



(11) **EP 1 633 661 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
04.06.2008 Bulletin 2008/23

(51) Int Cl.:
B65D 90/00 ^(2006.01) **B65D 88/12** ^(2006.01)
B65D 88/02 ^(2006.01)

(21) Application number: **04735036.8**

(86) International application number:
PCT/GB2004/002277

(22) Date of filing: **27.05.2004**

(87) International publication number:
WO 2004/106193 (09.12.2004 Gazette 2004/50)

(54) **FREIGHT CONTAINER**

FRACHTCONTAINER

CONTENEUR

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

(30) Priority: **27.05.2003 GB 0312081**

(43) Date of publication of application:
15.03.2006 Bulletin 2006/11

(60) Divisional application:
08004750.9

(73) Proprietor: **Container Leasing UK Limited**
Chepstow,
Monmouthshire NP15 5EU (GB)

(72) Inventors:
• **LAWN, James, William**
Monmouthshire NP16 7QA (GB)
• **VAN DEN POEL, Jean, Marie-Anne, Carlos**
B-8380 Dudzele (BE)

(74) Representative: **Bardo, Julian Eason et al**
Abel & Imray
20 Red Lion Street
London WC1R 4PQ (GB)

(56) References cited:
GB-A- 2 353 277 **GB-A- 2 368 336**
US-A- 3 735 713 **US-A- 5 275 301**

EP 1 633 661 B1

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).

Description

[0001] This invention relates to open-sided freight containers and more particularly, but not exclusively, to open-sided 45ft (13 716mm) freight containers, and to corner fittings for use in such containers.

[0002] Where reference is made in this specification to an open-sided freight container, it should be understood that the term includes, but is not limited to, the following: a container with at least one side which is able to be covered by a flexible covering such as a tarpaulin which can be moved away from the side of the container to allow access into the container through the open side (such a container is referred to herein as a curtain-sided container); a container with a roof but at least one side which is entirely open along most of its length to allow access into the container; and, a container having a base structure and ends upstanding from the base structure but no roof or sides along at least most of its length (such a container is referred to herein as a flatrack).

[0003] In the European freight container industry, although metric units are used for most measurements, container lengths are still referred to in units of feet and therefore in this specification such references are also provided in feet. For the convenience of the reader, metric equivalents, usually in mm, are included in parentheses after the units of feet. The units are given to the last mm, but it should be understood that the dimension referred to is not necessarily as precise as that. For example, a "45 foot container" might have a length of 13 706mm.

[0004] For many years containers have existed in standard lengths especially 20ft (6096mm), 40ft (12 192mm), 13 600mm (a container that is known by its metric length) and 45ft (13 716mm) lengths. The 40ft (12 192mm) length of container has been especially popular and load handling equipment provided at container facilities are usually able to handle 40ft (12 192mm) containers, whatever other length or lengths of container they may be able to handle.

[0005] 45ft (13 716mm) containers are becoming increasingly popular as the largest container that can be transported by road in Europe, but such containers are usually provided with intermediate corner fittings at the spacing (11 985mm centre-to-centre spacing) of the corner fittings on a 40ft (12 192mm) container so that they can be handled by load handling equipment intended for 40ft (12 192mm) containers. When such a 45ft (13 716mm) container is used it is desirable not only that it can be handled by equipment designed for 40ft containers but also that a 40ft (12 192mm) container can safely be stacked on top of it.

[0006] In the case of a 45ft (13 716mm) container with solid sides it is reasonably simple to provide the necessary structural support to the intermediate corner fittings of the container: the base of the container under the floor is relatively strong and the solid sides of the container provide structural support to the intermediate corner fittings at the top of the container. In the case of an open-sided container, however, a problem arises in providing the required structural support to the intermediate corner fittings at the top of the container. Typically that problem is solved by making the open-sided container with substantially closed sides along the end portion of the container (up to the position of the 40ft (12 192mm) intermediate corner fittings), but that reduces the length along which the container can rightly be regarded as open-sided.

[0007] The problem just described also arises with other containers longer than 40ft (12 192mm), for example with 13 600 containers.

[0008] This problem has been recognised and attempts made to overcome it. For example, it has been proposed to provide partly or totally removable side walls at the ends of a container and it has also been proposed to provide an open-sided container with a wall extending longitudinally along a central plane of the container between a base structure of the container and the roof. Such a design makes it possible to provide additional strength in the region of the 40ft (12 192mm) intermediate top corner fittings even when the container is open-sided in that area, but the presence of a central longitudinal wall is often not acceptable in a container that is specifically designed to be loaded from the side. In particular such a design requires that the container be loaded from both sides. GB2368336 discloses an open freight container according to the preamble of claim 1, with intermediate corner fittings, with diagonally extending corner braces used to provide additional support to the corner fittings. The corner braces include hinges to enable movement between their supporting positions and a non-obstructing position when the container is being loaded or unloaded.

[0009] It is an object of the invention to provide an open-sided container with improved side access.

[0010] It is a further object of the invention to provide an intermediate corner fitting for an open-sided container that enables side access to the container to be improved.

[0011] According to a first aspect of the invention there is provided an open-sided freight container, the container including a base structure, a structural framework that extends upwardly from the base structure and corner fittings including four intermediate top corner fittings at a longitudinal spacing between the centres of their top openings of about 11 985mm to enable the container to be handled by load handling equipment for lifting 40ft (12 192mm) containers, a vertical member extending downwardly from the top corner fitting to the base structure of the container, the vertical member being offset outwardly in a longitudinal direction from the intermediate top corner fitting by a distance of more than 150mm measured between the centre of the top opening of the top corner fitting and the longitudinally inner face of the vertical member, leaving the space on the longitudinally inner side of the vertical member and under the intermediate top corner fitting open for allowing side access, characterised in that at least one of the intermediate top corner fittings above an open side of the container is structurally secured in a cantilever arrangement to the structural framework.

[0012] By providing such a cantilever arrangement the overall length of the open part of the open-sided container can be increased. Even a small increase can be very useful in enabling particular goods to be loaded through the open side of the container.

5 **[0013]** Whilst it is possible to extend the length of the open side at one end only of the container, it is preferred to extend the length at both ends. Thus it is preferred that first and second intermediate top corner fittings above the same open side of the container and towards opposite ends of the container are each secured in a cantilever arrangement, the structural framework including a first vertical member extending downwardly from the first intermediate top corner fitting to the base structure of the container and a second vertical member extending downwardly from the second intermediate top corner fitting to the base structure of the container, each vertical member being offset outwardly in a longitudinal direction from the respective cantilevered intermediate top corner fitting by a distance of more than 150mm measured between the centre of the top opening of the top corner fitting and the inner face of the vertical member, leaving the space on the longitudinally inner side of the vertical member and under the cantilevered intermediate top corner fitting open for allowing side access.

10 **[0014]** Usually it will be preferred that the first and second intermediate top corner fittings are spaced by the same distances from the respective adjacent ends of the container, but it is also possible for them to be spaced by different distances. Similarly, it will usually be preferred that the inner faces of the first and second vertical members are spaced by the same distances from the respective ends of the container, but it is also possible for them to be spaced by different distances.

15 **[0015]** The container may be open on one side only, the other side in that case being closed. It is, however, preferable for there to be open access to both sides of the container and for the length of both open sides to be extended at both ends. Thus, it is preferred that both sides of the container are open-sided and third and fourth intermediate top corner fittings are arranged above the other side of the container in substantially the same manner as the first and second intermediate top corner fittings..

20 **[0016]** It will be noted that the intermediate bottom corner fittings are below floor level and are not affected by the open-sided nature of the container.

25 **[0017]** The invention is especially advantageous when applied to a 45ft (13 716mm) container although it may also be applied to containers of other lengths. In a conventional 45ft (13 716mm) container a vertical member is provided directly underneath each intermediate corner fitting and the gap between the vertical members is therefore less than 12 000mm. The more that gap can be increased the better the access to the container and in a container embodying the invention the gap is usually more than 12 300mm and preferably more than 12 500mm. In a container described below the gap is 12 600mm. As will be understood, in a case where the same offset arrangement is provided at both ends of the container an increase in gap of 200mm can be achieved by an increase in each offset of 100mm. Thus while the offset of the vertical member from the cantilevered intermediate top corner fitting is required, in the first aspect of the invention, to be more than 150mm, it is preferably more than 250mm and more preferably greater than 300mm.

30 **[0018]** Even when the offset is as great as 300mm, we have found that the container can be arranged such that even in the region of the vertical member it is not unduly narrow. More particularly the internal width of the container in the region of the vertical member may be more than 2420mm. In a container described below it is more than 2430mm, being 2434mm. Such widths are advantageous in allowing two pallets of 1,2m width or three pallets of 0,8m width to be placed across the container in the region of the vertical member.

35 **[0019]** Preferably the cantilevered intermediate top corner fitting is secured in a cantilever arrangement both to the vertical member extending downwardly to the base structure and to a horizontal member extending longitudinally outwardly to an end portion of the container. The cantilevered securing of the intermediate top corner fitting to both the vertical and horizontal members enables the loads to be shared between those members enabling those members to be of smaller cross-section and thereby enabling the free space within the container to be increased.

40 **[0020]** Preferably the cantilevered intermediate top corner fitting supports a horizontal beam extending across the top of the container, preferably aligned longitudinally with the top opening in the corner fitting. It is desirable for the container to be reasonably strong across its top at that position.

45 **[0021]** Corner fittings of freight containers are typically of cuboidal shape and formed in one piece, usually as castings. It is, however, possible to form corner fittings in other ways: for example openings may be formed in end parts extending from the top to the bottom of the container or the fittings may be fabricated from one or more metal sheets bent into the required shape. Similarly the intermediate cantilevered corner fitting described herein may be fabricated from one or more sheets of metal, but it is preferably of one piece construction and is preferably a casting.

50 **[0022]** As already indicated, an open-sided container embodying the invention may take various forms. For example, it may have a roof and one or two open sides each covered with a flexible covering which can be moved away from the side of the container to allow access into the container. It is also within the scope of the invention for it to be without a roof and for the sides to exist only adjacent to the ends of the container; such a container is commonly referred to as a flatrack.

55 **[0023]** The intermediate top corner fitting employed in embodiments of the present invention is itself of novel con-

struction and according to a third aspect of the invention there is provided an intermediate top corner fitting for a 45ft (13 716mm) open-sided freight container as defined above, the corner fitting being of elongate form and including a cantilever arm having first and second opposite end portions, the first end portion including a top opening for engagement by load handling equipment for lifting 40ft (12 192mm) containers and the second end portion being fixable to a vertical member extending downwardly to the base structure of the container and to a horizontal member extending horizontally to an end portion of the container. The fitting may of course have other of the features described above with reference to the container of the first and second aspects of the invention.

[0024] The present invention still further provides an open-sided freight container including a corner fitting as defined above, the corner fitting being positioned along the top of the container intermediate the ends of the container. The open-sided freight container may also incorporate any of the features defined above with reference to a container of the invention.

[0025] Whilst it will usually be appropriate to include first and second corner fittings on the same side of the container along the top of the container intermediate the ends of the container, another possibility is to have just one intermediate top corner fitting on each side of the container so that, for example, there may be a total of six top corner fittings. Such an arrangement may be suitable where an especially asymmetric arrangement of side opening is desired.

[0026] By way of example an embodiment of the invention will now be described with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of curtain-sided freight container,

Figure 2a is a perspective view of a top intermediate corner fitting employed in the structure of the container shown in Fig 1,

Figure 2b is a plan view of the intermediate corner fitting shown in Fig 2a,

Figure 3 is a side view from the inside of the container of an end region of the container shown in Fig 1,

Figure 4 is a side view of the container shown in Fig 1,

Figure 5 is a sectional plan view of the container shown in Fig 1 and

Figure 6 is a side view of a modified form of the container shown in Fig. 1.

[0027] The freight container shown in Fig 1 is of generally cuboidal shape having ends 1, 2, open sides 3 (only one of which is visible in Fig 1), a roof 4 and a base structure 5 on the top of which is a floor 6 (the floor being partly cut away in Fig 1 to reveal the base structure of the container). The end 1 of the container is provided with a pair of double doors 7. The container is symmetrical about a vertical longitudinal plane.

[0028] The sides 3 of the container are coverable by tarpaulins 8 (only partly shown in Fig 1) which can be tied securely to the container along their bottom edge but also untied and moved away to allow open access to the sides of the container in a manner well known per se.

[0029] The freight container is a 45ft (13 716mm) container and is provided with eight corner fittings 9 at the corner extremities of the container, with four intermediate top corner fittings 10 and with four intermediate bottom corner fittings 11 (only two of which are visible in Fig 1). As is customary, the openings in the intermediate corner fittings 10, 11 are at the same spacings (11 985mm centre-to-centre spacing) as the corner fittings located at the corner extremities of a 40ft (12 192mm) container so that the containers can be lifted by load handling equipment arranged to lift 40ft (12 192mm) containers by engagement of the equipment in top openings 12 of the intermediate top corner fittings 10, and to enable a mixture of 40ft (12 192mm) and 45ft (13 716mm) containers to be stacked on top of one another with twist-locks engaging corner fittings at the corner extremities of the 40ft (12 192mm) containers and intermediate corner fittings of the 45ft (13 716mm) containers.

[0030] The features of the container that are described above are conventional. In accordance with the invention, each intermediate top corner fitting 10 is of a special design which will now be described with reference to Figs 2a and 2b. The fitting 10 is of generally elongate form and comprises a cantilever arm 13 having a first end portion 14 and a second, opposite, end portion 15. The first end portion 14 has the top opening 12 in the standard location but that represents just the end portion 14 of the fitting 10. Instead of having the usual almost cubic shape the fitting 10 is elongate and the second, opposite, end portion 15 is provided with a protuberance 16 for closely fitting inside and welding to a horizontal, longitudinal, member and a protuberance 17 for closely fitting inside and welding to a vertical member. Also, as best seen in Fig 2b, the first end portion 14 is formed with an open topped socket 18 for receiving as a close fit and welded thereto a horizontal, transverse, member.

[0031] Although Fig 2a may give the impression that the corner fitting is solid except in the region of the opening 12 that is not the case: the fitting is formed in one piece as a steel casting and is of limited wall thickness throughout as indicated by dotted lines in Fig 2b.

[0032] Referring also to Fig 1, it may be noted that the corner fitting exactly as shown in Figs 2a and 2b is only used for two of the intermediate top corner fittings 12 and that a mirror image of the corner fitting exactly as shown in Figs 2a and 2b is used for the other two intermediate top corner fittings.

[0033] In Fig 1 the vertical members that are welded at their top ends to the protuberances 17 of the intermediate top corner fittings 12 are referenced 19 (two of the four members being visible in Fig 1), and the horizontal, transverse, members whose opposite ends are received in and welded to the sockets 18 of the fittings 12 are shown in dotted outline and referenced 20. The horizontal, longitudinal, members whose longitudinally inner ends are welded to the protuberances 16 of the intermediate top corner fittings 12 are shown in Fig 3 and are referenced 21. They extend to the end portions of the container. Thus, each fitting 10 is secured in a cantilever arrangement to the vertical members 19 and the horizontal members 20..

[0034] As can readily be seen in Fig 1, the vertical members 19 are offset outwardly in a longitudinal direction from the top openings 12 in the corner fittings 10 with the result that the longitudinal gap between the vertical members 19 is greater than the spacing between the openings 12, thereby increasing the side access to the container. Such an increase, although small, is nonetheless valuable, especially as it does not result in any significant reduction in the interior width or height of the container in the region of the members 19, as can be seen from the drawings.

[0035] It may be noted that in the illustrated embodiment the open sides 3 of the container are interrupted at two locations by vertical support posts 22. Similar posts 22 are provided on the other side of the container (not visible in Fig 1) but are staggered slightly from the positions on the side shown in Fig 1. The purpose of the posts 22 is simply to support the roof partway along its longitudinal span. The posts 22 are not required to support greater loads, such as for example the load of a container stacked on top, and can therefore be of thin and lightweight construction; they may also be removable, if desired.

[0036] Whilst it will be understood that the invention is applicable to containers of various dimensions, certain dimensions of one especially preferred embodiment of the invention will now be given with reference to Figs 3, 4 and 5:

Overall length (l in Fig 4):	13 716mm
Longitudinal centre-to centre spacing of top openings 12 (s in Fig 4):	11 985mm
Offset of inner face of vertical members 19 from centre of top opening 12 (o in Fig 3):	312mm
Longitudinal gap between vertical member 19 (g in Fig 4):	12 610mm
Tranverse gap between vertical members 19 (t in Fig 5):	2434mm
Overall width (w in Fig 5):	2550mm

[0037] Whilst one particular example of the invention has been described, it will be understood that it may be modified in a wide variety of ways. For example, the intermediate top corner fittings 10 are shown each having a single opening, namely a top opening. It is possible for the fittings also to be provided with side openings as are some standard 45ft containers.

[0038] As already indicated the container described with reference to Figs. 1 to 5 is simply one example of a container that may be constructed in accordance with the invention. As will be understood, many modifications to the design are possible and Fig. 6 illustrates one such modification. Fig. 6 is a similar view to Fig. 4 but of the modified container and the same reference numerals are used in Figs. 4 and 6 to designate identical or almost identical parts. In Fig. 6, the two intermediate top corner fittings 10a adjacent one end of the container (in the illustrated case the end 1 with doors) are arranged in generally the same way as before but a little further from the end of the container, while the other two intermediate corner fittings 10b adjacent to the other end of the container (in the illustrated case the end 2) are arranged immediately adjacent to the end of the container. Thus the intermediate top corner fittings 10a, 10b are still spaced at the spacing s of 11 985mm as in the previous example, but they are asymmetrically positioned along the length of the container.

Claims

1. An open-sided freight container, the container including a base structure(S), a structural framework that extends upwardly from the base structure(5) and corner fittings including four intermediate top corner fittings(10) at a longitudinal spacing between the centres of their top openings of about 11 985mm to enable the container to be handled by load handling equipment for lifting 40ft (12 192mm) containers, a vertical member(19) extending downwardly from a top corner fitting(10) to the base structure(5) of the container, the vertical member(19) being offset outwardly in a longitudinal direction from the intermediate top corner fitting(10) by a distance of more than 150mm measured between the centre of the top opening(12) of the top corner fitting(10) and the inner face of the vertical member(19), leaving the space on the longitudinally inner side of the vertical member(19) and under the intermediate top corner fitting(10) open for allowing side access, **characterised in that** at least one of the intermediate top corner fittings

(10) above an open side of the container is structurally secured in a cantilever arrangement to the structural framework.

- 5 2. A container according to claim 1, in which first and second intermediate top corner fittings(10) above the same open side of the container and towards opposite ends of the container are each secured in a cantilever arrangement, the structural framework including a first vertical member(19) extending downwardly from the first intermediate top corner fitting(10) to the base structure(5) of the container and a second vertical member(19) extending downwardly from the second intermediate top corner fitting(10) to the base structure of the container(5), each vertical member being offset outwardly in a longitudinal direction from the respective cantilevered intermediate top corner fitting(10) 10 by a distance of more than 150mm measured between the centre of the top opening of the top corner fitting(10) and the inner face of the vertical member(19), leaving the space on the longitudinally inner side of the vertical member(19) and under the cantilevered intermediate top corner fitting(10) open for allowing side access.
- 15 3. A container according to claim 2, in which the first and second intermediate top corner fittings(10) are spaced by the same distances from the respective adjacent ends of the container.
4. A container according to claim 2 or 3, in which the inner faces of the first and second vertical members (19) are spaced by the same distances from the respective adjacent ends of the container.
- 20 5. A container according to claim 2, in which the first and second intermediate top corner fittings(10) are spaced by different distances from the respective adjacent ends of the container.
6. A container according to claim 2 or 5, in which the inner faces of the first and second vertical members(19) are spaced by different distances from the respective adjacent ends of the container.
- 25 7. A container according to any of claims 2 to 6, in which both sides of the container are open-sided and third and fourth intermediate top corner fittings(10) are arranged above the other side of the container in substantially the same manner as the first and second intermediate top corner fittings(10).
- 30 8. A container according to any of claims 2 to 7, in which the length of the gap between the vertical members(19) offset from the first and second intermediate top corner fittings is more than 12 300mm.
9. A container according to any of claims 2 to 7, in which the length of the gap between the vertical members(19) offset from the first and second intermediate top corner fittings(10) is more than 12 600mm.
- 35 10. A container according to any preceding claim, in which the vertical member(19) is offset from the cantilevered intermediate top corner fitting(10) by a distance of more than 300mm.
11. A container according to any preceding claim, in which the internal width of the container in the region of the vertical member(19) is more than 2420mm.
- 40 12. A container according to any preceding claim, in which the internal width of the container in the region of the vertical member(19) is more than 2430mm.
- 45 13. A container according to any preceding claim, in which the cantilevered intermediate top corner fitting(10) is secured in a cantilever arrangement both to the vertical member(19) extending downwardly to the base structure(5) and to a horizontal member(20) extending longitudinally outwardly to an end portion of the container.
- 50 14. A container according to claim 13, in which the cantilevered intermediate top corner fitting(10) supports a horizontal beam(20) extending across the top of the container.
15. A container according to any preceding claim, in which the cantilevered intermediate top corner fitting(10) is of one piece construction.
- 55 16. A container according to any preceding claim, in which the cantilevered intermediate top corner fitting(10) is a casting.
17. A container according to any preceding claim, in which the cantilevered intermediate top corner fitting(10) is a fabrication.

EP 1 633 661 B1

- 5 18. An intermediate top corner fitting(10) for an open-sided freight container according to any of claims 1 to 17, the corner fitting(10) being of elongate form and including a cantilever arm having first and second opposite end portions, the first end portion including a top opening for engagement by load handling equipment for lifting 40ft (12 192mm) containers and the second end portion being fixable to a vertical member(19) extending downwardly to the base structure(5) of the container and to a horizontal member(20) extending horizontally to an end portion of the container.
- 10 19. An open-sided freight container including a corner fitting(10) according to claim 18, the corner fitting(10) being positioned along the top of the container intermediate the ends of the container.
20. A container according to claim 19, including first and second corner fittings(10), each according to claim 18, the corner fittings(10) being positioned on the same side of the container along the top of the container intermediate the ends of the container.
- 15 21. A container according to claim 19 or 20, and further being according to claims 1 to 17.

Patentansprüche

- 20 1. Offenseitiger Frachtcontainer, wobei der Container folgendes aufweist: eine Basisstruktur (5); eine Rahmenkonstruktion, die sich von der Basisstruktur (5) nach oben erstreckt; und Eckbeschläge, die vier obere Zwischeneckbeschläge (10) in einem Längsabstand zwischen den Mitten ihrer oberen Öffnungen von ungefähr 11985 mm die aufweisen, um die Handhabung des Containers durch eine Lasthandhabungsvorrichtung zum Heben von 40 ft (12192 mm) Containern zu ermöglichen; ein vertikales Element (19), das sich von einem oberen Eckbeschlag (10) zu der Basisstruktur (5) des Containers nach unten erstreckt; wobei das vertikale Element (19) in einer Längsrichtung von dem oberen Zwischeneckbeschlag (10) um einen Abstand von mehr als 150 mm, gemessen zwischen der Mitte der oberen Öffnung (12) des oberen Eckbeschlags (10) und der Innenfläche des vertikalen Elements (19), nach außen versetzt ist; wobei der Raum an der in Längsrichtung inneren Seite des vertikalen Elements (19) und unter dem oberen Zwischeneckbeschlag (10) offen bleibt, um einen seitlichen Zugang zu ermöglichen,
25 **dadurch gekennzeichnet,**
30 **daß** mindestens einer der oberen Zwischeneckbeschläge (10) über einer offenen Seite des Containers in einer freitragenden Anordnung an der Rahmenkonstruktion konstruktiv gesichert ist.
- 35 2. Container nach Anspruch 1, wobei ein erster und ein zweiter oberer Zwischeneckbeschlag (10) über derselben offenen Seite des Containers und zu gegenüberliegenden Enden des Containers hin jeweils in einer freitragenden Anordnung gesichert sind, wobei die Rahmenkonstruktion folgendes aufweist: ein erstes vertikales Element (19), das sich von dem ersten oberen Zwischeneckbeschlag (10) zu der Basisstruktur (5) des Containers nach unten erstreckt, und ein zweites vertikales Element (19), das sich von dem zweiten oberen Zwischeneckbeschlag (10) zu der Basisstruktur (5) des Containers nach unten erstreckt, wobei jedes vertikale Element in einer Längsrichtung von dem jeweiligen freitragenden oberen Zwischeneckbeschlag (10) um einen Abstand von mehr als 150 mm, gemessen zwischen der Mitte der oberen Öffnung des oberen Eckbeschlags (10) und der Innenfläche des vertikalen Elements (19), nach außen versetzt ist, wobei der Raum an der in Längsrichtung inneren Seite des vertikalen Elements (19) und unter dem freitragenden oberen Zwischeneckbeschlag (10) offen bleibt, um den seitlichen Zugang zu ermöglichen.
- 45 3. Container nach Anspruch 2, wobei der erste und der zweite obere Zwischeneckbeschlag (10) mit den gleichen Abständen von den jeweils benachbarten Enden des Containers beabstandet sind.
- 50 4. Container nach Anspruch 2 oder 3, wobei die Innenflächen des ersten und des zweiten vertikalen Elements (19) mit den gleichen Abständen von den jeweils benachbarten Enden des Containers beabstandet sind.
- 55 5. Container nach Anspruch 2, wobei der erste und der zweite obere Zwischeneckbeschlag (10) mit unterschiedlichen Abständen von den jeweils benachbarten Enden des Containers beabstandet sind.
6. Container nach Anspruch 2 oder 5, wobei die Innenflächen des ersten und des zweiten vertikalen Elements (19) mit unterschiedlichen Abständen von

EP 1 633 661 B1

den jeweils benachbarten Enden des Containers beabstandet sind.

- 5
7. Container nach einem der Ansprüche 2 bis 6,
wobei beide Seiten des Containers offenseitig sind und ein dritter und ein vierter oberer Zwischeneckbeschlag (10)
über der anderen Seite des Containers in der im wesentlichen gleichen Weise wie der erste und der zweite obere
Zwischeneckbeschlag (10) angeordnet sind.
- 10
8. Container nach einem der Ansprüche 2 bis 7,
wobei die Länge des Zwischenraums zwischen den von dem ersten und dem zweiten oberen Zwischeneckbeschlag
versetzten vertikalen Elementen (19) größer als 12300 mm ist.
- 15
9. Container nach einem der Ansprüche 2 bis 7,
wobei die Länge des Zwischenraums zwischen den von dem ersten und dem zweiten oberen Zwischeneckbeschlag
(10) versetzten vertikalen Elementen (19) größer als 12600 mm ist.
- 20
10. Container nach einem der vorhergehenden Ansprüche,
wobei das vertikale Element von dem freitragenden oberen Zwischeneckbeschlag (10) mit einem Abstand von mehr
als 300 mm versetzt ist.
- 25
11. Container nach einem der vorhergehenden Ansprüche,
wobei die innere Breite des Containers in dem Bereich des vertikalen Elements (19) größer als 2420 mm ist.
- 30
12. Container nach einem der vorhergehenden Ansprüche,
wobei die innere Breite des Containers in dem Bereich des vertikalen Elements (19) größer als 2430 mm ist.
- 35
13. Container nach einem der vorhergehenden Ansprüche,
wobei der freitragende obere Zwischeneckbeschlag (10) in einer freitragenden Anordnung sowohl an dem sich zu
der Basisstruktur (5) nach unten erstreckenden vertikalen Element (19) als auch an einem sich in Längsrichtung zu
einem Endbereich des Containers nach außen erstreckenden horizontalen Element (20) gesichert ist.
- 40
14. Container nach Anspruch 13,
wobei der freitragende obere Zwischeneckbeschlag (10) einen horizontalen Träger (20) abstützt, der sich über die
Oberseite des Containers erstreckt.
- 45
15. Container nach einem der vorhergehenden Ansprüche,
wobei der freitragende obere Zwischeneckbeschlag (10) eine einstückige Konstruktion ist.
- 50
16. Container nach einem der vorhergehenden Ansprüche,
wobei der freitragende obere Zwischeneckbeschlag (10) ein Gußteil ist.
- 55
17. Container nach einem der vorhergehenden Ansprüche,
wobei der freitragende obere Zwischeneckbeschlag (10) ein Fertigungsteil ist.
18. Oberer Zwischeneckbeschlag (10) für einen offenseitigen Frachtcontainer nach einem der Ansprüche 1 bis 17,
wobei der Eckbeschlag (10) eine langgestreckte Form hat und einen freitragenden Arm aufweist, der einen ersten
und einen zweiten Endbereich hat, die einander gegenüberliegen, wobei der erste Endbereich eine obere Öffnung
für den Eingriff durch eine Lasthandhabungsvorrichtung zum Heben von 40 ft (12192 mm) Containern aufweist und
der zweite Endbereich an einem sich zu der Basisstruktur (5) des Containers nach unten erstreckenden vertikalen
Element (19) und an einem sich zu einem Endbereich des Containers horizontal erstreckenden horizontalen Element
(20) fixierbar ist.
19. Offenseitiger Frachtcontainer,
der einen Eckbeschlag (10) nach Anspruch 18 aufweist, wobei der Eckbeschlag (10) entlang der Oberseite des
Containers zwischen den Enden des Containers positioniert ist.
20. Container nach Anspruch 19,
der einen ersten und einen zweiten Eckbeschlag (10) jeweils nach Anspruch 18 aufweist, wobei die Eckbeschläge
(10) an derselben Seite des Containers entlang der Oberseite des Containers zwischen den Enden des Containers

positioniert sind.

21. Container nach Anspruch 19 oder 20,
der ferner gemäß den Ansprüchen 1 bis 17 ausgebildet ist.

5

Revendications

- 10
1. Conteneur de fret à côté ouvert, le conteneur comprenant une structure de base (5), un châssis structurel qui s'étend vers le haut depuis la structure de base (5) et des pièces de fixation d'angle incluant quatre pièces de fixation d'angles supérieurs intermédiaires (10) à un espacement longitudinal entre les centres de leurs ouvertures supérieures d'environ 11 985 mm pour permettre la manipulation du conteneur avec un équipement de manutention pour lever des conteneurs de 12 192 mm (40 pieds), un élément vertical (19) s'étendant vers le bas d'une pièce de fixation d'angle supérieur (10) à la structure de base (5) du conteneur, l'élément vertical (19) étant décalé vers l'extérieur dans une direction longitudinale par rapport à la pièce de fixation d'angle supérieur intermédiaire (10) d'une distance supérieure à 150 mm mesurée entre le centre de l'ouverture supérieure (12) de la pièce de fixation d'angle supérieur (10) et la face intérieure de l'élément vertical (19), laissant l'espace du côté longitudinalement intérieur de l'élément vertical (19) et sous la pièce de fixation d'angle supérieur intermédiaire (10) ouvert pour permettre l'accès par le côté, **caractérisé en ce qu'**au moins l'une des pièces de fixation d'angles supérieurs intermédiaires (10) au-dessus d'un côté ouvert du conteneur est fixée structurellement en porte-à-faux au châssis structurel.
- 15
2. Conteneur selon la revendication 1, dans lequel des première et deuxième pièces de fixation d'angles supérieurs intermédiaires (10) au-dessus du même côté ouvert du conteneur et vers les extrémités opposées du conteneur sont fixées chacune en porte-à-faux, le châssis structurel comprenant un premier élément vertical (19) s'étendant vers le bas de la première pièce de fixation d'angle supérieur intermédiaire (10) à la structure de base (5) du conteneur et un deuxième élément vertical (19) s'étendant vers le bas de la deuxième pièce de fixation d'angle supérieur intermédiaire (10) à la structure de base du conteneur (5), chaque élément vertical étant décalé vers l'extérieur dans une direction longitudinale
- 20
3. Conteneur selon la revendication 2, dans lequel les première et deuxième pièces de fixation d'angles supérieurs intermédiaires (10) sont à la même distance des extrémités adjacentes respectives du conteneur.
- 25
4. Conteneur selon la revendication 2 ou 3, dans lequel les faces intérieures des premier et deuxième éléments verticaux (19) sont à la même distance des extrémités adjacentes respectives du conteneur.
- 30
5. Conteneur selon la revendication 2, dans lequel les première et deuxième pièces de fixation d'angles supérieurs intermédiaires (10) sont à des distances différentes des extrémités adjacentes respectives du conteneur.
- 35
6. Conteneur selon la revendication 2 ou 5, dans lequel les faces intérieures des premier et deuxième éléments verticaux (19) sont à des distances différentes des extrémités adjacentes respectives du conteneur.
- 40
7. Conteneur selon l'une quelconque des revendications 2 à 6, dans lequel les deux côtés du conteneur sont à côté ouvert et des troisième et quatrième pièces de fixation d'angles supérieurs intermédiaires (10) sont placées au-dessus de l'autre côté du conteneur sensiblement de la même manière que les première et deuxième pièces de fixation d'angles supérieurs intermédiaires (10).
- 45
8. Conteneur selon l'une quelconque des revendications 2 à 7, dans lequel la longueur de l'espace entre les éléments verticaux (19) décalés par rapport aux première et deuxième pièces de fixation d'angles supérieurs intermédiaires est supérieure à 12 300 mm.
- 50
9. Conteneur selon l'une quelconque des revendications 2 à 7, dans lequel la longueur de l'espace entre les éléments verticaux (19) décalés par rapport aux première et deuxième pièces de fixation d'angles supérieurs intermédiaires (10) est supérieure à 12 600 mm.
- 55
10. Conteneur selon l'une quelconque des revendications précédentes, dans lequel l'élément vertical (19) est décalé par rapport à la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) d'une distance supérieure à 300 mm.

EP 1 633 661 B1

11. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la largeur interne du conteneur dans la région de l'élément vertical (19) est supérieure à 2420 mm.
- 5 12. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la largeur interne du conteneur dans la région de l'élément vertical (19) est supérieure à 2430 mm.
- 10 13. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) est fixée en porte-à-faux à la fois à l'élément vertical (19) s'étendant vers le bas jusqu'à la structure de base (5) et à un élément horizontal (20) s'étendant longitudinalement vers l'extérieur jusqu'à une partie d'extrémité du conteneur.
14. Conteneur selon la revendication 13, dans lequel la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) supporte une traverse horizontale (20) qui s'étend d'un bord à l'autre du sommet du conteneur.
- 15 15. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) est en une pièce.
16. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) est une pièce moulée.
- 20 17. Conteneur selon l'une quelconque des revendications précédentes, dans lequel la pièce de fixation d'angle supérieur intermédiaire en porte-à-faux (10) est une fabrication.
- 25 18. Pièce de fixation d'angle supérieur intermédiaire (10) pour conteneur de fret à côté ouvert selon l'une quelconque des revendications 1 à 17, la pièce de fixation d'angle (10) étant de forme allongée et comprenant un bras en porte-à-faux ayant des première et deuxième parties d'extrémité opposées, la première partie d'extrémité comprenant une ouverture supérieure permettant la coopération avec un équipement de manutention pour lever des conteneurs de 12 192 mm (40 pieds) et la deuxième partie d'extrémité pouvant être fixée à un élément vertical (19) s'étendant vers le bas jusqu'à la structure de base (5) du conteneur et à un élément horizontal (20) s'étendant horizontalement jusqu'à une partie d'extrémité du conteneur.
- 30 19. Conteneur de fret à côté ouvert comprenant une pièce de fixation d'angle (10) selon la revendication 18, la pièce de fixation d'angle (10) étant positionnée le long du sommet du conteneur, à mi-distance entre les extrémités du conteneur.
- 35 20. Conteneur selon la revendication 19, comprenant des première et deuxième pièces de fixation d'angles (10), chacune selon la revendication 18, les pièces de fixation d'angles (10) étant positionnées du même côté du conteneur le long du sommet du conteneur, à mi-distance entre les extrémités du conteneur.
- 40 21. Conteneur selon la revendication 19 ou 20, et étant de plus conforme aux revendications 1 à 17.
- 45
- 50
- 55

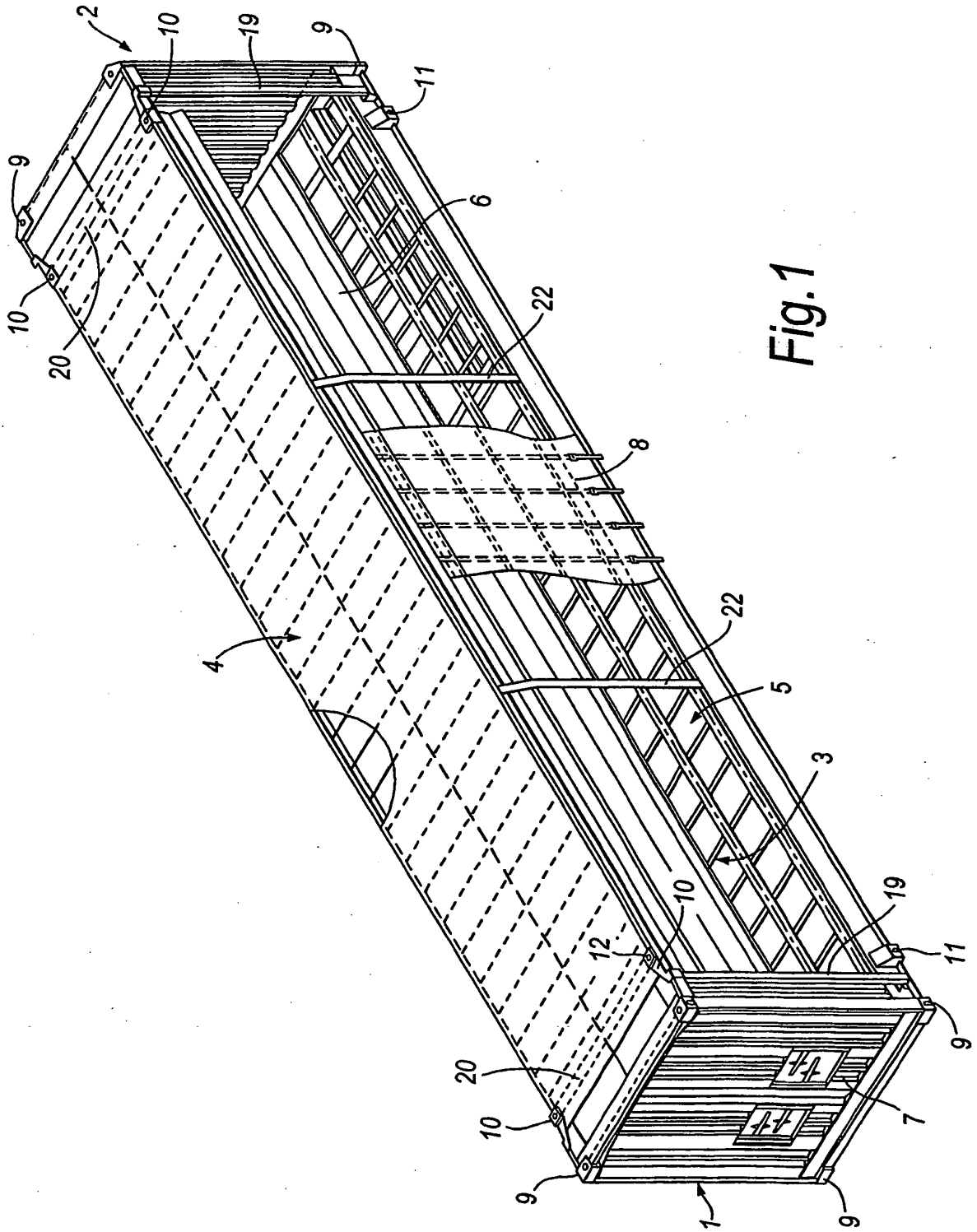


Fig. 1

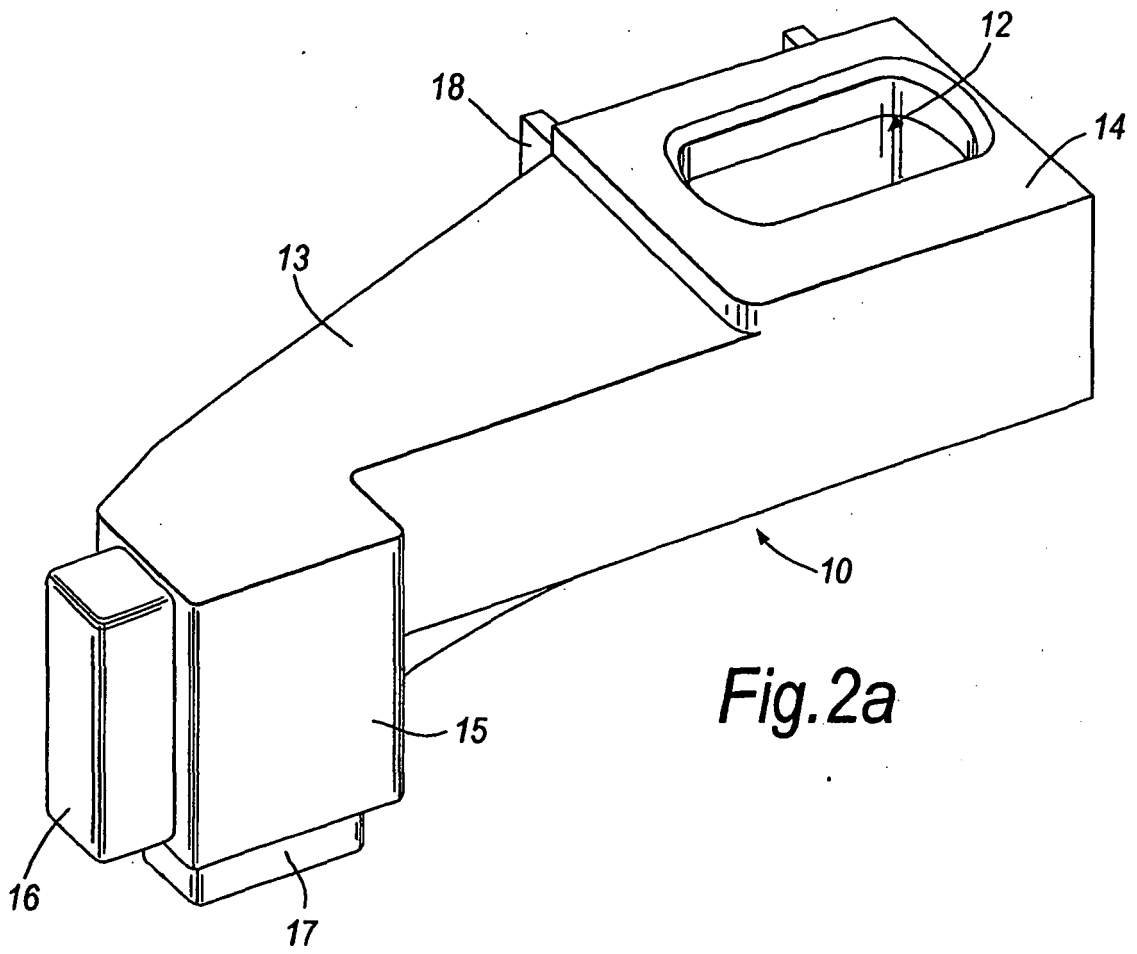


Fig. 2a

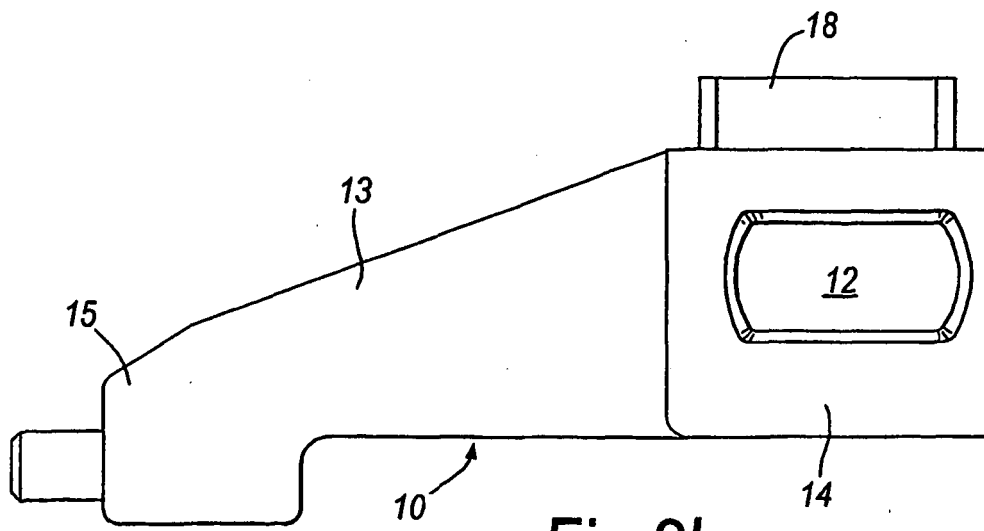


Fig. 2b

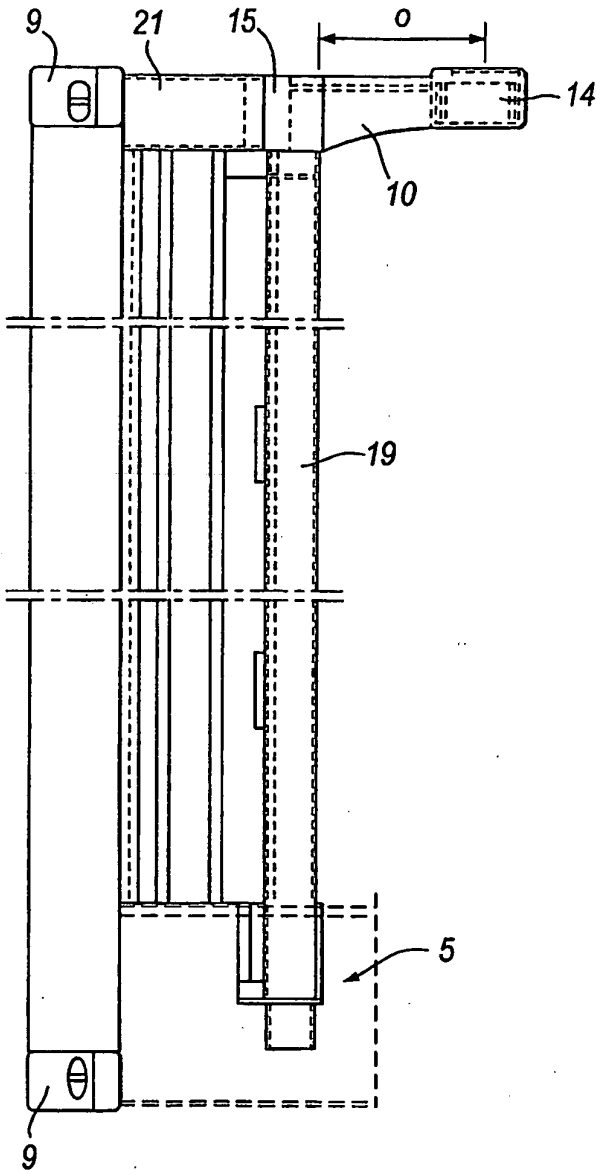


Fig. 3

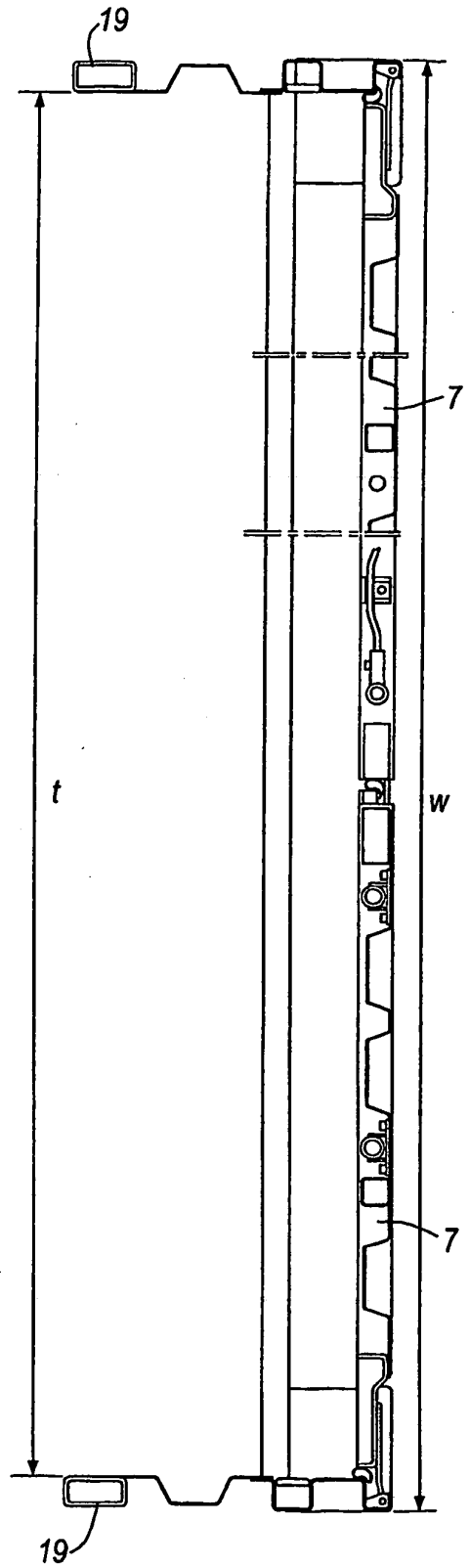


Fig. 5

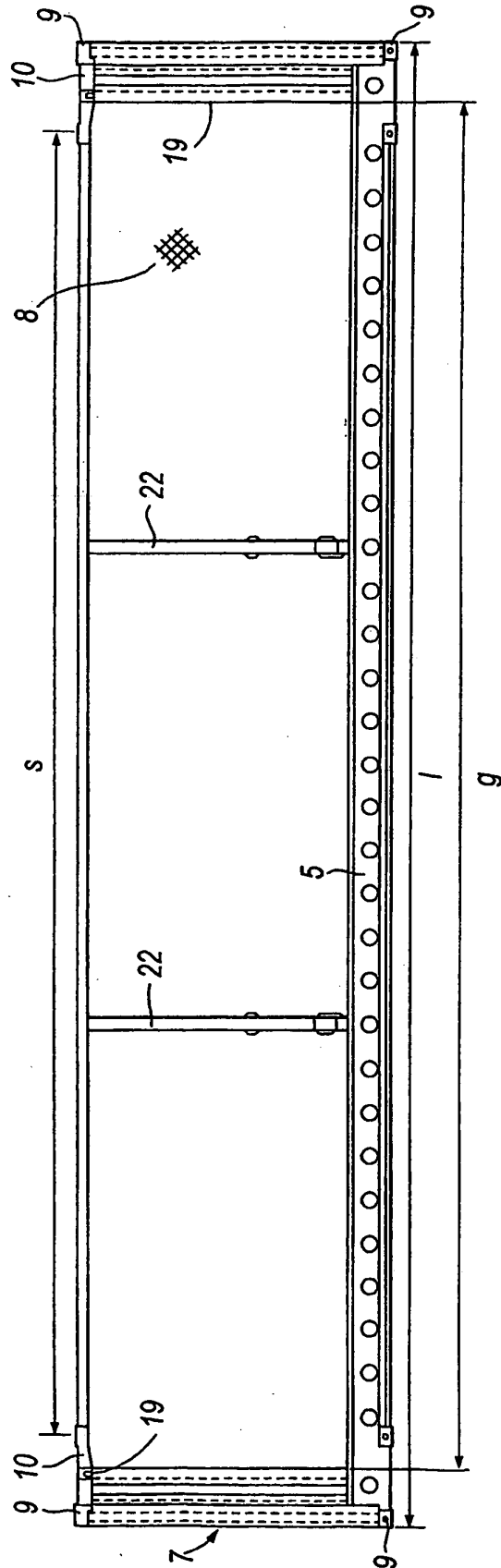


Fig.4

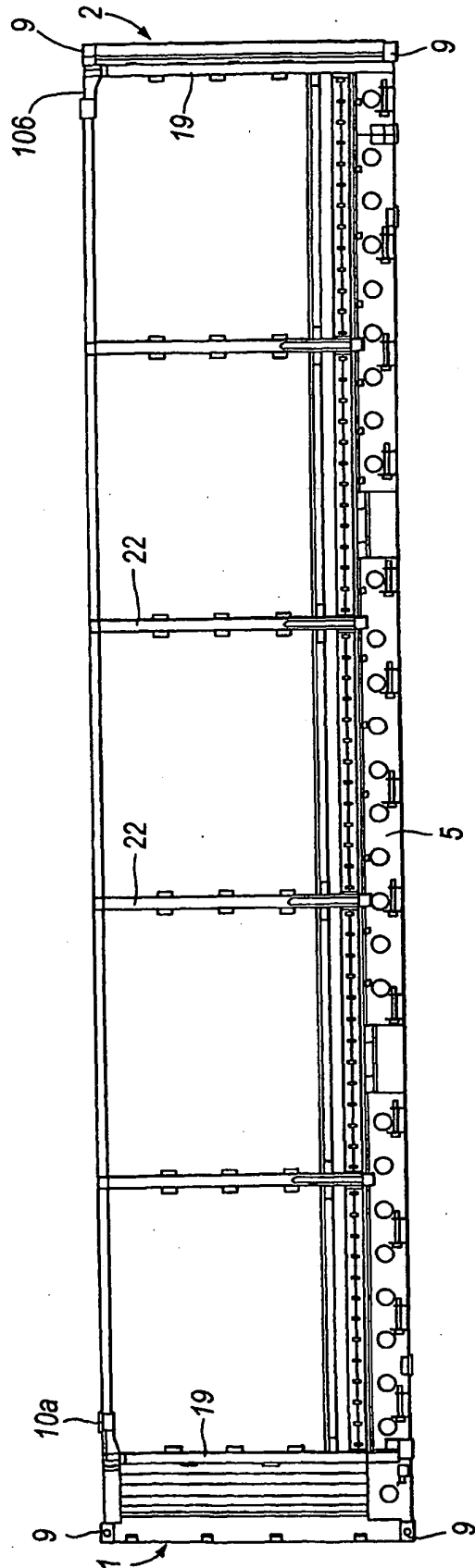


Fig.6

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

- GB 2368336 A [0008]