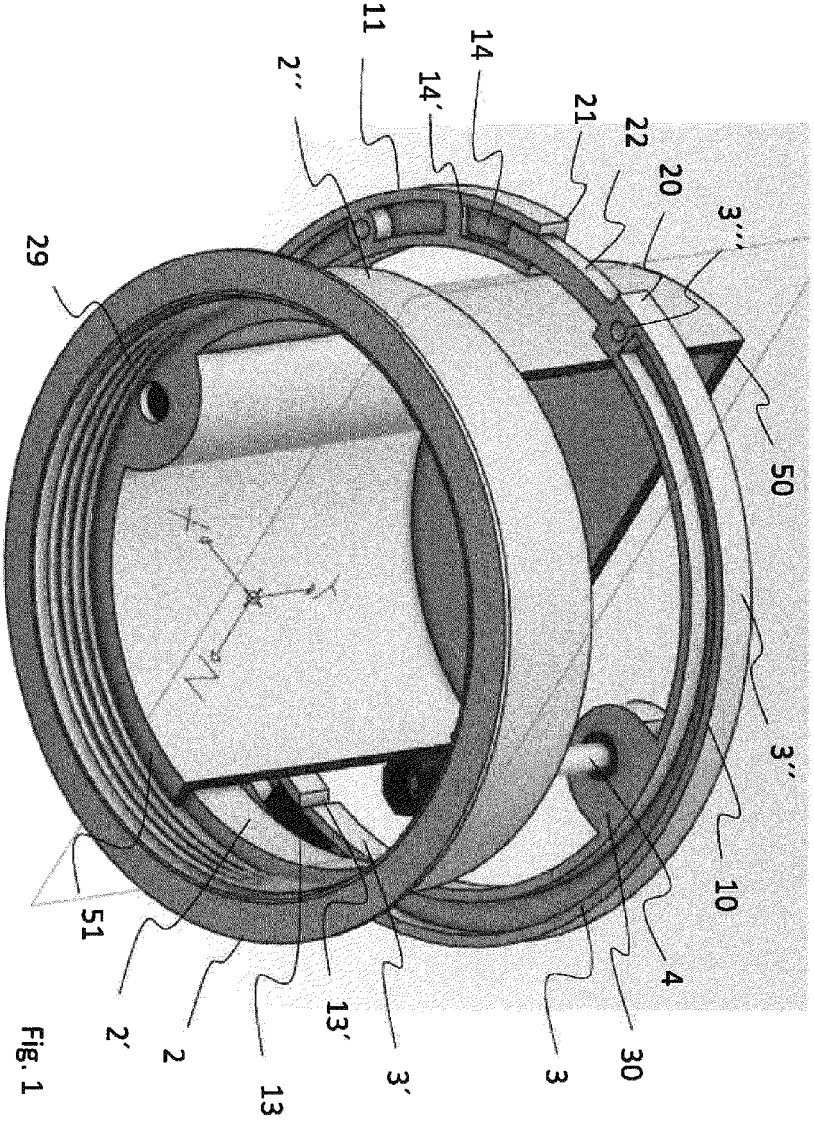

Fig. 1

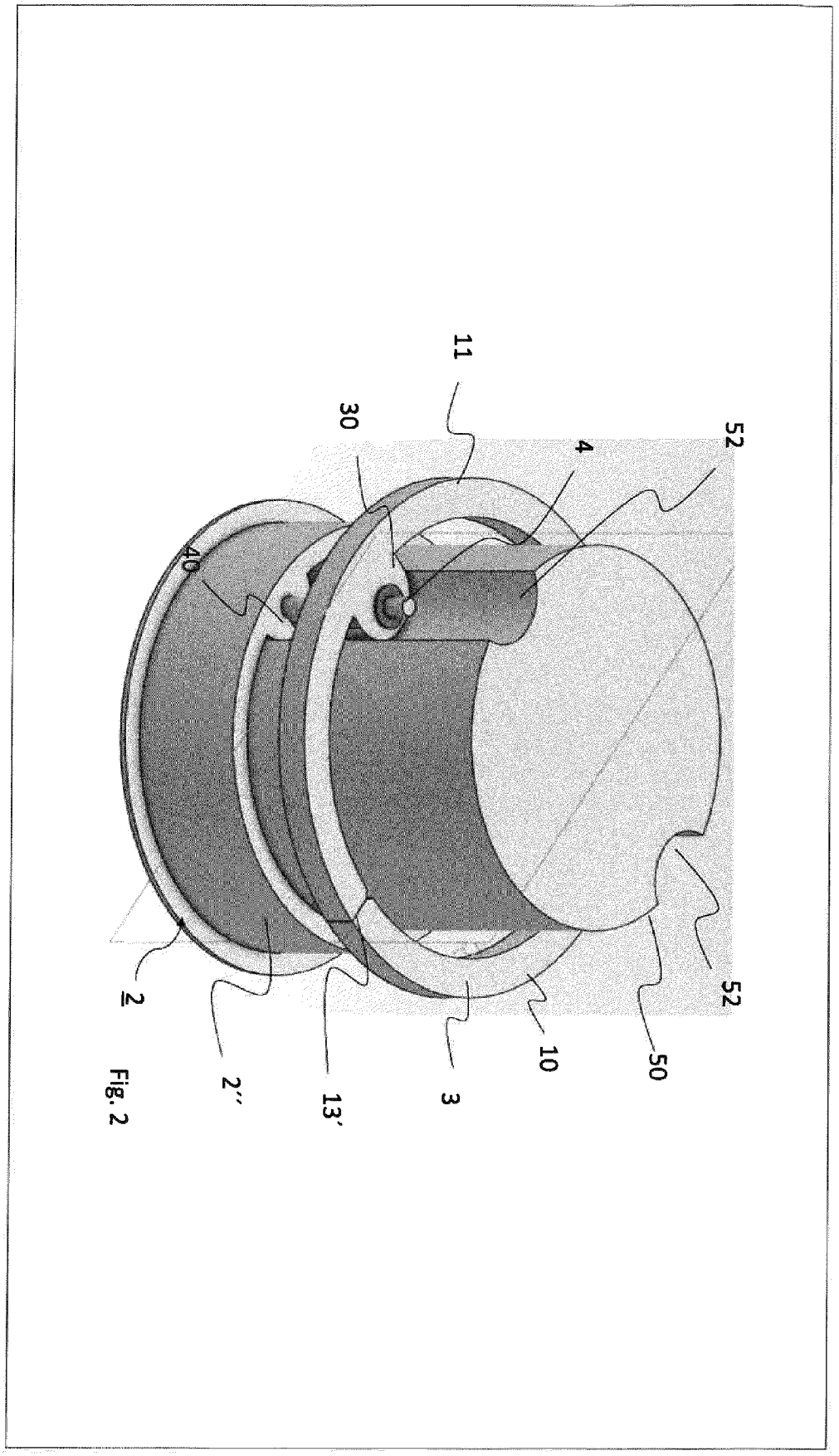

Fig. 2

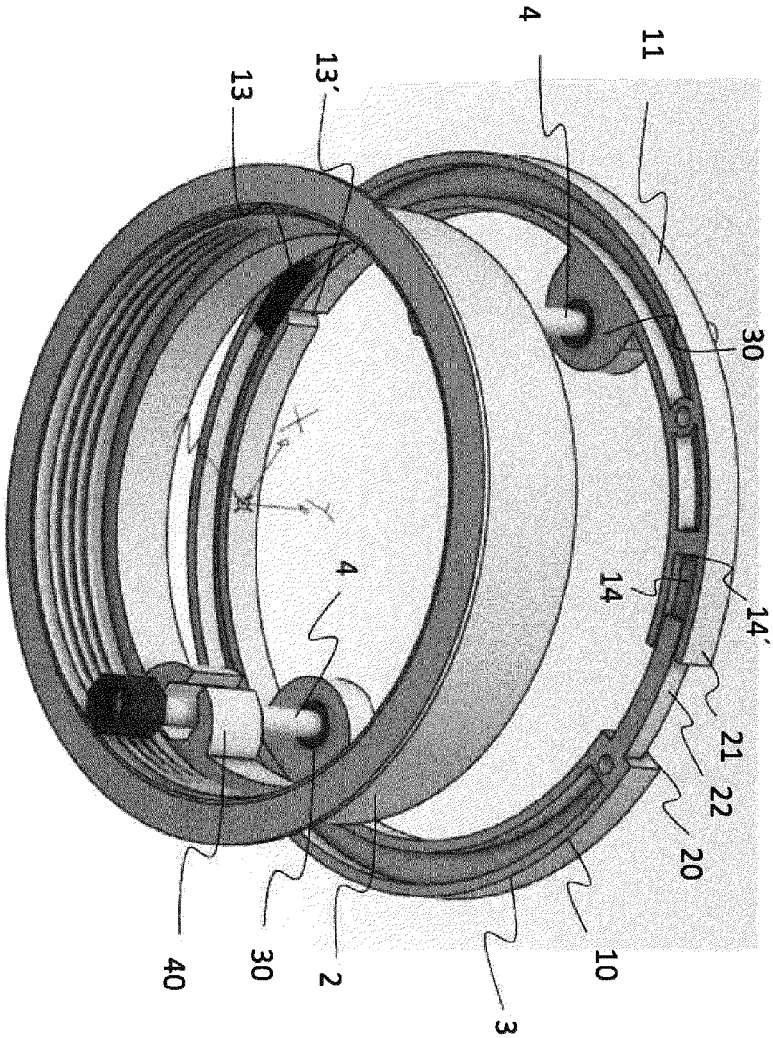

Fig. 3

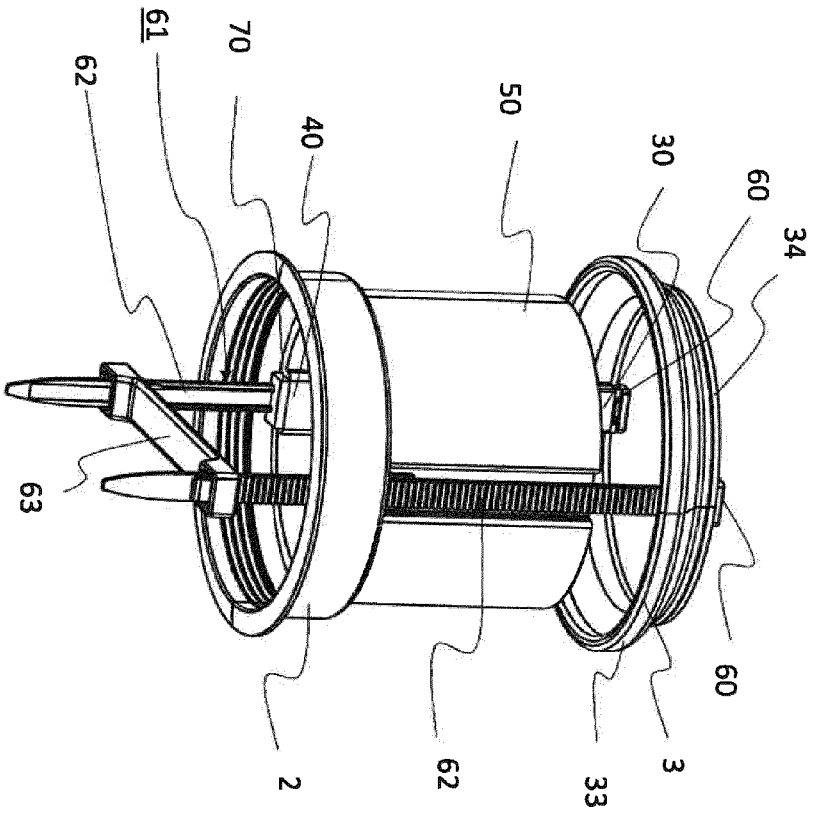

Fig. 4

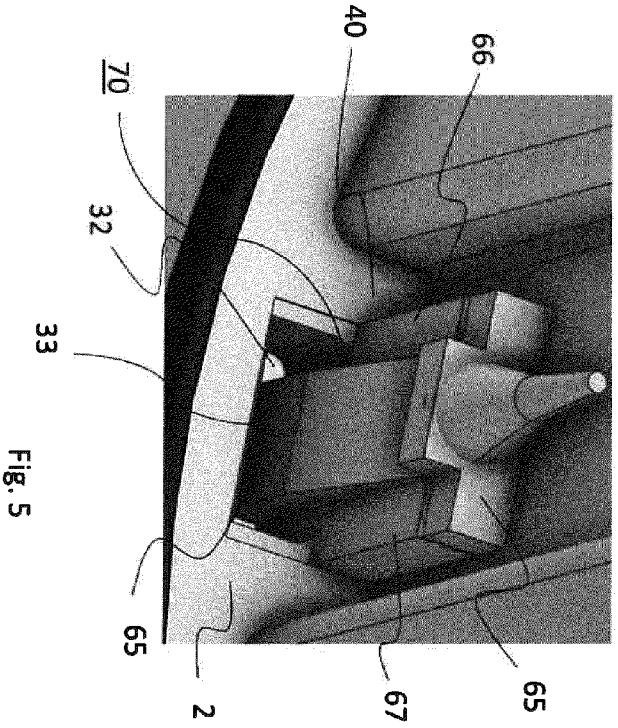

Fig. 5

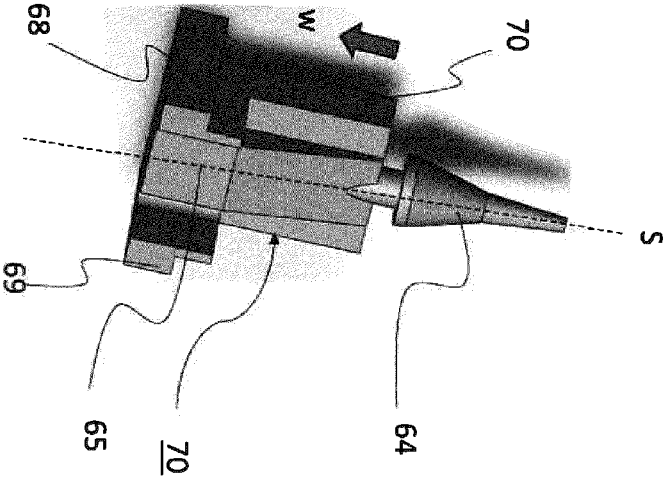

Fig. 6

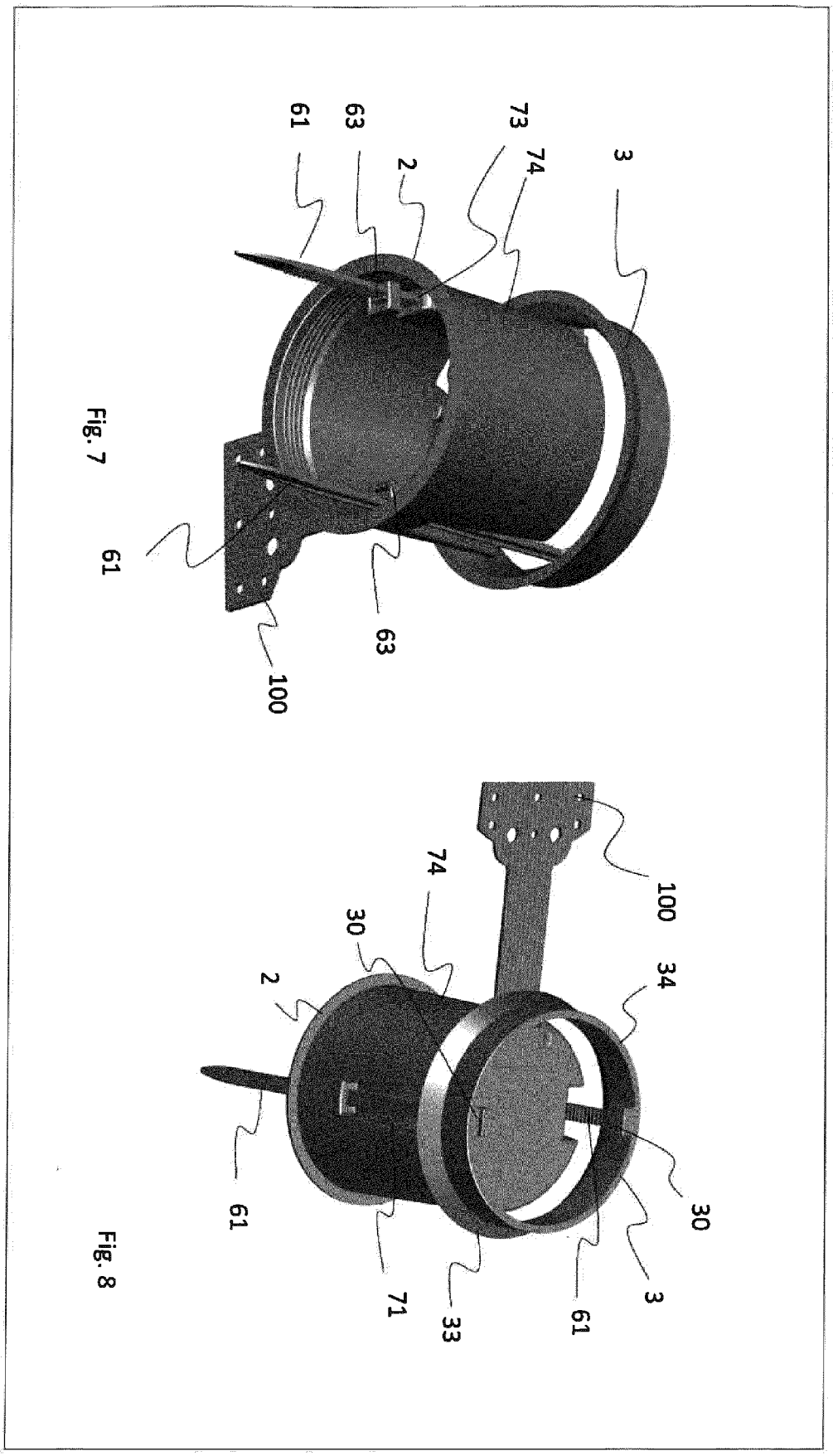

Fig. 7

Fig. 8

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 16 5877

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 A	EP 3 297 110 A1 (NIKO NV [BE]) 21 March 2018 (2018-03-21) * figures 9-12,14 * * paragraph [0052] - paragraph [0054] *	1-4,6 10-15	INV. F21V21/04 F21S8/02
X	GB 2 530 177 A (B & W GROUP LTD [GB]) 16 March 2016 (2016-03-16) * page 30, line 16 - page 32, line 16 * * figures 5b,6,7 *	1-3,7-9	
X	EP 2 581 645 A1 (DAXTOR APS [DK]) 17 April 2013 (2013-04-17) * figures 1-7 * * paragraphs [0006], [0028], [0031] *	1,4-6	
X	JP H05 7389 A (NISHI DENKO KK) 14 January 1993 (1993-01-14) * figures 1,3,4,14 *	1-6	
X	KR 101 855 361 B1 (COZYLED LTD [KR]) 8 May 2018 (2018-05-08) * figures 8-15 * * paragraph [0034] *	1,2,4-6	TECHNICAL FIELDS SEARCHED (IPC) F21V F21S
A	US 2010/208471 A1 (SELL TIMOTHY L [US]) 19 August 2010 (2010-08-19) * figures 1-6 *	1	
A	US 2020/393098 A1 (BOULANGER DAVE [CN] ET AL) 17 December 2020 (2020-12-17) * figures 5,6 *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 August 2022	Dinkla, Remko

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 16 5877

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-08-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3297110 A1	21-03-2018	BE 1024579 A1	11-04-2018
		EP 3297110 A1	21-03-2018
GB 2530177 A	16-03-2016	GB 2517846 A	04-03-2015
		GB 2530177 A	16-03-2016
		GB 2592172 A	18-08-2021
EP 2581645 A1	17-04-2013	NONE	
JP H057389 A	14-01-1993	NONE	
KR 101855361 B1	08-05-2018	NONE	
US 2010208471 A1	19-08-2010	NONE	
US 2020393098 A1	17-12-2020	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82