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(54) **AN ATTACHMENT MODULE FOR SUPPORTING A LAMP GLOBE**

(57) The present inventive concept relates to an attachment module (70) for supporting a lamp globe (30) having an opening for a lamp socket (90), the attachment module comprising:

a central body (72) having a connecting portion (74) configured to fit the lamp socket;
a plurality of elongated arms (76) extending out from the central body, wherein each one of the elongated arms is bendable in relation to the central body, such that in a

first state, a respective endpoint of the elongated arms is positioned at a first radial distance from the central body whereby the attachment module can pass through the opening, and wherein

in a second state, a respective endpoint of the elongated arms is positioned at a second radial distance from the central body, the second radial distance being larger than the first radial distance whereby the attachment module cannot pass through the opening.

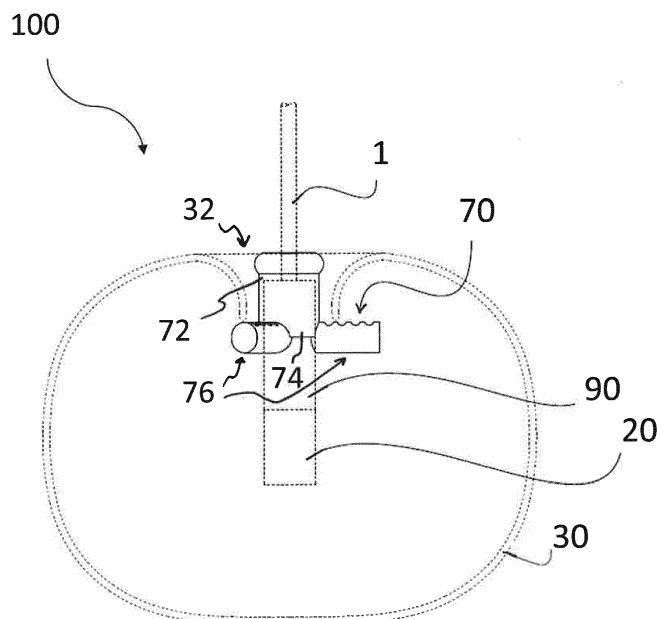


Fig. 1

Description

Technical field of the Invention

[0001] The present inventive concept relates to an attachment module for supporting a lamp globe. The present inventive concept further relates to a lamp arrangement comprising an attachment module.

Background of the Invention

[0002] An attachment module is typically used to support a lamp globe or a lamp shade of a hanging lamp. The term hanging lamp is referring to light systems mounted to a ceiling or similar, by a cable connected to the light system.

[0003] A hanging lamp typically consists of a cable, a lamp shade or a lamp globe with one opening located the upper part of the lamp globe or lamp shade (i.e. the part facing the ceiling), a lamp socket attached to the cable, and a light source such as e.g. a light bulb, held in the lamp socket. These components may commonly be referred to as a lamp arrangement, or specifically when a lamp globe is comprised, a lamp globe arrangement.

[0004] When the lamp arrangement is hanging from a ceiling it is advantageous to have a lamp globe or lamp shade that encloses the light source. The shading of the lamp should be as good as possible which put some challenges to how to attach the lamp globe or lampshade to the light source.

[0005] Conventional attachment modules often comprise two or more parts which must be fixed together by a tool or a screw.

[0006] The present inventive concept seeks to provide an attachment module for supporting a lamp globe which is less complex and easier to use.

Summary of the Invention

[0007] An object of the inventive concept is to overcome the above problems, and to provide for an attachment module which, at least to some extent, is less complex than prior art solutions. This, and other objects, which will become apparent in the following, are accomplished by means of an attachment module and a lamp arrangement comprising an attachment module defined in the accompanying claims.

[0008] The present inventive concept is based on the insight that an attachment module as described for supporting a lamp globe or lamp shade of a hanging lamp arrangement facilitates the assembling and reassembling of the lamp arrangement. In addition, the mounting of the lamp arrangement to the ceiling is simplified with no lamp globe attached, as the attachment module provides a means for easily attaching the lamp globe or lamp shade to the lamp socket, light source and associated cable to the after mounting the latter to the ceiling. Fur-

thermore, the lamp arrangement gets an improved visual appearance since the attachment module is hidden inside the lamp globe or lamp shade.

[0009] According to at least a first aspect of the present inventive concept, an attachment module for supporting a lamp globe having an opening for a lamp socket is provided. The attachment module comprises:

a central body having a connecting portion configured to fit the lamp socket;
a plurality of elongated arms extending out from said central body, wherein each one of said elongated arms is bendable in relation to said central body, such that in a first state, a respective endpoint of said elongated arms is positioned at a first radial distance from said central body whereby said attachment module can pass through said opening, and wherein in a second state, a respective endpoint of said elongated arms is positioned at a second radial distance from said central body, said second radial distance being larger than said first radial distance whereby said attachment module cannot pass through said opening.

[0010] Hereby, the attachment module can easily be inserted in the lamp globe or disengaged from the same when compressed in said first state. The lamp globe itself must not be put in parts during installation or disengagement. Neither do the operator has to use a tool to assemble or disassemble the attachment module within the lamp globe.

[0011] Furthermore, the attachment portion provides an advantage when used in combination with spherical globes with only one opening. Normally the size of the opening in the lamp globe limits the size of the attachment module which is to be attached to it. However, the bendable function of the attachment module provides a possibility to use the attachment module together with lamp globes with different sizes of openings. The lamp globe can be manufactured in many different shapes and still fit to the attachment module. In addition, the bendable function of the attachment modules allows for an opening within the globe to be small. Even with a small opening it is easy to insert or remove the attachment module from the lamp globe without risk of breakage of the attachment module or the lamp globe.

[0012] Another advantage is that the attachment module could be made of recycled plastic material. This feature in combination with the fact that the attachment module can be used several times, in combination with various lamp arrangements, makes the attachment module environmentally friendly. In other words, the attachment module could be made for a long life cycle.

[0013] The attachment module has an advantage in that it is positioned inside the lamp globe. This means that the attachment module is not visible once it is assembled to the lamp globe or lamp shade.

[0014] For the attachment module to function properly,

the lamp arrangement, to which the attachment module in use is connected to, is preferably a hanging lamp arrangement. A hanging lamp arrangement is for example attached to the inner sealing of a house. Thus, the application of the attachment module is typically for a hanging lamp which also can be referred to as a suspended lamp.

[0015] The attachment module may also be used for supporting a lamp shade, thus both the term lamp globe and the term lamp shade are used throughout the application text when describing the supporting function of the attachment module. To support a lamp globe could be interpreted as to hold a lamp globe. A function of the lamp globe is to diffuse the light. A lamp globe could also be referred to as a lamp diffuser or a reflexion shell.

[0016] Hereby, the lamp arrangement can be mounted to a ceiling before the lamp globe is assembled which makes the installation procedure of the lamp arrangement facilitated, especially, when the lamp globe is bulky or heavy.

[0017] According to at least one example embodiment, said first state is a bended state in which each one of said elongated arms is bended in relation to said central body, and wherein said second state is a relaxed state in which each one of said elongated arms is unbended in relation to said central body.

[0018] Hereby, the attachment module can obtain different shapes. In the first state, which is referred to as the bended state, the attachment module is compressed. When the attachment module is compressed it can easily be passed through an opening of a lamp globe. When the lamp arrangement is suspended and the attachment module is in the relaxed state, the elongated arms of the attachment module extend radially longer relative the central body, and may thus carry the lamp globe and prevent the lamp socket and the light source, inside the lamp globe from falling out.

[0019] A relaxed state means that the attachment module is not influenced by an internal tension. In bended state there is an internal tension within the attachment module. There needs to be a force applied in order to make the attachment module to stay in the bended state. For this reason, the risk that the attachment module will be bended once it is applied inside lamp globe is small. Hence the attachment module is safe and secure to hold the lamp globe. Thus, there is a low risk of unintended separation of the attachment module from the lamp globe.

[0020] The bended state of the attachment module is advantageous when the attachment module is to be inserted in the lamp globe. The bended state is also advantageous when releasing the attachment module from the lamp globe. The bended state could be that the elongated arms are bended in an upwards direction in relation to the lamp globe, into a so called upward bending state. The upward bending state is advantageous when the attachment module is to be inserted in the lamp globe. The bended state could also mean that the elongated arms

are bended downwards in relation to the lamp globe. Such downward bending of the elongated arms is advantageous when releasing the attachment module from the lamp globe. In either of the two bending directions of the elongated arms the attachment module has a smaller diameter, as measure from the central body, such as e. g. a centreline of the central body, than when the elongated arms are in the relaxed state, or second state.

[0021] Since the elongated arms are extending from the central body, the size of the aperture within the globe may be varied, i.e. the attachment module can be adopted to several different globes with different aperture size or different shapes of the globe. The lamp globe does not have to be spherical, it could also have other shapes.

[0022] According to at least one example embodiment, said central body has a tubular shape.

[0023] Hereby, the attachment module is made to match a lamp socket of a tubular shape. It should be understood that the central body may adopt other arrangements provided that the dimension of the attachment module allows for passage through an opening of a lamp globe, and fits to a lamp socket. A tubular shape may be referred to as a cylindrical shape.

[0024] Additionally, with a tubular shape of the attachment module the diameter of it in its bended state can be minimised.

[0025] According to at least one example embodiment, said elongated arms are evenly distributed around the periphery of the central body.

[0026] Hereby, an even load distribution is applied to the attachment module when arranged in the relaxed state. In addition, the lamp globe is easy to adjust to the attachment module in order to make it centralised. Hereby, the lamp arrangement including the lamp globe can be hung straight. The correction of weight balance is facilitated with evenly distributed elongated arms. The elongated arms help to correct the weight balance of the lamp globe. In addition, the lamp globe positioning may be adjusted without aid of adjusting means, as e.g. screws.

[0027] According to at least one example embodiment, said connecting portion comprises a recess sized and dimensioned to hold the lamp socket.

[0028] Accordingly, the lamp socket has a smaller radius than the radius of the recess of the connecting portion. Thus, the lamp socket fits into, and may be connected to the attachment module, i.e. the connection portion and the lamp socket are attachable to one another.

[0029] The attachment module and the lamp socket are easily connected to one another via the connecting portion by a pulling, tractive movement of the cable. Likewise, the attachment module and the lamp socket are easily disconnected from each another by a counter force of the cable.

[0030] The attachment module is via the connecting portion able to connect to a lamp socket or to be separated therefrom. Preferably, the lamp socket is not connected to the attachment module when this is to be bent,

e.g. when the elongated arms are to be bent with regards to the central body in order to insert the attachment module into the lamp globe or for excerpting the same. To embrace or hold the lamp socket means that an upper part of the lamp socket is enclosed by the connecting portion. Thus, the lamp socket carries the lamp arrangement when the connecting portion is attached to the attachment portion and the lamp arrangement is suspended.

[0031] According to at least one example embodiment, the connecting portion of the attachment module may be shaped to house in its inside at least a part of the lamp socket. This could be embodied by that the attachment module is hollow with an inner diameter exceeding the outer diameter of the lamp socket.

[0032] According to at least one example embodiment, said central body has a first end portion comprising said connecting portion, and wherein said recess is a first recess, and wherein said central body has a second end portion arranged opposite to said first end portion, said second end portion comprising a second recess.

[0033] Hereby, the first and the second recesses are linked to each other which makes it possible to adopt the attachment module to a cable to.

[0034] The first recess makes it possible to adopt a lamp socket to the connecting portion. The first recess could be an aperture of the attachment module. The first recess could have a circular shape. The first recess is used for the cable to be inserted in the attachment module. Therefore, the first recess could be of a size similar to that of a cable. According to at least one example embodiment, the attachment module is positioned on the cable with the lamp socket on one side and the lamp globe on the other side. A recess could here be interpreted as an aperture. The first recess can also be connected to the second recess and thereby form a through-hole in the attachment module.

[0035] According to at least one example embodiment, said first recess has a diameter larger than said second recess of said second end portion.

[0036] Hereby, the lamp socket is stuck in the attachment module. The first recess is used for guiding the cable. The second recess is used for adopting the lamp socket connected to the cable.

[0037] According to at least one example embodiment, said elongated arms are extending in a radial direction from said central body.

[0038] Hereby, the elongated arms can bend both upwards and downwards. The radial direction promotes a stable product. The elongated arms may thus take up loads from the lamp globe in an even distribution.

[0039] According to at least one example embodiment, said elongated arms are extending substantially perpendicular to a main extension of said central body.

[0040] Hereby, the load is evenly distributed on the attachment module when it is in use. The lamp globe hereby rests on the elongated arms by gravity.

[0041] According to at least one example embodiment,

each one of said elongated arms has a tubular shape.

[0042] The tubular shape provides for the advantage that the attachment module can slide through the hole in the lamp glove. The tubular shape of the elongated arms facilitates the sliding motion. If the hole in the lamp is very tight, the sliding motion needs to be optimised. The sliding properties of the attachment module through the hole in the lamp glove is an important feature of the attachment module. The function of the attachment module is enhanced by its ability to slide.

[0043] According to at least one example embodiment, said elongated arms are provided with scores or grooves.

[0044] The scores of the elongated arms improve the ability of the attachment module to support the lamp globe. For example, if the lamp arrangement is exposed to a push, the lamp globe is, by help of the scores in the elongated arms, prevented from sliding. Furthermore, if a recess in the score has the dimension to the enclose an edge of the lamp globe directed downwards, the stability is still more enhanced.

[0045] According to at least a second aspect of the present inventive concept, a lamp arrangement is provided. The lamp arrangement comprises a lamp globe having an opening for a lamp socket, and an attachment module according to the first aspect of the present inventive concept. Thus, the lamp arrangement of the second aspect of the present inventive concept may be referred to as a lamp glove arrangement.

[0046] Effects and features of this second aspect of the present invention are largely analogous to those described above in connection with the first aspect of the inventive concept. Embodiments mentioned in relation to the first aspect of the present invention are largely compatible with the second aspect of the invention. The opening of the lamp globe is typically adapted to the size of the attachment module, such that in the second state, the elongated arms extends beyond the opening of the lamp globe.

[0047] According to at least one example embodiment, the lamp arrangement further comprises at least one of the following: a cable, a lamp socket being attachable to a cable or being attached to the cable, a light source such as e.g. a light bulb, typically held in the lamp socket.

[0048] The lamp arrangement may also be referred to as a lamp shade arrangement for which the lamp globe is referred to a lamp shade having an opening for a lamp socket.

Brief description of the drawings

[0049] The present inventive concept will now be described in more detail, with reference to the appended drawings showing example embodiments, wherein:

Fig. 1 illustrates in cross section of a lamp arrangement in an assembled state with an attachment module according to at least one example embodiment of the inventive concept;

Fig. 2a-2e illustrate in cross section the steps for assembling a lamp arrangement from an unassembled state to an assembled state, with an attachment module according to at least one example embodiment of the inventive concept going from a relaxed state to a bended state and back to a relaxed state; Fig. 3 illustrates different cross sections of the attachment module according to at least one example embodiment of the inventive concept.

Detailed description of the drawings

[0050] In the following description, the present inventive concept is described with reference to an attachment module and a lamp arrangement comprising said attachment module.

[0051] Fig. 1 illustrates in cross section of a lamp arrangement 100 in an assembled state. The lamp arrangement comprises an attachment module 70, a lamp globe 30, a cable 1, a lamp socket 90, and a light source 20, and in the assembled state, at least the attachment module 70 is assembled and connected to the lamp globe 30, and preferably also to the light source 20 and the cable 1 via the lamp socket 90. As seen in Fig. 1, the lamp globe 30 comprises an opening 32, through which the cable 1 and possibly the lamp socket 90 extends in order to position the light source 20 within the lamp globe 30. The cable 1 is typically plugged into a power outlet and provides electricity to the light source 20 via the lamp socket 90, i.e. the cable 1 is connected to the lamp socket 90 holding the light source 20. As shown in Fig. 1, the attachment module 70 comprises a central body 72, which in the embodiment of Fig. 1 is tubularly shaped, and which is provided with a plurality of elongated arms 76, of which two arms are shown in Fig. 1. The attachment module 70 further comprises a connecting portion 74 configured to be coupled to the lamp socket 90, as will be further described with reference to Fig. 3. In Fig. 1, the elongated arms 76 are arranged within the lamp globe 30, and supports a portion of the lamp globe 30 surrounding the opening 32. Hereby, the lamp socket 90 and light source 20 are held within the lamp globe 30, and are prevented from being withdrawn from the lamp globe 30, by means of the attachment module 70.

[0052] Figs. 2a-2e discloses the lamp arrangement 100 of Fig. 1, from a non-assembled state (Fig. 2a-2d) to an assembled state (Fig. 2e).

[0053] Fig. 2a illustrates the lamp arrangement 100 in a non-assembled state, i.e. in which the attachment module 70 is not assembled to the lamp globe 30 or any other parts of the lamp arrangement 100. The attachment module 70 is in a relaxed state with the elongated arms 76 extending substantially perpendicular to the main extension of the central body 72. Hence, a respective endpoint of the elongated arms 76 is positioned at a radial distance from the central body 72 which prevents the attachment module 70 to pass through the opening 32 of the lamp globe 30. In Fig. 2a, the attachment module 70 encircles

the cable 1, and the lamp socket 90 is connected to the cable 1 but the attachment module 70 is not yet connected to the lamp socket 90. In Fig. 2a the cable 1, the attachment module 70, the lamp socket 90, and the light source 20 are not inserted in the lamp globe 30.

[0054] Fig. 2b illustrates the same lamp arrangement 100 as Fig. 2a except for that the attachment module 70 is in a bended state, i.e. the elongated arms 76 are not extending substantially perpendicularly with regards to the main extension of the central body 72. Instead, elongated arms 76 are arranged in a first state, or bended state, wherein a respective endpoint of the elongated arms 76 is positioned at a radial distance from the central body 72 whereby the attachment module 70 can pass through the opening 32 of the lamp globe 30. This radial distance may be referred to as a first radial distance. In Fig. 2b, the elongated arms 76 are bended in a downward position, downward being in the direction of the force of gravity.

[0055] Fig. 2c illustrates the lamp arrangement 100 according to Fig. 2b in yet another position. Similar to Fig 2b, the attachment module 70 is in a bended state, i.e. the elongated arms 76 are not extending substantially perpendicularly with regards to the main extension of the central body 72. The attachment module 70 is positioned in the opening 32 of a lamp globe 30, and is thus in the process of being inserted into the lamp globe 30. Thus, Fig. 2c illustrates the attachment module 70 compressed when it is to be passed through the opening 32 of a lamp globe 30 in a direction in or out from the lamp globe 30.

[0056] Fig. 2d illustrates the same lamp arrangement 100 as in Figs. 2a-2c, with the difference that the attachment module 70, at least a part of the cable 1, the lamp socket 90, and the light source 20 are positioned inside the lamp globe 30. Hence, owing to that the elongated arms 76 are bendable, the attachment module may be compressed and be passed through the opening 32 of the lamp globe 30, in order to position the light source 20 within the lamp globe 30.

[0057] Fig. 2e illustrates the lamp arrangement 100 as in Fig. 2d, but in an assembled state, and wherein the light source 20 and the attachment module 70 are arranged in the lamp globe 30. The lamp arrangement 1 may for example be a suspended lamp arrangement 1. In the assembled state, the attachment module 70 is relaxed and thus arranged in a relaxed state (or second state) wherein a respective endpoint of the elongated arms 76 is positioned at a radial distance from the central body 72, which radial distance is larger than the first radial distance in the bended state (or first state) so that the attachment module 70 cannot pass through the opening 32 of the lamp globe 30. This radial distance may be referred to as a second radial distance. Moreover, as seen in Fig. 2e, the lamp globe 30 rests on the elongated arms 76 of the attachment module 70. Preferably, the lamp globe 30 rests on scores 78 (better shown in Fig. 3) of the elongated arms 76.

[0058] Fig. 3 illustrates a cross sectional view of the

attachment module 70, as shown in Fig. 1 and in Figs. 2a-2e. As stated above, the attachment module 70 comprises a central body 72 provided with elongated arms 76 and a connecting portion 74 for connection to the lamp socket 90. The connecting portion 74 is located on a first end portion 80 of the attachment module 70 which further comprises a first recess 75. The first recess 75 is sufficiently big to enclose at least a portion of a lamp socket 90, as illustrated in Fig. 1. Hence, the recess 75 is sized and dimensioned to hold the lamp socket 90, or at least a part of the lamp socket 90.

[0059] The central body 72 further comprise a second end portion 82 arranged opposite to the first end portion 80, the second end portion 82 having a second recess 85. In Fig. 3, the second recess 85 of the second end portion 82 meets the first recess 75 of the first end portion 80, and thus forms a through hole through which the cable 1 can be led. Thus, the attachment module 70 is hollow and a cable 1 can be mounted into the attachment module 70 as illustrated in Fig. 1 and Figs. 2a-2e.

Claims

1. An attachment module for supporting a lamp globe having an opening for a lamp socket, said attachment module comprising:
 - a central body having a connecting portion configured to fit the lamp socket;
 - a plurality of elongated arms extending out from said central body, wherein each one of said elongated arms is bendable in relation to said central body, such that in a first state, a respective end-point of said elongated arms is positioned at a first radial distance from said central body whereby said attachment module can pass through said opening, and wherein in a second state, a respective endpoint of said elongated arms is positioned at a second radial distance from said central body, said second radial distance being larger than said first radial distance whereby said attachment module cannot pass through said opening.
2. An attachment module according to claim 1, wherein said first state is a bended state in which each one of said elongated arms is bended in relation to said central body, and wherein said second state is a relaxed state in which each one of said elongated arms is unbended in relation to said central body.
3. An attachment module according to any one of the preceding claims, wherein said central body is tubularly shaped.
4. An attachment module according to any one of the preceding claims, wherein said elongated arms are evenly distributed around the periphery of the central body.
5. An attachment module according to any one of the preceding claim, wherein said connecting portion comprises a recess sized and dimensioned to hold the lamp socket.
6. An attachment module according to claim 5, wherein said central body has a first end portion comprising said connecting portion, and wherein said recess is a first recess, and wherein said central body has a second end portion arranged opposite to said first end portion, said second end portion comprising a second recess.
7. An attachment module according to claim 6, wherein said first recess has a diameter smaller than said second recess of said second end portion.
8. An attachment module according to any one of the preceding claims, wherein said elongated arms are extending in a radial direction from said central body.
9. An attachment module according to claim 8, wherein said elongated arms are extending substantially perpendicular to a main extension of said central body.
10. An attachment module according to any one of the preceding claims, wherein each one of said elongated arms has a tubular shape.
11. An attachment module according to any one of the preceding claims, wherein said elongated arms are provided with scores.
12. A lamp arrangement comprising lamp globe having an opening for a lamp socket, and an attachment module according to any one of the claims 1-11.

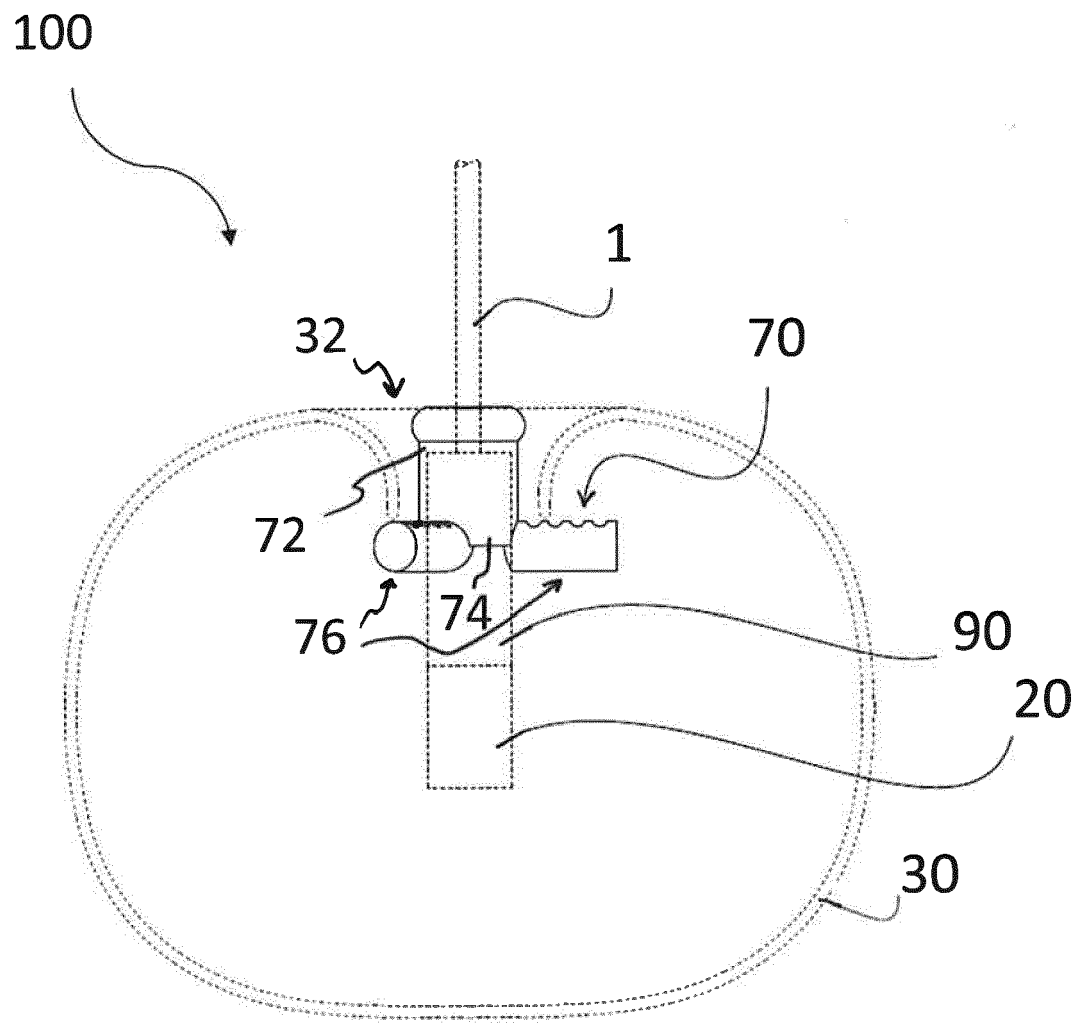


Fig. 1

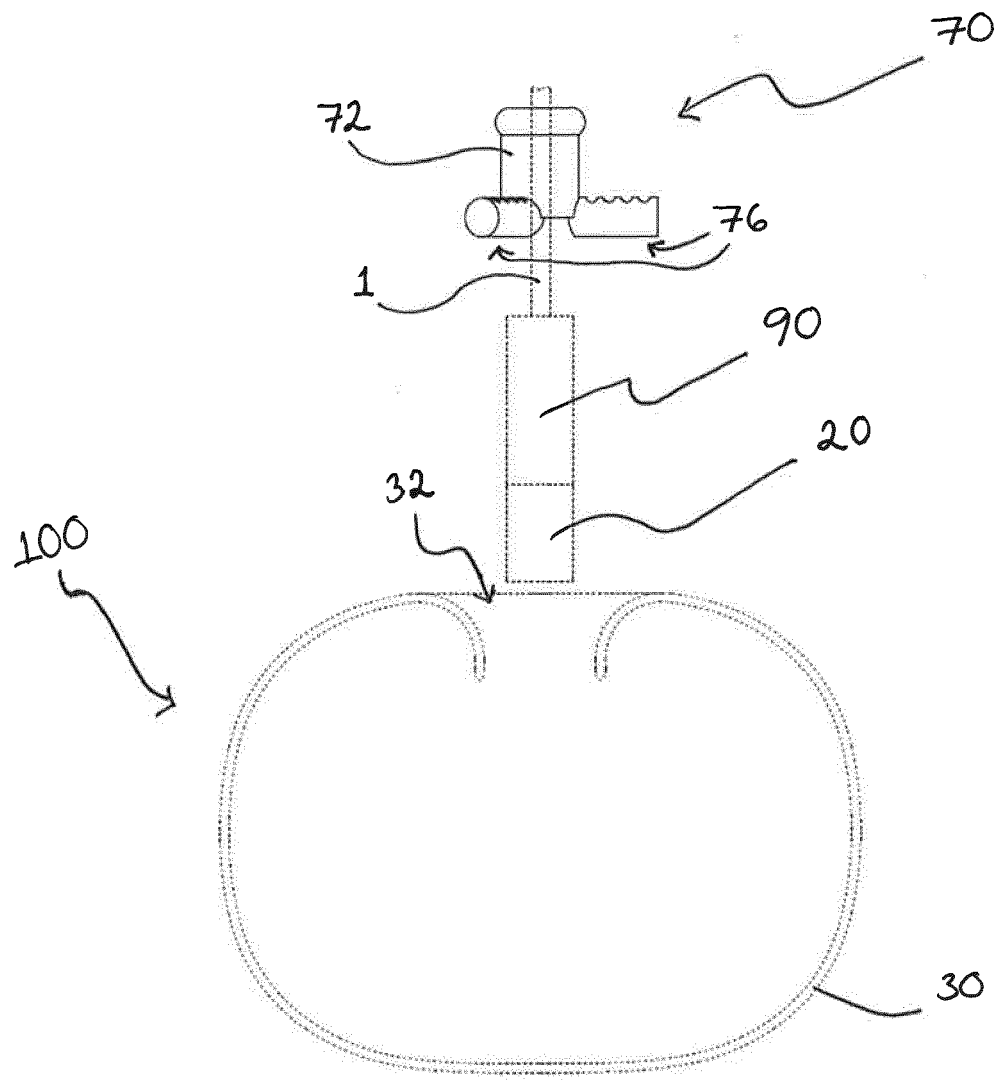


Fig. 2a

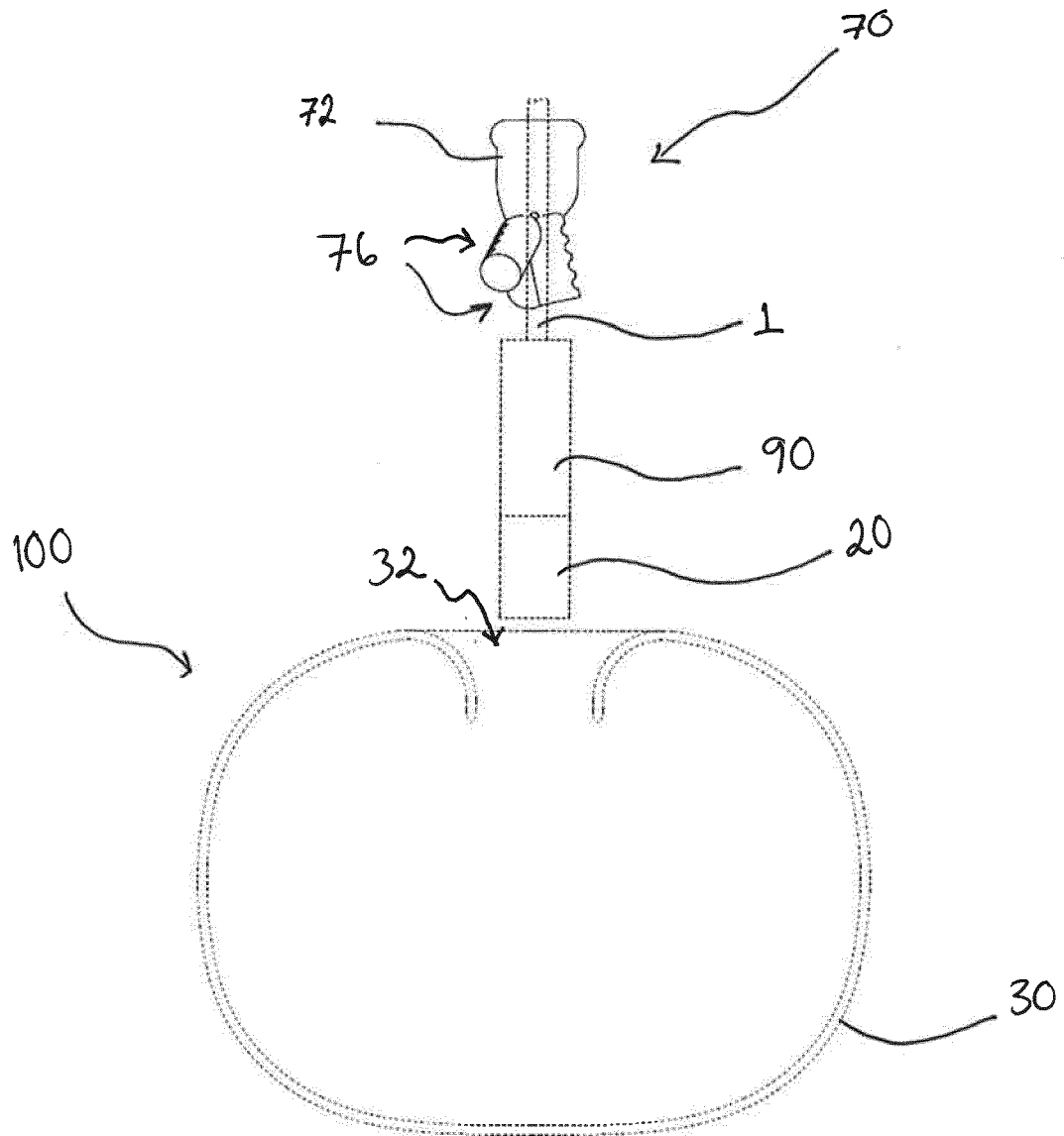


Fig. 2b

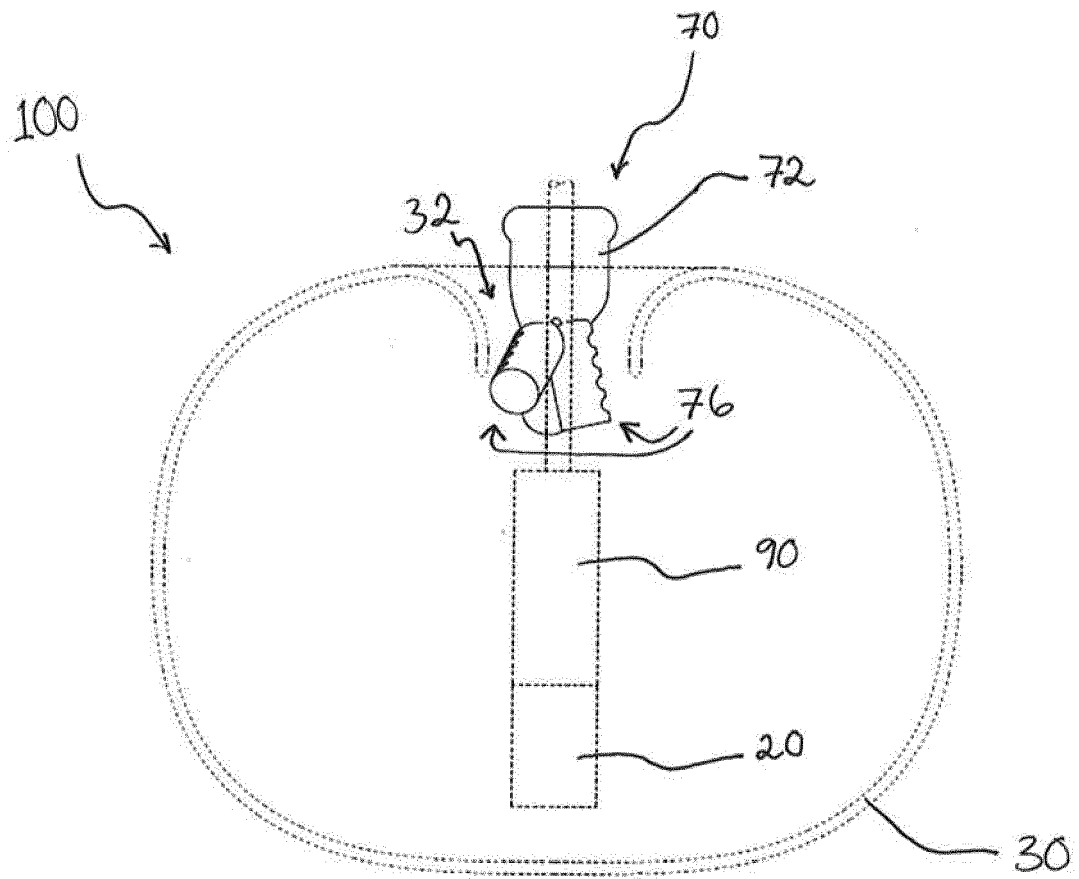


Fig. 2c

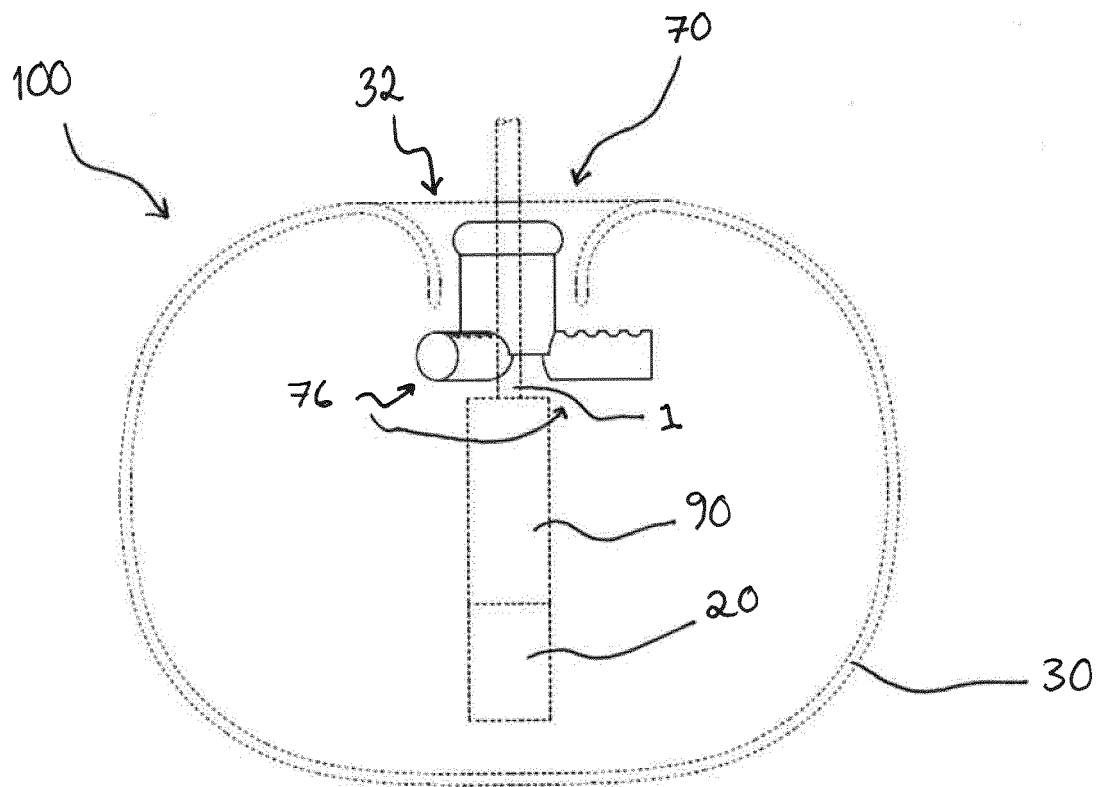


Fig. 2d

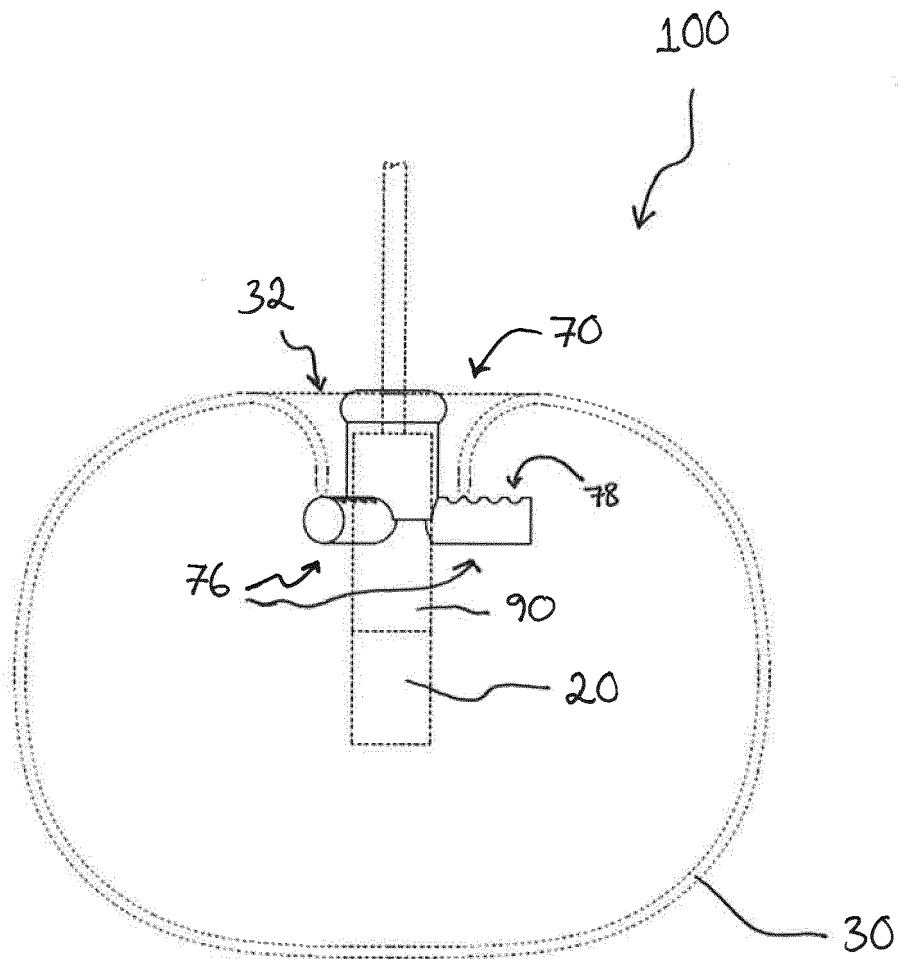


Fig. 2e

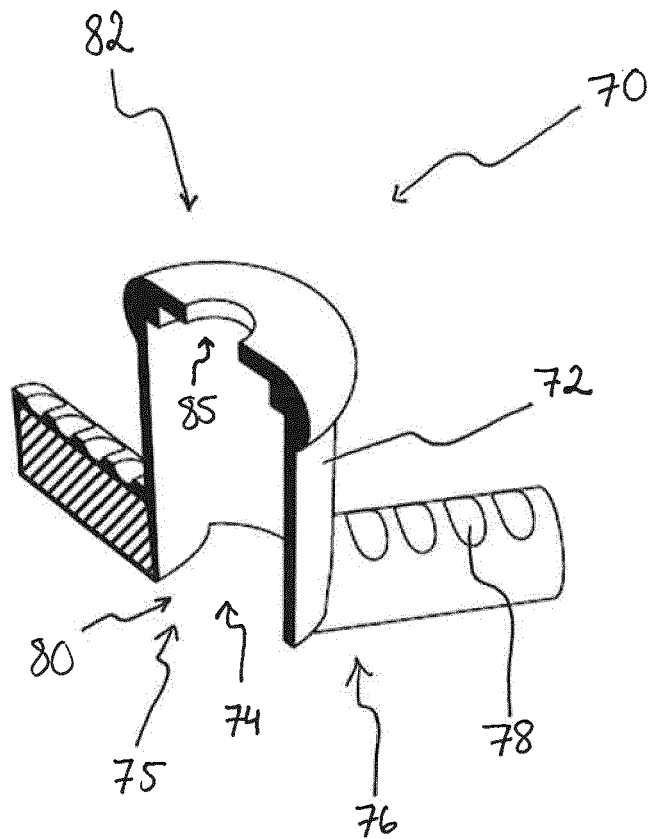


Fig. 3



EUROPEAN SEARCH REPORT

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

EP 18 16 6094

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