



(11) **EP 1 801 035 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
08.09.2010 Bulletin 2010/36

(51) Int Cl.:
B65D 88/06 (2006.01) **B65D 88/76** (2006.01)
B65D 90/10 (2006.01) **B65D 88/02** (2006.01)

(21) Application number: **06126843.9**

(22) Date of filing: **21.12.2006**

(54) **Container for underground installation**

Behälter für unterirdische Installation

Réservoir pour installation souterraine

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

(30) Priority: **23.12.2005 FI 20055700**

(43) Date of publication of application:
27.06.2007 Bulletin 2007/26

(73) Proprietor: **Uponor Innovation AB
513 81 Fristad (SE)**

(72) Inventors:
• **Tast, Niila
15270 Kukkila (FI)**
• **Forssell, Fredrik
513 96 Fristad (SE)**

• **Strand, Johan
513 35 Fristad (SE)**

(74) Representative: **Huhtanen, Ossi Jaakko et al
Kolster Oy AB,
Iso Roobertinkatu 23,
P.O. Box 148
00121 Helsinki (FI)**

(56) References cited:
**AU-A- 2 684 071 BE-A6- 1 013 186
DE-A1- 19 911 009 DE-U1- 9 115 953
DE-U1-202004 008 058 JP-A- 10 174 985
JP-A- 11 105 977 JP-A- 2000 136 540
JP-A- 2002 309 631 US-A1- 6 024 242
US-A1- 2003 136 789 US-A1- 2004 188 447**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 801 035 B1

Description

BACKGROUND OF THE INVENTION

[0001] The invention relates to a container having a body that is configured for underground installation, and an ascending tube.

[0002] The invention further relates to a container having a body that is configured for underground installation.

[0003] There are known containers, such as depositing tanks, which have a body and an ascending tube. It is known to configure the container body such that the container is intended for installation in the ground. Thus, typically only a part of the ascending tube will remain visible on the ground. It is relatively cumbersome to transport these containers. Because of the ascending tube it is practically impossible to stack the containers one on top of the other. There are also known containers comprising a hole for the ascending tube, and during transport the body and the tube are kept apart. An ascending tube that is separate from the body may be transported independently of the body, whereby it may get damaged or disappear during transport. Solutions have been proposed, in which the tube is connected outside the container body for transport, but this requires extra arrangements and it is not a completely reliable solution either in view of keeping the ascending tube intact and safe in transport. A solution is also known, in which the ascending tube is of telescopic type. In that case its length is adjustable and for transport the tube parts are fitted one inside the other. The telescopic structure is very complex, however, and therefore very difficult and expensive to manufacture. It also requires carefulness to make sure that it remains intact in transport. For the duration of transport it may be necessary to place the container on a pallet so that it can be handled with a forklift truck and/or a hand pallet truck. It is possible to avoid using a pallet in a solution, in which the container bottom comprises transport mounts. The transport mounts of the container raise the rest of the container body up such that the fork of a forklift truck or a hand pallet truck may be fitted under the container. Installation of a container like this, however, poses a problem that on preparing the final installation base for the container a recess should be provided for the mounts in order for the bottom of the container to be completely supported against the ground. This is relatively difficult, however, and unsupported areas easily remain underneath the container with the mounts.

[0004] Document JP-A-10 174 985 discloses a container according to the preamble of claim 1.

BRIEF DESCRIPTION OF THE INVENTION

[0005] The object of the present invention is to provide a novel container.

[0006] The container of the invention is characterized by what is stated in the independent claim 1.

[0007] A container comprises a body that is intended

for underground installation and an ascending tube. The ascending tube is detachable from the body. The ascending tube comprises a tube part and a base, which base is larger in the outer dimensions than the tube part seen in the axial direction of the tube part. For transport it is possible to stack containers one on top of the other. As the base of the ascending tube is larger than the tube part of the ascending tube, it is possible to produce a relatively large hole in the container body, whereby the interior of the container may be utilized extremely well for transport of parts or accessories relating to the container. This solution facilitates transport and reduces a risk that the parts and accessories would be damaged in transport. The container is divided into chambers with partition walls. The chambers are serviced through the ascending tube, and the ascending tube is so large and arranged such that at least two or more chambers, preferably all chambers, are serviced through the ascending tube. As the base of the ascending tube is larger than the tube part it is possible to make the hole in the body so large that the tube part of the ascending tube and eventually some other part or accessory relating to the container can be placed through the hole in one of the chambers for transport, i.e. in such a manner that the partition walls do not hinder the placement of the ascending tube and eventually another part or accessory inside the container body for transport. Advantageously, the tube part of the ascending tube is arranged eccentrically to the base of the ascending tube, which enables the placement of the tube part of the ascending tube in one of the chambers for transport even better.

[0008] Further, a container comprises a body that is intended for underground installation. Transport mounts are arranged in the body on at least one side thereof. In that case it is possible to transport the container lying on the side. Hence, the container may be moved during transport with a forklift or a hand pallet truck, i.e. the fork of the forklift truck or the hand pallet truck fits under the container lying on the side. When the container is installed, the foundation on which the container is to be mounted can be packed and levelled to be even. The bottom of the container is flat, i.e. no air will remain beneath the container and the container will not stand on its legs alone. In accordance with one embodiment, the transport mounts are arranged on at least two opposing sides of the container. Thus, containers lying on their sides may be superimposed for transport. The superimposed containers support on the transport mounts of one another. Thus, the transport mounts on one side of the container may be made concave and those on the other side of the container may be made convex. In that case in transport the container is placed with the concave transport mounts downwardly and the convex transport mounts upwardly and on top of a first container there is placed a second container such that the concave transport mounts of the second container fit against the convex transport mounts of the container below. Thus the containers will be precisely aligned and firmly in place during

transport.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be described in greater detail in the attached drawings, wherein

Figure 1 shows schematically a depositing tank seen obliquely from above,

Figure 2 shows the tank of Figure 1 with an ascending tube in transport position,

Figure 3 shows a schematic cross-sectional side view of the depositing tank,

Figure 4 shows a cross-sectional side view of the tank of Figure 3 with the ascending tube in transport position,

Figure 5 shows a top view of the container of Figure 3, and

Figure 6 shows a top view of the depositing tank in the situation of Figure 4.

[0010] For the sake of clarity, in the figures some embodiments of the invention are shown in a simplified form. Like reference numerals refer to like parts in the figures.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE INVENTION

[0011] Figure 1 shows a depositing tank. The depositing tank comprises a body 1, which is configured for allowing the container to be buried in the ground. Preferably the body 1 is made of plastic, such as polyethylene PE or polypropylene PP or some other suitable plastic material.

[0012] The container further comprises an ascending tube 2 arranged in the body 1. The ascending tube 2 includes a tube part 3, which extends above the ground when the container is in use. The ascending tube 2 further includes a base 4 that is integral with the tube part 3.

[0013] The ascending tube 2 is configured to be detachable from the body 1, whereby the ascending tube may be arranged partly inside the body 1 during the transport of the container in a manner shown in Figure 2.

[0014] The base 4 of the ascending tube 2 comprises a flange 5, and when the container is in use the ascending tube 2 is attached to the body 1, to a connecting end 6 provided in the body 1. The flange 5 is thus set over the connecting end 6. The connecting end 6 is a vertical collar that surrounds the hole in the upper part of the body 1. A seal is arranged between the flange 5 and the connecting end 6 such that the body 1 and the ascending tube 2 will be tightly fitted and the joint concerned will not leak. The flange 5 thus constitutes a sleeve that is arranged over the connecting end 6. The ascending tube 2 and the body 1 may also be interconnected with screws or bolts, whereby the base 4 may be designed to conform to the outer surface of the hole in the body 1 and a suitable seal is arranged between the base 4 and the body 1.

Between the tube part 3 and the base 4 of the ascending tube 2 there is further provided a stiffening rib 7. The stiffening rib 7 reinforces the structure of the ascending tube 2.

[0015] Figure 3 also illustrates how the ascending tube 2 is arranged in connection with the body 1.

[0016] Thus, the attaching figures show a depositing tank, in which there is a partition wall 8 or a plurality of partition walls 8 inside the container body 1. The partition walls 8 divide the interior of the container into chambers. As it appears from Figure 5, the tube part 3 of the ascending tube 2 is arranged such that all chambers inside the container may be serviced through the ascending tube 3.

[0017] Figures 4 and 6, in turn, illustrate how the eccentric placement of the tube part 3 of the ascending tube in the base 4 enables the tube part of the ascending tube being arranged in a chamber of the container during transport without the partition walls 8 preventing the tube part from being placed inside the container. In Figure 6, partition walls 8 that remain invisible behind the ascending tube 2 and the container body 1 are indicated by broken lines.

[0018] If the hole in the container body 1 is arranged to be sufficiently large, and correspondingly, the base 4 of the ascending tube 2 is sufficiently large and the tube part 3 is sufficiently small, the tube part 3 may also be arranged in a centralized manner in relation to the base 4, but nevertheless the tube part could be placed inside a container chamber. When the tube part 3 is arranged eccentrically to the base 4, a hole to be made in the body 1 need not be large as a whole, and yet it is possible to place the tube part inside the chamber. In addition, eccentricity makes it possible that during transport the base 4 is supported throughout to the rims of the hole in the container 1.

[0019] The container 1 is still further provided with lugs 9, by means of which the ascending tube 2 may be secured firmly into place for transport. Said lugs may also be utilized for holding the ascending tube 2 in place, when the container is in normal use. It is possible to connect to the lugs 9 a strap, a rope or a binding line by which the ascending tube 2 is held in place.

[0020] There may be one, two or more lugs 9 for securing the ascending tube 2.

[0021] The container body 1 is further provided with a recess 10. The recess 10 may be arranged at the end of the body 1 and it is intended for accommodating a distribution well during transport. Namely, subsequent to the depositing tank there is typically arranged a separate distribution well. The distribution well to be transported to the installation site together with the depositing tank can be transported attached to the recess 10. The container further comprises a dowel pin 11. The dowel pin is designed in size and shape to correspond to a pipe that is inserted in an inlet of the distribution well. Thus, the distribution well inlet may be arranged in the dowel pin 11. The container body 1 further comprises lugs 12. Thus,

the distribution well may be firmly attached to the body 1 by means of the dowel pin 11 and the lugs 12 for transport. Thanks to the dowel pin 11, two lugs 12, to which the strap, the rope or the connecting line are to be connected, will typically suffice for securing the distribution well.

[0022] Instead of the dowel pin 11, it is possible to use another aligning element, such as a rib, a notch or another suitable structural element. In that case the aligning element is not necessarily supported to the inlet of the distribution well, but it may be supported to some other shape in the distribution well.

[0023] On at least one side, i.e. flank, of the container body 1 there are arranged transport mounts 13. In a normal use position the container is naturally in a position shown in Figure 1, i.e. the ascending tube 2 points upwardly. When the transport mounts 13 have been arranged on the side of the body 1, the container is transported to the installation site on its side, i.e. the transport mounts pointing downwardly.

[0024] The transport mounts 13 may be arranged on the first side and additionally to a second side opposite to the first side. This allows a plurality of containers being superimposed during transport.

[0025] The transport mounts 13 may be provided such that on the first side of the container the transport mounts are concave. It is thus advantageous to transport the container with these concave mounts downwardly. The transport mounts 13 on the other side of the container are convex. Then, the convex transport mounts 13 point upwardly during transport. It will be relatively easy to place another container with concave downwardly pointing transport mounts on top of the convex transport mounts 13. Consequently, the concave transport mounts 13 of the upper container will fit smoothly and firmly against the convex transport mounts 13 of the lower container.

[0026] In some cases the features set forth in this application may be used as such, irrespective of other features. On the other hand, features set forth in this application may be combined, where necessary, to provide various combinations.

[0027] The drawings and the relating description are only intended to illustrate the inventive idea. The details of the invention may vary within the scope of the claims.

[0028] So, the container to which the presented features are applied, may be, for instance, a depositing tank as indicated in the attached drawings. Also, the container may be another container intended for installation in the ground, such as a sewage tank or any other liquid tank, a well, such as a distribution well, or a corresponding container or well. Further, as the container comprises partition walls, the container may be a depositing tank or a small-scale purifying plant or another corresponding container having two or more chambers inside the body. In addition to the ascending tube or a section thereof it is possible to transport inside the body also other parts or accessories relating to the container completely or

such that part of them is located inside the body. These parts or accessories may include inlet and outlet connections, inlet and outlet pipes, filter bed pipes, joints and branches, etc. During transport the ascending tube may also be mounted in its use position, and then the ascending tube will not be at all inside the body during transport. If the container body 1 is sufficiently large, it is possible to make the hole for the ascending tube base 4 in the body 1 so large that relatively large pieces may be transported in the interior of the body 1. The capacity of the body 1 may vary, for instance, between 500 and 5000 litres. If the capacity of the body 1 is sufficient, it is possible to transport a distribution well inside it, for instance.

Claims

1. A container having a body (1) that is configured for underground installation, and an ascending tube (2) that is detachable from the body (1), whereby inside the body (1) there is at least one partition wall (8) such that the container comprises at least two chambers, and the ascending tube (2) is arranged such that the at least two chambers can be serviced through a hole provided on the container body (1) **characterized in that** the ascending tube (2) comprises a tube part (3) and a base (4), which base is larger in the outer dimensions than the tube part seen in the axial direction of the tube part (3) and from which base (4) the ascending tube (2) is attached to the body (1), whereby the hole of the container body (1) is larger than the outer measurement of the tube part (3) seen in the axial direction, such that the ascending tube (2) may be arranged through the hole of the container body (1) at least partly inside one of the at least two chambers for the duration of transport.
2. The container of claim 1, **characterized in that** the tube part of the ascending tube (2) is arranged eccentrically to the base (4) of the ascending tube (2).
3. The container of any one of the preceding claims, **characterized in that** on the exterior of the body (1) there is arranged at least one lug (9) for securing the ascending tube (2).
4. The container of any one of the preceding claims, **characterized in that** in the body (1), on the exterior thereof, there is provided a recess (10) for transporting a distribution well in connection with the container.
5. The container of claim 4, **characterized in that** in connection with the recess (10) there is an aligning element (11) that may be utilized for supporting the distribution well during transport.

6. The container of claim 5, **characterized in that** the aligning element is a dowel pin (11) that is designed in size and shape to correspond to a pipe that is to be inserted in an inlet of the distribution well.
7. The container of any one of the preceding claims, **characterized in that** a distribution well may be arranged inside the body (1) for transport.
8. The container of any one of the preceding claims, **characterized in that** on the exterior of the body (1), at least on one side thereof, there are arranged transport mounts (13).
9. The container of claim 8, **characterized in that** the transport mounts (13) are arranged on two opposing sides of the body (1).
10. The container of claim 9, **characterized in that** the transport mounts (13) on the first side of the body (1) are concave and the transport mounts (13) on the second side of the body (1) are convex.

Patentansprüche

1. Behälter, enthaltend einen Körper (1), der für eine unterirdische Installation eingerichtet ist, und ein aufsteigendes Rohr (2), das von dem Körper (1) lösbar ist, wobei im Inneren des Körpers (1) wenigstens eine Trennwand (8) derart vorhanden ist, dass der Behälter wenigstens zwei Kammern enthält und das aufsteigende Rohr (2) derart eingerichtet ist, dass die wenigstens zwei Kammern durch ein Loch versorgt werden können, das in dem Behälterkörper (1) vorgesehen ist, **dadurch gekennzeichnet, dass** das aufsteigende Rohr (2) einen Rohrteil (3) und eine Basis (4) enthält, wobei die Basis größere Außenabmessungen als der Rohrteil, in der Achsrichtung des Rohrteils (3) betrachtet, aufweist und an dieser Basis (4) das aufsteigende Rohr (2) an dem Körper (1) angebracht ist, wobei das Loch des Behälterkörpers (1), in axialer Richtung betrachtet, größer ist als die Außenabmessung des Rohrteils (3), so dass das aufsteigende Rohr (2) das Loch des Behälterkörpers (1) durchlaufend wenigstens teilweise innerhalb einer der wenigstens zwei Kammern während des Transportes angeordnet sein kann.
2. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der Rohrteil des aufsteigenden Rohres (2) exzentrisch an der Basis (4) des aufsteigenden Rohres (2) angeordnet ist.
3. Behälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** am Äußeren des Körpers (1) wenigstens ein Bügel

(9) zum Sichern des aufsteigenden Rohres (2) angebracht ist.

4. Behälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in dem Körper (1) auf der Außenseite desselben eine Aussparung (10) für den Transport eines Verteilerschachtes in Verbindung mit dem Behälter vorgesehen ist.
5. Behälter nach Anspruch 4, **dadurch gekennzeichnet, dass** ein Ausrichtelement (11) mit der Aussparung (10) verbunden ist, das dazu verwendet werden kann, den Verteilerschacht während des Transportes zu stützen.
6. Behälter nach Anspruch 5, **dadurch gekennzeichnet, dass** das Ausrichtelement ein Passstift (11) ist, der in Größe und Form derart bemessen ist, dass er einem Rohr entspricht, dass in einen Einlass des Verteilerschachtes eingefügt werden soll.
7. Behälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Verteilerschacht für den Transport (1) innerhalb des Körpers angeordnet sein kann.
8. Behälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** auf der Außenseite des Körpers (1), wenigstens auf einer Seite desselben, Transporthalterungen (13) angebracht sind.
9. Behälter nach Anspruch 8, **dadurch gekennzeichnet, dass** die Transporthalterungen (13) auf zwei gegenüberliegenden Seiten des Körpers (1) angebracht sind.
10. Behälter nach Anspruch 9, **dadurch gekennzeichnet, dass** die Transporthalterungen (13) auf der ersten Seite des Körpers (1) konkav sind und die Transporthalterungen (13) auf der zweiten Seite des Körpers (1) konvex sind.

Revendications

1. Conteneur ayant un corps (1) qui est configuré pour l'installation souterraine, et un tube ascendant (2) qui est détachable du corps (1), moyennant quoi à l'intérieur du corps (1), on trouve au moins une paroi de séparation (8) de sorte que le conteneur comprend au moins deux chambres, et le tube ascendant (2) est agencé de sorte que les au moins deux chambres peuvent être entretenues par le biais d'un trou prévu sur le corps de conteneur (1),

caractérisé en ce que :

le tube ascendant (2) comprend une partie de tube (3) et une base (4), laquelle base est plus grande du point de vue des dimensions externes que la partie de tube observée dans la direction axiale de la partie de tube (3) et à partir de cette base (4), le tube ascendant (2) est fixé sur le corps (1), moyennant quoi le trou du corps de conteneur (1) est supérieur du point de vue de la mesure externe de la partie de tube (3) observée dans la direction axiale, de sorte que le tube ascendant (2) peut être agencé à travers le trou du corps de conteneur (1) au moins partiellement à l'intérieur de l'une desdites au moins deux chambres pendant la durée du transport.

2. Conteneur selon la revendication 1, **caractérisé en ce que** la partie de tube du tube ascendant (2) est agencée de manière excentrique par rapport à la base (4) du tube ascendant (2). 20
3. Conteneur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** sur l'extérieur du corps (1), on agence au moins une patte (9) pour fixer le tube ascendant (2). 25
4. Conteneur selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, dans le corps (1), sur son extérieur, on prévoit un évidement (10) pour transporter un puits de distribution conjointement au conteneur. 30
5. Conteneur selon la revendication 4, **caractérisé en ce que** conjointement à l'évidement (10), on trouve un élément d'alignement (11) qui peut être utilisé pour supporter le puits de distribution pendant le transport. 35
40
6. Conteneur selon la revendication 5, **caractérisé en ce que** l'élément d'alignement est une goupille de positionnement (11) qui est conçue du point de vue de la taille et de la forme pour correspondre à un tuyau qui doit être inséré dans une entrée du puits de distribution. 45
7. Conteneur selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'un** puits de distribution peut être agencé à l'intérieur du corps (1) pour le transport. 50
8. Conteneur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** sur l'extérieur du corps (1), au moins sur l'un de ses côtés, on trouve des dispositifs de montage de transport (13). 55

9. Conteneur selon la revendication 8, **caractérisé en ce que** les dispositifs de montage de transport (13) sont agencés sur deux côtés opposés du corps (1).

- 5 10. Conteneur selon la revendication 9, **caractérisé en ce que** les dispositifs de montage de transport (13) sur le premier côté du corps (1) sont concaves et les dispositifs de montage de transport (13) sur le second côté du corps (1) sont convexes.

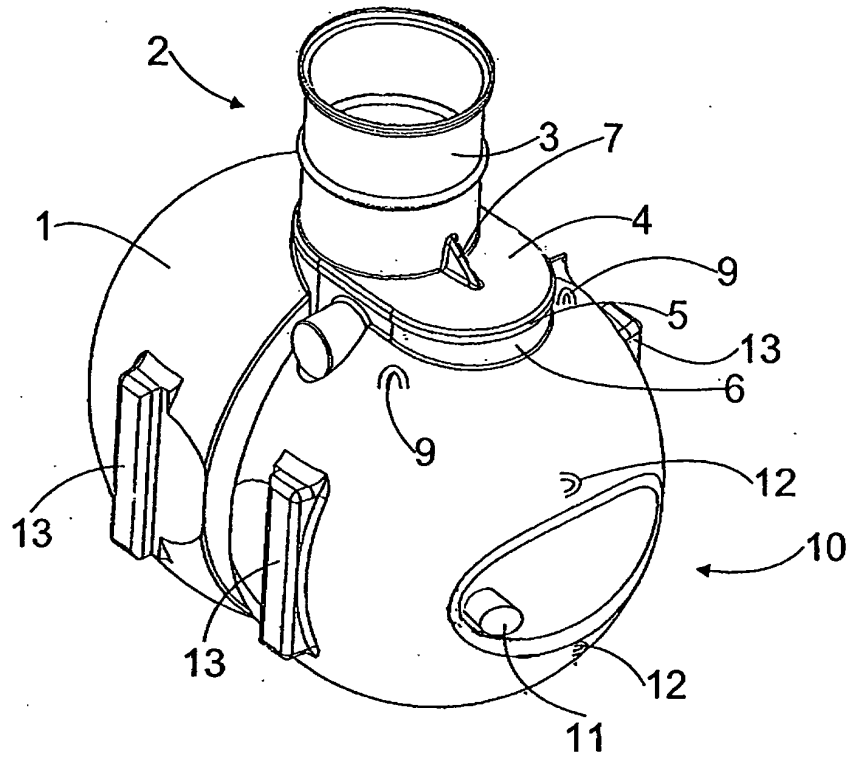


FIG. 1

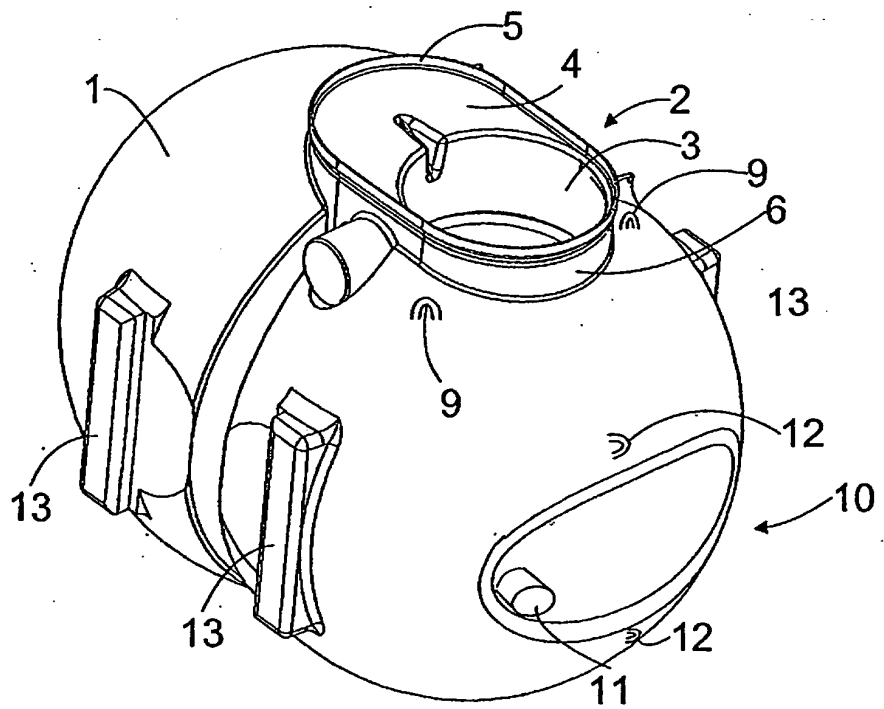


FIG. 2

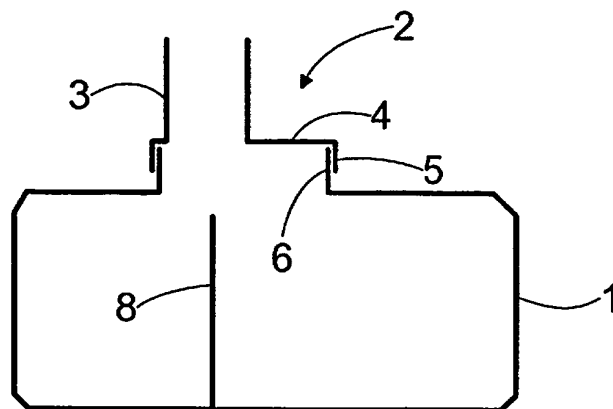


FIG. 3

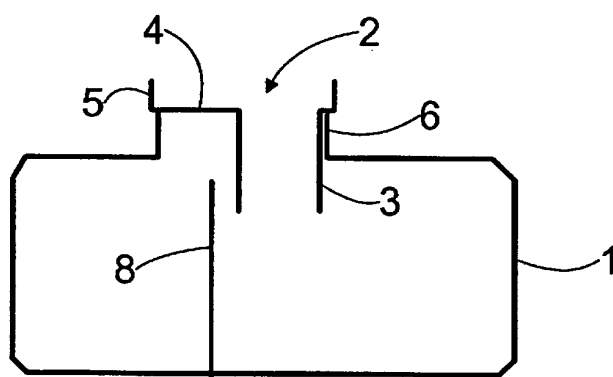


FIG. 4

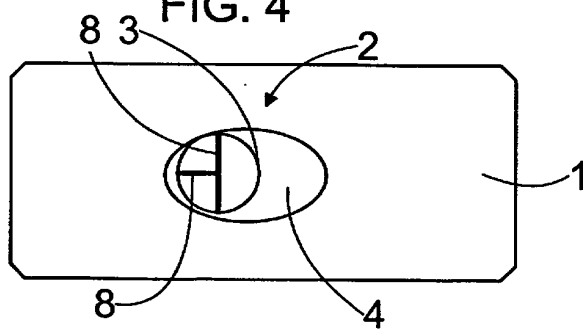


FIG. 5

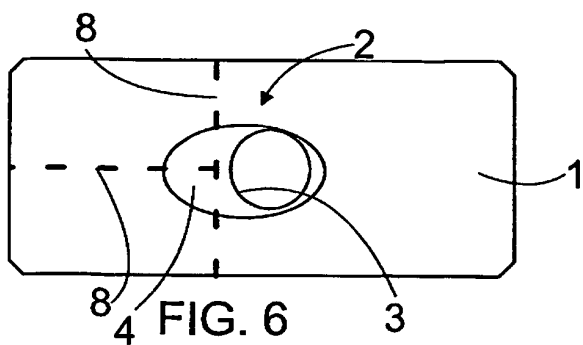


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 10174985 A [0004]