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(54) **Device for illuminating a liquid jet**

(57) A device for illuminating a liquid jet (100) from a liquid supply means, comprising an at least substantially annular body (2), which annular body (2) comprises a passage (6), through which the liquid to be illuminated can pass, light sources (5) and means for connecting the liquid supply means thereto, wherein the device furthermore comprises an at least substantially annular cover body (3), which is detachably connected to the annular body (2) and which is provided with a passage (7) through which the liquid to be illuminated can pass, said cover body (3) being arranged for covering the light sources (5).

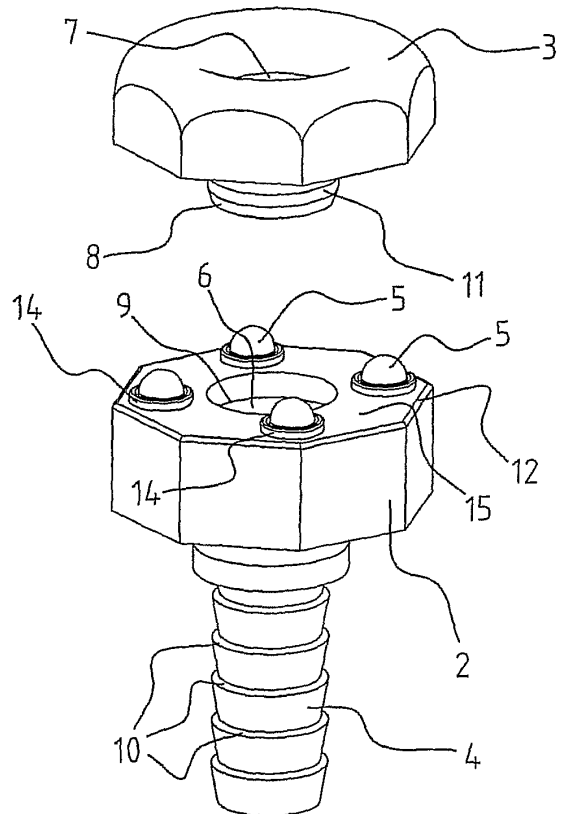


FIG. 3

EP 2 012 055 A1

Description

[0001] The invention relates to a device for illuminating a liquid jet from a liquid supply means, comprising an at least substantially annular body, which annular body comprises a passage, through which the liquid to be illuminated can pass, light sources and means for connecting the liquid supply means thereto.

[0002] Such a device is known from German utility model No. 20 2004 012 070 U1.

[0003] The last few years have witnessed an increasing interest in decorating gardens with fountains, cascades and the like ornaments. Some of these garden ornaments are provided with illumination means so as to meet people's wish to enjoy their garden also in the evening hours, usually in connection with the fact that they have to work in the daytime.

[0004] In the device as referred to in the introduction, the liquid jet flows from a liquid source, for example a garden hose, past the light sources, as a result of which the liquid jet is illuminated, which leads to beautiful light effects, for example in a fountain, especially if such a liquid jet lands in a basin.

[0005] The object of the invention is to improve the prior art, and in particular to provide a simple device for illuminating a liquid flow which can be produced at low cost and/or which is economical in use.

[0006] In order to accomplish that object, a device of the kind referred to in the introduction for illuminating a liquid jet is according to the invention characterised in that the device furthermore comprises an at least substantially annular cover body, which is detachably connected to the annular body and which is provided with a passage through which the liquid to be illuminated can pass, said cover body being arranged for covering the light sources. The cover body preferably extends co-axially with the annular body, with the passages defined by the two at least substantially annular bodies connecting to each other so as to allow the liquid flow to pass there-through. More preferably, the cover body is at least substantially made of a transparent material, even more preferably the cover body is at least substantially made of a coloured material for illuminating the liquid flow with coloured light. The advantage of such a device is that the colour of the liquid jet can be varied in a simple manner by placing differently coloured cover bodies on the annular body, without there being a need to exchange the light sources themselves. Moreover, by using the invention the light sources are protected against damage, for example during transport or storage.

[0007] In a preferred embodiment of a device according to the invention, said light sources comprise LEDs. LEDs, or Light Emitting Diodes, have a low energy consumption and are thus economical in use. In addition, LEDs have a long life, which adds to the service life of the device.

[0008] In another preferred embodiment of a device according to the invention, the cover body comprises a

cylindrical lip at least substantially extending in the direction of the passage, which lip can be received in the passage of the annular body. Preferably, the external diameter of the cylindrical lip corresponds to the internal diameter of the passage of the annular body, in order that the lip can be clampingly received in the passage. In this way the cover body and the annular body are connected together in a simple manner.

[0009] In another preferred embodiment of the device according to the invention, at least one slot formed in the circumference of the passage and/or the lip is provided for receiving a thickening formed in the circumference of the passage and/or the lip. Upon connection of the annular body to the cover body, a thickening in the form of a ridge formed in, for example, the passage of the annular body is received in a slot formed in, for example, the lip of the cover body, as a result of which a solid connection between the cover body and the annular body is obtained.

[0010] In another preferred embodiment of a device according to the invention, the lip is provided with external screw thread and the passage of the annular body is provided with internal screw thread, so that the cover body can be screwed to the annular body, thereby providing a rigid connection between the two.

[0011] In another preferred embodiment of a device according to the invention, an end surface of the annular body is provided with holes extending transversely to the passage for receiving the light sources. Preferably, the circumferential shapes of the light sources correspond at least substantially to the circumferential shapes of said holes, so that the light sources can be clampingly received in the annular body. Mounting the light sources in a surface extending transversely to the direction of flow of the liquid jet results in the jet being illuminated in the direction of flow, as a result of which the jet functions as a light guide, analogously to a glass fibre, and thus absorbs and transports the light, resulting in the intended light effects.

[0012] In another preferred embodiment of the device according to the invention, the annular body has an at least substantially U-shaped cross-section. Because of this, the annular body is easy to manufacture and, in addition, sufficient space is available between the legs of the U-shaped section for the provision of electric power supply means for supplying electric power to the light sources, which are preferably mounted in the holes in the base of the U-shaped section.

[0013] In another preferred embodiment of a device according to the invention, the cover body has an at least substantially U-shaped cross-section, so that the light sources, which preferably project from the annular body, are received in the U-shaped section. More preferably, the leg on the side of the centre of the cover body comprises the lip-shaped profile and, even more preferably, the other leg of the U-shaped section is arranged for fitting over the annular body, so that the annular body is at least partially received in the cover body.

[0014] In another preferred embodiment of a device

according to the invention, the outer circumferences of said bodies are at least substantially polygonal, preferably, the outer circumferences of said bodies are at least substantially octagonal. If the device according to the invention is mounted in a fountain, for example, it can be placed in a fitting profile, so that it can no longer be turned, which leads to a more solid connection between the device and, for example, the fountain.

[0015] In another preferred embodiment of a device according to the invention, the means for connecting a water supply means comprise a connecting element which is detachably connected to the annular body. A garden hose, for example, can be connected to such a connecting element, which preferably has a cylindrical configuration, with different connecting elements being available for different garden hose diameters, so that a wide range of liquid supply means can be connected to one and the same annular body.

[0016] The invention also relates to the cover body as described in the above.

[0017] The invention will now be explained in more detail with reference to figures illustrated in a drawing, in which:

- Figure 1 is a schematic view of a preferred embodiment of the invention, incorporated in a fountain column;
- Figure 2 is a schematic, perspective view of a preferred embodiment of the invention;
- Figure 3 is a schematic view of the preferred embodiment of figure 2 in disassembled condition;
- Figure 4 is a schematic, cross-sectional view of the preferred embodiment of figure 2; and
- Figures 5-7 are schematic views of another preferred embodiment of the invention analogous to figures 2-4.

[0018] Figure 1 shows a fountain 13, which consists of three columns 16, which are placed on top of a basin 17. Water ornaments 1 according to the invention are placed on the upper side of the columns 16, which water ornaments are provided with illumination means, which illuminate a water jet 100. If the water is illuminated from behind upon flowing from the ornaments 1, as shown in figure 1, the water jet 100 will function as a light guide, with the water holding the light and providing decorative light effects.

[0019] As shown in figures 2 - 4, the water ornament 1 essentially consists of three parts, viz. an illumination ring 2, a cover 3 and a connecting piece 4.

[0020] The illumination ring 2 is an annular body made of plastic, which is provided with a passage 6 on the inner side, through which the water flows. To illuminate the water jet that flows through the passage 6, four LEDs 5

are placed in the ring 2. The LEDs 5 are inserted into holes 14 formed in an upper surface 15 of the ring 2 with a clamping fit, so that a solid connection is obtained. A ridge 12, whose use will become apparent hereinafter, is furthermore provided near the edge of the upper surface 15.

[0021] The cover 3 is made of a transparent, coloured plastic, so that the LEDs are covered when the cover 3 is placed on the ring 2, colouring the light from the LEDs 5, which is preferably white light. To enable the user to adapt the colour of the illumination, the cover is 3 available in various colours, so that the colour can be varied in a simple manner.

[0022] The cover 3 has a substantially U-shaped cross-sectional profile, as is shown more clearly in figure 4, with the LEDs 5 being accommodated between the legs 3a and 3b of the cover 3. The space defined by the inner leg 3b forms a passage 7, which, upon placement of the cover, connects to the passage 6 in the ring 2. The leg 3b is longer, so that a lip 8 is formed, which is received in the passage 6 of the ring 2 when the ring 2 and the cover 3 are connected together. To strengthen said connection, a slot 11 is formed in the lip 8, which slot is capable of receiving an annular thickening 9 formed in the passage 6. In connected condition, as shown in figures 2 and 4, the bottom side of the leg 3a is accommodated in the ridge 12 above the upper surface 15, as a result of which a watertight seal of the upper surface 15 is obtained. In another embodiment, the outer leg 13 is longer as well and oriented more towards the outside, as a result of which it will slide over the outer side of the ring 2, thus sealing the upper surface 15.

[0023] As shown, both the cover 3 and the illumination ring 2 are octagonal in shape. This shape leads to a solid connection of the water ornament 1 to, for example, a column 13 as shown in figure 1 when the ornaments 1 are placed in fitting profiles, since the ornaments 1 cannot be turned any more in that case.

[0024] In the bottom side of the passage 6 of the ring 2, the connecting piece 4 is connected via connecting means 9 and 11 similar to those used for connecting the cover 3 to the ring 2. The connecting piece 4 is provided with stepped projections 10 on the outer side, over which a water supply means (not shown), for example a garden hose, can be clampingly fitted. In this embodiment the connecting piece 4 has a diameter of thirteen millimetres, for example. As a variant, a water supply means can be clampingly fitted in the inner side of the connecting piece 4.

[0025] Figures 5 - 7 show another preferred embodiment according to the invention, in which the same numerals are used for indicating the parts as in figures 2 - 4. In this case a ring 2b is provided with eight LEDs 5, and a connecting piece 4b has a larger diameter, for example of nineteen millimetres, for connecting a thicker water supply means. Because of the various embodiments of the rings 2 and 2b, the connecting pieces 4 and 4b and the differently coloured covers 3, the water orna-

ment can be readily adapted to the user's wishes, since the various connecting pieces 4 and 4b, the rings 2 and 2b and the covers 3 are exchangeable.

Claims

1. A device for illuminating a liquid jet from a liquid supply means, comprising an at least substantially annular body, which annular body comprises a passage, through which the liquid to be illuminated can pass, light sources and means for connecting the liquid supply means thereto, **characterised in that** the device furthermore comprises an at least substantially annular cover body, which is detachably connected to the annular body and which is provided with a passage through which the liquid to be illuminated can pass, said cover body being arranged for covering the light sources.
2. A device according to claim 1, wherein the cover body is at least substantially made of a transparent material.
3. A device according to claim 2, wherein the cover body is at least substantially made of a coloured material for illuminating the liquid flow with coloured light.
4. A device according to claim 1, 2 or 3, wherein said light sources comprise LEDs.
5. A device according to any one of the preceding claims 1-4, wherein the cover body comprises a cylindrical lip at least substantially extending in the direction of the passage, which lip can be received in the passage of the annular body.
6. A device according to claim 5, wherein the external diameter of the cylindrical lip corresponds to the internal diameter of the passage of the annular body, in order that the lip can be clampingly received in the passage.
7. A device according to claim 5 or 6, wherein at least one slot formed in the circumference of the passage and/or the lip is provided for receiving a thickening formed in the circumference of the passage and/or the lip.
8. A device according to claim 5, 6 or 7, wherein the lip is provided with external screw thread and the passage of the annular body is provided with internal screw thread.
9. A device according to any one of the preceding claims 1-8, wherein an end surface of the annular body is provided with holes extending transversely to the passage for receiving the light sources.
10. A device according to claim 9, wherein the circumferential shapes of the light sources correspond at least substantially to the circumferential shapes of said holes, so that the light sources can be clampingly received in the annular body.
11. A device according to any one of the preceding claims 1-10, wherein the annular body has an at least substantially U-shaped cross-section.
12. A device according to any one of the preceding claims 1-11, wherein the cover body has an at least substantially U-shaped cross-section.
13. A device according to any one of the preceding claims 1-12, wherein the outer circumferences of said bodies are at least substantially polygonal.
14. A device according to claim 13, wherein the outer circumferences of said bodies are at least substantially octagonal.
15. A device according to any one of the preceding claims 1-14, wherein the means for connecting a water supply means comprise a connecting element which is detachably connected to the annular body.
16. A cover body according to any one of the preceding claims 1-15.

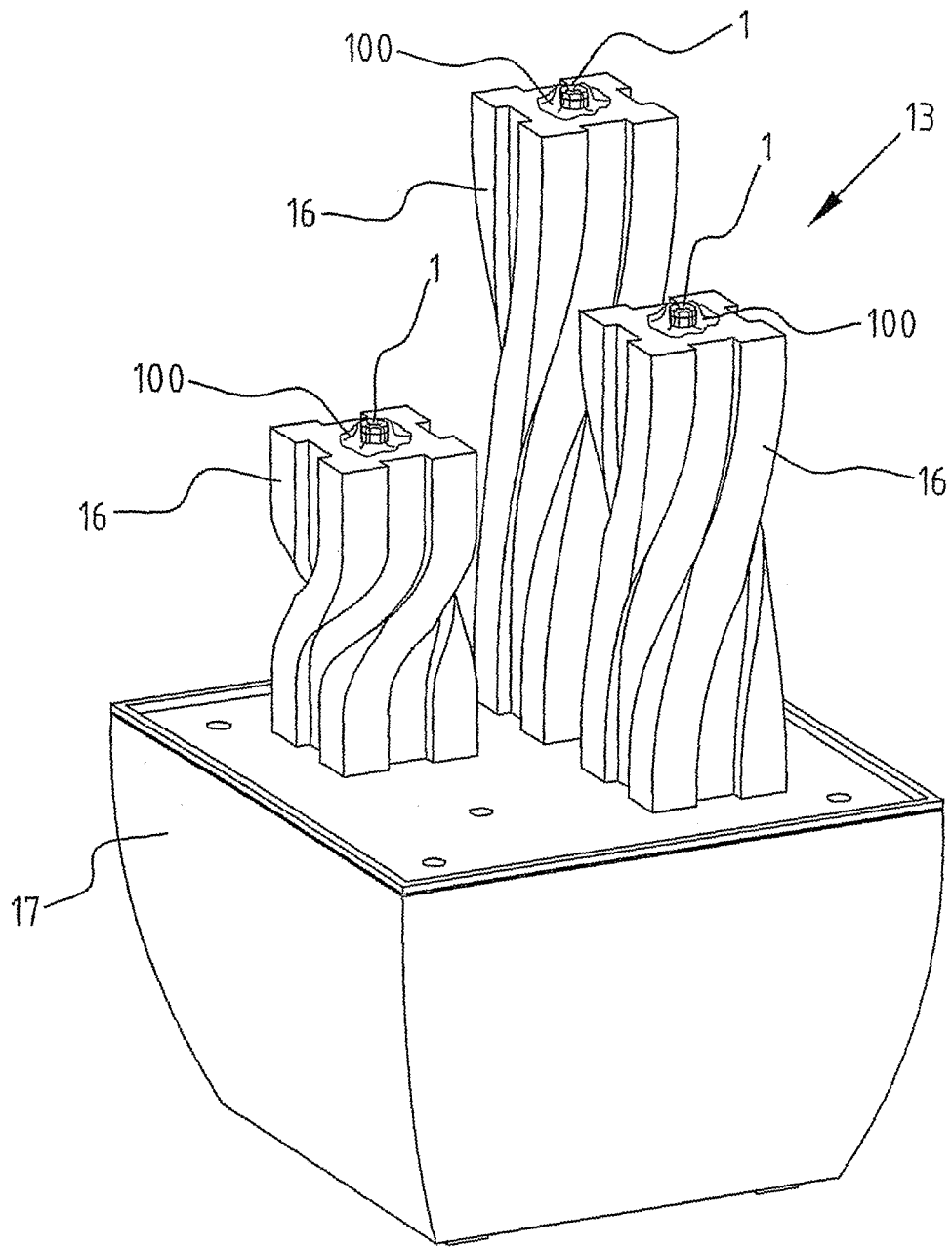


FIG. 1

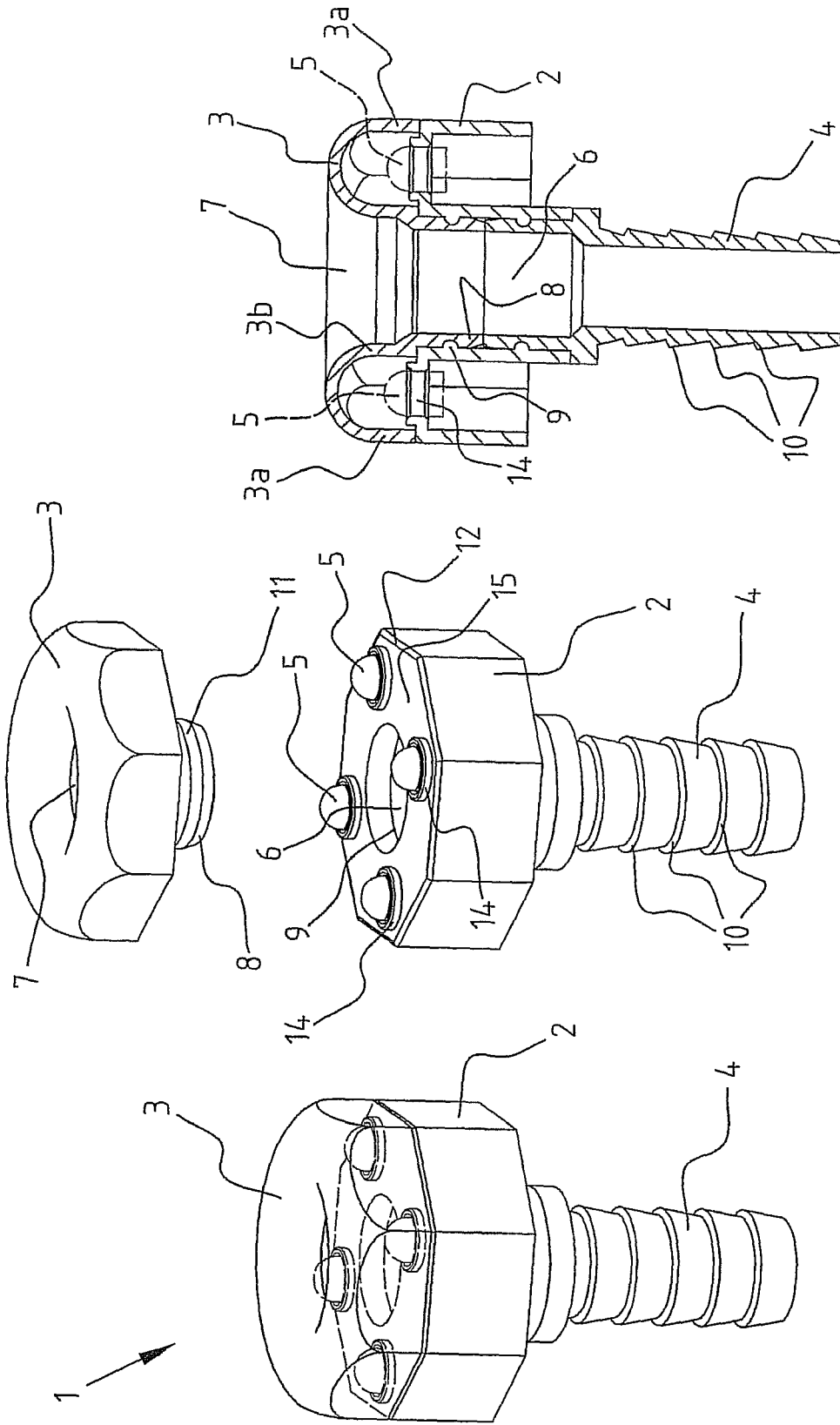


FIG. 2

FIG. 3

FIG. 4

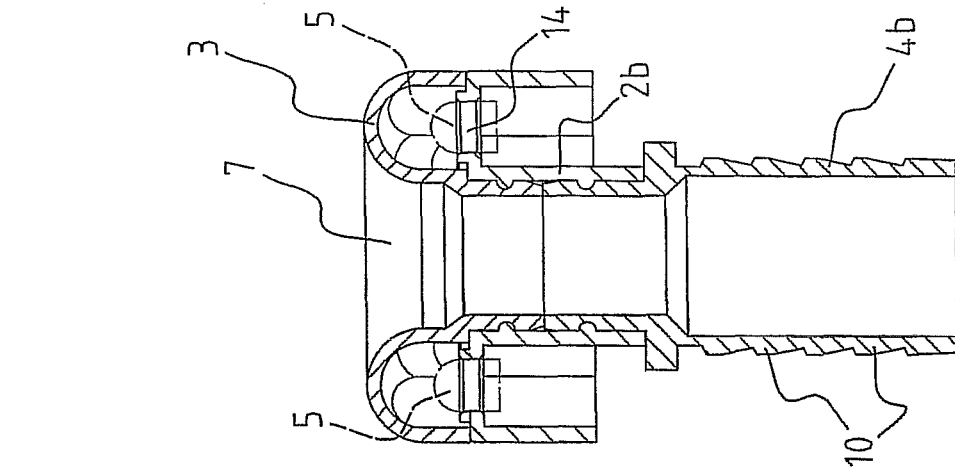


FIG. 5

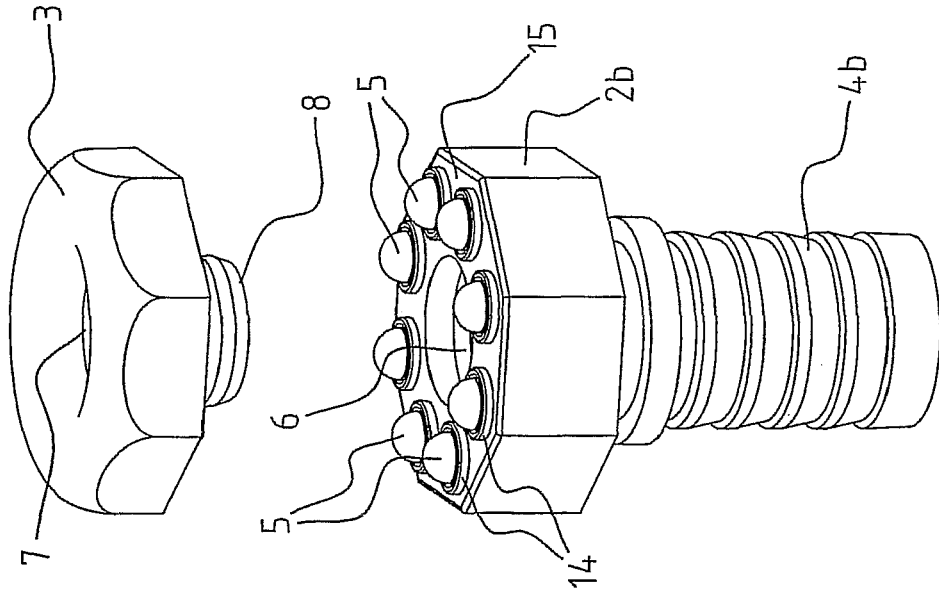


FIG. 6

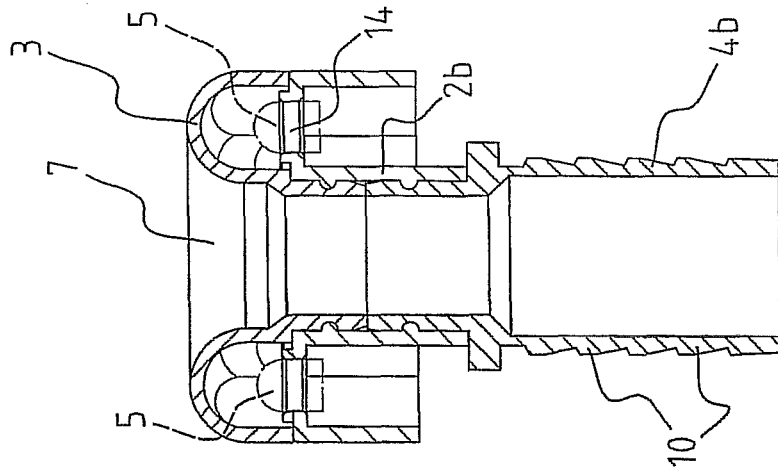


FIG. 7



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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 August 2008	Examiner Lange, Christian
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	

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Place of search The Hague		Date of completion of the search 21 August 2008	Examiner Lange, Christian
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	

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