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

(11) EP 3 354 356 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.08.2018 Bulletin 2018/31

(51) Int Cl.:
B05B 17/08 *(2006.01)*

(21) Application number: **17154008.1**

(22) Date of filing: **31.01.2017**

(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:
MA MD

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(54) DEVICE COMPRISING A WATERFALL OBJECT

(57) A device comprising a waterfall object, as well as a water supply, wherein the waterfall object comprises a substantially C-shaped enclosure, wherein a lower end of the C-shape comprises an inlet configured to connect the water supply system thereto for supplying water in an upward direction to the interior of the enclosure, wherein the water is directed from the inlet, over the entire C-shape, to an upper end of the C-shape, which comprises an outlet for discharging the water to be supplied to enclosure, wherein the waterfall object comprises a light source near the inlet, and wherein light to be emitted by the light source illuminates the water in a downstream direction at the location of the inlet, wherein the water flowing up via the inlet functions as a light guide for guiding the light upwardly towards the outlet, and that the enclosure is made from a light-transparent material.

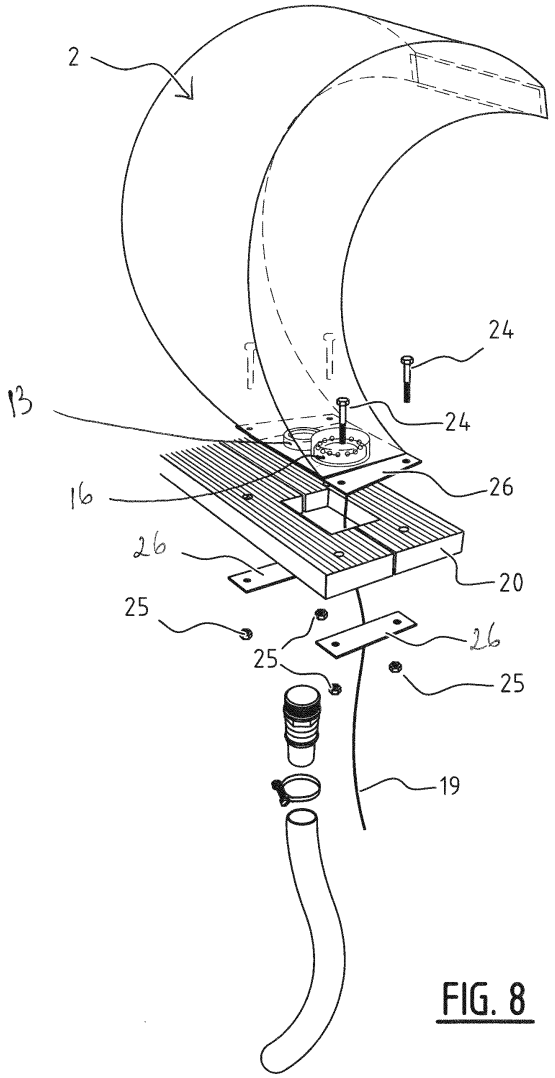


FIG. 8

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Description

[0001] The present invention relates to a device comprising a waterfall object, as well as a water supply system for supplying water to the waterfall object, wherein the waterfall object comprises a substantially C-shaped enclosure, wherein a lower end of the C-shape comprises an inlet configured to connect the water supply system thereto for supplying water in an upward direction to the interior of the enclosure, wherein the water is directed from the inlet, over the entire C-shape, to an upper end of the C-shape, which comprises an outlet for discharging the water to be supplied to enclosure. The invention further relates to a waterfall object as used in said device.

[0002] Such a device is generally known, for instance from EP-B-2 497 577. In particular, garden centres are experiencing an increasing public interest in all kinds of garden ornaments and related articles. Said public interest in particular results from an increasing need that people feel to embellish the surroundings of their houses, in particular the garden, with ornaments, such as fountains, waterfalls and the like. There has been a growing interest in waterfall objects, from which water flows down in a decorative manner, especially illuminated waterfall objects, such as described in EP-B-2 497 577.

[0003] The object of the invention is to provide a device which meets the public's increasing interest to decorate a pond or pool, for example, using a waterfall object.

[0004] In order to accomplish that object, a device of the kind described in the introduction is according to the invention characterised in that the waterfall object comprises a light source near the inlet, and wherein light to be emitted by the light source illuminates the water in a downstream direction at the location of the inlet, wherein the water flowing up via the inlet functions as a light guide for guiding the light upwardly towards the outlet, and that the enclosure is made from a light-transparent material. Preferably, the light is guided through the water from the inlet, over the entire C-shape, to the outlet. In other words, the water in the light-transparent enclosure behaves as a light guide, as if the water forms a collection of glass fibres, which "capture" the light being emitted from below and guide said light upwardly towards the outlet. As the enclosure is transparent, in other words light-transmissive, the entire enclosure emits light when the enclosure is fully filled with the water to be supplied. In this way, the waterfall object acts like a lava lamp, which provides an attractive appearance to the waterfall object and enhances the pond or pool. Moreover, a playful and graceful effect of falling illuminated water is obtained.

[0005] Preferably, the enclosure is made from glass and/or acrylic glass. Glass provides excellent light-transmission properties, so that the water-filled enclosure of the waterfall object lights up as bright as possible. Also, acrylic glass is similarly transparent. In addition, acrylic glass has the beneficial advantage of slightly reflecting the light which is emitted by the light source and guided through the water, so that it keeps part of the light inside the enclosure, thereby facilitating the light guiding process all the way up to the upper end of the C-shaped enclosure.

[0006] In a preferred embodiment, the light source comprises a luminaire integrated in a base of the C-shaped enclosure, wherein the luminaire is substantially cylindrical. A beneficial advantage of a substantially circular luminaire is that the interface between the base and the luminaire can be sealed in a reliable manner, so that no water leaks from the enclosure. Differently shaped luminaires, for example with a square, hexagonal or octagonal cross-sectional shape, are less reliable in that sense.

[0007] In a preferred embodiment, the light source is made up of a plurality of LEDs. A beneficial advantage of LEDs is that they emit light over a limited emission angle, so that the bulk of the light to be guided through the water can be directed upwardly towards the upper end of the C-shaped enclosure. Preferably, the light source comprises an LED controller, so that light of different intensities and/or different wavelengths can be chosen. In this way, the waterfall object can emit light of different colours and intensities, which contributes positively to attractive appearance of the waterfall object.

[0008] In a preferred embodiment, the plurality of LEDs is distributed across the bulk of an area spanned by the base. In this way, a substantial light emission area is obtained, so that the water in the enclosure is illuminated as uniform as possible, resulting a distribution of the light emitted through and by the water.

[0009] In a preferred embodiment, the outlet extends across the entire width of the C-shape. In this way, a curtain of illuminated water is output from the waterfall object, which gives an attractive appearance to the object itself as well as to the pond or pool to be decorated

[0010] In a preferred embodiment, the light source can be connected to the electric system of a house. In other words, the light source is fed from the power grid.

[0011] In a preferred embodiment, the water system can be connected to the water supply system of a house. The water system is in particular equipped with a water pump which is connected to the waterfall object via a, preferably flexible, water conduit.

[0012] In a preferred embodiment, the waterfall object is configured to be connected to a wall of a water reservoir, such as a swimming pool or a pond, near the lower end of the C-shape. In this way, the waterfall object can enhance the appearance of the pool or pond, so that the public's increasing interest to decorate a pond or pool can be met.

[0013] The invention further relates to a waterfall object, as defined in a device according to any one of the embodiments of the present invention.

[0014] In a preferred embodiment of the device according to the invention, the outlet extends across the entire width of the C-shape.

[0015] The invention will now be explained in more detail with reference to figures illustrated in a drawing, in

which:

- Figure 1 is a schematic side view of a preferred embodiment of the invention, in which the water reservoir is embodied as a swimming pool;
- Figures 2 to 4 show various views of the waterfall object used in figure 1; and
- Figures 5 to 8 show installation steps for the installation of the waterfall object shown in figure 2 on the swimming pool shown in figure 1.

[0016] Figure 1 shows a swimming pool 1 with a waterfall object 2 in the form of an elegant C-shaped enclosure 27, which is connected to the water supply system of a house. The swimming pool 1 is built up of columns 3 and vertical walls 4 fitted therebetween. A water system for supplying water to the waterfall object 2 consists of a vessel 5, an electric motor 6 connected thereto for pumping water from the swimming pool 1 into the vessel 5 via flexible conduits 7, 8, a flexible conduit 9 for supplying water from the water supply system of the house to the vessel 5, as well as a flexible conduit 10 for supplying water from the swimming pool 1, via the vessel 5, to the waterfall object 2 by means of the electric motor 6. When the swimming pool 1 is to be filled, the electric motor 6 is turned off and water is directed to the swimming pool 1 from the water mains by means of the flexible conduit 11. The supply to the waterfall object 10 is shut off in that case. Once the swimming pool 1 is filled, the supply from the water mains to the vessel 5 is shut off, and a closed system is obtained, in which the water is circulated by the electric motor 6. The supply to the waterfall object 2 is open in that case.

[0017] With reference now to figure 2, the lower end 12 of the C-shaped enclosure 27 is provided with an inlet 13 for supplying water to the waterfall object 2 via the inlet 13. As shown, the water is directed from the inlet 13, over the entire C-shape, to an outlet 14 near the upper end 15 of the C-shape. The outlet 14 extends across the entire width of the C-shape. Near the inlet 13, the C-shape comprises a light source 16 in the form of a cylindrically shaped luminaire comprising a plurality of LEDs. The luminaire 16 is fed through an electrical conduit 19, as shown in figure 1. The plurality of LEDs is distributed across the bulk of an area spanned by the base 28. In this way, a substantial light emission area is obtained, so that the water in the enclosure 27 is illuminated as uniformly as possible, resulting in a homogeneous distribution of the light emitted through and by the water. A beneficial advantage of LEDs is that they emit light over a limited emission angle, so that the bulk of the light to be guided through the water can be directed upwardly towards the upper end of the C-shaped enclosure 27.

[0018] The waterfall object 2 in the form of the C-shaped enclosure 27 is made of acrylic glass. Acrylic glass provides excellent light-transmission properties, so that the water-filled enclosure 27 of the waterfall object 2 lights up as bright as possible. Moreover, acrylic glass has the beneficial advantage of slightly reflecting the light which is emitted by the light source 16 and guided through the water, so that it keeps part of the light inside the enclosure 27, thereby facilitating the light guiding process all the way up to the upper end of the C-shaped enclosure 27.

[0019] As shown in figure 2, the water supplied via the inlet 13 and being discharged through the outlet 14 is illuminated in a downstream direction by the light source 16, so that light emitted by the LEDs is coupled into the water flowing at that location, said water thereby functioning as a light guide, as if it forms a bundle of glass fibres. The light being guided through the outlet 14 is thus projected at a location where the water falls into the swimming pool 1. The combination of falling water and lighting enhances the attractive appearance of the waterfall object 2. The luminaire or light source 16 has such a shape, that the interface between the base 28 and the luminaire 16 can be sealed in a reliable manner, so that no water leaks from the enclosure 27. Light source 16 may comprise an LED controller, so that light of different intensities and/or different wavelengths can be chosen. In this way, the waterfall object 2 can emit light of different colours and intensities, which contributes positively to attractive appearance of the waterfall object 2. Light source 16 is configured such that it can be connected to the power system of a house through an electrical conduit 19 (see figure 1), in other words to the power grid.

[0020] Figure 3 relates to the installation in steps of the waterfall object 2, by which the waterfall object 2 is fixed to a flat, horizontal wall 20 of the swimming pool 1. Use is made of a jigsaw 21 for forming a hole in the wall 20 for fixing the waterfall object 2 to the wall 20 at that location, and also of a drill 22 for drilling screw holes 23, via which the waterfall object 2 is fixed to the wall 20 by means of bolts 24 and nuts 25. Connecting pieces 26 are provided on either side of the wall 20.

[0021] It is noted that the invention is not limited to the embodiment shown herein, but that it also extends to other variants that fall within the scope of the appended claims.

Claims

1. A device comprising a waterfall object (2), as well as a water supply system for supplying water to the waterfall object (2), wherein the waterfall object (2) comprises a substantially C-shaped enclosure, wherein a lower end (12) of the C-shape comprises an inlet (13) configured to connect the water supply system thereto for supplying water in an upward direction to the interior of the enclosure, wherein the water is directed from the inlet (13), over the entire C-shape, to an upper end (15) of the C-shape, which comprises an outlet (14) for discharging the water to be sup-

plied to enclosure (2), **characterised in that** the waterfall object comprises a light source (16) near the inlet (13), and wherein light to be emitted by the light source (16) illuminates the water in a downstream direction at the location of the inlet (13), wherein the water flowing up via the inlet (14) functions as a light guide for guiding the light upwardly towards the outlet, and that the enclosure is made from a light-transparent material.

2. A device according to claim 1, wherein the light is guided through the water from the inlet (13), over the entire C-shape, to the outlet (14).

3. A device according to claim 1 or 2, wherein the enclosure is made from glass and/or acrylic glass.

4. A device according to claim 1, 2 or 3, wherein the light source comprises a luminaire integrated in a base of the C-shaped enclosure, wherein the luminaire is substantially cylindrical.

5. A device according to any one of the claims 1-4, wherein the light source (16) is made up of a plurality of LEDs.

6. A device according to claim 5, wherein the light source comprises an LED controller.

7. A device according to claim 5 or 6, wherein the plurality of LEDs is distributed across the bulk of an area spanned by the base.

8. A device according to any one of the claims 1-7, wherein the outlet (14) extends across the entire width of the C-shape.

9. A device according to any one of the claims 1-8, wherein the light source (16) can be connected to the electric system of a house.

10. A device according to any one of the preceding claims, wherein the water system can be connected to the water supply system of a house.

11. A device according to any one of the preceding claims, wherein the waterfall object (2) is configured to be connected to a wall (20) of a water reservoir (1), such as a swimming pool or a pond, near the lower end (12) of the C-shape.

12. A waterfall object (2) as defined in a device according to any one of the preceding claims 1-11.

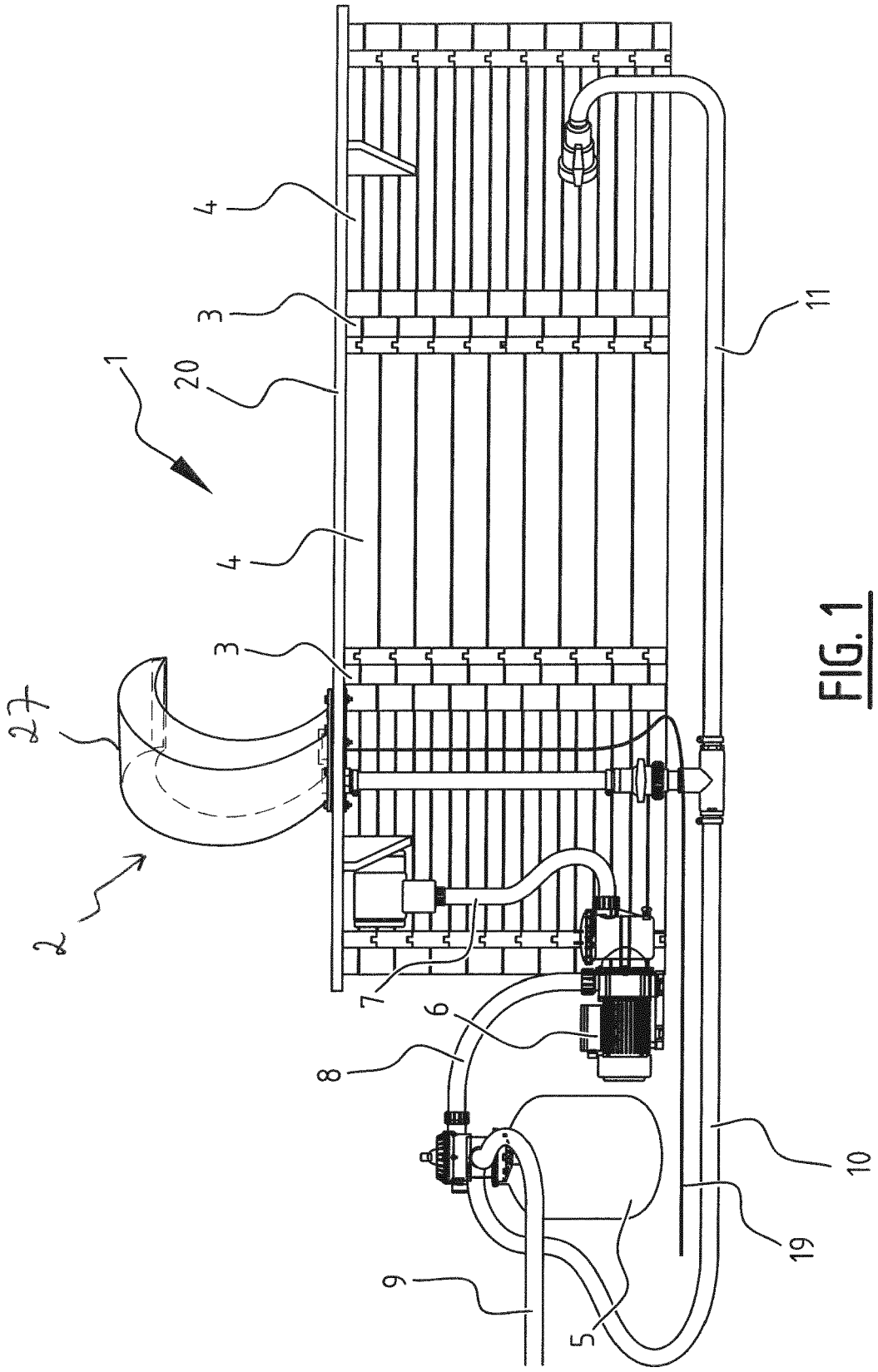


FIG. 1

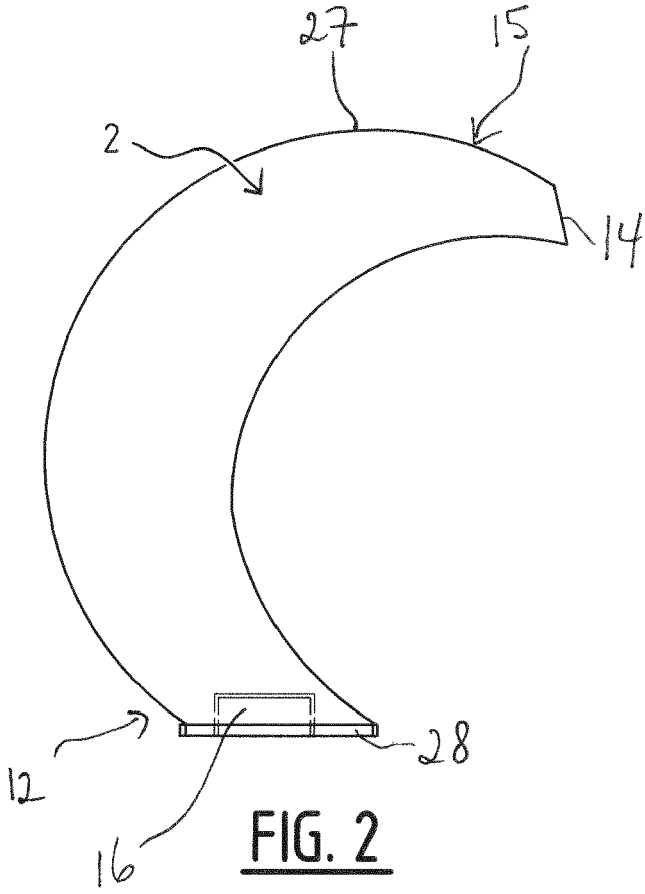


FIG. 2

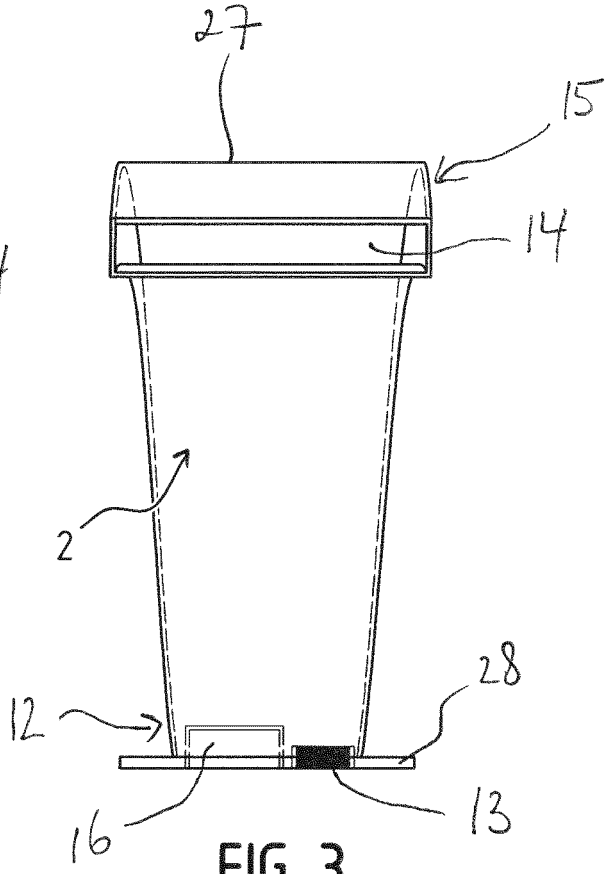


FIG. 3

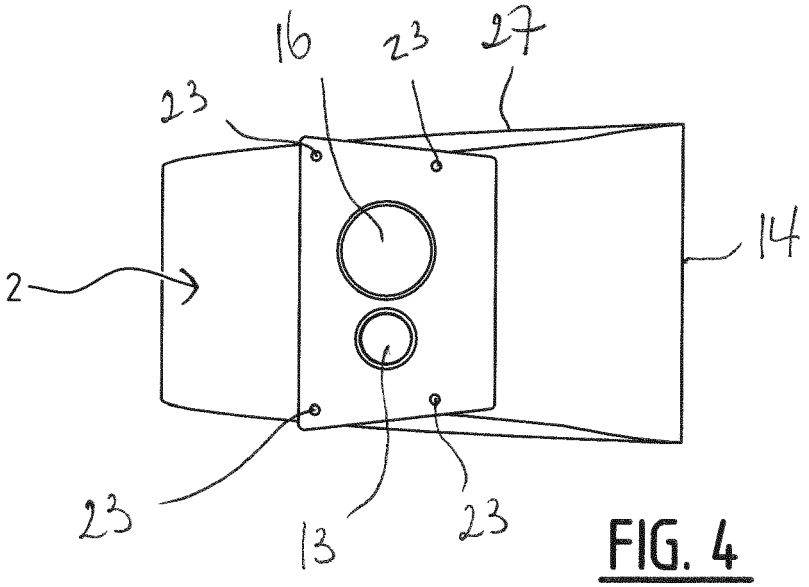


FIG. 4

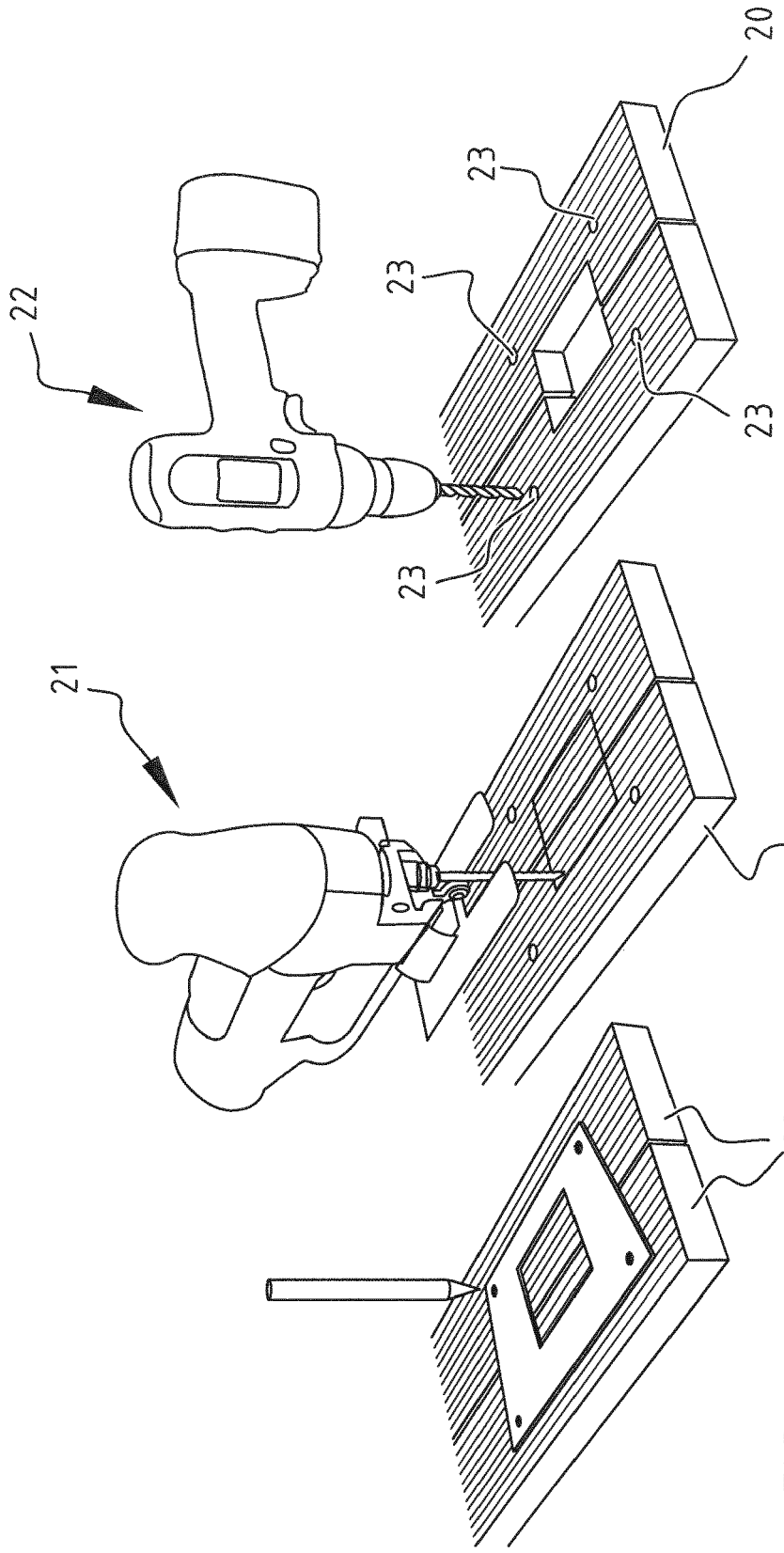


FIG. 7

FIG. 6

FIG. 5

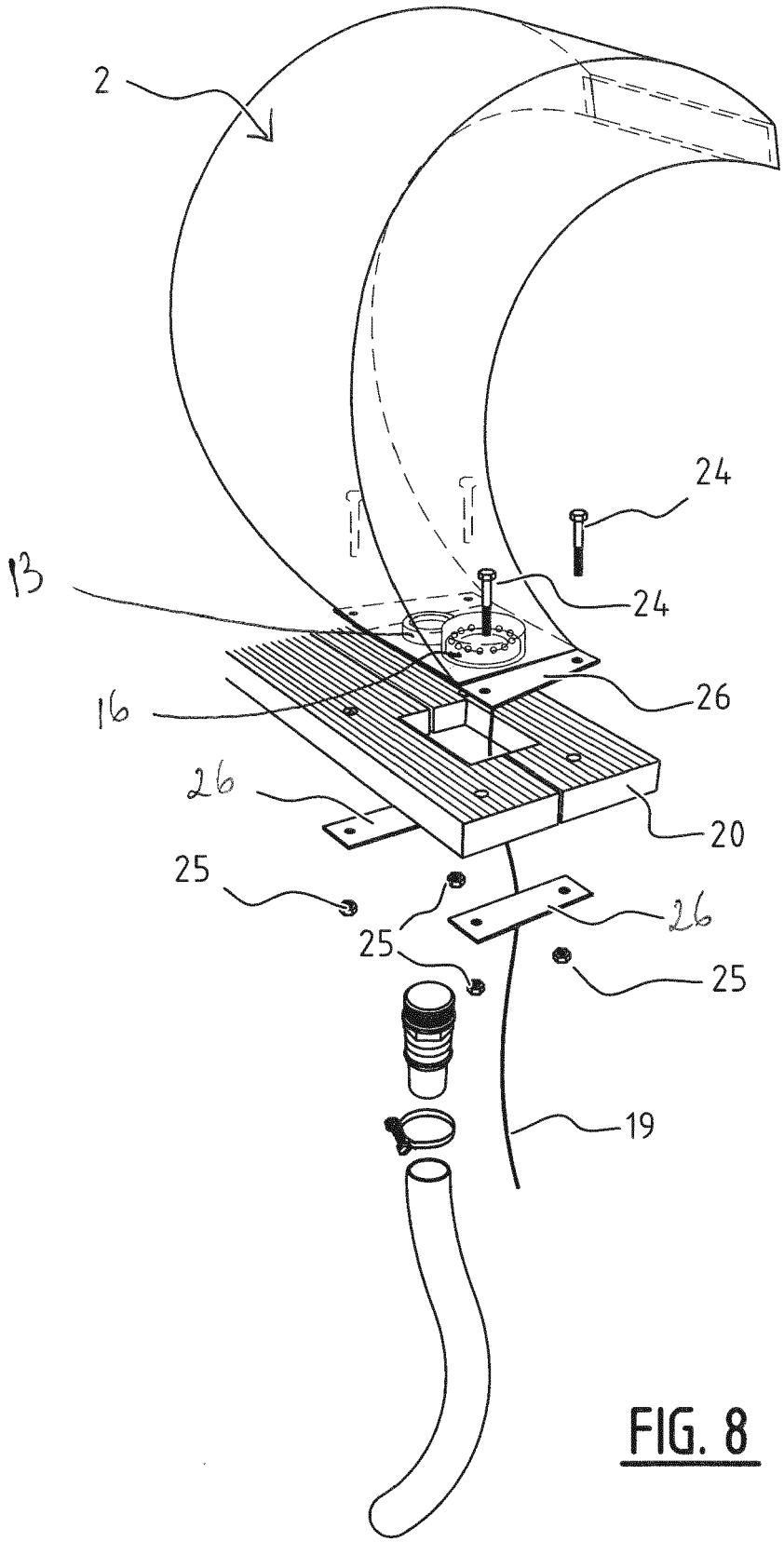


FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 17 15 4008

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	DISTRIPOOL.FR: "Cascade Mamba Ubbink acrylique", youtube, 21 December 2016 (2016-12-21), page 1 pp., XP054977557, Retrieved from the Internet: URL:https://www.youtube.com/watch?v=fJOKMtIB30o [retrieved on 2017-07-17] * the whole document *	1-12	INV. B05B17/08
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 July 2017	Lohse-Busch, Heike

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