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(54) **ARRANGEMENT IN A TRAP**

ANORDNUNG IN EINER FALLE

AGENCEMENT DANS UN PIÈGE

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Description

Background of the invention

[0001] The present invention relates to an arrangement in a drain trap in accordance with the preamble of claim 1. This type of arrangement aids the assembly of a floor drain.

[0002] Said floor drain is used especially to conveying waste water from the surfaces of the floor and the drain fixtures connected to the floor drain into the sewage system of the property. For this purpose, the floor drain comprises a bowl-like vessel with a drain trap and side inlets for receiving water or other liquid conveyed to the drain. The top surface of the floor drain conventionally has a screen arranged at floor level.

[0003] This type of floor drain should be easily cleanable and the parts that are possibly detachable from the drain should be easily installable back in place. Examples of these drain traps can be found in the publications CH 651 610 and US 2 136 945, for instance. It has been noticed that parts of floor drains currently in the market may sometimes be assembled incorrectly, in which case considerable smells are generated into the room space surrounding the floor drain.

Brief description of the invention

[0004] The object of the present invention is, thus, to develop an arrangement that provides a simple solution to the above-mentioned problems caused by prior-art drawbacks. This object is achieved in such a manner that the arrangement in a drain trap is, in accordance with the present invention, provided with the characteristic features defined in the claims. More specifically, the arrangement according to the invention is mainly characterised by what is disclosed in the characterising part of claim 1.

[0005] Preferred embodiments of the invention are disclosed in the dependent claims.

[0006] The terms "top edge", "bottom edge" and so forth used in the specification illustrate the features of the invention in directions that are relative to the arrangement in a drain trap of the invention as it is presented in the attached figures.

[0007] Other advantages of the invention are presented in the following in connection with a more detailed description of special embodiments of the invention.

Brief description of the figures

[0008] In the following, a preferred embodiment of the invention is explained in more detail with reference to the accompanying drawing, in which

Figure 1 shows the entire floor drain fully assembled,
Figure 2 shows the frame of the floor drain,
Figure 3 shows the frame of the floor drain cut at point A-A of Figure 1,
Figure 4 shows a no-return pipe installable in the frame as seen obliquely from the top,
Figure 5 shows the no-return pipe of Figure 4 as seen obliquely from the bottom,
Figure 6 shows the floor drain cut at point B-B of Figure 1,
Figure 7 shows the floor drain cut at point C-C of Figure 6, and
Figure 8 shows the floor drain partially cut at the location of the support collar and support edge.

Detailed description of preferred embodiments

[0009] The present figures do not show the arrangement in a drain trap in scale but the figures are schematic, illustrating the general structure and operation of the preferred embodiments. The structural parts indicated by reference numerals in the attached figures correspond to the structural parts marked with reference numerals in this specification.

[0010] The present arrangement in a drain trap relates, in particular, to floor drains 1, the assembly of which can be substantially facilitated by this solution. The floor drain comprises a frame 2 that surrounds the water conveyed through a drainage aperture 3 into its interior 4. The frame is made up of a shell 5 and a bottom 6 attached thereto that is opposite the drainage aperture. One or more side inlets 7 are connected to the shell of the frame to convey water to the floor drain from various water fixtures and machines. The water that accumulates into the floor drain is led on to the sewer through an outlet 8 connected to the shell.

[0011] To avoid smells, a drain trap 9 is formed in the interior 4 of the floor drain 1 to stop the gases emitted from the sewer from entering the room space through the outlet 8. This drain trap is achieved by leading from the direction of the drainage aperture 3 to the interior a no-return pipe 11 that extends to the bottom cup 10 formed below the bottom edges in the side and outlets. This type of bottom cup can also be achieved by damming it up at the side inlets and outlet. Thus, in Figure 6, the bottom cup is dammed up at the outlet. The no-return pipe is arranged to close the interior 4 of the floor drain 1 in an air-tight manner by extending a drainage flange 12 from its drainage aperture-side end to the inner surface 13 in the interior of the shell. The drainage flange settles substantially tightly against the inner surface, and the tightness is preferably ensured by a seal 15 arranged on the outer edge of the drainage flange. The structure is shown in Figure 6, for instance.

[0012] Said drainage flange 12 further comprises, in the manner shown in Figures 4 and 5, for example, a special collar 16 that extends from the outer edge 14 of the drainage flange toward the drainage aperture 3. The collar is arranged to settle against the inner surface 13 of the shell 5 when the drain trap 9 is formed. When the collar is arranged against the inner surface of the shell,

they comprise in an embodiment of the floor drain at least one groove 17 and a guide 18 to be led to the groove to position these parts of the floor drain simply together.

[0013] When taking the no-return pipe 11 toward the bottom 6 of the floor drain 1, the correct path is achieved by aligning the groove 17 and guide 18 in the collar 16 and shell 5 and by then sliding the no-return pipe into place in the bottom cup 10. The positioning of the guide and groove together is best seen in Figure 7. To simplify the movement between them, the guide and the groove receiving it can be made to taper from the drainage aperture 3 toward the bottom 6.

[0014] In the embodiments shown in the figure, the groove 17 forming the first connecting means is arranged on the collar 16 of the drainage flange 12, whereas the guide 18 forming the second connecting means is arranged on the shell 5 of the collar 16. However, nothing prevents the implementation of this structure in reverse order. In the solution of the figures, the connecting means form a flow opening 19 at the side inlet as a tongue and groove-type structure comprising a protrusion and slide. Nothing prevents the implementation of the connecting means as considerably narrower than shown. These opposite connecting means may also be located at several locations along the circumference of the collar. The connecting means can also be implemented broader than in the solution of the figures.

[0015] Even though the above connecting means 17 and 18 help guide the no-return pipe 11 fairly easily into place in the interior 4 of the floor drain, the alignment of the no-return pipe and floor drain can also be aided by arranging in the no-return pipe a plane surface 20 in the direction oriented toward the inner surface 13 of the shell 5. This plane surface is arranged to interact with a frontal surface 21, which is in the shell and extends into the interior, to guide the no-return pipe in place in the direction of the bottom. The opposite plane surface and frontal surface are shown in Figure 6.

[0016] The guidance of the no-return pipe 11 into place is further facilitated by also arranging the part of the frame between the frontal surface 21 and shell 5 extending into the interior to tilt toward the bottom.

[0017] In a third embodiment, at least along part of the outer edge 14 of the drainage flange 12, the no-return pipe 11 can be equipped with a special support collar 22 that extends toward the bottom 6, as shown in Figures 4 and 5, for instance. This type of support collar is, in turn, arranged to interact with support edges 23 extending from the shell 5 toward the interior 4 on opposite sides of the interior, as shown in Figure 2. This interaction is shown schematically in Figure 8. By extending at least part of the bottom edge 24 of the support collar lower than the outer edge of the drainage flange or other parts of the support collar, the toothing of Figures 4 and 5 is achieved, in which the support collar has end edges 25 at opposite ends of the protruding section.

[0018] The support collar 22 is dimensioned in length to fit exactly between the opposite support edges 23. Thus, when leading the no-return pipe 11 into the interior 4, one must ensure the fitting of the support collar between the support edges during motion. If the no-return pipe is in a wrong position, the bottom edge of the support collar contacts the support edge, which thus supports the no-return pipe, making it impossible to continue the installation until its position has been changed to accommodate the locations of the support collar and support edge. This way, the bottom edge on the support collar projecting downward is, during the operation of the floor drain, arranged to settle closer to the bottom than the top edge 26 on the support edge projecting toward the interior.

[0019] In a preferred embodiment of the floor drain, the support collar 22 is formed on the outer edge of the drainage flange 12 over a distance of 90 to 180 degrees. The end edge of the support collar can further be arranged to form an approximately 90 to 120 degree angle with the bottom edge 25 of the support collar.

[0020] The physical message provided by the support collar 22 during installation concerning the incorrect location of the no-return pipe 11 is especially significant to the resident of the apartment cleaning the floor drain. Because the desired drain trap cannot be achieved by the no-return pipe which in the incorrect position stays clearly too high, the person cleaning the floor drain receives a clear message of the need to fix the position of the no-return pipe so that it would settle functionally in the correct location in the bottom cup 10. By utilizing in the same floor drain both the support collar 20 and the plane surface 18 and frontal surface 19, it is possible to ensure that, while the support collar and support edge settle in their adjacent locations, also the plane surface and frontal surface are aligned against each other. In addition to the interaction of the support collar and support edge and the interaction of the plane surface and frontal surface, the floor drain can also be equipped with the above-mentioned connecting means.

[0021] It is to be understood that the above description and the related figures only illustrate the present solution. It will be obvious to a person skilled in the art that a variety of variations and modifications are possible within the scope of the idea defined in the accompanying claims.

Claims

1. A floor drain (1) comprising
a frame (2) having a shell (5) and bottom (6),
an interior (4) surrounded by said frame,
a drainage aperture (3) opposite the bottom, and
one or more side inlets (7) and an outlet (8) associated with the shell (5), whereby
a drain trap (9) is formed in said interior (4) by a no-return pipe (11) slid into the interior from the direction of the drainage aperture (3) to a bottom cup (10) formed below bottom edges of the side inlets (7) and the outlet (8), while

the no-return pipe (11) settles substantially tightly on an inner surface (13) of the shell (5), whereby
an end of the no-return pipe (11) oriented to the drainage aperture (3) side of the floor drain (1) comprises a drainage flange (12) and a collar (16) extending therefrom toward the drainage aperture (3), thereby arranged to settle against the inner surface (13) of the shell,
characterised in that
the floor drain (1) further comprises opposite support edges (23) extending from the shell (5) toward the interior (4) of the floor drain, and
a support collar (22) extending toward the bottom (6) from along a part of an outer edge (14) of the drainage flange (12) of the no-return pipe (11), which support collar (22) has opposite end edges (25) and is dimensioned in length to fit exactly between the opposite support edges (23), whereby
the end edges (25) are arranged to interact with the support edges (23), hereby fitting the support collar (22) of a correctly positioned no-return pipe (11) between the opposite support edges (23).

2. A floor drain (1) as claimed in claim 1, **characterised in that** the support collar (22) is formed on the outer edge (14) of the drainage flange (12) over a distance of 90 to 180 degrees.

3. A floor drain (1) as claimed in any one of the preceding claims, **characterised in that** the support collar (22) comprises end edges (25) at its opposite ends.

4. A floor drain (1) as claimed in claim 3, **characterised in that** the end edges (25) of the support collar (22) forms an angle of 90 to 120 degrees on the bottom edge.

5. A floor drain (1) as claimed in any one of the preceding claims, **characterised in that** the no-return pipe (11) comprises a plane surface (20) in the direction oriented toward the inner surface (13) of the shell (4), the plane surface being arranged to interact with a frontal surface (21) in the shell and extending in the interior (4) of the floor drain (1) to guide the no-return pipe in place in the direction of the bottom (6).

6. A floor drain (1) as claimed in any one of the preceding claims, **characterised in that** the collar (16) and the inner surface (13) of the shell (5) comprise at least one groove (17) and a guide (18) to be led to the groove.

7. A floor drain (1) as claimed in claim 6, **characterised in that** the guide (18) and the groove (17) receiving it taper from the drainage aperture toward the bottom.

8. A floor drain (1) as claimed in claim 6 or 7, **characterised in that** the guide (18) is arranged in the shell (5) and the groove (17) receiving it in the collar (16).

Patentansprüche

1. Bodenablauf (1), der Folgendes umfasst
einen Rahmen (2) mit einer Schale (5) und einem Boden (6),
einen Innenraum (4), der vom Rahmen umgeben ist, eine Abflussöffnung (3) gegenüber dem Boden, und einen oder mehrere Seiteneinlässe (7) und einen Auslass (8), die mit der Schale (5) verknüpft sind, wodurch
durch ein Rückschlagrohr (11), das aus einer Richtung der Abflussöffnung (3) in den Innenraum zu einem Bodennapf (10) geschoben ist, der unter Unterkanten der Seiteneinlässe (7) und des Auslasses (8) gebildet ist, ein Geruchsverschluss (9) im Innenraum (4) gebildet ist, während das Rückschlagrohr (11) im Wesentlichen dicht an einer Innenfläche (13) der Schale (5) anliegt, wodurch
ein Ende des Rückschlagrohrs (11), das zur Seite der Abflussöffnung (3) des Bodenablaufs (1) ausgerichtet ist, einen Abflussflansch (12) und einen Bund (16), der sich davon zur Abflussöffnung (3) erstreckt, wodurch er angeordnet ist, an der Innenfläche (13) der Schale anzuliegen, umfasst,
dadurch gekennzeichnet, dass
der Bodenablauf (1) ferner Folgendes umfasst
gegenüberliegende Stützkanten (23), die sich von der Schale (5) zum Innenraum (4) des Bodenablaufs erstrecken, und
einen Stützbund (22), der sich von entlang eines Teils einer Außenkante (14) des Abflussflansches (12) des Rückschlagrohrs (11) zum Boden (6) erstreckt, wobei der Stützbund (22) gegenüberliegende Endkanten (25) aufweist und längenmäßig dimensioniert ist, um genau zwischen die gegenüberliegenden Stützkanten (23) zu passen, wodurch
die Endkanten (25) angeordnet sind, mit den Stützkanten (23) zu interagieren, wodurch der Stützbund (22) eines korrekt positionierten Rückschlagrohrs (11) zwischen die gegenüberliegenden Stützkanten (23) eingepasst wird.

2. Bodenablauf (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Stützbund (22) über einen Abstand von 90 bis 180 Grad an der Außenkante (14) des Abflussflansches (12) gebildet ist.

3. Bodenablauf (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Stützbund (22) an seinen gegenüberliegenden Enden Endkanten (25) umfasst.

4. Bodenablauf (1) nach Anspruch 3, **dadurch gekennzeichnet, dass** die Endkanten (25) des Stütz-

bundes (22) an der Unterkante einen Winkel von 90 bis 120 Grad bilden.

5. Bodenablauf (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Rückschlagrohr (11) in der Richtung, die zur Innenfläche (13) der Schale (4) ausgerichtet ist, eine ebene Fläche (20) umfasst, wobei die ebene Fläche angeordnet ist, mit einer vorderen Fläche (21) in der Schale zu interagieren, und sich in den Innenraum (4) des Bodenablaufs (1) erstreckt, um das Rückschlagrohr in die Richtung des Bodens (6) an seine Stelle zu führen.

6. Bodenablauf (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Bund (16) und die Innenfläche (13) der Schale (5) mindestens eine Nut (17) und eine Führung (18), die zur Nut geleitet wird, umfasst.

7. Bodenablauf (1) nach Anspruch 6, **dadurch gekennzeichnet, dass** sich die Führung (18) und die Nut (17), die sie aufnimmt, von der Abflussöffnung zum Boden hin verjüngen.

8. Bodenablauf (1) nach Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** die Führung (18) in der Schale (5) und die Nut (17), die sie aufnimmt, im Bund (16) angeordnet ist.

Revendications

1. Siphon de sol (1) comprenant :

un bâti (2) ayant une coque (5) et un fond (6),
un intérieur (4) entouré par ledit bâti,
une ouverture de drainage (3) opposée au fond, et
une ou plusieurs entrées latérales (7) et une sortie (8) associée avec la coque (5), moyennant quoi :
un siphon (9) est formé dans ledit intérieur (4) par un tuyau de non-retour (11) coulissé dans l'intérieur à partir de la direction de l'ouverture de drainage (3) jusqu'à une coupelle de fond (10) formée au-dessous des bords inférieurs desdites entrées latérales (7) et de la sortie (8), alors que le tuyau de non-retour (11) se fixe de manière sensiblement étanche sur une surface interne (13) de la coque (5), moyennant quoi :

une extrémité du tuyau de non-retour (11) orientée vers le côté de l'ouverture de drainage (3) du siphon de sol (1) comprend une bride de drainage (12) et un collier (16) s'étendant à partir de cette dernière vers l'ouverture de drainage (3), agencée ainsi pour se fixer contre la surface interne (13) de la coque,
caractérisé en ce que :

le siphon de sol (1) comprend en outre des bords de support opposés (23) s'étendant à partir de la coque (5) vers l'intérieur (4) du siphon de sol, et
un collier de support (22) s'étendant vers le fond (6) le long d'une partie d'un bord externe (14) de la bride de drainage (12) du tuyau de non-retour (11), lequel collier de support (22) a des bords d'extrémité opposés (25) et est dimensionné en longueur pour s'adapter exactement entre les bords de support opposés (23), moyennant quoi :
les bords d'extrémité (25) sont agencés pour interagir avec les bords de support (23), montant ainsi le collier de support (22) d'un tuyau de non-retour (11) correctement positionné entre les bords de support opposés (23).

2. Siphon de sol (1) selon la revendication 1, **caractérisé en ce que** le collier de support (22) est formé sur le bord externe (14) de la bride de drainage (12) sur une distance de 90 à 180 degrés.

3. Siphon de sol (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le collier de support (22) comprend des bords d'extrémité (25) au niveau de ses extrémités opposées.

4. Siphon de sol (1) selon la revendication 3, **caractérisé en ce que** les bords d'extrémité (25) du collier de support (22) forment un angle de 90 à 120 degrés sur le bord inférieur.

5. Siphon de sol (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le tuyau de non-retour (11) comprend une surface de plan (20) dans la direction orientée vers la surface interne (13) de la coque (4), la surface de plan étant agencée pour interagir avec une surface frontale (21) dans la coque et s'étendant dans l'intérieur (4) du siphon de sol (1) pour guider le tuyau de non-retour en place dans la direction du fond (6).

6. Siphon de sol (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le collier (16) et la surface interne (13) de la coque (5) comprennent au moins une rainure (17) et un guide (18) à acheminer jusqu'à la rainure.

7. Siphon de sol (1) selon la revendication 6, **caractérisé en ce que** le guide (18) et la rainure (17) le recevant se rétrécissent progressivement de l'ouver-

ture de drainage vers le fond.

8. Siphon de sol (1) selon la revendication 6 ou 7, **caractérisé en ce que** le guide (18) est agencé dans la coque (5) et la rainure (17) la recevant dans le collier (16).

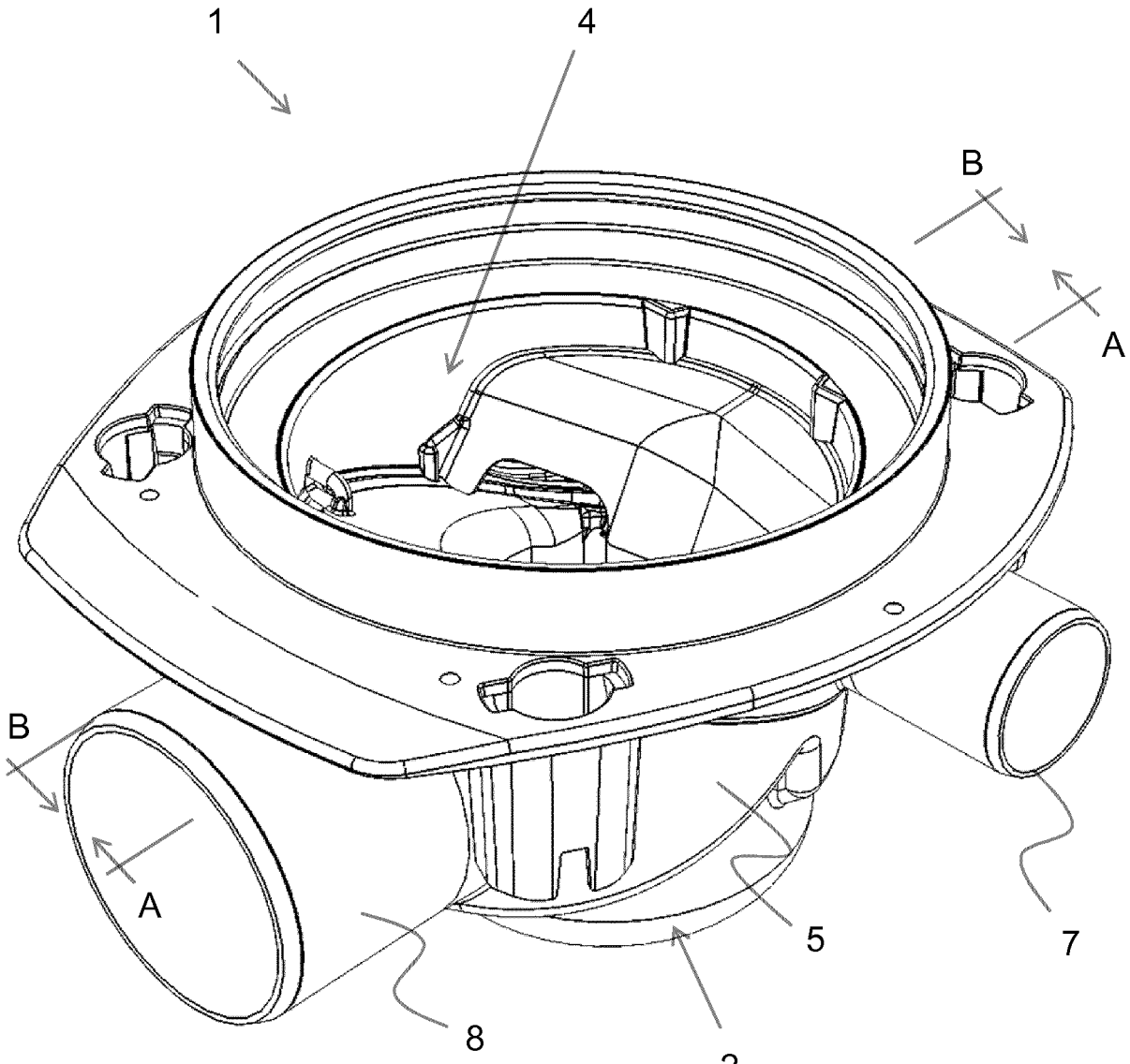

FIG. 1

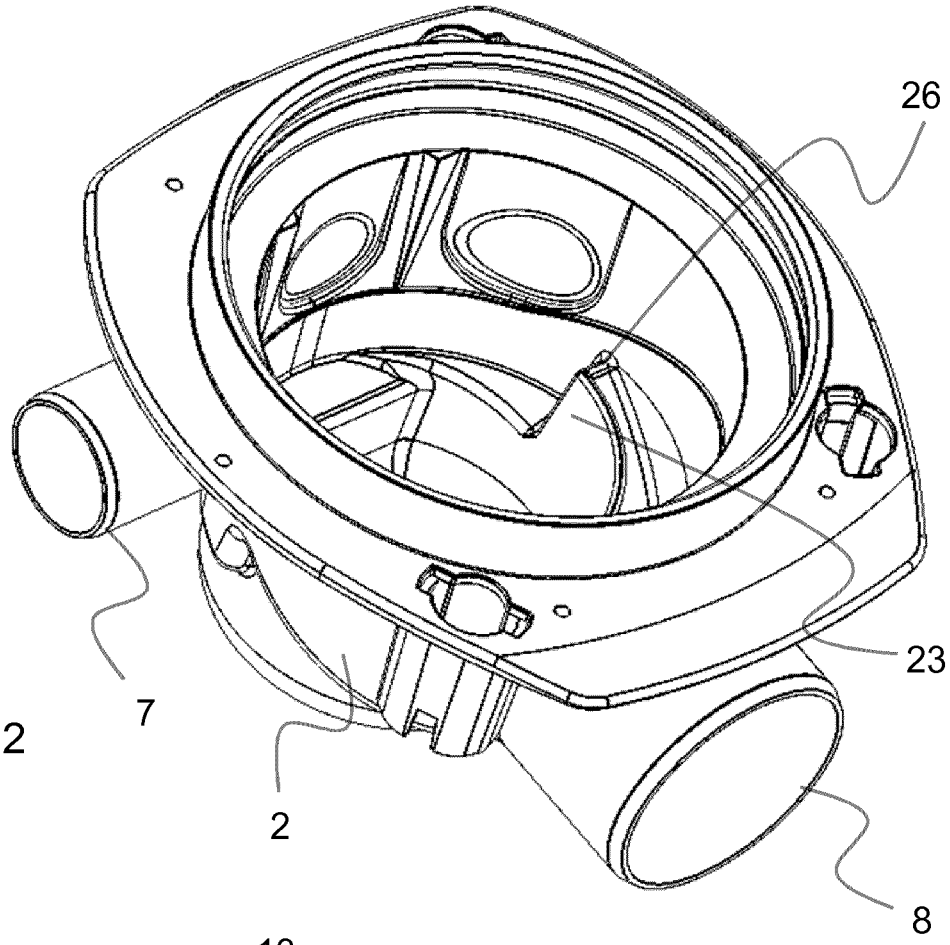

FIG. 2

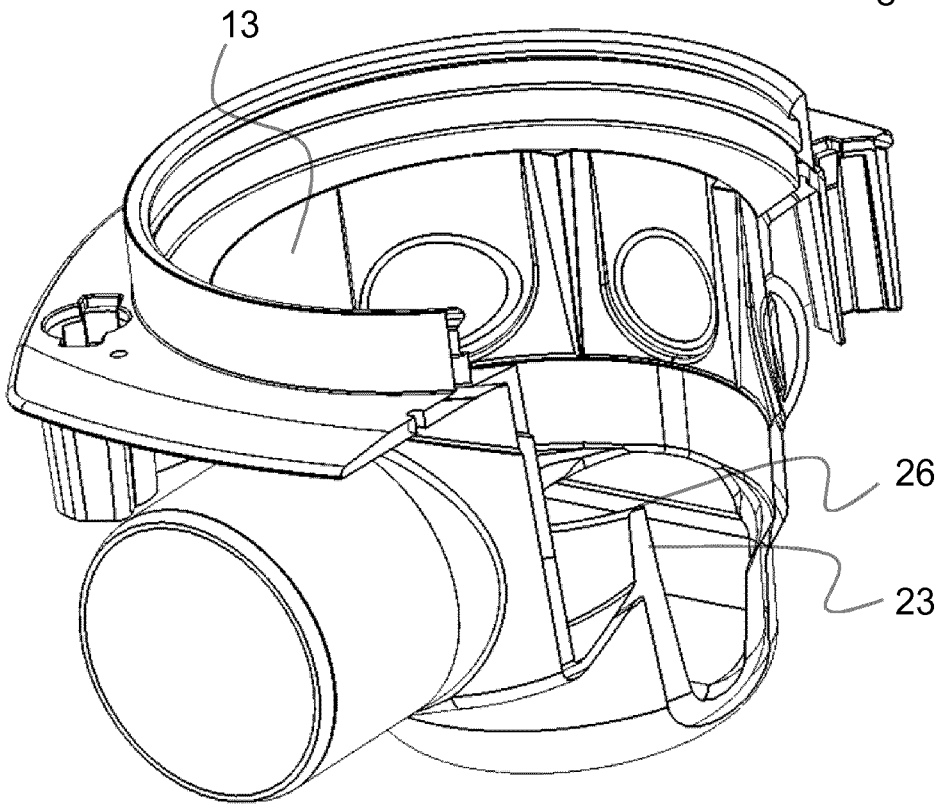

FIG. 3

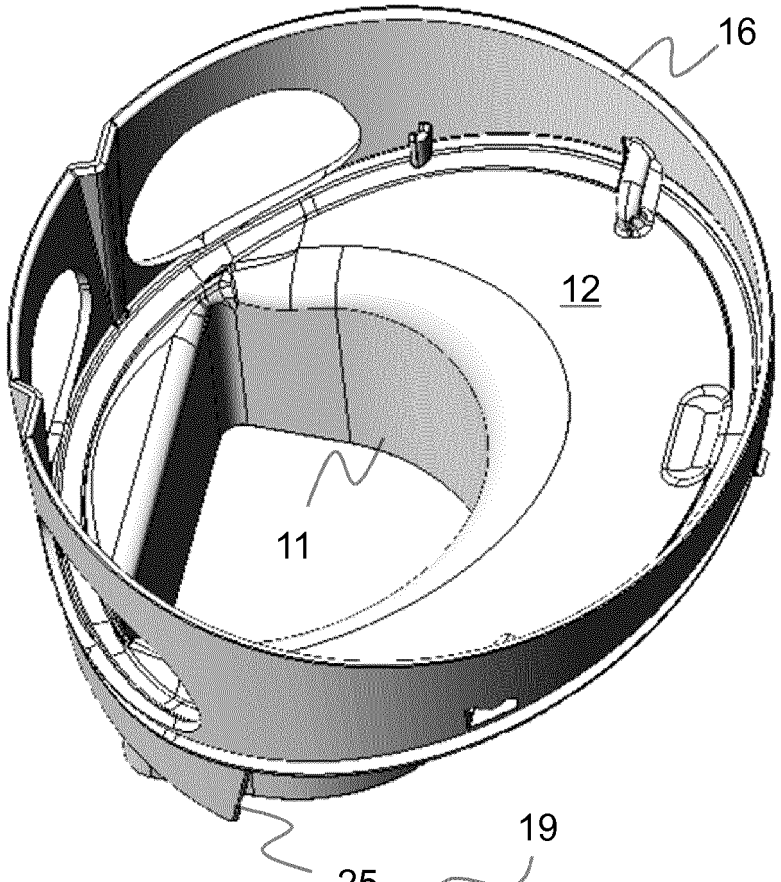

FIG. 4

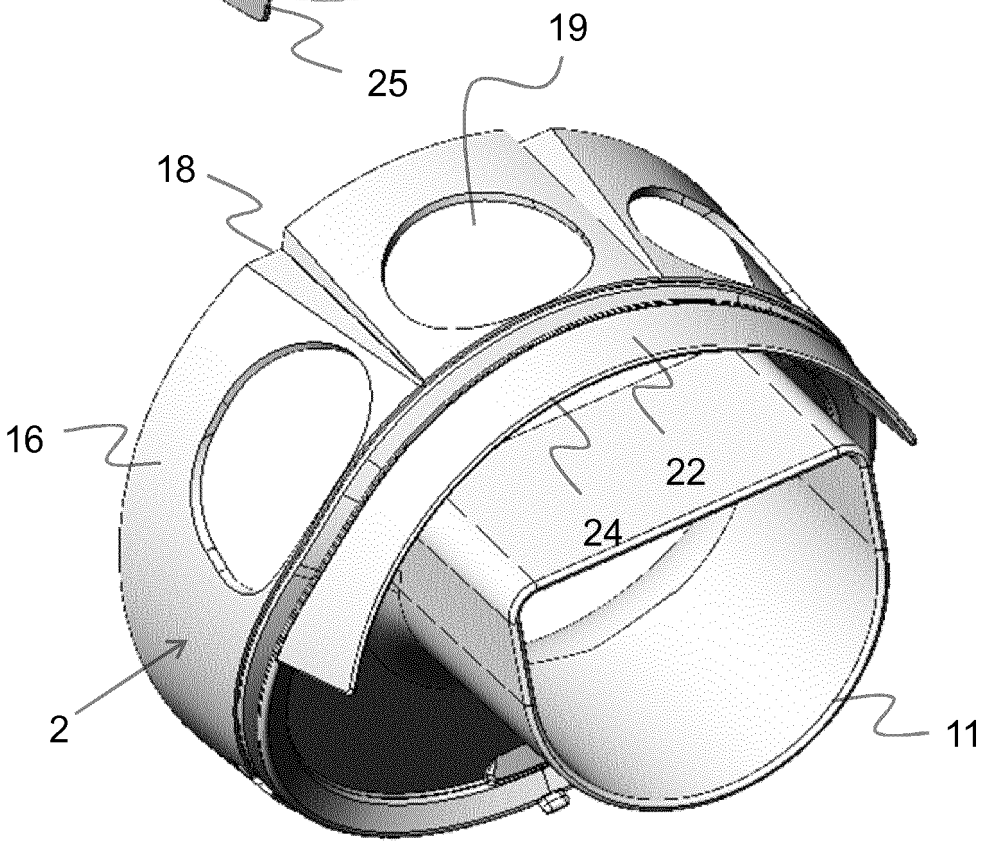

FIG. 5

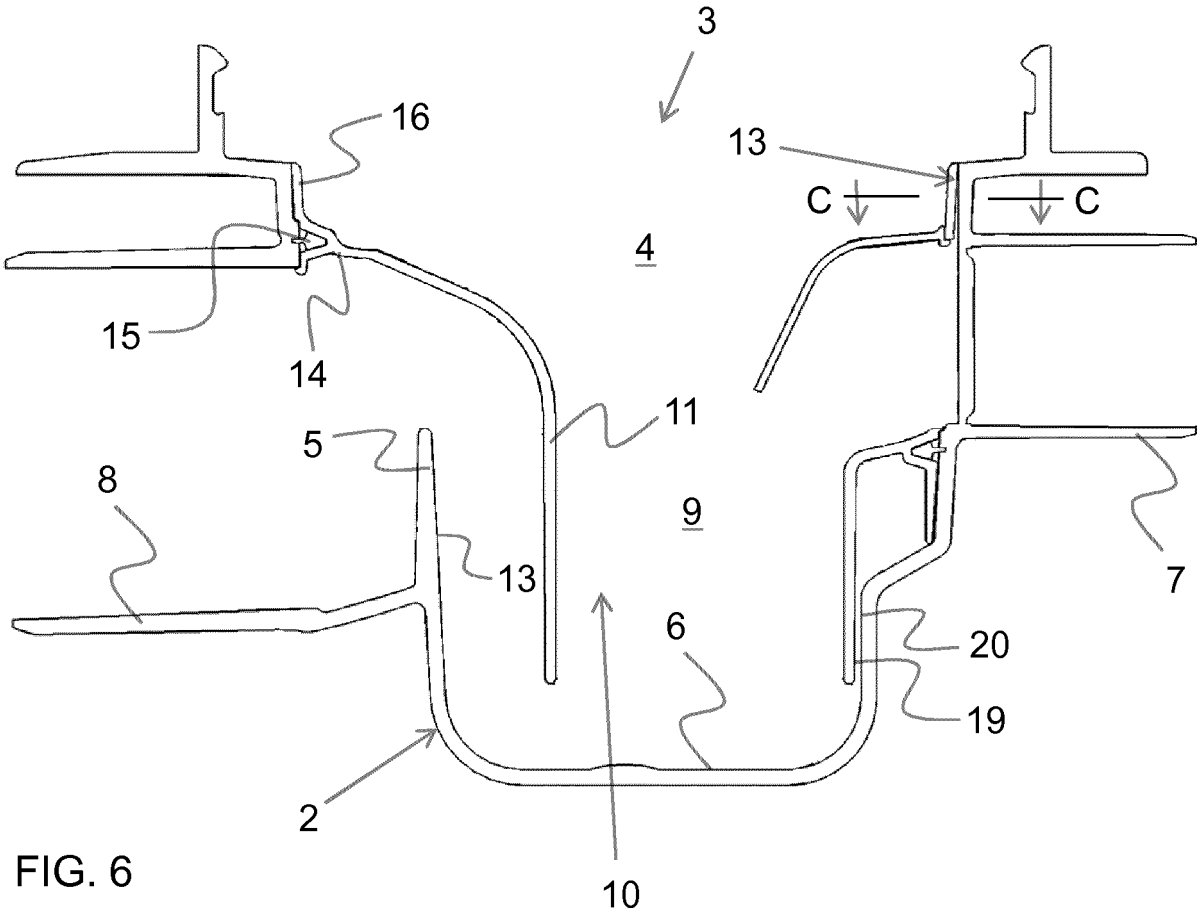

FIG. 6

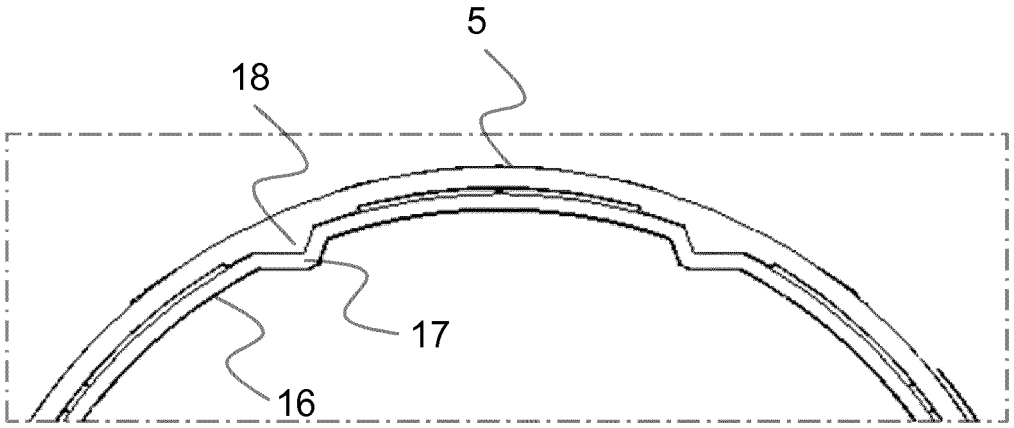

FIG. 7

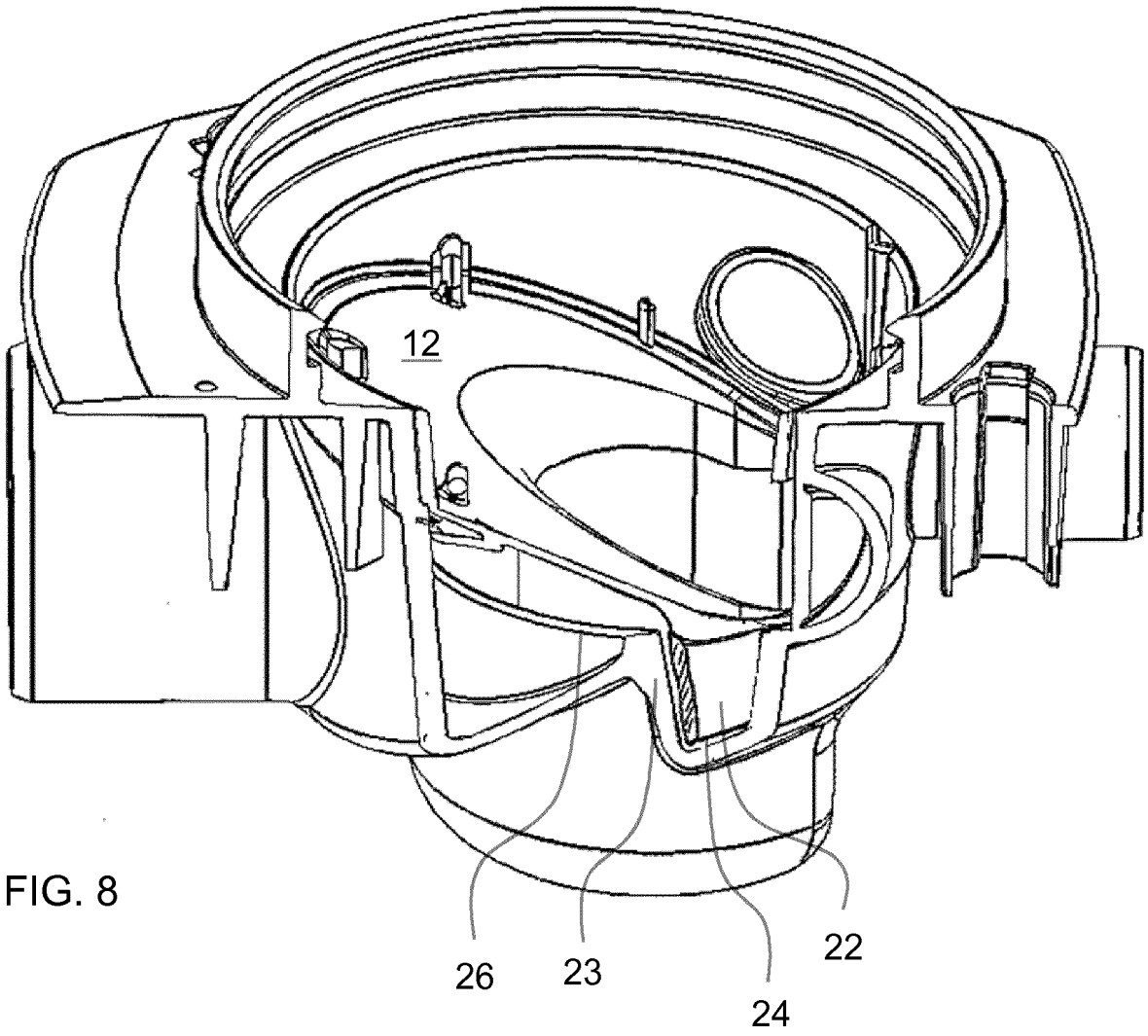

FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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