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Remarks:
This application was filed on 06-09-2010 as a divisional application to the application mentioned under INID code 62.

(54) **Container for underground installation and method of transporting the same**

(57) A container comprises a body (1) that is configured for underground installation. It may also comprise an ascending tube (2). The ascending tube may be detachable from the body and it may comprise a tube part (3) and a base whose outer dimensions are larger than the tube part (3) seen in the axial direction of the tube part. On the exterior of the body (1), at least on one side thereof, it is possible to arrange transport mounts (13).

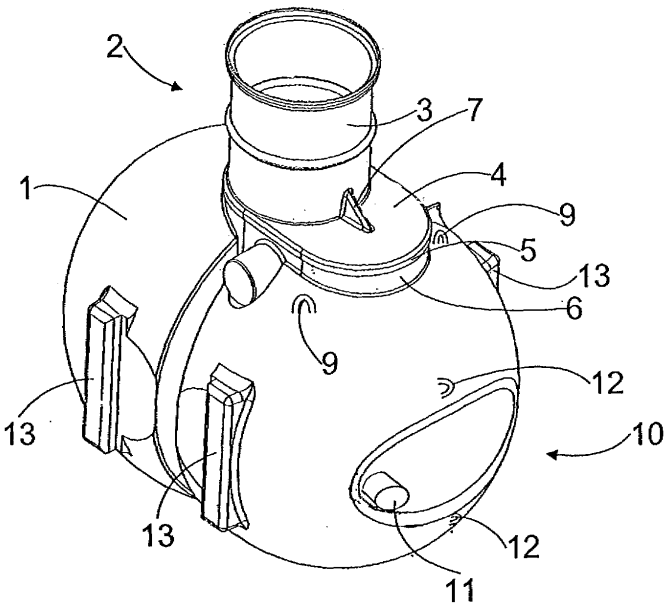

FIG. 1

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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.

BRIEF DESCRIPTION OF THE INVENTION

[0004] The object of the present invention is to provide a novel container.

[0005] The container of the invention is characterized by what is stated in the independent claims.

[0006] 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 may be divided into chambers with partition walls. The chambers are serviced through the ascending tube, and advantageously, the ascending tube is so large and arranged such that two or more chambers, preferably all chambers, may be serviced through one 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 or some other part or accessory relating to the container may 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 or 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.

[0007] 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

[0008] 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.

[0009] 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

[0010] 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.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] Figure 3 also illustrates how the ascending tube 2 is arranged in connection with the body 1.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] There may be one, two or more lugs 9 for securing the ascending tube 2.

[0020] 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 trans-

port. 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.

[0021] 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.

[0022] 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.

[0023] 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.

[0024] 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.

[0025] 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.

[0026] 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.

[0027] 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, if 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 or instead of 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, **characterized in that** at least one flank of the body (1) is provided with transport mounts (13) on the exterior of the body (1).

2. The container of claim 1, **characterized in that** the transport mounts (13) are arranged on two opposing flanks of the body (1).

3. The container of claim 2, **characterized in that** the transport mounts (13) on the first flank of the body (1) are concave and the transport mounts (13) on the second flank of the body (1) are convex.

4. The container of any one of the preceding claims, **characterized in that** the container comprises an ascending tube (2) that is detachable from the body (1).

5. The container of claim 4, **characterized in that** the ascending tube (2) comprises a tube part (3) and a base (4) whose outer dimensions seen in axial direction of the tube part (3) are larger than those of the tube part (3).

6. The container of claim 5, **characterized in that** the tube part (3) of the ascending tube (2) is arranged eccentrically to the base (4) of the ascending tube (2).

7. The container of claim 5 or 6, **characterized in that** inside the body (1) there is at least one partition wall (8) such that the container comprises at least two chambers, that
the ascending tube (2) is arranged such that at least two chambers may be serviced therethrough and that
at least one chamber may be utilized for transport of parts or accessories relating to the container.

8. The container of any one of claims 4 to 7, **characterized in that**
on the exterior of the body (1) there is arranged at

least one lug (9) for securing the ascending tube (2).

9. 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.

10. The container of claim 9, **characterized in that**
in connection with the recess (10) there is an aligning element that may be utilized for supporting the distribution well during transport.

11. The container of any one of the preceding claims, **characterized in that**
the bottom of the container is flat.

12. A method of transporting a container, **characterized by** providing a container that is configured for underground installation and having transport mounts (13) on at least one flank of the body (1) and
transporting the container such that the flank with the transport mounts (13) points downwards.

13. The method of claim 12, **characterized in that** at least two containers are transported one on top of the other.

14. The method of claim 13, **characterized in that** the transport mounts (13) are arranged on two opposing flanks of the body (1) whereby the containers support on the transport mounts (13) of one another.

15. The method of claim 14, **characterized in that** the transport mounts (13) on the first flank of the body (1) are concave and the transport mounts (13) on the second flank of the body (1) are convex whereby during transport the concave transport mounts (13) fit against the convex transport mounts (13).

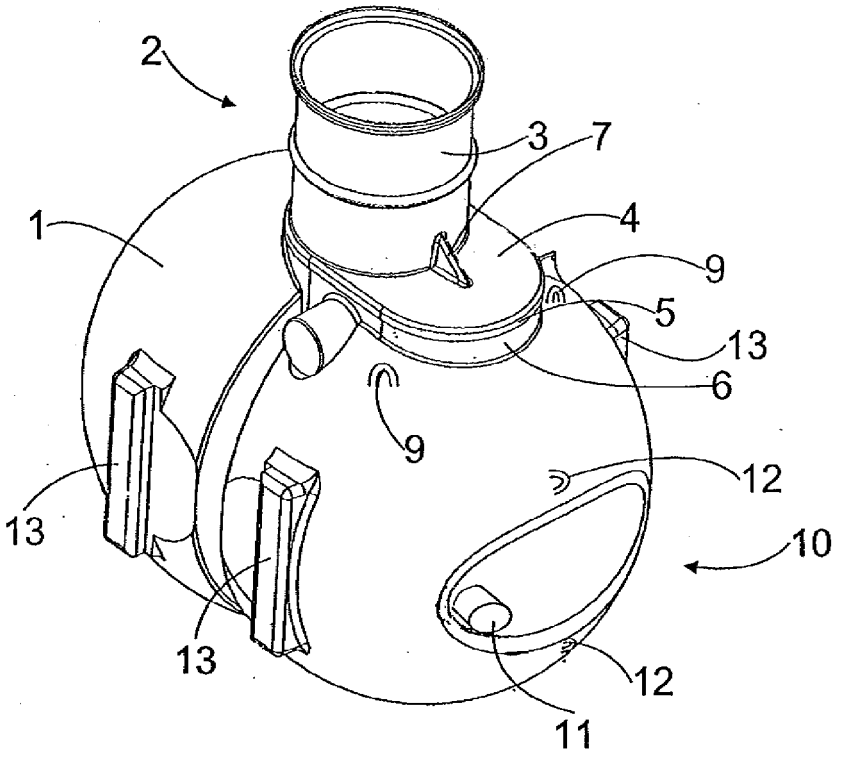

FIG. 1

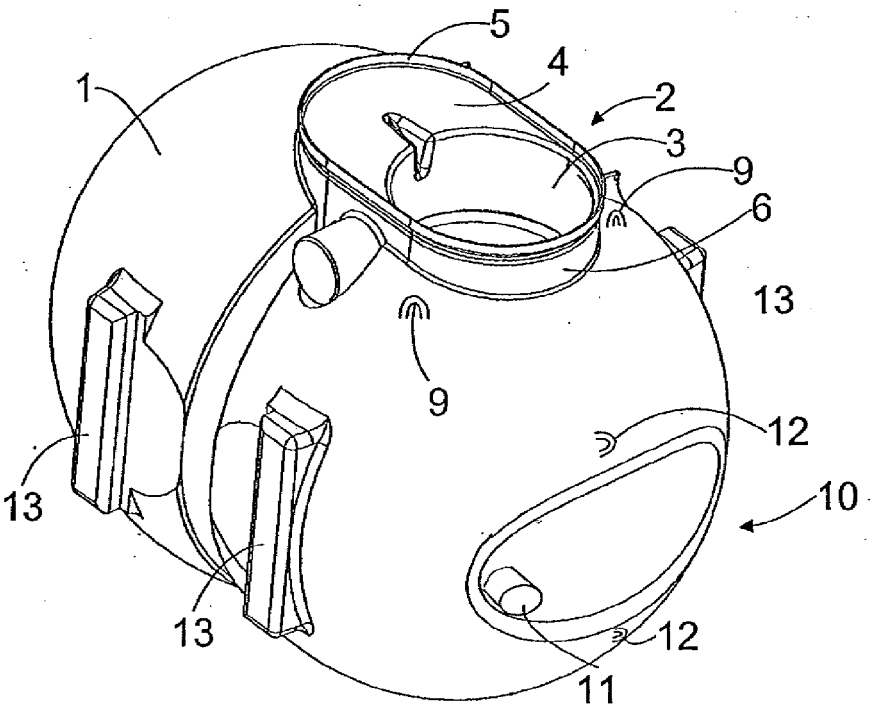

FIG. 2

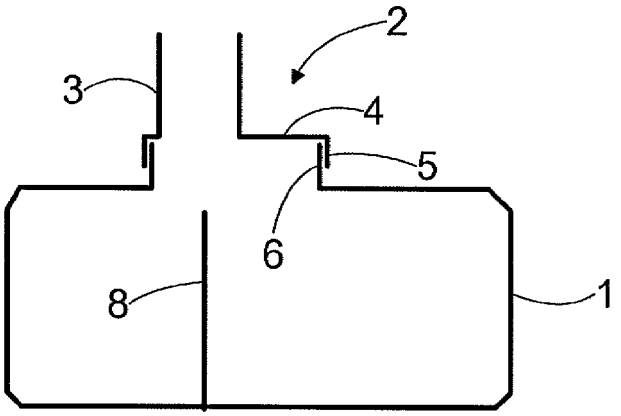

FIG. 3

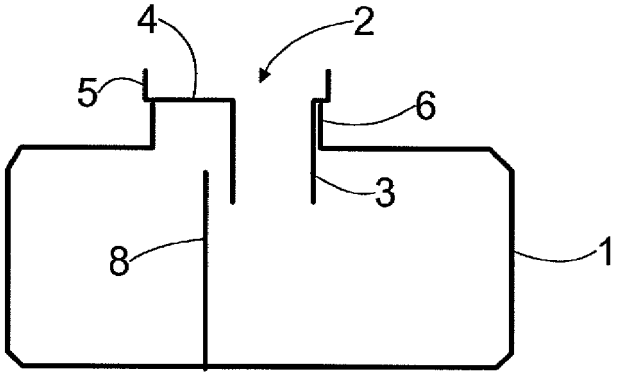

FIG. 4

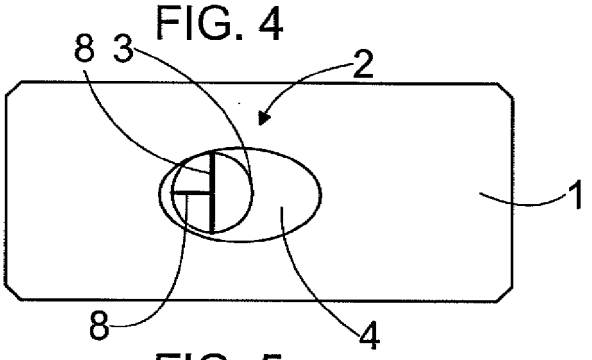

FIG. 5

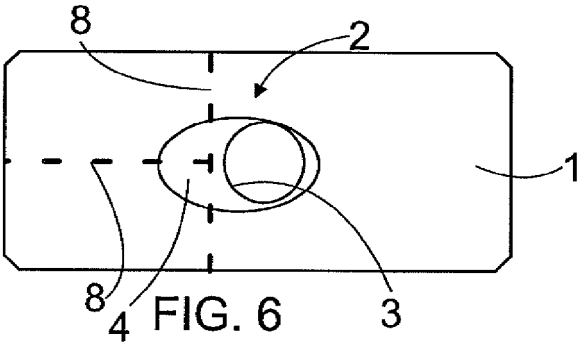

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 10 17 5413

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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	4 October 2010	Piolat, Olivier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

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Munich	4 October 2010	Piolat, Olivier

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