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(54) Intermediate bulk container of low height

Schüttgut-Zwischenbehälter mit geringer Höhe

Conteneur intermédiaire de faible hauteur pour produits en vrac

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(73) Proprietor: **Royal Packaging Industries van Leer B.V.**
1181 KK Amstelveen (NL)

(72) Inventors:
- **Decroix, Claude**
  76160 La Vieux-Rue (FR)
- **Tragin, Sylvain**
  76380 Canteleu (FR)
- **Berthy, Laurent**
  76000 Rouen (FR)

(74) Representative: **Kilchert, Jochen et al**
Meissner, Bolte & Partner GbR
Postfach 86 06 24
81633 München (DE)

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Description

[0001] The present invention relates to an IBC comprising a base constructed as a pallet, a cage, fitted thereon, within which a plastic container is placed, which container is provided at the top with a fill opening with a filler cap, said pallet comprising a deck for supporting the bottom of said container, a supporting structure for said deck and a connection face for connecting the lower part of said cage.

[0002] An IBC of this type is generally known in the state of the art and is used on a large scale for the transport of a wide variety of types of fluids and other materials. The dimensions of the IBC have been normalised and standardised to a substantial extent for example with a nominal capacity of 1000 1. Because of the large production numbers, deviations for specific applications are very expensive and will directly lead to a much higher price for the IBC.

[0003] The current standard height of an IBC is such that it is possible only to load one IBC on the last row in the height of a standard sea container. As a result of extensive standardisation, modification of dimensions is precluded for these sea containers as well.

[0004] DE 3839647 discloses an IBC wherein the grid is connected to the upper face of the deck of the palet.

[0005] EP 1241109 A1 which was published after the priority date of subject application discloses a single part moulded plastic pallet having a reces for receiving the lower part of the grid.

[0006] The aim of the present invention is to provide an IBC that can be produced in a simple manner using standard components but which enables more efficient loading in a standard sea container.

[0007] This aim is achieved with an IBC as described above and having the features of the characterising part of appended claim 1.

[0008] It has been found that starting from two IBCs placed on top of one another the height thereof is only a few centimetres too great to enable loading in a sea container.

[0009] According to the present invention it is proposed to move the cage of the IBC downwards somewhat with respect to the container. That is to say, the top of the container comes closer to the top of the cage. In contrast to the prior art wherein the supporting face for the container (bottle) and the connection face for the cage are at the same level. This means that when two IBCs according to the invention are placed on top of one another a compressive effect is exerted on the container itself by the centering means of the upper IBC. It has been found that this compression of the container only needs to be a few centimetres and has no further consequences whatsoever. As a rule IBCs are never completely filled and a residual volume always remains unused at the top. That is to say, some compression of the top of the container of an IBC has no consequences.

[0010] Supporting structure is any structure which is distinguishable from the deck on which the bottle bears during normal use.

[0011] According to the invention this difference in height is at least 10 mm and more particular minimum 18 mm. Such difference in height can be obtained according to a further preferred embodiment of the invention in case of a normally used (wooden) pallet by having the deck constructed to only support the container. This means that the lower part of the cage is not longer supported by the deck of the pallet but by the layer immediately below. Normally this will be the planks or any combination of the blocks and planks which are below the deck. The usual pallet has the following parts in the position of use from top to bottom: deck comprising a number of slats; planks also comprising of slats but extending perpendicular to the deck, blocks functioning as spacer allowing introduction of lift forks and runners extending parallel to the slats of deck and perpendicular to the planks.

[0012] A further measure for achieving lowering of the IBC is restriction of the height of the slots for inserting the forks of a fork lift truck. It has proved possible to restrict this height to approximately 6 cm and more particularly to approximately 58 mm at maximum. According to the present invention the complete IBC is constructed in such a way that the height thereof is approximately 111 cm and more particular 112 cm. When two such IBCs according to the invention are placed on top of one another a total height of approximately 2.23 m at maximum is obtained, which is precisely adequate to be fitted through the door of a (sea) container of the customary dimensions.

[0013] The lower part of the pallet also functions as centering means for centering an upper pallet relative to a lower pallet in a stack of at least two pallets.The blocks extend somewhat beyond the runners or other part of the pallet being above such centering means. The blocks are intended to bear during stacking on the upper edge of the cage of the IBC being below. This means that the centering means extend below the upper edge of the cage and could compress the container.

[0014] The centering means described above can be formed by the runners of the pallet. With this arrangement the extent of the runners is less than the inner circumference of the top boundary of the cage. As a result the runners drops inside the periphery of the cage of the IBC beneath it. With this arrangement the runners will bear on the top of the container over a relatively large surface area, which provides for uniform compression.

[0015] The invention will be explained in more detail below with reference to an illustrative embodiment shown in the drawing. In the drawing:

Fig. 1 shows an IBC according to the invention;
Fig. 2 shows a pallet base of the IBC according to the invention; and
Fig. 3 shows two IBCs according to the invention placed on top of one another.

[0016] In the figures an intermediate bulk container or IBC is indicated by 1. This consists of a plastic container with a volume of, for example, nominal 1,000 litres. However, other volumes are also possible. The plastic container is provided with a fill opening 12 onto which a cap 11 can be screwed. There is a tapping opening 10 at the bottom. A tap or other shut-off element can optionally be fitted thereon. A cage 3 is present to protect and support the container 2. This cage 3 consists of vertical parts 4 and horizontal parts 5. These parts are fixed to one another in some way or other at the points where they cross. In the example shown the vertical parts 4 have been made larger and provided with holes for accommodating the horizontal parts 5 through these. Horizontal reinforcing bars 13 are present. At the top and bottom the horizontal part is fixed to the vertical part by welding. A cage of this type can be produced in any way known in the state of the art. For instance, it is possible to produce the cage shape shown in the figure starting from an elongated grid by bending. With this procedure the end parts can be welded to one another.

[0017] The pallet base on which the container 2 is placed is indicated by 6 in the drawings. This pallet base consists of an deck 7 and a runners 9 between which blocks 8 and planks 15 are fitted. As can be seen from Fig. 2, these blocks 8 and planks 15 extend further outwards than either the deck 7 or the runners 9. The peripheral boundary of the runners 9 approximately corresponds to the inner periphery of the top of the cage 3.

[0018] The deck 7 is constructed in such a way that this supports the container 2 but, as can be seen from Fig. 1, the underside of the cage rests on the circumferential edge realised by the planks. The difference in height is indicated by c in fig. 2 and is more than 10 mm and more particular about 18 mm at minimum. The cage can be connected with any fastening means known in the art. This means that compared with the conventional situation, the cage has been moved downwards over the height of the deck 7, whilst the container 2 remains in the conventional position.

[0019] This means that if standard components are used as the starting point, the top of the container comes closer to the top of the cage. This distance is indicated by b in Fig. 1. This distance b is less than the thickness of the runners 9. This means that if an identical IBC is placed on top of the IBC shown in Fig. 1, as is shown in Fig. 3, the underside of the runners 9 of the upper IBC comes into contact with the top of the container 2 of the IBC beneath it. As a result this container will deform until the underside of the blocks 8 of the top IBC comes to rest on the top of the cage 3 of the bottom IBC 1. Such movement of the container is very slight. As a rule the container is not completely filled, so that the compression of the container over this small distance is possible in a simple manner. However, should the IBC be completely filled there are still found to be no problems. When a further IBC is placed on top of it, the container will give way somewhat and bulge. The strength of a plastic container 2 is such that such a movement is possible without damage.

[0020] The runners 9 are so constructed that there is no stress on the location close to the filler cap 11 of an underlying IBC. That is to say, in principle pressure is not exerted directly on the top of filler cap 11.

[0021] The pallet can be produced from any material known in the state of the art, such as plastic. Preferably, however, wood is used for the various components of the pallet.

[0022] The distance between the upper face and runners, that is to say the thickness of the blocks 8 and planks 15, is indicated by a in the figure 2. The thickness of these blocks is preferably approximately 58 mm maximum.

[0023] With the construction described above it is possible to load a standard (sea) container more efficiently because two IBCs 1, 21 can be stacked on top of one another. This has proved possible with the use of standard components, just sufficient height gain being obtained by a minor adjustment of the construction of the pallet in order to enable efficient stacking in sea containers.

[0024] Variants which fall within the scope of the appended claims will be immediately apparent to those skilled in the art after reading the above.

Claims

1. IBC (1, 21) comprising a base constructed as a pallet (6), a cage (3), fitted thereon, within which a plastic container (2) is placed, which container is provided at the top with a fill opening (12) with a filler cap (11), said pallet comprising a deck for supporting the bottom of said container, a supporting structure for said deck and a connection face for connecting the lower part of said cage, wherein said connection face comprises the upper part of the supporting structure being at least 10 mm (c) below the upper face of said deck, wherein said supporting structure comprises a layer of planks (15) below said upper deck (7) and extending in lateral direction beyond said deck to provide a support edge for connecting said cage, blocks (8) below said planks and runners, wherein said pallet is provided at the bottom with supporting means (8) and centering means (9), said supporting means being constructed to bear on the top of the cage of an underlying IBC and said centering means being constructed so as to fix the position of the cage of an underlying IBC, said centering means extending over a distance (d) that is greater than the difference in height between the top of the cage and the top of the container (b).

2. IBC according to claim 1, wherein said connection face is minimum about 18 mm below said bottom face.

3. IBC according to one of the previous claims, wherein the height (a) of said blocks (8) and planks (15) is approximately 6 cm.

4. IBC according to Claim 3, wherein the maximum height of said blocks and planks is approximately 58 mm.

5. IBC according to one of the preceding claims, wherein the height of the top boundary of the cage from the underside of the pallet base is approximately 111 cm.

6. IBC according to Claim 5, wherein said height is approximately 112 cm at maximum.

7. Stack comprising two IBCs (1, 21) according to one of the preceding claims placed on top of one another, wherein the total height is approximately 2.23 m at maximum.

Patentansprüche

1. IBC (intermediate bulk container) (1, 21) mit einem Boden, der als Palette (6) ausgebildet ist, einem Käfig (3), der darauf angebracht ist, innerhalb dessen ein Kunststoffcontainer (2) angeordnet ist, wobei der Container am obersten Abschnitt mit einer Befüllungsöffnung (12) ausgestattet ist, die eine Befüllungskappe (11) aufweist, wobei die Palette eine Trageebene umfasst, um den unteren Abschnitt des Containers zu tragen, einer Tragestruktur für die Trageebene umfasst, um den unteren Abschnitt des Containers zu tragen, einer Tragestruktur für die Trageebene und eine Verbindungsseite, um den unteren Teil des Käfigs zu verbinden, wobei die Verbindungsseite den oberen Teil der Tragestruktur umfasst, die sich mindestens 10 mm (c) unterhalb der oberen Seite der Trageebene befindet, wobei die Tragestruktur eine Schicht aus Planken (15) unterhalb der oberen Trageebene (7) umfasst, und die sich in einer seitlichen Richtung unterhalb der Trageebene erstreckt, um eine Tragekante vorzusehen, um den Käfig, Blöcke (8), die unter den Planken vorgesehen sind, sowie Kufen zu verbinden, wobei die Palette an dem Boden mit einer Trageeinrichtung (8) und einer Zentriereinrichtung (9) ausgestattet ist, wobei die Trageeinrichtung ausgestaltet ist, um auf dem oberen Abschnitt des Käfigs eines darunter liegenden IBCs aufzuliegen, und die Zentriereinrichtung ausgestaltet ist, um die Position des Käfigs eines darunter liegenden IBCs zu fixieren, wobei sich die Zentriereinrichtung über eine Entfernung (d) erstreckt, die größer als die Höhendifferenz zwischen dem obersten Abschnitt des Käfigs und dem obersten Abschnitt des Containers (b) ist.

2. IBC nach Anspruch 1, wobei die Verbindungsseite mindestens ca. 18 mm unter der unteren Seite vorgesehen ist.

3. IBC nach einem der vorangehenden Ansprüche, wobei die Höhe (a) der Blöcke (8) und der Planke (15) ungefähr 6 cm beträgt.

4. IBC nach Anspruch 3, wobei die maximale Höhe der Blöcke und der Planken ungefähr 58 mm beträgt.

5. IBC nach einem der vorangehenden Ansprüche, wobei die Höhe der oberen Abgrenzung des Käfigs ausgehend von der Unterseite des Palettenbodens ungefähr 111 cm beträgt.

6. IBC nach Anspruch 5, wobei die Höhe maximal ungefähr 112 cm beträgt.

7. Stapel mit zwei IBCs (1, 21) gemäß einem der vorangehenden Ansprüche, die übereinander angeordnet sind, wobei die Gesamthöhe maximal ungefähr 2,23 m beträgt.

Revendications

1. Conteneur intermédiaire pour produits en vrac (IBC) (1,21) comprenant une base construite sous la forme d'une palette (6), une cage (3) fixée sur celui-ci, à lintérieur de laquelle est placé un conteneur en plastique (2), lequel conteneur est muni sur le dessus d'une ouverture de remplissage (12) avec un capuchon de remplissage (11), ladite palette comprenant une plate-forme pour supporter le fond dudit conteneur, une structure de support pour ladite plate-forme et une face de liaison destine à relier la partie inférieure de ladite cage, dans lequel ladite face de liaison comprend la partie supérieure de la structure de support qui se situe au moins à 10 mm (c) au-dessous de ladite face supérieure de la plate-forme, dans lequel ladite structure de support comprend une couche de planches (15) au-dessous de ladite plate-forme supérieure (7) et s'étendant dans la direction latérale au-delà de ladite plate-forme pour fournir un bord de support destiné à relier ladite cage, les blocs (8) au-dessous desdites planches et glissières, dans lequel ladite palette est munie sur le fond de moyens de support (8) et de moyens de centrage (9), lesdits moyens de support étant construits de façon à s'appuyer sur le dessus de la cage d'un conteneur intermédiaire pour produits en vrac sous-jacent et lesdits moyens de centrage étant construits de façon à fixer la position de la cage d'un conteneur intermédiaire pour produits en vrac sous-jacent, lesdits moyens de centrage s'étendant sur une distance (d) qui est supérieure à la différence en hauteur entre le dessus de la cage et le dessus du conteneur (b).

2. Conteneur intermédiaire pour produits en vrac selon la revendication 1, dans lequel ladite face de liaison est au minimum à environ 18 mm au-dessous de ladite face de fond.

3. Conteneur intermédiaire pour produits en vrac selon l'une des revendications précédentes, dans lequel la hauteur (a) desdits blocs (8) et planches (15) est d'environ 6 mm.

4. Conteneur intermédiaire pour produits en vrac selon la revendication 3, dans lequel la hauteur maximum desdits blocs et planches est d'environ 58 mm.

5. Conteneur intermédiaire pour produits en vrac selon l'une quelconque des revendications précédentes, dans lequel la hauteur de la limite supérieure de la cage à partir du côté inférieur de la base de la palette est d'environ 111 mm.

6. Conteneur intermédiaire pour produits en vrac selon la revendication 5, dans lequel ladite hauteur est d'environ 112 cm au maximum.

7. Empilement comprenant deux conteneurs intermédiaires pour produits en vrac (1, 21) selon l'une des revendications précédentes, placés l'un au-dessus de l'autre, dans lequel la hauteur totale est d'environ 2,23 m au maximum.

Fig 1

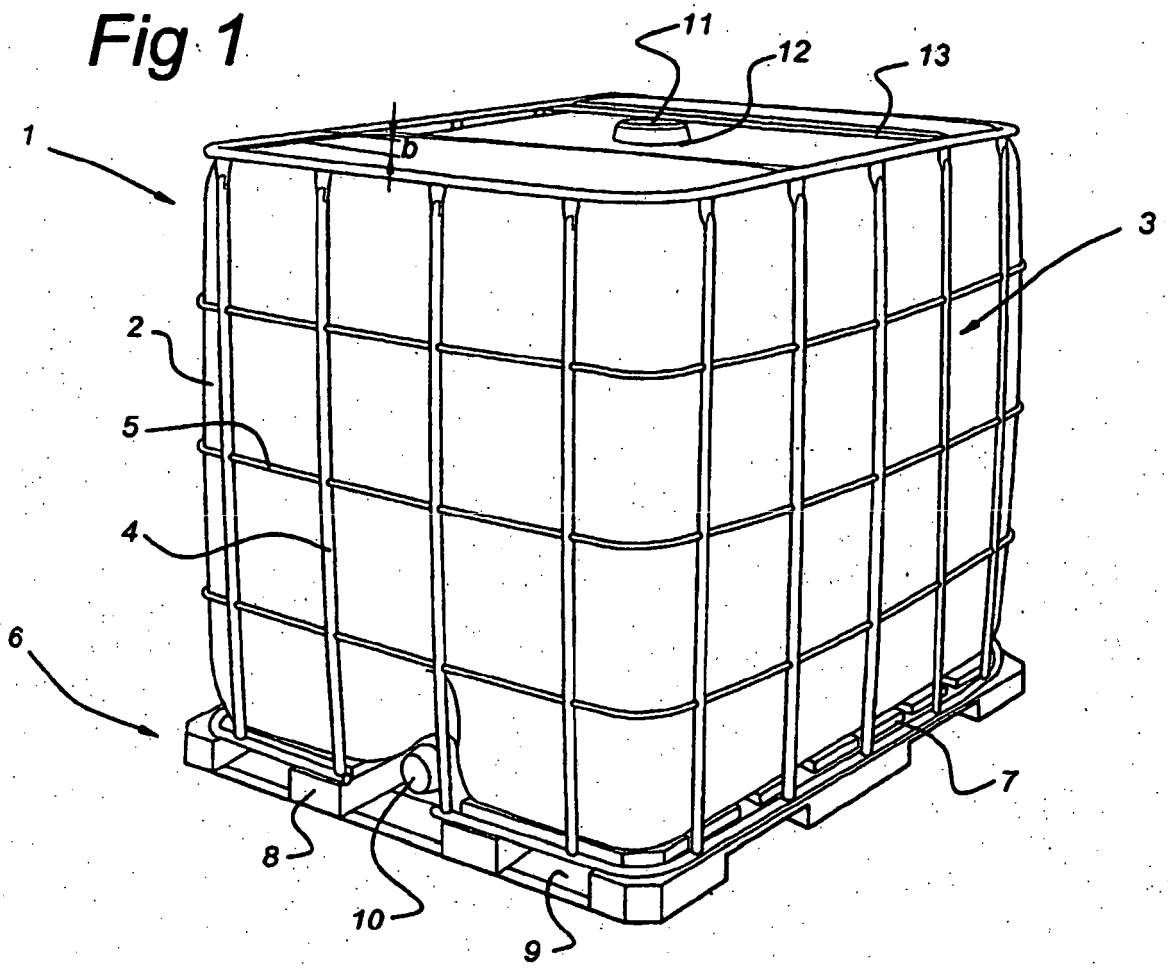


Fig 2

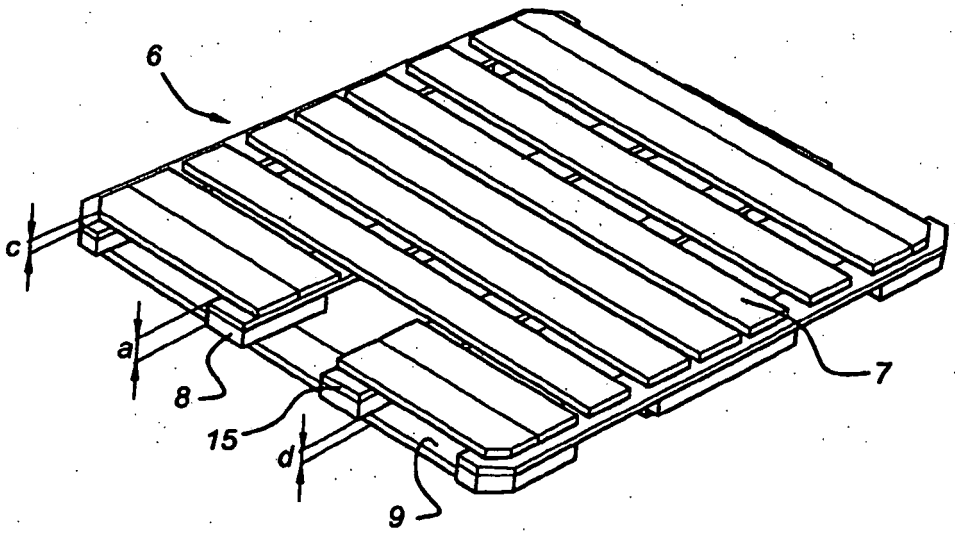
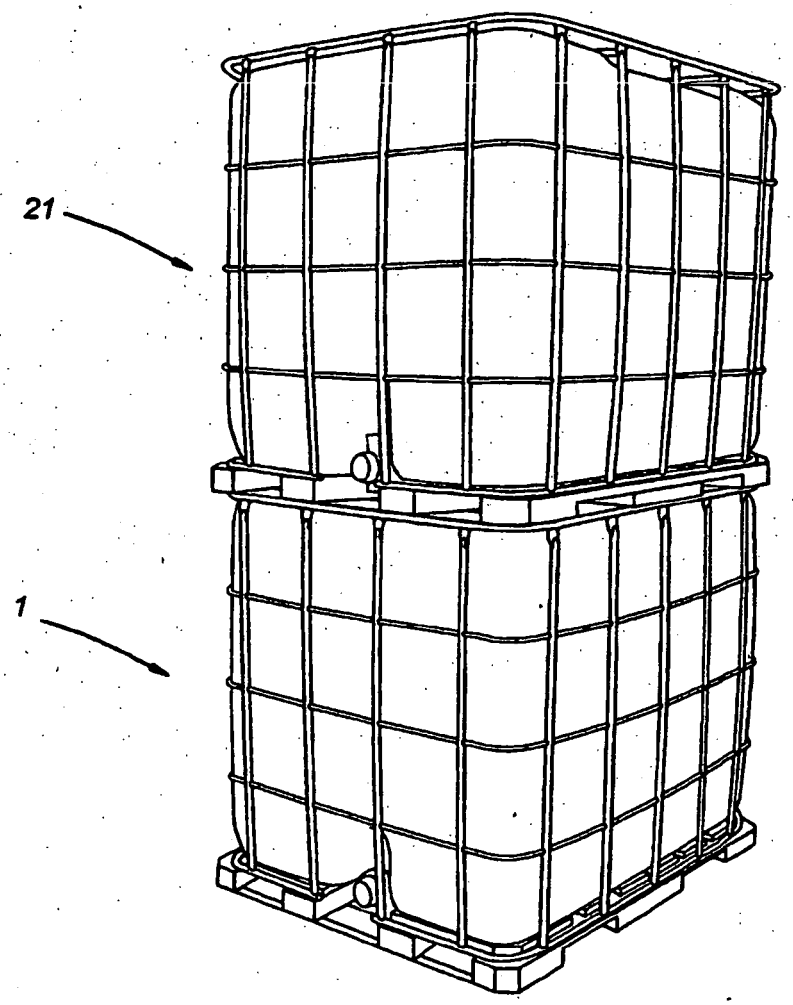


Fig 3



REFERENCES CITED IN THE DESCRIPTION

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- EP 1241109 A1 **[0005]**