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

(11) **EP 2 440 478 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
23.11.2016 Bulletin 2016/47

(21) Application number: **10785804.5**

(22) Date of filing: **10.06.2010**

(51) Int Cl.:
B65D 90/04 *(2006.01)* ***B65D 88/12*** *(2006.01)*

(86) International application number:
PCT/FI2010/050481

(87) International publication number:
WO 2010/142856 (16.12.2010 Gazette 2010/50)

(54) **TRANSPORT CONTAINER**

TRANSPORTBEHÄLTER

CONTENEUR DE TRANSPORT

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **12.06.2009 FI 20095673**

(43) Date of publication of application:
18.04.2012 Bulletin 2012/16

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EP 2 440 478 B1

Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION

[0001] The invention relates to a transport container having side walls and ends and a bag arranged inside the container for transporting a fluid or a bulk material.

[0002] Transport containers of standardised sizes are used for transporting a wide variety of goods, products, and materials. A commodity to be transported may be packaged appropriately, and then the packages may be loaded into containers or, depending on the nature of the commodity to be transported, it may be loaded directly into a transport container. For transporting powders, granules, fluids and another bulk material or corresponding material of similar type, a solution is used wherein a bag is arranged inside a transport container and the material to be transported is deposited in the bag for the duration of transport. The container is also provided with a protective liner within which the bag is placed. A solution wherein a transport container is provided with a bag is disclosed in WO 97/01496. The publication further discloses that the front corners of the transport container are provided with triangular fillets to enhance the discharge of the bag when the bag is emptied by tipping the container. Typically, however, it is impossible to transport e.g. large amounts of fluids in a container since a bag filled with fluid causes a load onto the walls of the container to such an extent that it is impossible to fit inside a standard-sized container any bag/amount of fluid that would be anywhere near the volume the inner dimensions of the container would allow. This makes the transport fairly inefficient, since the container carries empty space. Further, since the inside of the container is not filled up with fluid or another slippery material, such as grain, a free fluid level is formed inside the container, which causes instability when moving or transporting the container. Document US-A-4557400 discloses a cargo carrier unit and document US-A-2005/126425 discloses a container for storage, transportation, and segregation of a flowable cargo.

BRIEF DESCRIPTION OF THE INVENTION

[0003] An object of the invention is to provide a novel transport container.

[0004] A transport container according to the invention is characterized by the features of claim 1.

[0005] An idea underlying the invention is that a bag is arranged inside a transport container for transporting a fluid or a bulk material. The transport container is further provided with bevel surfaces parallel to its side walls and arranged in a lower part of the side walls, the bag being arranged to be supported against the bevel surfaces. The bevel surfaces divide a load caused by the bag to be received by the structures of the transport container such that the bag may be reasonably large, i.e. quite close to the magnitude of the inner volume of the transport container, and the bag may also be filled quite completely also when transporting a heavy material, such as a fluid. Further, the bevel surfaces provided in the lower parts of the side walls force the material contained in the bag, such as a fluid, to stay mainly in the centre of the transport container even if the transport container were to some extent slightly inclined to one side.

[0006] An idea of an embodiment is that the bevel surfaces are arranged to form a groove for reels, in which case without a bag, the transport container is usable for transporting reels.

[0007] An idea of another embodiment of the invention is that the container is provided with a smooth inner liner, so the bag does not have to be arranged inside a protective liner but the bag may be arranged directly inside the container. Further, the container may then also be used without a bag for transporting bulk goods and bulk materials, which makes the container extremely versatile.

BRIEF DESCRIPTION OF THE FIGURES

[0008] The invention is described in closer detail in the accompanying drawings, in which

Figure 1 is a schematic side view showing a transport container,
Figure 2 is a schematic end view showing the transport container according to Figure 1,
Figure 3 schematically shows the transport container according to Figure 1, cross-sectioned along line A-A of Figure 1 and provided with a bag,
Figure 4 schematically shows the transport container according to Figure 1, cross-sectioned along line A-A of Figure 1 and loaded with reels,
Figure 5 is a schematic top view showing the transport container according to Figure 1, and
Figure 6 is a schematic and cross-sectional side view showing a transport container.

[0009] For the sake of clarity, the figures show some embodiments of the invention in a simplified manner. In the figures, like reference numerals identify like elements.

DETAILED DESCRIPTION OF THE INVENTION

[0010] Figure 1 shows a transport container 1 having a length of 20 ft, i.e. about 6.1 m, corresponding with the length of a standard container. The transport container 1 has a width of 8 ft, i.e. about 2.4 m, corresponding with the width of a standard container. Corner posts 2, and thus the entire transport container 1, have a height of about 2.59 m. Of course, the disclosed solution may also be applied to differently-sized transport containers, such as transport containers or frames of 3,048 m, 9,144 m, 12,192 m, 13,716 m,or 16,1544 m (10, 30, 40, 45, or 53 ft.)

[0011] The corner posts 2 enable another container to be placed on top of the transport container 1. The pairs of corner posts provided at both ends are by their upper ends connected by means of horizontal supports 3. One end of the transport container 1 is provided with a door 4. At the end provided with the door 4, the horizontal support 3 is removable from between the corner posts 2. Removal of the horizontal support 3 makes the transport container 1 easier to load and unload when using e.g. a reel lift or another corresponding lifting device of a considerable size. At an end of the transport container 1 opposite to the door 4, instead of or in addition to a horizontal support, it is possible to use a lattice structure or some other suitable support structure. Door locking means 5 or some other suitable means known per se are provided in conjunction with the door 4 for locking the door 4. The door 4 may also be made such that it is openable e.g. by its lower part only. Opening the door 4 by its lower part only may be utilized e.g. in connection with unloading bulk goods or bulk materials, or when unloading a fluid or another material from a bag arranged inside the transport container. In such a case, the transport container 1 may be unloaded by tilting.

[0012] Free ends of the corner posts 2 are provided with fastening members for fastening members provided at the corners and to be arranged on top thereof. The containers lock to the fastening members by standard-type fastening arrangements, so no fastening arrangement structure will be described in closer detail herein.

[0013] The transport container 1 is fastened to an underlying installation base by a fastening arrangement. The fastening arrangement may comprise e.g. a fastening means which fastens to a lower corner of the transport container and which is lockable to the frame, thus constituting a locking means. The installation base may be e.g. a ship's tween deck, a bottom of a ship's cargo space, or a cover of a ship's cargo space. Furthermore, the installation base may be a platform or a corresponding place for a transport container 1 of some other transport means, such as a truck or a railway carriage. No fastening arrangement structure will be described in closer detail herein since a fastening arrangement may be used that is known and commonly used for fastening conventional containers to a transport means. All corners of the transport container 1 are provided with a fastening means known from containers. The fastening means is integral to the fastening arrangement. The fastening means also enables superimposed transport containers 1 to be connected with each other.

[0014] As can be seen in Figure 3, the transport container 1 is provided with bevel surfaces 6 parallel to its side walls and arranged in a lower part of the side walls. The transport container 1 further comprises a bag 7 arranged to be supported against the bevel surfaces 6. The bevel surfaces 6 distribute the load caused by the bag 7 to be received by the structures of the transport container 1 such that no excessive load is caused to the walls of the transport container 1.

[0015] The bag 7 may be attached to the structures of the transport container 1, e.g. to the upper corners or roof of the transport container 1, by fasteners 8. The fasteners 8 may be e.g. fastening loops or other suitable fastening structures appropriate for hanging the bag 7. The bag 7 is not necessarily hung anywhere but, when empty, it may be in a folded state in a lower part of the transport container 1, distending upon being filled.

[0016] A bevel surface 6 may be formed by several bevel surface parts having a different bevel angle. The bevel surface may reside e.g. close to the centre of the transport container 1 at an angle e.g. of about 40 degrees with respect to the horizontal plane and close to the walls of the transport container 1 at an angle e.g. of about 70 degrees with respect to the horizontal plane. The degrees may also differ from the given ones, and they may be determined according to the shape of the bag 7 and the shape and size of other structures to be transported in the transport container 1. Further, in connection with the present description, the definition "bevel surface" also encompasses a curved bevel surface.

[0017] Longitudinal supports provided below the bevel surfaces 6 are shown in Figures 3 and 4 by reference number 9. The longitudinal supports 9 extend from end to end of the transport container 1. The weight directed to the bevel surfaces 6 from the longitudinal supports 9 becomes transferred to the bottom structures of the transport container 1. Also transverse supports may be arranged below the bevel surfaces 6.

[0018] In the embodiment of Figure 4, the bag 7 has been removed from inside the container 1 and the transport container is loaded with reels 10. The bevel surfaces 6 thus also form a groove or cradle for the reels 10. Further, the bevel surfaces 6 form a uniform surface which extends over the entire length of the transport container 1. The bevel surfaces 6 form support surfaces that provide the reels 10 with lateral support. The bevel surfaces 6 are shaped so as to provide optimal support for differently-sized reels; this is illustrated by the differently-sized circles in the figure. The diameter of the largest circle is about 2100 mm while the diameter of the smallest one is about 900 mm. In the present context, reels refer to heavy steel reels in particular that are made from wound steel plate. Further, the reels may be any objects having a cylindrical structure, such as paper rolls. Typically, such reels have a weight of 10 to 25 tons, but they may be even heavier.

[0019] The transport container 1 further comprises side walls 11 extending upwards from the bevel surfaces 6. The lower part of the transport container 1, i.e. the bevel surfaces 6 and the section therebetween, is smooth and solid, and the side walls 11 are also smooth and solid. Further, the ends of the transport container 1, i.e. the door 4 and the end opposite to the door, are also smooth and solid. Consequently, the inner surface of the transport container 1 is in its entirety smooth and solid. The inner surface of the transport container 1 is thus uniform, i.e. provided with no holes and formed with no

notches or angles. Consequently, the inner surface of the transport container 1 has no structures to damage a bag 7 arranged therein. This means that no separate liner is necessary for a bag 7 but the bag 7 may be installed directly against the inner surfaces of the transport container.

[0020] The solidity and smoothness of the inner surfaces of the transport container 1 also enable the transport container 1 to be utilized for transporting bulk goods and a bulk material without a bag 7. The bulk goods or bulk material to be transported by the transport container 1 may be e.g. steel refuse, sand, coal, kaoline, or some other loose and/or powdery material.

[0021] The transport container 1 is further provided with a solid, i.e. uniform, roof 12. The roof 12 is thus impermeable. On account of the roof 12, and on account of the solidity of the lower part, side walls and ends of the transport container, the transport container 1 is solid, i.e. impermeable, in its entirety such that the transport container 1 may be used for transporting also in spaces that are exposed e.g. to changes in weather or other environmental effects. Thus, the transport container 1 may be used e.g. on top of a cover of a cargo space or elsewhere on a weather deck or in an open cargo space. Of course, the transport container 1 may also be utilized in a cargo space provided with a cover and protected from weather or on the tween deck or in another protected place. In such a case, the transport container 1 does not necessarily have to be provided with a roof 12.

[0022] The roof 12 is detachable. Thus, by detaching the roof 12 and the horizontal support 3 at the end provided with the door 4, the transport container 1 may be loaded and unloaded easily and simply. The roof 12 is fastened in place by fastening locks 13 or by using some other appropriate fastening arrangement. Preferably, the fastening locks 13 are, according to Figure 1, operable from below, i.e. when standing at a level of a lower edge of the transport container 1.

[0023] As illustrated in Figure 5, the roof 12 is provided with hatches 14. The hatches 14 may be used e.g. for feeding a fluid to the bag 7. The fluid may be fed by pushing a hose through a second hatch 14 and combining it with a fluid feed fitting provided below the hatch. Below the second hatch 14, in connection with the bag 7, an air outlet valve may be provided, for instance. A bulk material may be fed to the transport container 1 through the hatches 14 by using e.g. a belt conveyor when the transport container is used for transporting a bulk material without a bag 7. The diameter of the hatch 14 may vary e.g. between 300 and 800 mm.

[0024] In the solution shown in Figure 6, a discharge valve of the bag 7 is arranged in the bottom part of the bag and in the container in the end opposite to the door 4. The particular end is provided with a support structure 15 to keep the discharge valve 14 and the bag 7 in place when a hatch 16 in the end is opened for emptying the bag 7. Thus, in such a solution, no need exists to open the door of the transport container 1 completely when unloading the bag, but it will suffice only to open the hatch 16. Further, in the solution according to Figure 6, the bag 7, even when full, is not allowed to bulge out when the hatch 16 is opened.

[0025] The hatch 16 may also be utilized for unloading a bulk material when the transport container 1 is used for transporting a bulk material without a bag 7. In such cases, the support structure 15 may be provided with a closable opening or the support structure 15 may be detachable from the rest of the structure of the container.

[0026] The structure may also be such that only a hatch that is smaller than the hatch for unloading a bulk material is provided for the discharge valve 14. This hatch may also be arranged in connection with the hatch 16 for unloading a bulk material. In such a case, the support structure 15 for the discharge valve 14 does not have to be very large, i.e. it may be smaller than the hatch 16 for unloading a bulk material, i.e. a so-called bulk hatch.

[0027] The solution according to the invention makes it possible for the bag 7 to be sufficiently large such that when completely filled up, it extends close to the roof 12 of the container 1. Further, the solution according to the invention makes it possible that also in this case, the bag 7 may be filled up with quite a heavy material, such as a fluid. When an upper surface of the bag 7 is close to the roof 12 of the container 1, the roof 12 prevents the fluid level from moving, which balances the transport container during transportation and movement.

[0028] The transport container 1 may also be provided with a pressure cover 17 arranged close to the upper surface of the bag 7. In such a case, the upper surface of the bag 7 does not have to extend close to the roof 12 but the pressure cover 17 ensures that no free fluid level is formed in the container 1 that would fluctuate in an uncontrolled manner. The pressure cover 17 may be utilized e.g. when a fluid is unloaded from the bag 7 to many different places, in which case after unloading, the bag 7 still contains some fluid but the bag 7 is not full, its upper surface thus having lowered. Then, the pressure cover 17 is thus lowered such that a height position of the pressure cover 17 follows the height position of the upper surface of the bag 7. The pressure cover 17 may be arranged to be movable e.g. by a suitable latch solution along vertical tracks 18.

[0029] In some cases, the features set forth in the present application may be used as such, irrespective of other features. On the other hand, when necessary, the features set forth in the present application may be combined to provide different combinations.

[0030] The drawings and the related description are only intended to illustrate the idea of the invention. The details of the invention may vary within the scope of the claims.

[0031] The bevel surfaces 6 may be provided in the transport container 1 also by arranging detachable bevel supports in the lower parts of the side walls of the transport container 1. These detachable bevel supports are thus in use in the transport container when a bag 7 is

arranged therein. All in all, the bevel surfaces thus receive a pressure caused by the material contained in the bag 7 and distribute it evenly such that the pressure will also be distributed to the floor structures of the transport container 1. The bag 7 may also be used for transporting an extremely light material, such as styrene beads. In such a case, the transport container may be unloaded by lifting the bag 7 containing the light material out of the transport container 1 e.g. by the fasteners 8 or other suitable lifting means for the bag 7. Then, the material contained in the bag 7 may be stored for a while and transported in the very bag 7 if the structure and material of the bag 7 are strong enough to allow this.

Claims

1. A transport container having side walls (11) and ends and a bag (7) arranged inside the container for transporting a fluid or a bulk material, the transport container (1) being provided with bevel surfaces (6) parallel to its side walls and arranged in a lower part of a side wall (11), the bag (7) being arranged to be supported against the bevel surfaces (6), c h a r a c t e r i z e d in that
the bevel surfaces (6) are connected by longitudinal supports (9) extending from end to end of the container and inclined extending from the bevel surfaces towards side bottom structures at the base of the side walls to transfer a weight received by the bevel surfaces (6) to said bottom structures of the transport container (1).

2. A transport container as claimed in claim 1, c h a r a c t e r i z e d in that the bevel surfaces (6) are arranged to form a groove for reels (10), whereby without a bag (7) the transport container (1) is usable for transporting reels (10).

3. A transport container as claimed in any one of the preceding claims, c h a r a c t e r i z e d in that the transport container (1) is provided with a smooth inner liner, whereby the transport container (1) is usable for transporting bulk goods and a bulk material also without a bag.

4. A transport container as claimed in any one of the preceding claims, c h a r a c t e r i z e d in that the transport container (1) is provided with a pressure cover (17) arranged above the bag (7) and movable according to a height position of an upper surface of the bag (7).

5. A transport container as claimed in any one of the preceding claims, c h a r a c t e r i z e d in that the bag (7) is provided with bag lifting means for lifting the bag (7) containing the material to be transported out of the transport container (1).

Patentansprüche

1. Ein Transportbehälter mit Seitenwänden (11) und Enden und einem innerhalb des Behälters zum Transport eines Fluides oder eines Schüttgutes angeordneten Beutel (7), wobei der Transportbehälter (1) parallel zu seinen Seitenwänden mit schrägen Oberflächen (6) bereitgestellt und in einem unteren Teil einer Seitenwand (11) angeordnet ist, wobei der Beutel (7) angeordnet ist, um gegen die schrägen Oberflächen (6) abgestützt zu werden, **dadurch gekennzeichnet, dass**

   die schrägen Oberflächen (6) durch Längsträger (9) verbunden sind, die sich vom einen Ende zum anderen Ende des Behälters erstrecken und die sich geneigt von den schrägen Oberflächen in Richtung seitlicher Bodenstrukturen an der Basis der Seitenwände erstrecken, um ein von den schrägen Oberflächen (6) empfangenes Gewicht an die besagten Bodenstrukturen des Transportbehälters (1) zu übertragen.

2. Ein Transportbehälter wie in Anspruch 1 beansprucht, **dadurch gekennzeichnet, dass** die schrägen Oberflächen (6) derart angeordnet sind, dass sie eine Nut für Rollen (10) bilden, wobei der Transportbehälter (1) ohne einen Beutel (7) zum Transportieren von Rollen (10) verwendet werden kann.

3. Ein Transportbehälter wie in einem der vorangegangenen Ansprüche beansprucht, **dadurch gekennzeichnet, dass** der Transportbehälter (1) mit einer glatten Auskleidung bereitgestellt ist, wobei der Transportbehälter (1) auch ohne einen Beutel zum Transportieren von Stückgütern und Schüttgut verwendet werden kann.

4. Ein Transportbehälter wie in einem der vorangegangenen Ansprüche beansprucht, **dadurch gekennzeichnet, dass** der Transportbehälter (1) mit einer Druckabdeckung (17) bereitgestellt ist, die oberhalb des Beutels (7) angeordnet und gemäß einer Höhenposition einer Oberseite des Beutels (7) bewegbar ist.

5. Ein Transportbehälter wie in einem der vorangegangenen Ansprüche beansprucht, **dadurch gekennzeichnet, dass** der Beutel (7) mit einem Beutelhebemittel zum Anheben des Beutels (7), der das aus dem Transportbehälter (1) heraus zu transportierende Material enthält, bereitgestellt ist.

Revendications

1. Conteneur de transport ayant des parois latérales (11) et des extrémités et une poche (7) agencée à

l'intérieur du conteneur pour transporter un fluide ou une matière en gros, le conteneur de transport (1) étant muni de surfaces chanfreinées (6) parallèles à ses parois latérales et agencées dans une partie inférieure d'une paroi latérale (11), la poche (7) étant agencée pour être supportée contre les surfaces chanfreinées (6), **caractérisé en ce que**
les surfaces chanfreinées (6) sont reliées par des supports longitudinaux (9) s'étendant d'une extrémité à l'autre du conteneur et s'étendant inclinées à partir des surfaces chanfreinées vers des structures inférieures latérales au niveau de la base des parois latérales pour transférer un poids reçu par les surfaces chanfreinées (6) auxdites structures inférieures du conteneur de transport (1).

2. Conteneur de transport selon la revendication 1, **caractérisé en ce que** les surfaces chanfreinées (6) sont agencées pour former une rainure pour des bobines (10), de sorte que sans poche (7) le conteneur de transport (1) est utilisable pour transporter des bobines (10).

3. Conteneur de transport selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conteneur de transport (1) est muni d'une doublure intérieure lisse, de sorte que le conteneur de transport (1) est utilisable pour transporter des marchandises en gros et une matière en gros également sans poche.

4. Conteneur de transport selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conteneur de transport (1) est muni d'un couvercle de pression (17) agencé au-dessus de la poche (7) et mobile selon une position en hauteur d'une surface supérieure de la poche (7).

5. Conteneur de transport selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la poche (7) est munie d'un moyen de soulèvement de poche pour soulever la poche (7) contenant la matière à transporter hors du conteneur de transport (1).

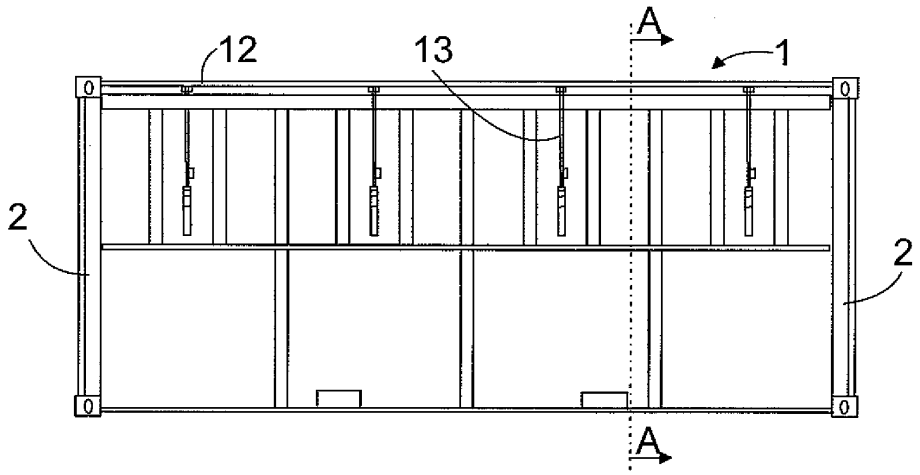


FIG. 1

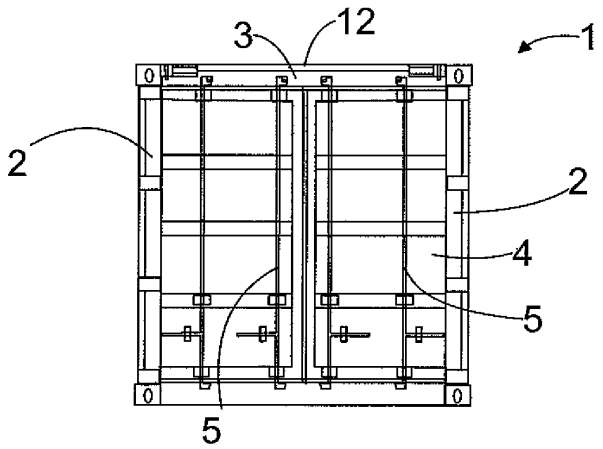


FIG. 2

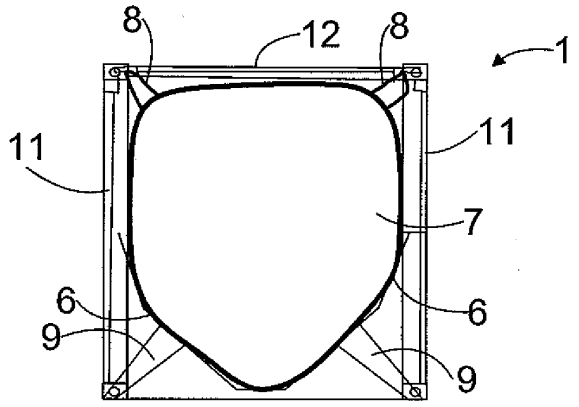


FIG. 3

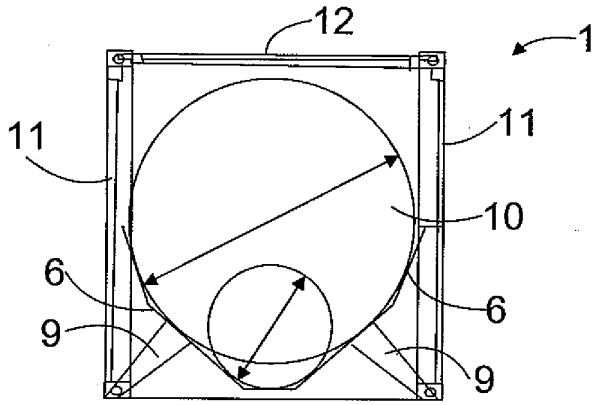


FIG. 4

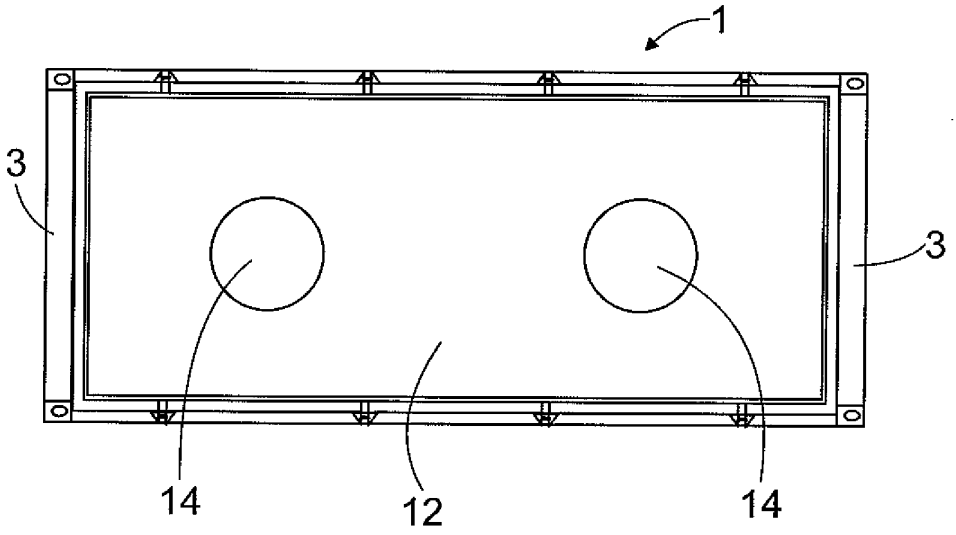


FIG. 5

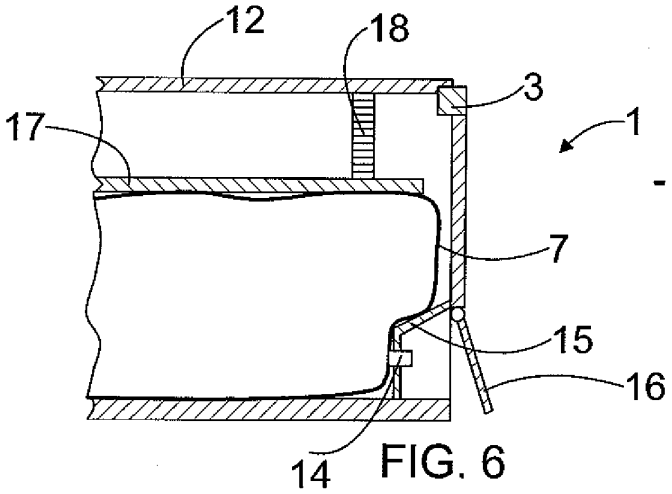


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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