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(54) **A SHOWER CUBICLE, AND A FRAME FOR SUCH SHOWER CUBICLE**

(57) There is provided a frame (5) for a shower cubicle tray (2). The frame (5) comprises an outer wall (7) and an inner wall (8) which are connected by a bottom surface (9). Further it comprises a waste water outlet (11) and height adjustment means. A hollow space (25) is provided on the inner side of the inner wall (8) for allowing access to the underlying surface (14). The inner wall (8), the outer wall (7) and the bottom surface (9) form a guide for waste water.

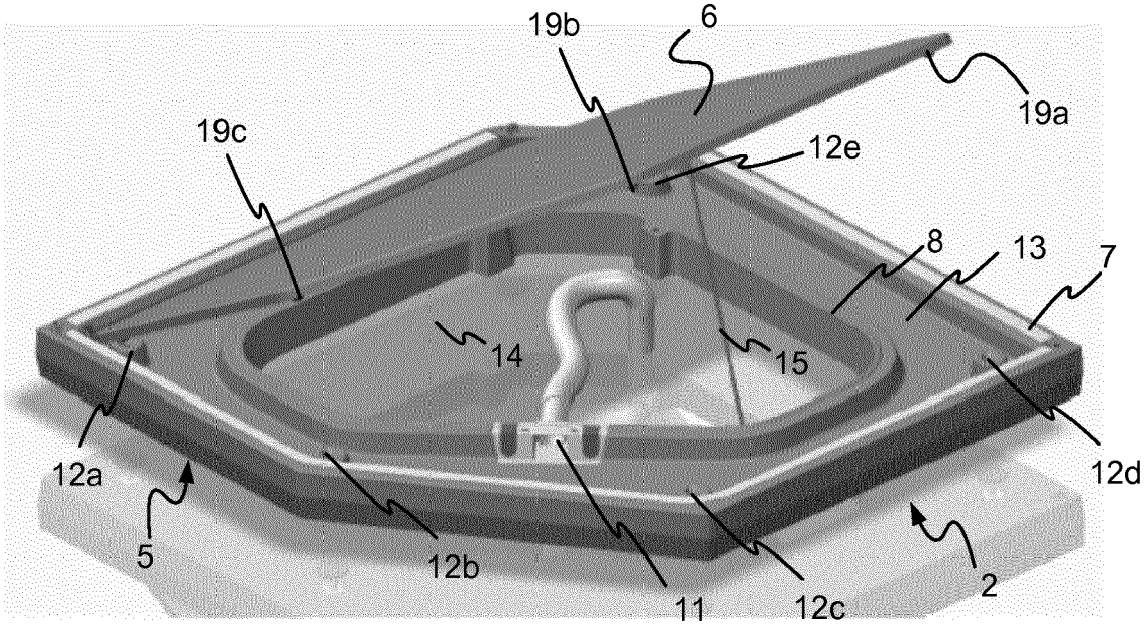

Fig. 2

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Description

Technical Field

[0001] The present invention relates to a shower cubicle, and in particular to a frame for a shower cubicle tray with a removable standing area.

Background

[0002] Shower cubicles are commonly used when installing a shower to a building. It is important that the shower tray is arranged in a robust manner on the supporting floor such that any pivoting, or tipping, of the shower cubicle is avoided. For this, the trays used are normally pieces requiring heavy lifting.

[0003] Once installed the shower cubicle should preferably be as less space consuming as possible, while still providing a sufficiently large shower compartment. However the water drain, which is normally provided as a covered outlet in the floor of the shower tray, is often considered as an area onto which the user does not want to stand on. Therefore the "active" standing area of the shower tray is reduced by the size of the water drain.

[0004] For this purpose it has been suggested to replace the standard water drain with a circumferential gap surrounding the standing area of the shower tray. Although the available standing area is increased there is a major disadvantage of such solution in terms of cleaning.

[0005] There is thus a need for an improved shower cubicle which provides advantages compared to the prior art solutions described above.

Summary

[0006] Accordingly, the present invention preferably seeks to mitigate or eliminate one or more of the above-identified deficiencies in the art singly or in any combination and solves at least the above mentioned problems.

[0007] According to a first aspect, a frame for a shower cubicle tray is provided. The frame comprises an outer wall and an inner wall connected by a bottom surface, a waste water outlet and height adjustment means. A hollow space is provided on the inner side of the inner wall for allowing access to the underlying surface, and the inner wall, the outer wall and the bottom surface form a guide for waste water. An advantage with this frame is that it is more lightweight compared to solid frames, which are heavy and complicated to move during installation.

[0008] In one embodiment, the inner wall is provided with a recess into which the waste water outlet is connected. This is beneficial in that the

[0009] The raised portions may be provided in one of the bottom surface of the frame or in the hollow space within the frame.

[0010] The height adjustment means may comprises adjustable feet provided in the raised portions. This is beneficial in that the leveling of the frame may be carried out when the frame is located in its intended position.

[0011] Preferably, the frame comprises at least four height adjustment means.

[0012] The frame has preferably a circumferential shape of one of: polygonal, square, oval or circular. The different options of circumferential shapes provides for use in many different locations.

[0013] In a second aspect, a shower tray comprising a frame is provided. The tray further comprises a plate provided on top of the frame. The plate is for a user to stand on during use of the shower.

[0014] In one embodiment, the plate is liftable to provide access to the frame. This is advantageous in that it is possible to reach both the underlying floor the drain and the inside of the frame, e.g. for cleaning purposes.

[0015] The plate may be supported by the inner wall of the frame. In another embodiment, the plate is supported by raised portions provided in the bottom surface of the frame.

[0016] Preferably, the plate comprises a convex shape such that water flows towards the circumference of the plate. No water is left on the plate after the shower has been in use.

[0017] In an embodiment, the frame comprises a holding means which in a holding position keeps the plate in an open position. This is beneficial when cleaning or adjusting the frame, since the person working do not need to keep the plate upright by him-/herself.

[0018] A heat exchanger, preferably a drain water heat recovery unit, may be provided in the waste water guide of the tray. The heat exchanger recovers heat from the disposed water, and use the heat to heat the tap water, and in that way provides for a more effective warm-up of the water.

[0019] In a third aspect, a shower cubicle comprising a shower tray, a column, and a number of shower wall sections is provided.

[0020] Preferably, the frame comprises a temporary holder for the column forming an installation position, and one final position holder, which facilitates the installation of the cubicle.

Brief Description of Drawings

[0021] Further objects, features and advantages will appear from the following detailed description, with reference being made to the accompanying drawings, in which:

Fig. 1 is an isometric view of a part of a shower cubicle according to an embodiment;

Fig. 2 is an isometric view of a shower tray according to an embodiment;

Fig. 3 is an isometric top view of a frame with a recess according to an embodiment;

Fig. 4 is an isometric top view of the frame with a

waste water drain connected;
Fig. 5 is an isometric view of a part of the frame with the recess for the waste water drain;
Fig. 6 is an isometric view of a detail of the frame with a waste water drain;
Fig. 7 is an isometric view of a frame according to a second embodiment;
Fig. 8 is an isometric view of a shower cubicle with the frame in Fig. 7;
Fig. 9 is a cross section view of the frame and a height adjustment means according to one embodiment;
Fig. 10 is an isometric view from above of a plate for use with a shower tray according to one embodiment;
Fig. 11 is an isometric view from below of the plate of Fig. 8;
Fig. 12 is an isometric view of the plate of Figs 8-9 being provided with a mat;
Fig. 13 is an isometric view of a frame during height adjustment;
Fig. 14 is an isometric view of the frame with a column in an assembly position;
Fig. 15 is an isometric view of the frame with the column in a final position;
Fig. 16 is an isometric view of an embodiment of a frame with a heat recovery unit;
Fig. 17 is an isometric view of a frame according to a third embodiment;
Fig. 18 is an isometric view of the shower cubicle with one wall section in a partly open position;
Fig. 19 is an isometric view of the shower cubicle in Fig. 18 with the wall section in a fully open position;
Fig. 20 is an isometric view of the shower cubicle in Figs. 18-19 with a tilted wall section; and
Fig. 21 is a detail of the shower cubicle in Figs. 18-20 with a wall section in a tilted but not fully open position.

Detailed Description

[0022] Hereinafter, certain embodiments will be described more fully with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention, such as it is defined in the appended claims, to those skilled in the art.

[0023] In Fig. 1, a shower cubicle 1 comprising a shower tray 2, a column 3 and a number of shower wall sections 4a, 4b, 4c is shown. The shower tray 2 is also shown separately in Fig. 2.

[0024] The column 3 extends in a vertical direction to define the vertical extension of the shower cubicle 1, and it is preferably provided with suitable connections for supply water. The column 3 should also be provided with a water mixing tap whereby the user is allowed to open and close the supply of water, as well as adjusting the desired temperature of the discharged water by applying the correct mix of hot and cold water.

[0025] Further, the shower wall sections 4a-c are preferably movably supported such that at least one of the shower wall sections 4a-c may be opened and closed. Opening and closing may either be performed by a pivoting action of the particular wall section, or a sliding movement. Once closed, the shower wall sections 4a-c should seal against the shower tray 2 such that water is prevented from escaping out from the shower cubicle 1.

[0026] Now turning to Fig. 2 the shower tray 2 comprises a frame 5 and a removable plate 6. The frame 5 as shown has a pentagonal circumference, and the removable plate 6 has the same shape, but slightly smaller, such that a small gap 27 is formed between the frame 5 and the plate 6 at its outer periphery, where water may exit. This provides for a shower tray 2 with no visible drain area which a user may try to avoid standing on. The whole tray area thus becomes very appealing to use, as well as aesthetically pleasing. In other embodiments, the circumferential shape may be different, e.g. another polygon, a square, a rectangle, oval or circular.

[0027] The frame 5 comprises an outer wall 7 and an inner wall 8, which are connected by a bottom surface 9 to form a guide 13 for waste water entering from the circumferential gap 27 between the frame 5 and the plate 6. Hence the outer wall 7 and the inner wall 8 extends from a bottom area upwards in a vertical direction, whereby the bottom surface 9 is a drain surface extending more or less horizontally between the lower portions of the outer wall 7and the inner wall 8.

[0028] The outer wall 7 and the inner wall 8 preferably extends along a closed path such that the drain water, entering the volume delimited by the outer wall 7, the inner wall 8, and the bottom surface 9, cannot escape except via the drain outlet which will be described further below. The drain volume formed by the outer wall 7, the inner wall 8, and the bottom surface 9 is preferably dimensioned to enclose an amount of drain water being large enough to prevent overflow of the drain volume.

[0029] The drain gap 27 formed between the frame 5 and the plate 6 is preferably positioned above the bottom surface 9, i.e. at a position radially outside the inner wall 8. Water flowing into the gap 27 will thus start to fill the drain volume of the shower tray 2.

[0030] As is also shown in Fig. 2, the plate 6 is liftable such that access to the underlying surface 14, e.g. a floor, is provided. This facilitates cleaning of a waste water outlet 11 of the shower tray 2, the underlying surface 14, as well as a floor drain (not shown).

[0031] This means that the frame 5 does not extend radially inwards from the inner wall 8, but instead a void is present through which a person may access the underlying surface 14 without removing the shower tray 5.

[0032] A holding means 15 is attached to the frame 5, which can be put in a raised position in order to maintain

the plate 6 in the open position, or in a folded down position inside the frame 5, when the plate 6 is lowered. In Fig. 2, the plate 6 is opened to the left, but in other embodiments it may very well be openable to the right as well. The holding means 15 is in this embodiment formed as a stick or a prop, but in other embodiments it could be any other type of suitable holding means e.g. springs, hinges, a lever or a squeegee.

[0033] When the plate 6 is in its lowered position the plate 6 is resting on the inner wall 8.

[0034] As is shown in Fig. 3, a recess 10 is provided in the inner wall 8 of the frame 5. The purpose of this recess 10 is to allow mounting of a waste water outlet 11, as shown in Fig. 4. Figs. 5 and 6 show close ups of the recess 10 and the waste water outlet 11 from another direction. The waste water outlet 11 is in this embodiment positioned in the rear part of the tray 2. In other embodiments it may be positioned elsewhere, e.g. in the front of the tray 2, in order to facilitate cleaning. By connecting the waste water outlet 11 to the recess 10 the water outlet will be positioned in a horizontal direction, instead of a vertical direction. This position provides for a frame 5 of less height, which thereby comprises less material and therefore is easier to handle and install. The waste water outlet 11 is preferably an adapter for a drain pipe, such that water present in the drain volume of the tray 5 will enter the waste water outlet 11 and flow further into the drain pipe. The drain pipe may at its other end be connected to a waste water outlet arranged in the floor or wall surrounding the shower cubicle 1. The drain pipe may for this purpose be flexible in order to facilitate handling and mounting.

[0035] Further, the bottom surface 9 may be tilted relative a horizontal plane such that waste water will be guided towards the waste water outlet 11 by means of gravity.

[0036] The frame 5 is further provided with raised portions 12a-f protruding upwards from the bottom surface 9. There are at least four raised portions 12, but there may also be more, depending on the shape of the frame 5. As an example, the pentagonal frame 5 in Figs 3 and 4 comprises 6 raised portions 12a-f. When the plate 6 is put in its lowered position it rests upon the raised portions 12 and the top edge of the inner wall 8. The plate 6 is thereby separated from the outer wall 7 and the guide 13, allowing water to flow between the edge of the plate 6 and the outer wall 7, and through the guide towards the outlet 11. The raised portions 12a-f are thus preferably separated from each other such that they will provide a robust support for the plate 6.

[0037] In another embodiment, the raised portions 12 are provided in the hollow space 25, or dry area, provided within the frame 5. As an alternative, the frame 5' does not comprise any raised portions, as shown in Figs. 7 and 8. Instead, the plate 6 rests only on the inner wall 8 of the frame 5'. In this case an edge (not shown) is provided on the bottom side of the plate 6, matching the inner edge of the inner wall 8 of the frame 5', such that the plate 6 is maintained in a stable position. Further, a hair strainer 26 is shown in Figs. 7 and 8. A corresponding strainer 26 may be arranged also in the frame 5 according to the first embodiment.

[0038] A cross sectional detail of one of the raised portions 12a, as well as a height adjustment means 17, are shown in Fig. 9. The raised portion 12a comprises a vertical through hole 16, into which a height adjustment means 17 is insertable from below. The height adjustment means 17 is screwed into the through hole 16 which has internal threads. In one embodiment, a T-nut, preferably metallic, is pre-mounted in frame 5.

[0039] Each raised portion 12a-f is provided with a height adjustment means 17 respectively. The height adjustment means 17 can be screwed further into the raised portion, or outwards. Each height adjustment means 17 can be adjusted independently of the other adjustment means 16 and the frame 5 can thus be adjusted such that it stands stable and planar, also on an uneven surface. The lower portion of each heigh adjustment means 17 is thus provided as a foot for the tray 5. However, as will be explained further below, the upper end of each height adjustment means 17 is preferably provided with a tool engagement recess such that the correct position of the height adjustment means 17 can be set from above when the plate 6 is removed, and may be set even when the frame 5 is arranged in its use position.

[0040] Further, the top surface of the inner wall 8 is provided with a sealing 24, which seals between the plate 6 and the inner wall 8, such that water does not enter the hollow area 25 inside the frame 5. The seal 24 is shown in Fig. 9.

[0041] Fig. 10 shows an isometric view of the upper side, or standing area, of the plate 6. The plate 6 is slightly curved into a convex shape. Thereby, water hitting the plate 6 is transported to its edges and enters the guide 13 in the frame 5 by the gap 27 between the plate 6 and the outer wall 7 of the frame 5. The smooth continuous plate 6 without drain holes forms an inviting area for a user who can use the entire surface as an "active" standing area.

[0042] In Fig. 11 an isometric view of the bottom of the plate 6 is shown. A number of studs 19a-d are provided in the bottom surface of the plate 6. The studs 19 are provided at corresponding locations compared to the raised portions 12 in the frame 5. When the plate 6 is put in its lowered position the studs 19 will thus fit into the top of the raised portions 12 and cover the through holes 16. Water will thus not enter the through holes 16 and the plate 6 is firmly fixed in place such that a user can stand on it. In the embodiment in which the frame 5 rests on the inner wall 8, a plate without studs (not shown) is provided.

[0043] In one embodiment, the bottom side of the plate 6 is provided with a mat 20, with the same dimensions as the plate 6, as shown in Fig. 12. The mat 20 has the same function as the sealing 24 provided on top of the inner wall 8. In one embodiment, the sealing 24 is re-

placed by the mat 20. The mat 20 may cover the entire under side of the plate 6, or only part of it. The mat 20 comprises e.g. rubber or any other soft, water resistant sealing material.

[0044] The first step of mounting the shower cubicle 1 is to put the shower tray frame 5 in its intended location and thereafter adjusting the height adjustment means 17 from above, such that the frame 5 is stable. The height adjustment means 17 are preferably accessed by the through hole 16 in the raised portion 12, by means of a tool 18, e.g. a screwdriver or allen key. This is shown in Fig. 13. By adjusting the height adjustment means 17 towards or away from the frame 5 with the tool 18 it is possible to adjust the frame 5 such that it becomes planar, i.e. horizontal. One or more of the height adjustment means 17 may be adjusted until the frame 5 is standing stable. The leveling can be done in the intended location of the shower cubicle 1. There is no need for moving the tray 2 during the adjustment procedure, which is beneficial for the installer and provides for a better and safer working environment.

[0045] In Figs 14 and 15, the next step of the assembly of the shower cubicle 1 is shown. In Fig. 14, the column 3 is put in a temporary holder 22, provided in the inner wall 8 of the frame 5, which provides an assembly position. The assembly position facilitates the assembly of the shower cubicle 1 in that it makes it safer and easier for an installer to connect a water supply (not shown) to the mixer (not shown), which is provided in the back of the column 3. Also, there is less risk of damaging the underlying floor or surface since the column 3 is not positioned directly onto the floor, but instead on the frame 5.. The temporary holder 22 provides stability to the column 3 during installation. One single installer may thus do the connecting work himself. There is no need for a second installer holding the column during the water connection installation. When the water supply is connected, the column 3 is moved into a final position 23, as shown in Fig. 15. The final position 23 is arranged such that the column 3 is located outside the guide 13, in the outer wall 7 of the frame 5.

[0046] The drain water outlet 11 is then inserted into the recess 10 provided in the inner wall 8 of the frame 5. The drain water outlet 11 may in one embodiment be preassembled in a factory. The holding means 15 is put in its lowered, or non-holding, position, and thereafter, the plate 6 is put on top of the frame 5 such that it rests on the raised portions 12 and/or the inner wall 8. The studs 19 on the bottom side of the plate 6 are fitted into corresponding raised portions 12, in order for the plate 6 not to move. In the embodiment without studs 19, the circumferential edge of the plate 6 is fitted against the inner wall 8 of the frame 5.

[0047] The plate 6 is thus supported by the raised portions 12 and/or the inner wall 8 and it fits tightly against the sealing 24 which prevents water from leaving the guide 13 and enter the hollow space 25. Alternatively, the bottom side of the plate 6 is provided with the mat 20, which seals between the plate 6 and the frame 5.

[0048] The shower cubicle 1 is now ready to be provided with shower wall sections 4.

[0049] When the shower cubicle 1 is in use, water hits the plate 6 and is transported to the edges of the convex plate 6. The small gap 27 between the plate 6 and the frame 5 let the water through into the water guide 13 in the frame 5. The water is then guided towards the waste water outlet 11 from where it is further transported to a drain outlet in the floor or wall of the surroundings.

[0050] In one embodiment, shown in Fig. 16, a heat recovery unit 21, preferably a drain water heat recovery unit, is provided in the guide 13 of the frame 5. In that way, the heating of the tap water becomes more efficient. The heat recovery unit 21 is easily installed, replaced or removed either at the same time as the shower cubicle 1 is installed, or at a later time.

[0051] The heat recovery unit 21 preferably includes a conduit which is connected to the cold water supply. When cold water is to be used, it is firstly circulated in the conduit of the heat recovery unit 21 before it enters at the mixer. The cold water will thus be heated by drain water present in the water guide 13, which means that less hot water is required when showering. The conduit is preferably made of a material having good heat conductivity, such as copper or stainless steel. As can be further seen in Fig. 16 the metal conduit is connected to the cold water supply by means of flexible hoses. These flexible hoses are preferably insulated in order to maintain the increased temperature of the cold water.

[0052] The shape of the frame 5 may vary between different embodiments. The frame 5 shown in Figs 1-16 is polygonal. In Fig. 17 a frame 5" of a third embodiment is shown, comprising a circumference with 90° corners. Other shapes of the frame 5 may be rectangular, polygonal, oval or circular.

[0053] In Figs. 18-21 the mounted shower cubicle 1 is shown. The gap 27 provided between the frame 5 and the plate 6 may be used to guide the sliding shower wall section, or door, 4c. In Fig. 18 the wall section 4c is in a middle position and in Fig. 19 it is in the fully open position. In one embodiment, it is possible to tilt the wall section 4c inwards when it is in the open, or rear, position such that cleaning is facilitated. This is shown in Fig. 20. It may even be possible to tilt the wall section 4c before it has reached the rear position, if desired. This is shown in Fig. 21. Advantages with the described structure is the facilitated installation, and the openable plate 6 which provides for easy cleaning of the waste outlet 11, the hair strainer 26, the floor 14 and the floor drain, situated underneath the shower cubicle 1. For this reason, there is no need for a loose front panel, which instead is integrated in the frame 5.

[0054] The position of the recess 10, and thus the waste water outlet 11, may be provided anywhere along the rim of the inner wall 8 of the frame 5, not only in the front as in the described embodiment.

[0055] The placement of the waste water outlet 11 in

the recess 10 of the inner wall 8 of the frame 5 provides for a low entry of the shower tray 2, which is advantageous for the user, as well as for the installer. The height of the tray 2 is below 15 cm, preferably below 12 cm, and most preferred 10 cm or below.

Claims

1. A frame for a shower cubicle tray (2), wherein the frame (5) comprises:

- an outer wall (7) and an inner wall (8) connected by a bottom surface (9);
- a waste water outlet (11); and
- height adjustment means (17);

wherein a hollow space (25) is provided on the inner side of the inner wall (8) for allowing access to the underlying surface (14), and wherein the inner wall (8), the outer wall (7) and the bottom surface (9) form a guide (13) for waste water.

2. The frame according to claim 1, wherein the inner wall (8) is provided with a recess (10) into which the waste water outlet (11) is connected.

3. The frame according to claim 1 or 2, wherein raised portions (12a-f) are provided in one of the bottom surface (9) of the frame (5) or in the hollow space (25) within the frame (5).

4. The frame according to claim 3, wherein the height adjustment means (17) comprises adjustable feet provided in the raised portions (12a-f).

5. The frame according to any one of the preceding claims, comprising at least three height adjustment means (17).

6. The frame according to any one of the preceding claims having a circumferential shape of one of: polygonal, square, oval or circular.

7. A shower tray comprising a frame (5) according to any one of the claims 1-6 and a plate (6) provided on top of the frame (5).

8. The shower tray according to claim 7, wherein the plate (6) is liftable to provide access to the frame (5).

9. The shower tray according to claim 7 or 8, wherein the plate (6) is supported by the inner wall (8) of the frame (5).

10. The shower tray according to claim 7 or 8, wherein the plate (6) is supported by raised portions (12) provided in the bottom surface (9) of the frame (5).

11. The shower tray according to any one of the claims 7-10, wherein the plate (6) comprises a convex shape such that water flows towards the circumference of the plate (6).

12. The shower tray according to any one of the claims 7-11, wherein the frame (6) comprises a holding means (15), which in a holding position keeps the plate (6) in an open position.

13. The shower tray according to any one of the claims 7-12, wherein a heat exchanger (21), preferably a drain water heat recovery unit, is provided in the waste water guide (13).

14. A shower comprising a shower tray (2) according to any one of the claims 7-13, a column (3), and a number of shower wall sections (4).

15. The shower according to claim 14, wherein the frame (5) comprises a temporary holder (22) for the column (3) forming an installation position, and one final position holder (23), which facilitates the installation of the cubicle (1).

16. The shower according to claim 14 or 15, wherein the gap (27) forms a slide track for one or more of the shower wall sections (4).

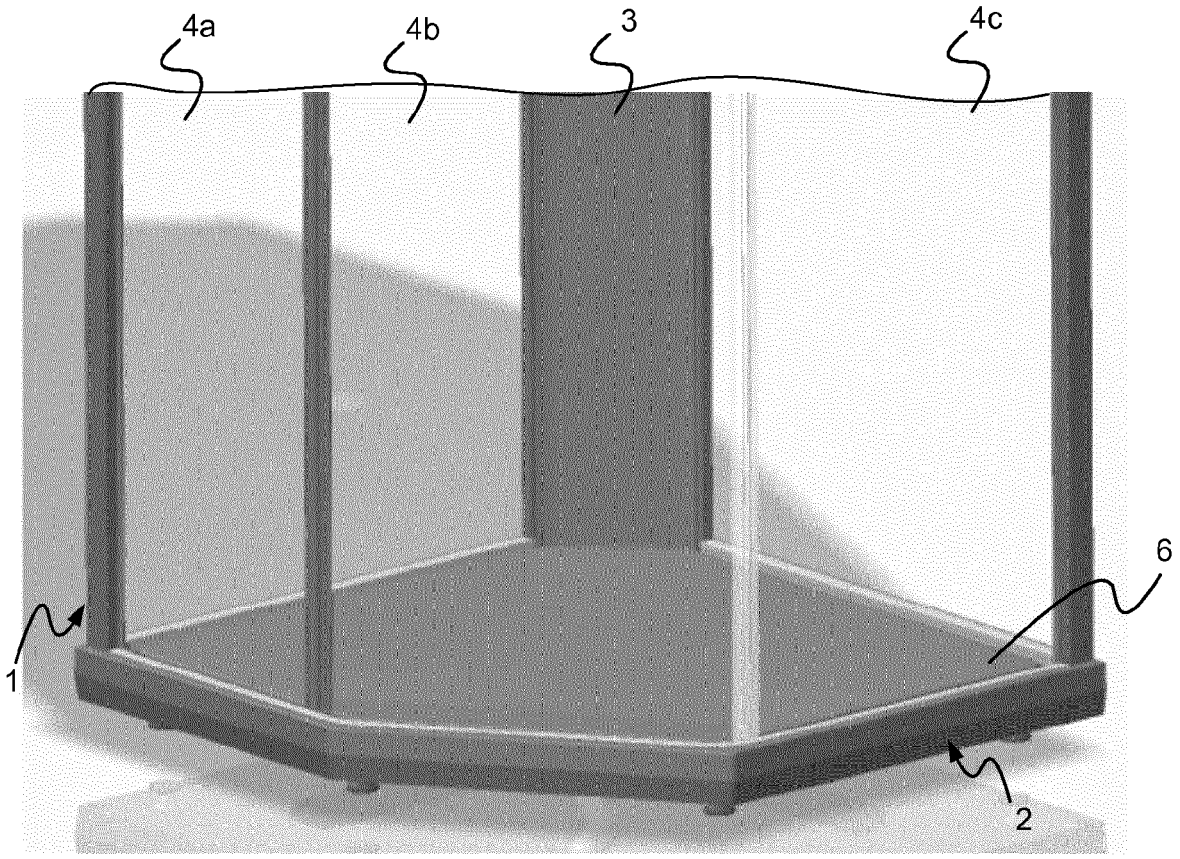


Fig. 1

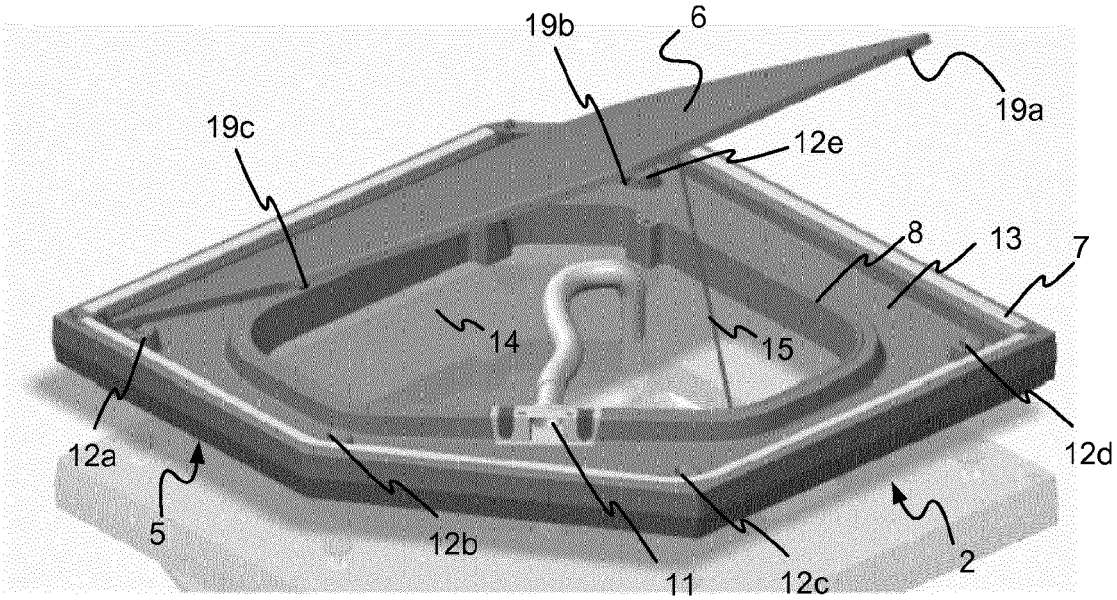
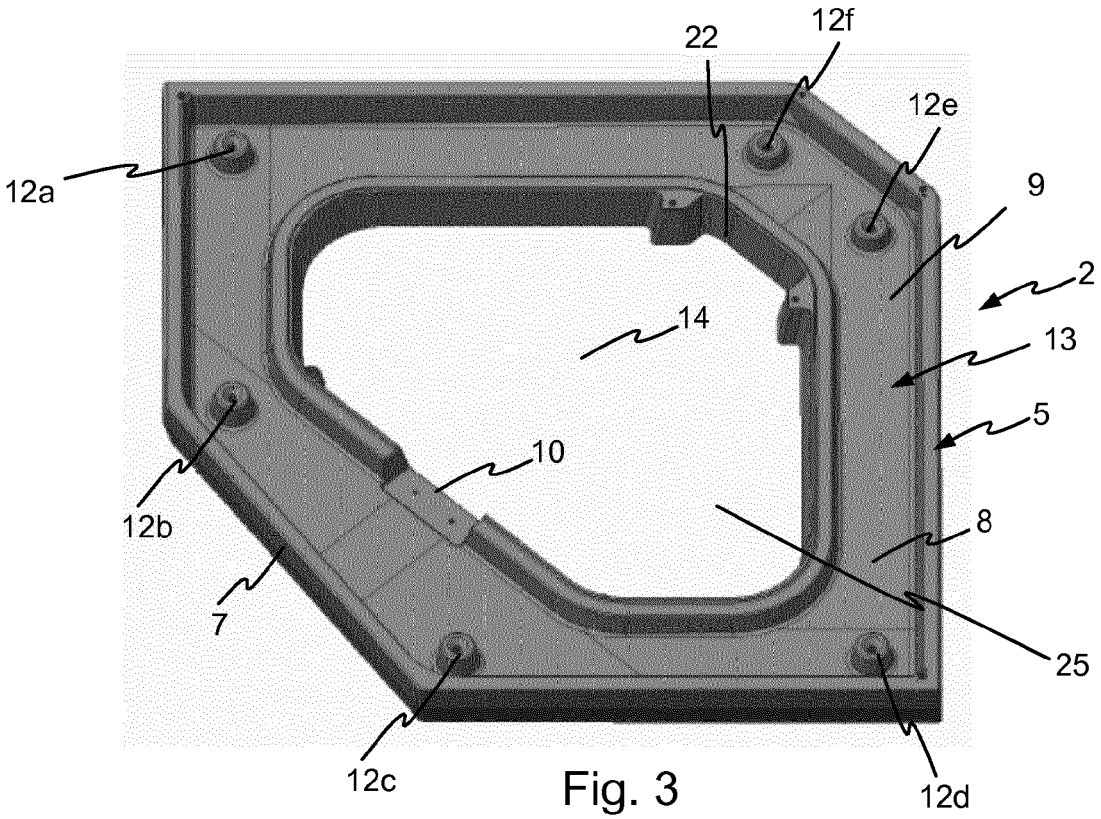


Fig. 2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12f
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12a
9
2
14
13
5
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12b
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7
25
12c
12d

Fig. 3

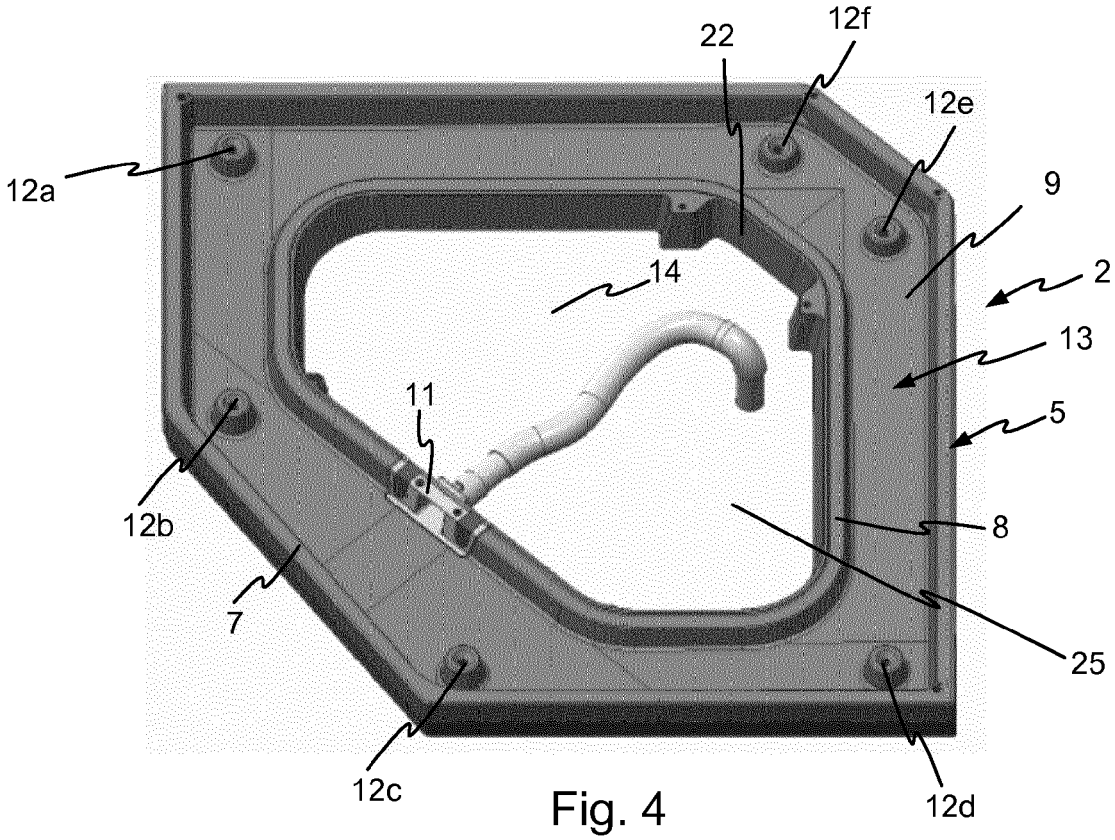
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Fig. 4

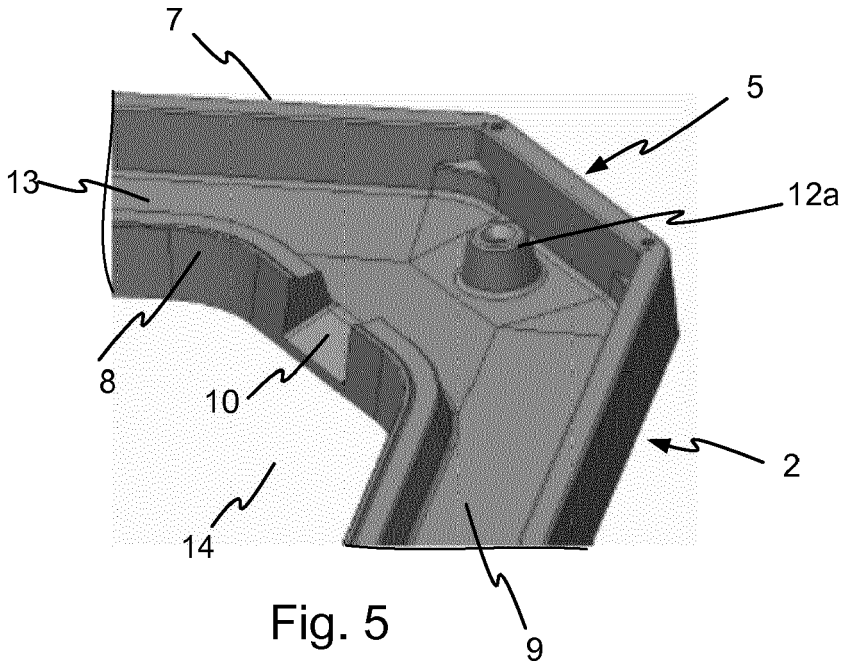


Fig. 5

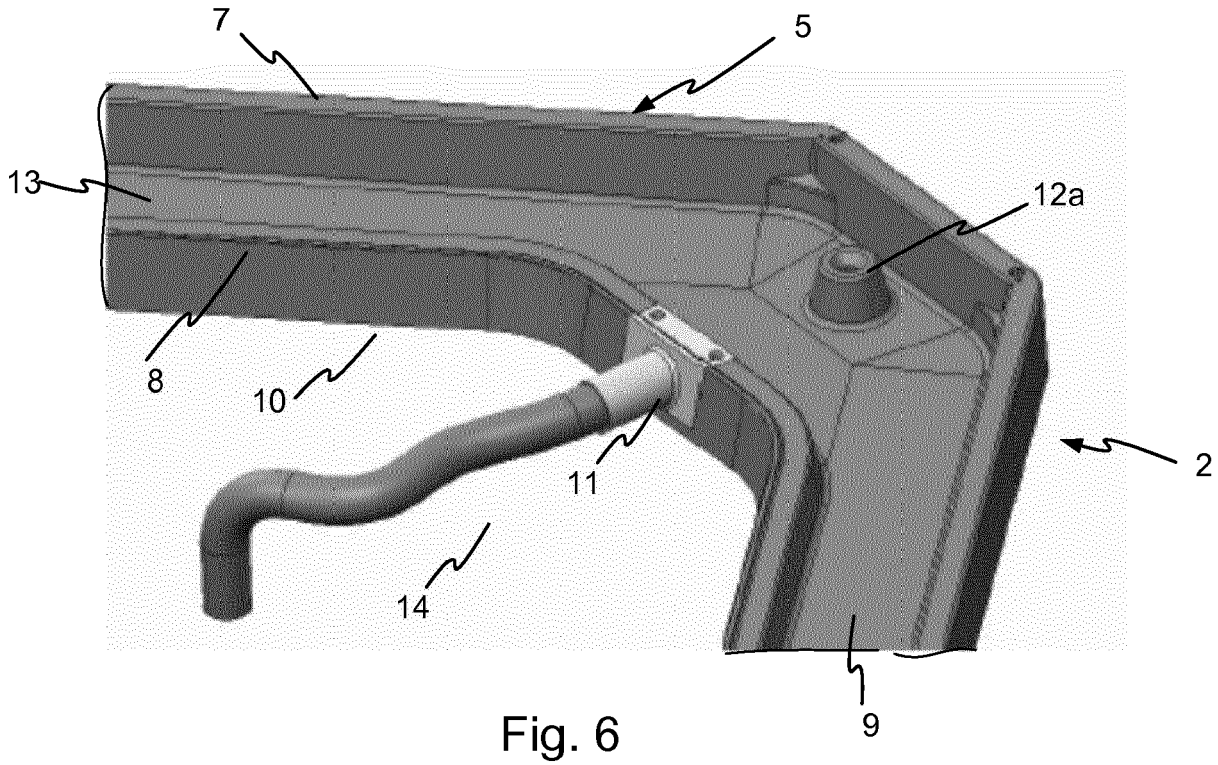


Fig. 6

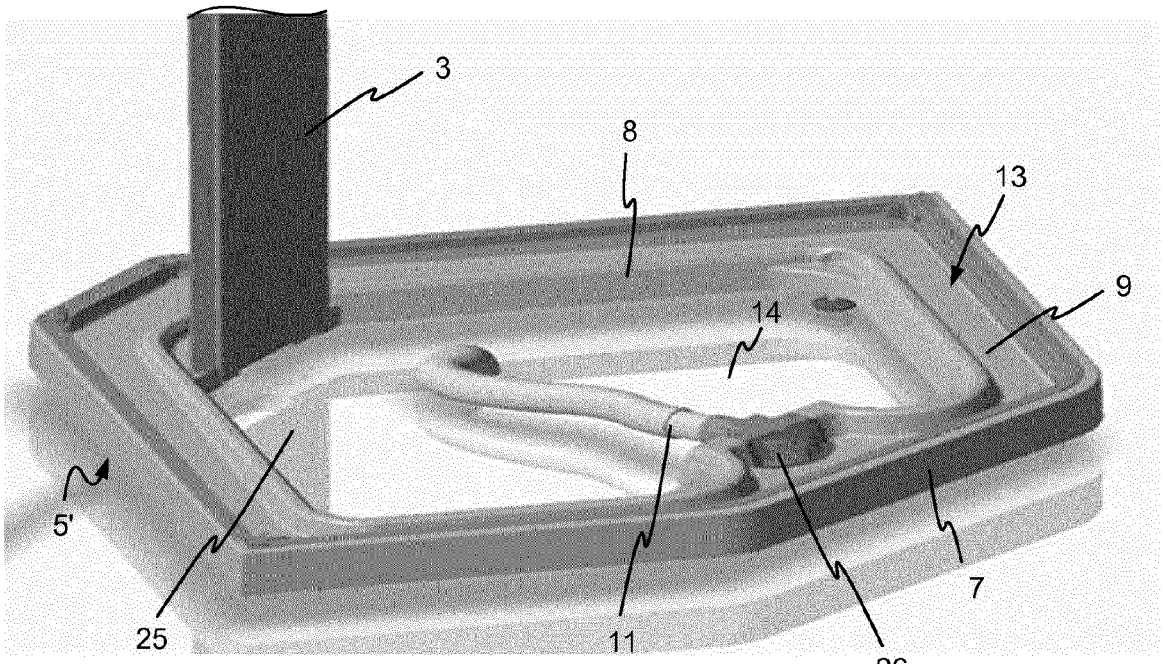


Fig. 7

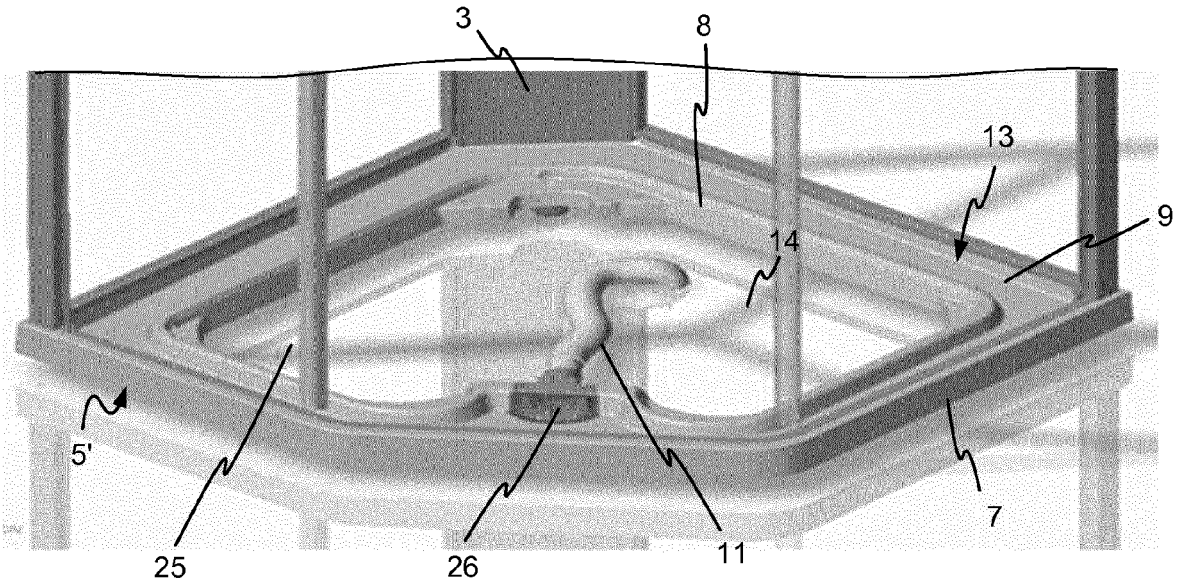


Fig. 8

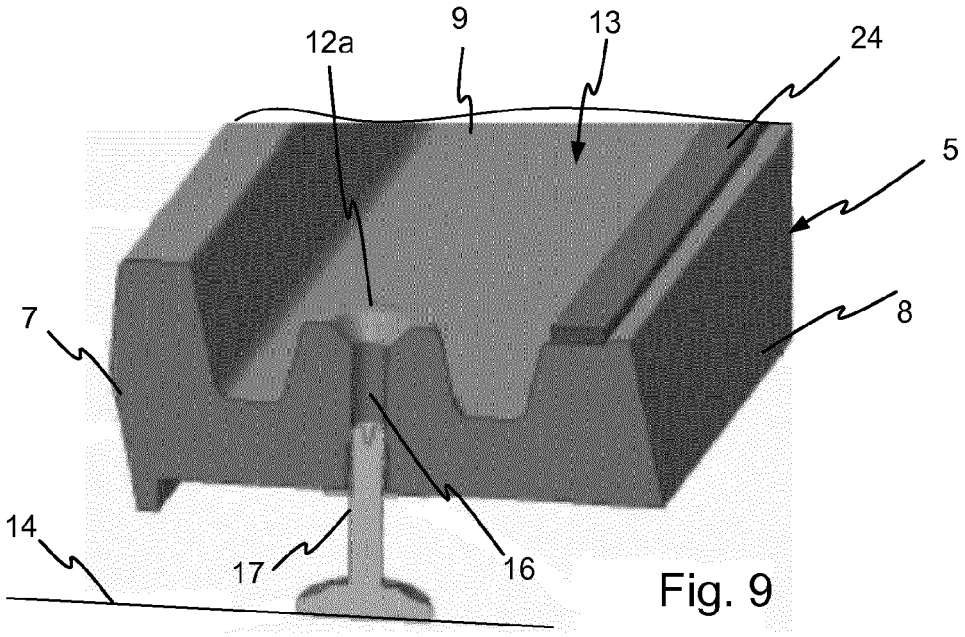


Fig. 9

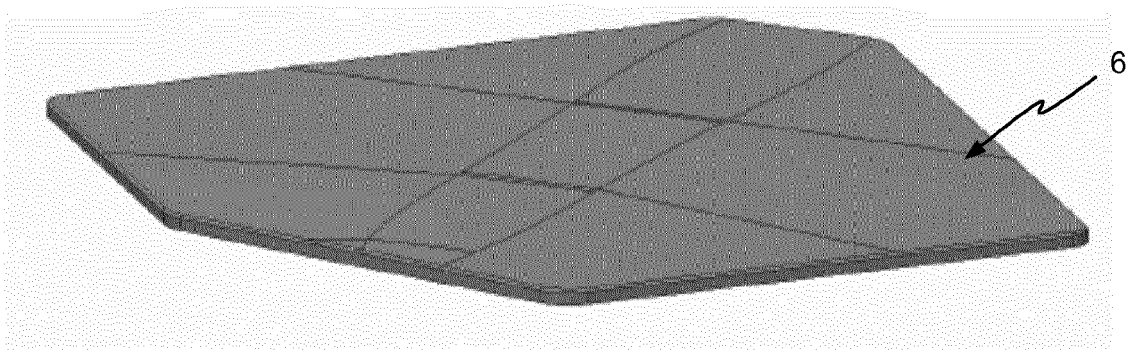


Fig. 10

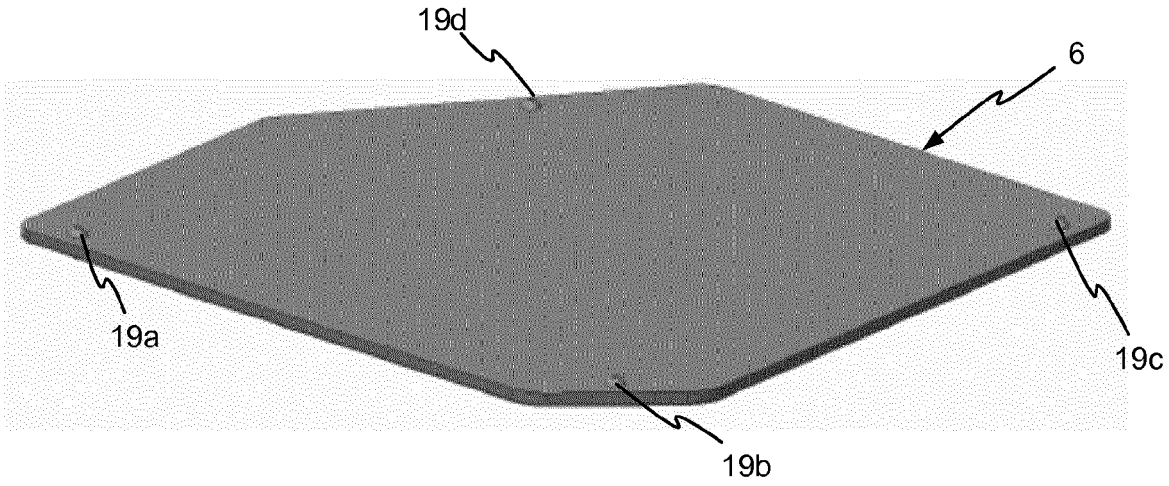


Fig. 11

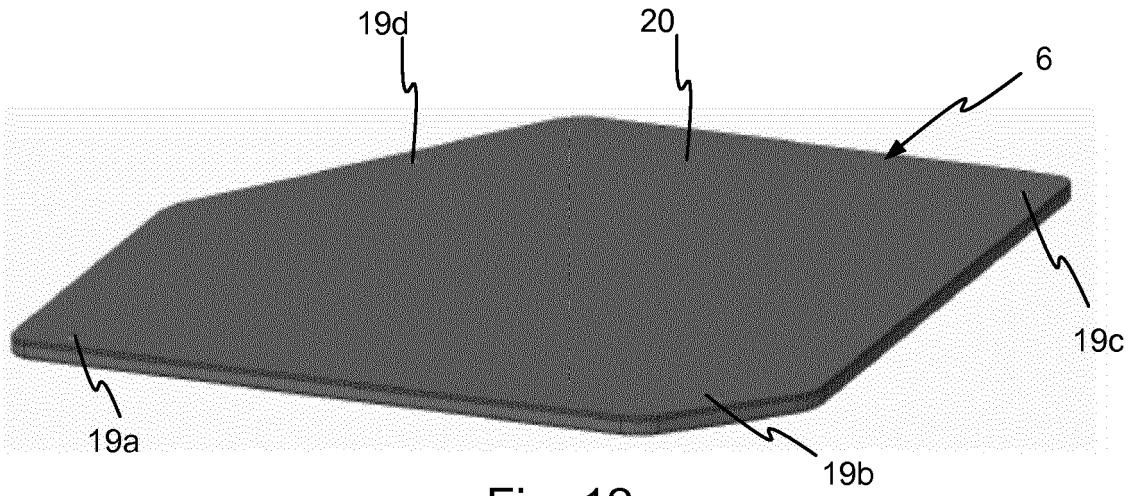


Fig. 12

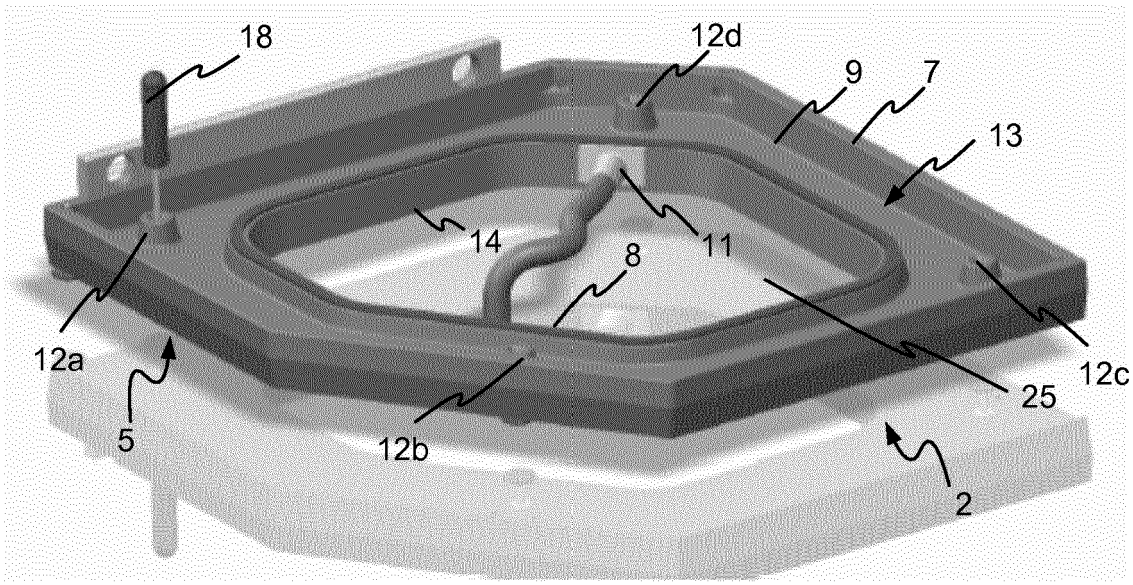
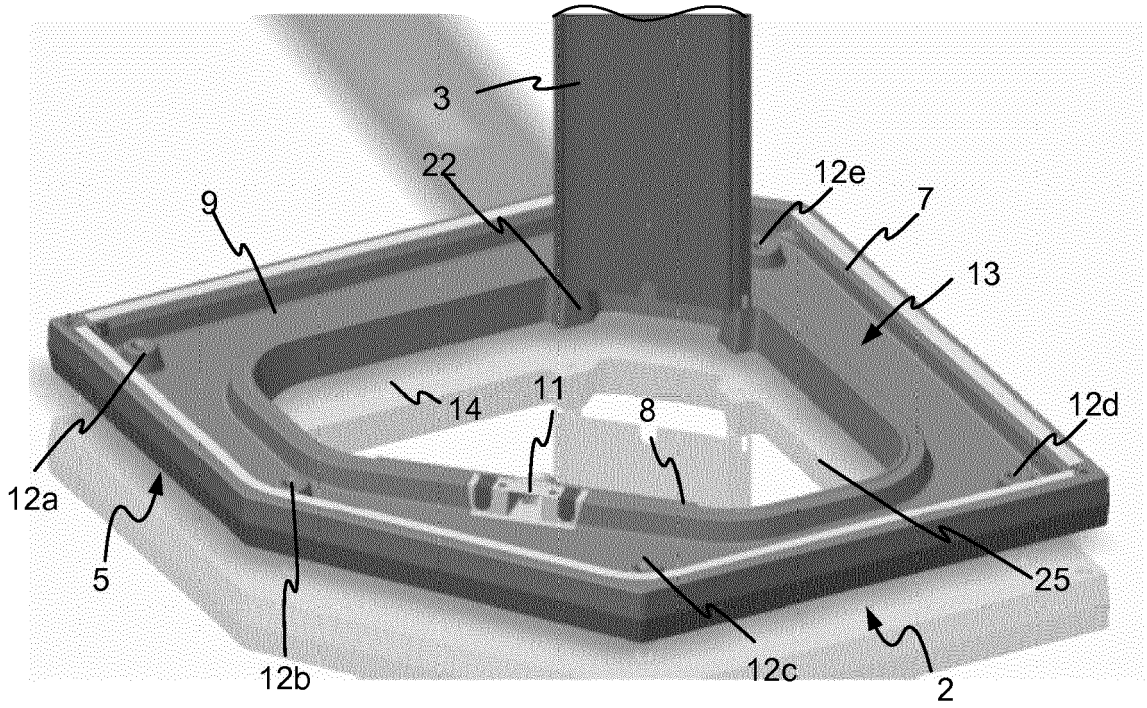


Fig. 13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12b
12c
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Fig. 14

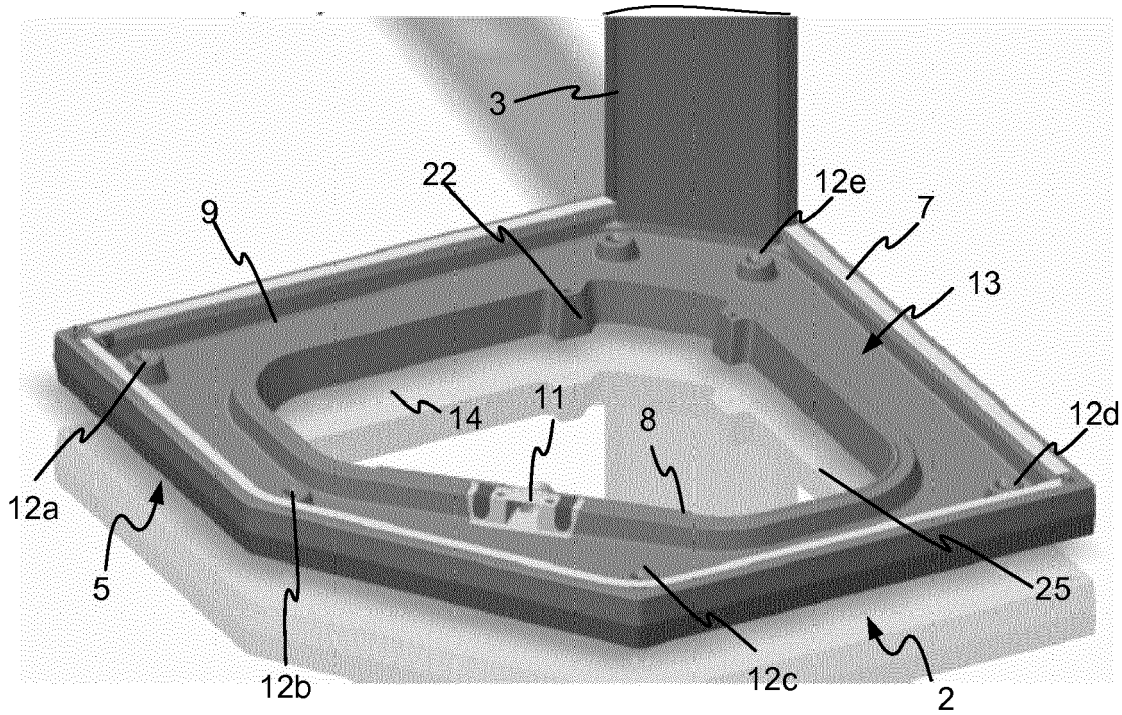
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Fig. 15

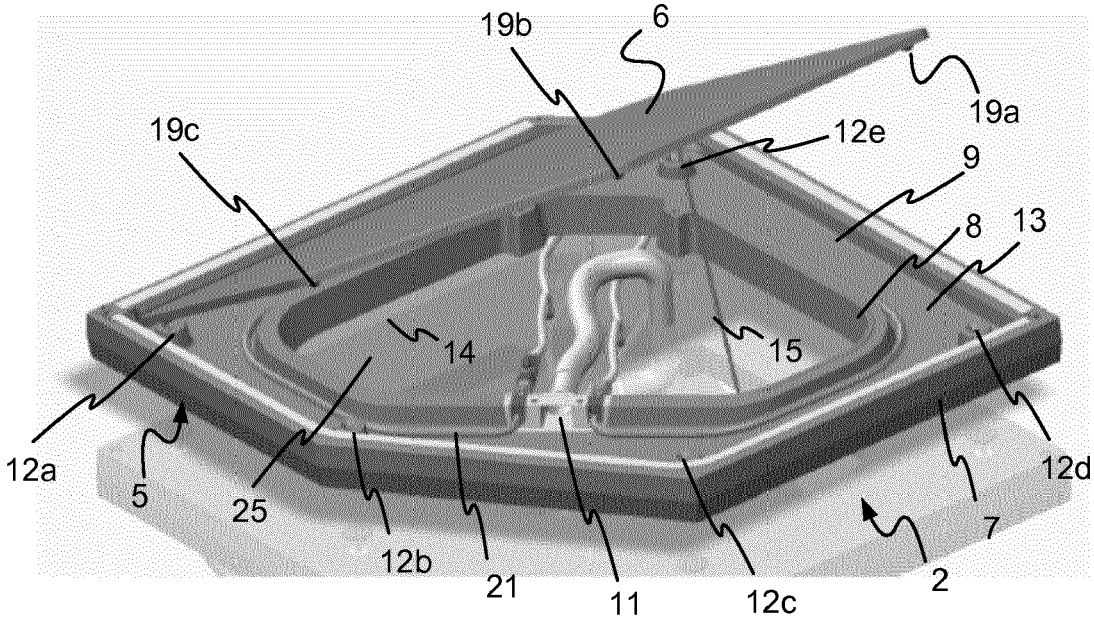
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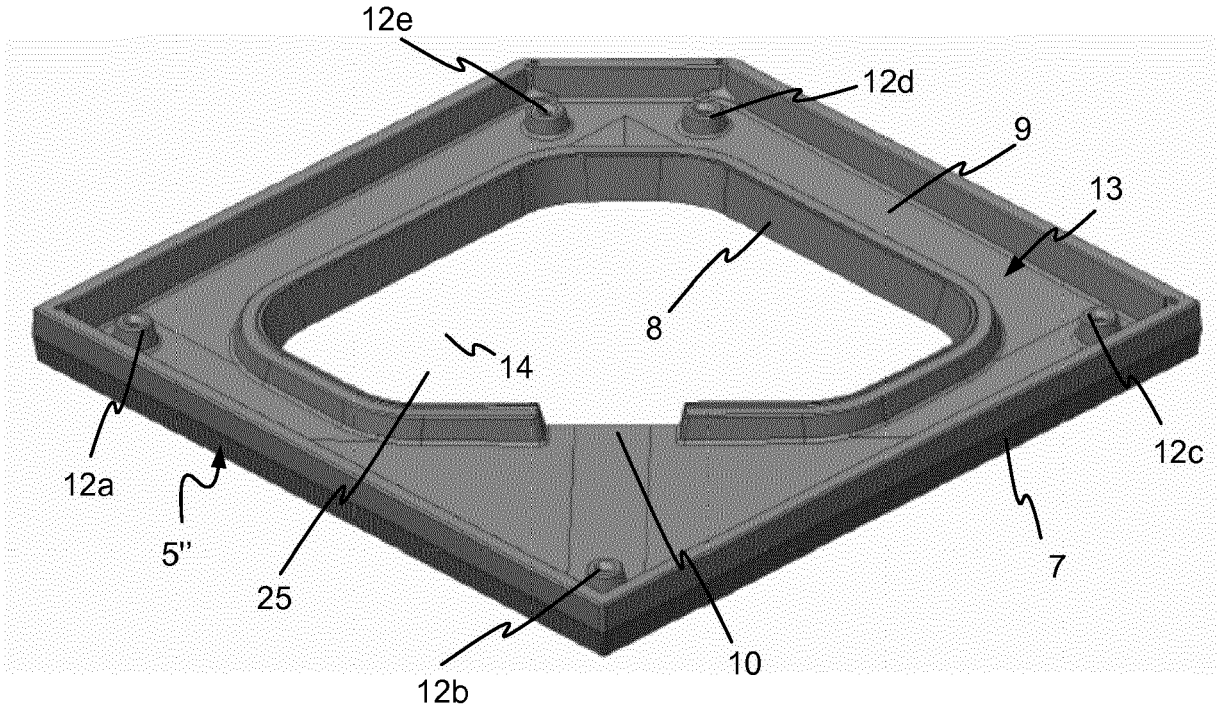
Fig. 16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12a
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12b
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12c

Fig. 17

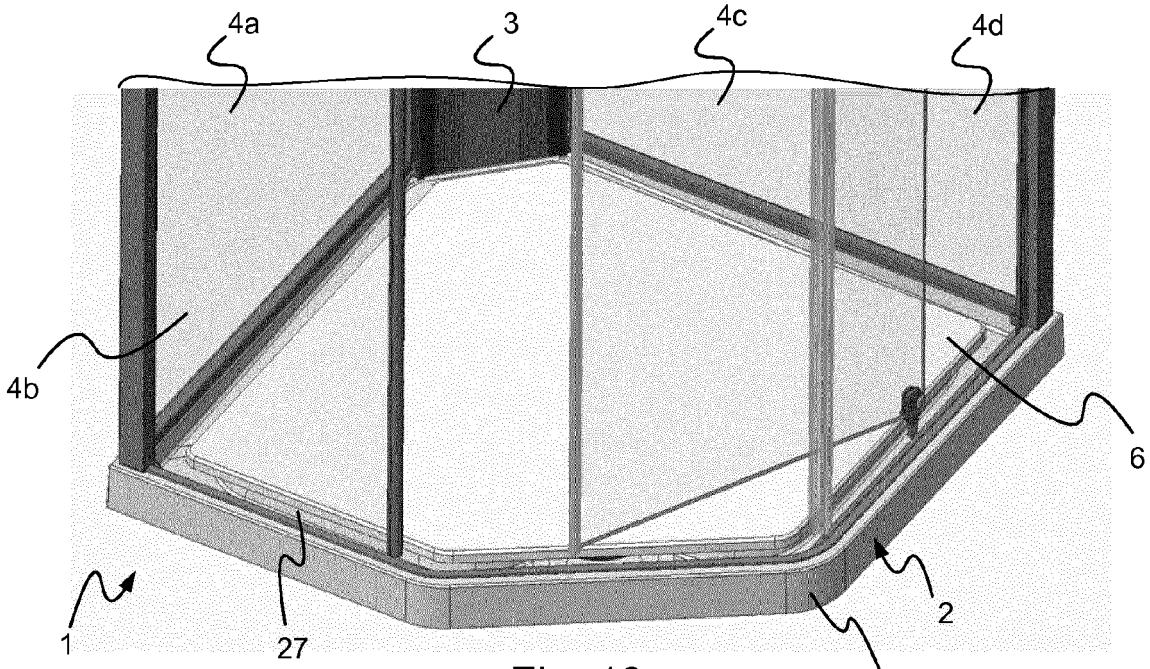

Fig. 18

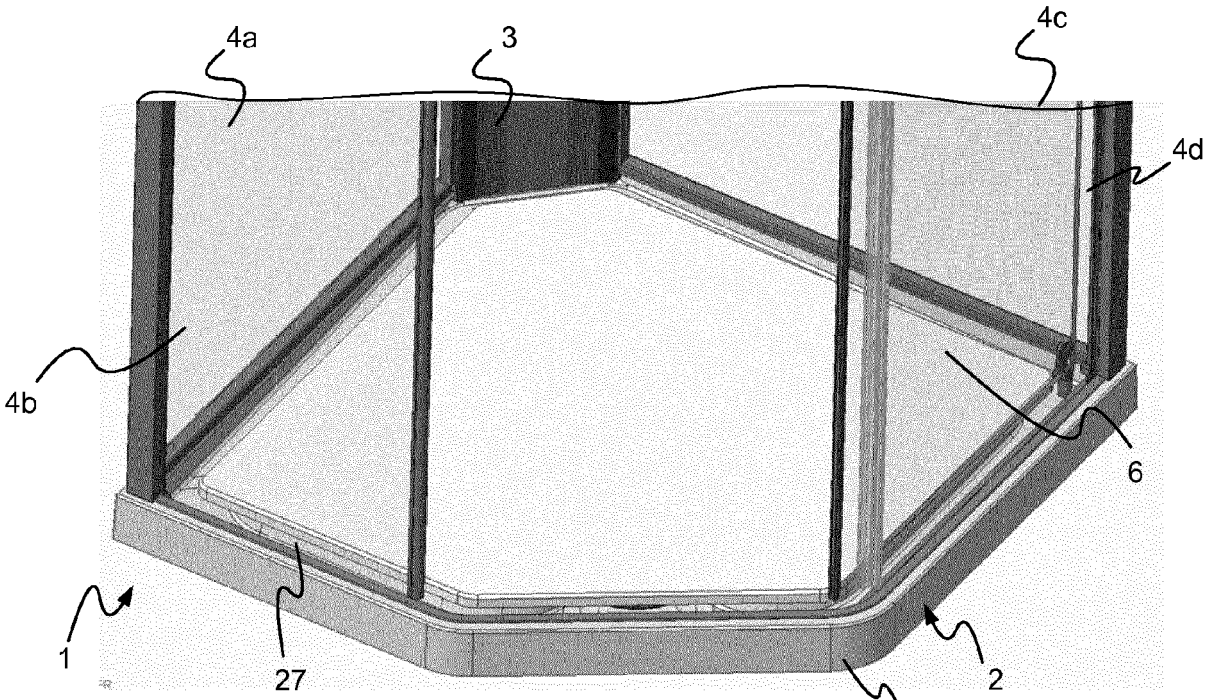

Fig. 19

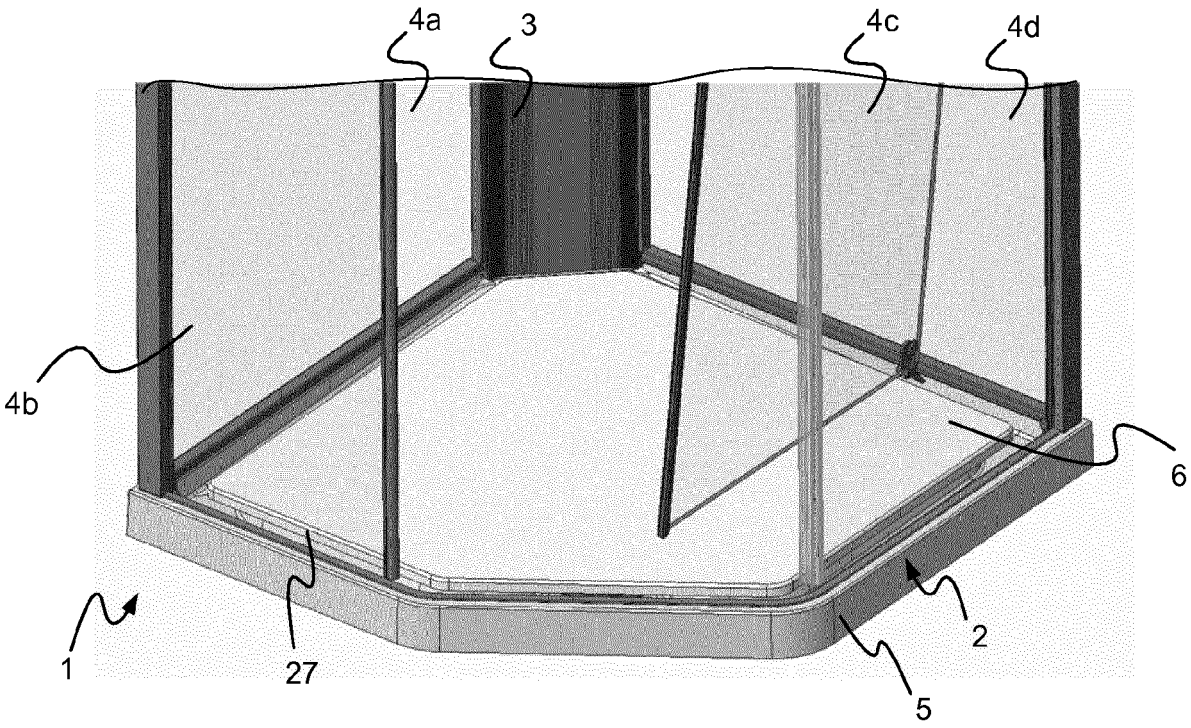

Fig. 20

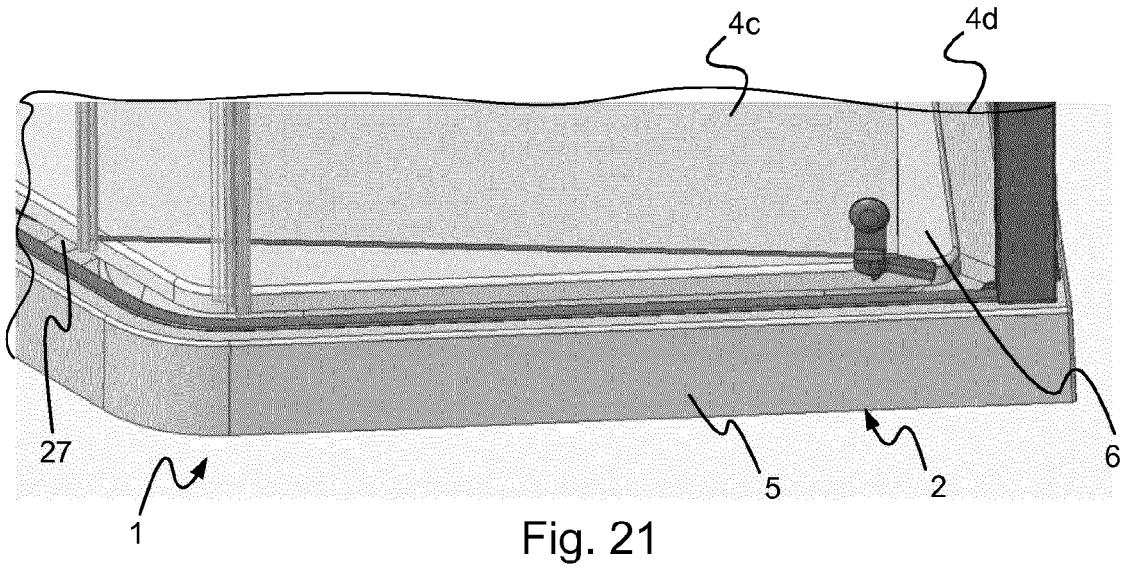

Fig. 21

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EUROPEAN SEARCH REPORT

Application Number
EP 16 17 2725

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	DE 201 07 001 U1 (ROSSKOPF & PARTNER GMBH & CO K [DE]) 28 June 2001 (2001-06-28) * page 5, line 12 - line 22 * * figures 1, 2 *	1-9, 11-16	INV. A47K3/40
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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
The Hague	14 October 2016	Schikhof, Arnout

CATEGORY OF CITED DOCUMENTS

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