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DESCRIPTION

Field

[0001] The present invention relates to a collapsible intermodal container and a collapsible intermodal container assembly.

Background

[0002] Intermodal containers, also known as ISO containers or shipping containers, are used to store a wide range of goods for transportation. In general, an intermodal container is a rectangular steel box with doors on either end to provide access to the interior in which goods are stored. The intermodal container also has a casting on each corner for engagement with twistlocks and/or bridge clamps to lock the intermodal container into place or interlock with other intermodal containers when stacked together.

[0003] In international trade, there is usually a trade imbalance between an exporting country and an importing country. Typically, intermodal containers are loaded with goods at the exporting country and then transported to the importing country. However, once the intermodal containers arrive at the importing country and the goods are unloaded, the intermodal containers are transported back to the exporting country in an empty state for reuse due to the trade imbalance. The transportation of empty intermodal containers is highly inefficient and involves significant costs, especially in relation to fuel, handling, and storage. In certain circumstances, it can become more cost effective to simply store and/or discard the empty intermodal containers at the importing country rather than transporting them back for reuse.

[0004] Also, in domestic logistics activities, similar imbalances and thereby similar disadvantages can occur. For example, the transportation of empty intermodal containers to the manufacturer for loading of goods prior to exportation.

[0005] CN 203359247 U relates to a folded container. A top board can be rotated downwards and a bottom board can be rotated upwards. A first side board and a second side board draw close to the middle incessantly. Meanwhile, a limiting connection is arranged to ensure that the top board, the bottom board, the first side board and the second side board are synchronous in the folding process.

[0006] WO 2013/025676 A1 provides a reversibly foldable freight container having a roof structure, a floor structure and sidewall structures. The reversibly foldable freight container further includes a front wall and a rear wall, where the front wall includes front wall corner posts, a front door hinge on at least one of the front wall corner posts and a front door joined to the front door hinge. The rear wall includes rear wall corner posts, a hinge on the rear wall

corner posts and a rear wall door joined to the hinge, where the rear wall door can pivot on the hinge to extend adjacent an exterior surface of the sidewall structure or can pivot into the volume of the reversibly foldable freight container.

[0007] US 2010/025397 A1 refers to a foldable portable container provided with an integral mechanical mechanism for folding or unfolding the container. The integral mechanical drive mechanism is utilized to simultaneously angularly displace the opposing container end walls and the container roof attached thereto to fold or unfold the portable container.

[0008] WO 2008/104193 A1 refers to a folding container, having a first and a second side wall, a top, a bottom, a face and a back, wherein the first side wall can be displaced along the top, and the second side wall can be displaced along the bottom such that the side parts can be displaced toward the inside of container until they are positioned parallel to the bottom. The top and the bottom are equipped with longitudinal rails extending parallel at a distance to each other for a rolling support of the first side wall that can be displaced on the top, and for a rolling support of the second side wall that can be displaced on the bottom, wherein tension springs are integrated in the longitudinal rails, tension being applied to said springs in an unfolded container, and the tension being removed in a folded container.

Object of Invention

[0009] It is an object of the present invention to substantially overcome or ameliorate one or more of the above disadvantages, or at least provide a useful alternative.

Summary of Invention

[0010] In accordance with the present invention, there is provided a collapsible intermodal container as defined in claim 1, comprising:

first and second opposing parallel side walls, the first side wall being connected to the second side wall such that the collapsible intermodal container is configurable between an erected configuration in which the first and second side walls are spaced apart by a first distance to define an interior for storing goods, and a collapsed configuration in which the first and second side walls are spaced apart by a second distance which is less than the first distance; and

front and rear end assemblies for closing front and rear ends of the container in the erected configuration and for controlling access to the interior of the container, each of the front and rear end assemblies being hingedly attached to the first side wall,

wherein, when the collapsible intermodal container is in the erected configuration, the front and rear end assemblies are engageable with the first and/or second side walls to secure the front side wall with respect to the second side wall, and, when the collapsible intermodal container is

in the collapsed configuration, the front and rear end assemblies are engageable with the first side wall and/or with at least a further collapsible intermodal container to secure the first side wall with respect to the further collapsible intermodal container.

[0011] Each of the front and rear end assemblies is pivotable between:

a closed position in which the respective end assembly extends substantially perpendicularly from the first side wall, and

an open position in which the respective end assembly extends substantially parallel and adjacent to the first side wall. That is, each of the end assemblies are pivoted via its respective hinged connection to the first side wall to be folded back against, and therefore to be substantially parallel to, an outer side of the first side wall in the open position.

[0012] When the collapsible intermodal container is in the collapsed configuration, the front and rear end assemblies may be further engageable with the second side wall to locate the second side wall between the front and rear end assemblies.

[0013] Each of the first and second side walls may comprise:

upper and lower forwardly extending members; and

upper and lower rearwardly extending members,

wherein the upper and lower forwardly extending members of the first and second side walls are adapted to engage with the front end assembly and the upper and lower rearwardly extending members of the first and second side walls are adapted to engage with the rear end assembly such that the first and second side walls are substantially supported by the front and rear end assemblies.

[0014] Each of the front and rear end assemblies may preferably comprise a rigid flap hingedly attached to a respective second side upright and pivotable to attach to the second side wall, and wherein each of the front and rear assemblies may comprise a peripheral rigid frame comprising:

first and second side uprights, each of the first and second side uprights having upper and lower ends;

four corner parts, preferably a corner casting for twistlock and/or clamp engagement, respectively mounted to the ends of the first and second side uprights; and

upper and lower cross bars, the upper cross bar extending from the corner part mounted to

the upper end of the first side upright to the corner part mounted to the upper end of the second side upright, and the lower cross bar extending from the corner part mounted to the lower end of the first side upright to the corner part mounted to the lower end of the second side upright. In an end assembly having one or more doors for accessing the interior of the container in the erected configuration, the one or more doors are typically supported in the peripheral rigid frame of the end assembly. An end assembly of the collapsible intermodal container not having any door preferably includes an end wall supported within the peripheral rigid frame.

[0015] When the upper and lower forwardly extending members of the first and second side walls are engaged with the front end assembly, each of the upper forwardly extending members may abut with one of the corner parts mounted to the upper ends of the first and second side uprights of the front end assembly or the upper cross bar of the front end assembly and each of the lower forwardly extending members may abut with one of the corner parts mounted to the lower ends of the first and second side uprights of the front end assembly or the lower cross bar of the front end assembly.

[0016] When the upper and lower rearwardly extending members of the first and second side walls are engaged with the rear end assembly, each of the upper rearwardly extending members may abut with one of the corner parts mounted to the upper ends of the first and second side uprights of the rear end assembly or the upper cross bar of the rear end assembly and each of the lower rearwardly extending member may abut with one of the corner parts mounted to the lower ends of the first and second side uprights of the rear end assembly or the lower cross bar of the rear end assembly.

[0017] Preferably, the collapsible intermodal container further comprises at least one lifting system, preferably a plurality of the lifting systems arranged spaced apart along a length of the first side wall, for use in configuring the container to the erected configuration. Each lifting system comprises an elongate, preferably flexible, line or tension member, such as a cable, cord, strap or chain or the like, for use in lifting an upper wall of the container into position when configuring the container to the erected configuration. In addition to the flexible line or tension member, the lifting system preferably also includes a roller mechanism for supporting travel of the flexible line or tension member as it is pulled or drawn and a hold member. One end region of the line or tension member is fastened or secured to a free edge region of the upper wall, from which the line or tension member then extends to pass through or over the roller mechanism to an outer side of the other side wall to which the upper wall is not hinged. The hold member is fixed or secured to an opposite end region of the line or tension member for an operator to hold and draw that line or tension member through or over the roller mechanism to lift the free edge region of the upper wall as the container is configured to the erected configuration. It will be noted, however, that the line or tension member of each lifting system may also be used in lowering the upper wall when the container is being configured to the collapsed configuration.

[0018] The at least one lifting system may include a track or rail attached to the outer side of the first side wall for guiding movement of the hold member as the collapsible intermodal container is configured to the erected configuration. The lifting system may further include a bracket that is attached to the outer side of the first side wall, preferably at or near the lower end thereof, to which the hold member may be fixed or secured when the intermodal container is in the erected configuration. This may assist to lock or hold the container is in the erected configuration; i.e. by fixing or securing the hold member to the bracket when the line or tension member is in the fully extended position with the upper wall lifted into a substantially horizontal posture.

[0019] In accordance with the present invention, there is provided a collapsible intermodal container assembly as defined in claim 11, comprising:

first and second collapsible intermodal containers according to any one of the embodiments of the collapsible intermodal container of the invention described above, each of the first and second collapsible intermodal containers being in the collapsed configuration,

wherein the front and rear end assemblies of the first collapsible intermodal container are engaged with the first side wall of the first collapsible intermodal container and the second side wall of the second collapsible intermodal container such that the first side wall of the first collapsible intermodal container is secured to the second side wall of the second collapsible intermodal container. and preferably further comprising third and fourth collapsible intermodal containers according to any one of the embodiments of the collapsible intermodal container of the invention described above,

wherein each of the third and fourth collapsible intermodal containers are in the collapsed configuration,

wherein each of the front and rear end assemblies of the third collapsible intermodal container extends substantially parallel and adjacent to the first side wall of the third collapsible intermodal container and each of the front and rear end assemblies of the fourth collapsible intermodal container extends substantially parallel and adjacent to the first side wall of the fourth collapsible intermodal container, and

wherein the front and rear end assemblies of the first collapsible intermodal container are further engaged with the third and fourth collapsible intermodal containers such that the third and fourth collapsible intermodal container are located between the front and rear end assemblies of the first collapsible intermodal container and substantially supported thereby.

[0020] The front and rear end assemblies of the first collapsible intermodal container may extend substantially perpendicularly from the first side wall of the first collapsible intermodal container to the second side wall of the second collapsible intermodal container, and wherein the front and rear end assemblies of the second collapsible intermodal container may extend substantially parallel and adjacent to the first side wall of the second collapsible intermodal

container and are located between the front and rear end assemblies of the first collapsible intermodal container.

[0021] The front and rear end assemblies may be further engaged with the second side wall of the first collapsible intermodal container and the first side wall of the second collapsible intermodal container such that the second side wall of the first collapsible intermodal container and the first side wall of the second collapsible intermodal container are located between the front and rear end assemblies of the first collapsible intermodal container.

[0022] When comprising the third and fourth collapsible intermodal container, the first, second, third and fourth collapsible intermodal containers may be in a sidewardly stacked formation such that the second side wall of the first collapsible intermodal container abuts with the front and rear end assemblies of the third collapsible intermodal container, the second side wall of the third collapsible intermodal container abuts with the front and rear end assemblies of the fourth collapsible intermodal container, and the second side wall of the fourth collapsible intermodal container abuts with the front and rear end assemblies of the second collapsible intermodal container.

[0023] An assembled distance may be between the first side wall of the first collapsible intermodal container and the second side wall of the second collapsible intermodal container is substantially equal to the first distance of the first intermodal container.

Brief Description of Drawings

[0024] Preferred embodiments of the invention will be described hereinafter, by way of example only, with reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a first embodiment of a collapsible intermodal container in the erected configuration with end assemblies or door assemblies in the closed position;

Fig. 1a is an enlarged partial view of a corner of the intermodal container of Fig. 1.

Fig. 2 is a perspective view of the collapsible intermodal container of Fig. 1 with the end assemblies or door assemblies in the open position;

Fig. 3 is a top view of the collapsible intermodal container of Fig. 2;

Fig. 4 is a first cross-sectional view of the collapsible intermodal container of Fig. 1;

Fig. 5 is a second cross-sectional view of the collapsible intermodal container of Fig. 1;

Fig. 6 is an enlarged front view of the collapsible intermodal container of Fig. 2;

Fig. 7 is a perspective view of the collapsible intermodal container of Fig. 2 configuring from the erected configuration to the collapsed configuration;

Fig. 8 is a top view of the collapsible intermodal container of Fig. 7;

Fig. 9 is an enlarged front view of the collapsible intermodal container of Fig. 7;

Fig. 10 is a perspective view of the collapsible intermodal container of Fig. 2 in the collapsed configuration;

Fig. 11 is top view of the collapsible intermodal container of Fig. 10;

Fig. 12 is an enlarged front view of the collapsible intermodal container of Fig. 10;

Fig. 13 is a perspective view of a second embodiment of a collapsible intermodal container in the erected configuration with end assemblies or door assemblies in the closed position;

Fig. 14 is an enlarged partial view of a lifting system or strap system of the collapsible intermodal container of Fig. 13;

Fig. 15 is an enlarged partial view of the lifting system or strap system of Fig. 14 with the collapsible intermodal container in the collapsed configuration;

Fig. 16 is an enlarged partial view of a foot hold and a bracket of the lifting system or strap system of Fig. 14;

Fig. 17 is a front view of the collapsible intermodal container of Fig. 13 with the end assemblies or door assemblies in the open position;

Fig. 18 is an enlarged view of Detail A of Fig. 17;

Fig. 19 is an enlarged view of Detail B of Fig. 17;

Fig. 20 is a front view of the collapsible intermodal container of Fig. 17 configuring from the collapsed configuration to the erected configuration;

Fig. 21 is a front view of the collapsible intermodal container of Fig. 17 in the collapsed configuration;

Fig. 22 is a perspective view of a collapsible intermodal container according to a third embodiment in the erected configuration the with end assemblies or door assemblies moved towards the closed position but not yet fully in the closed position;

Fig. 23 is an enlarged, more detailed perspective view in the region designated "B" of the collapsible intermodal container shown in Fig. 22;

Fig. 24 is an enlarged, more detailed perspective view in the region designated "C" of the collapsible intermodal container shown in Fig. 22;

Fig. 25 is a perspective view corresponding to the view shown in Fig. 23, but with the end assembly or door assembly of the collapsible intermodal container in the closed position;

Fig. 26 is a perspective view of four collapsible intermodal containers of Fig. 1 assembling to

form an embodiment of a collapsible intermodal container assembly, as one of the collapsible intermodal containers is in the erected configuration with door assemblies in the closed positions and the remaining collapsible intermodal containers are in the collapsed configurations with door assemblies in the open positions;

Fig. 27 is a perspective view of the collapsible intermodal containers of Fig. 26, as one of the collapsible intermodal containers are in the erected configuration with door assemblies in the open positions and the remaining collapsible intermodal containers are in the collapsed configurations with door assemblies in the open position;

Fig. 28 is a perspective view of the collapsible intermodal containers of Fig. 26, as one of the collapsible intermodal containers is configuring from the erected configuration to the collapsed configuration with door assemblies in the open positions and the remaining collapsible intermodal containers are in the collapsed configurations with door assemblies in the open positions;

Fig. 29 is a perspective view of the collapsible intermodal containers of Fig. 26, as all of the collapsible intermodal containers are in the collapsed configurations with door assemblies in the open positions;

Fig. 30 is a perspective view of the collapsible intermodal containers of Fig. 26, as one of the collapsible intermodal containers is in the collapsed configuration with door assemblies moving from the open positions to the closed positions and the remaining collapsible intermodal containers are in the collapsed configurations with door assemblies in the open positions;

Fig. 31 is a perspective view of the collapsible intermodal container assembly formed by the collapsible intermodal containers of Fig. 26;

Fig. 32 is another perspective view of the collapsible intermodal container assembly of Fig. 31 with door panels removed; and

Fig. 33 is an enlarged view of Detail C of Fig. 32.

Description of Embodiments

[0025] Figs. 1 to 12 of the accompanying drawings show a first embodiment of a collapsible intermodal container 10. The container 10 comprises a right side wall 12 and a left side wall 14. The side walls 12, 14 oppose each other and are substantially parallel to each other. Each of the side walls 12, 14 is formed from a rectangular corrugated steel panel which is surrounded by a rectangular steel frame. The right side wall 12 is defined by an upper longitudinal end 12a, a lower longitudinal end 12b, a front end 12c and a rear end 12d. The left side wall 14 is defined by an upper longitudinal end 14a, a lower longitudinal end 14b, a front end 14c and a rear end 14d.

[0026] As seen in Fig. 4, the right side wall 12 has a lower flange 12e which is disposed at the lower longitudinal end 12b and extends towards the lower longitudinal end 14b of the left side wall 14. The right side wall 12 further has three stop members 12f that are disposed at the upper longitudinal end 12a and are evenly spaced apart between the front end 12c and the rear end 12d. Each of the stop members 12f is formed from a steel channel and extends in an upward direction. The right side wall 12 further has eight pin-like protrusions 12g. Four of the protrusions 12g are disposed at the front end 12c and are evenly spaced apart between the longitudinal ends 12a, 12b. The other four protrusions 12g are disposed at the rear end 12d and are evenly spaced apart between the longitudinal ends 12a, 12b. Each of the protrusions 12g extends in a rightward (i.e. an outward) direction. As best seen in Fig. 9, the right side wall 12 further includes three round steel rods 12h disposed at the lower longitudinal end 12b and evenly spaced apart between the front end 12c and the rear end 12d. Each of the rods 12h extends substantially horizontally in a leftward direction towards the lower longitudinal end 14b of the left side wall 14. The right side wall 12 further has four engagement members in the form of four steel corner plates 12i. Two corner plates 12i are disposed at the front end 12c and extend in a forward direction. The other two plates 12i are disposed at the rear end 12d and extend in a rearward direction.

[0027] The left side wall 14 has an upper flange 14e which is disposed at the upper longitudinal end 14a and extends towards the upper longitudinal end 12a of the right side wall 12. The left side wall 14 further includes three round steel rods 14f that are disposed at the upper longitudinal end 14a and slightly above the upper flange 14e. The rods 14f are evenly spaced apart between the front end 14c and the rear end 14d. Each of the steel rods 14f extends substantially horizontally in a rightward direction towards and substantially aligned with a respective stop member 12f. The left side wall 14 further has four engagement members in the form of four steel corner plates 14g. Two corner plates 14g are disposed at the front end 14c and extend in a forward direction. The other two plates 14g are disposed at the rear end 14d and extend in a rearward direction.

[0028] The container 10 further comprises an upper wall 16 located between the right side wall 12 and the left side wall 14. The upper wall 16 is fabricated from a rectangular corrugated steel panel. The upper wall 16 is defined by a right longitudinal end 16a, a left longitudinal end 16b, a front end 16c and a rear end 16d. The left longitudinal end 16b is engageable with the upper flange 14e of the left side wall 14 for removable attachment (e.g., by screws and/or bolts). The upper wall 16 has eight lugs 16e disposed on the upper surface of the upper wall 16. The lugs 16e are evenly spaced apart between the front end 16c and the rear end 16d, and each lug 16e extends upwardly from the upper surface of the upper wall 16. As best seen in Figs 5 and 6, the upper wall 16 further has a right flange 16f disposed at the right longitudinal end 16a. The right flange 16f is hingedly attached to the upper longitudinal end 12a of the right side wall 12 such that the upper wall 16 is able to pivot in relation to the right side wall 12 via that hinged connection. As best shown in Figs. 6, 9 and 12, given that the right longitudinal end 16a of the upper wall 16 will abut with the upper longitudinal end 12a of the right side wall 12 as the upper wall 16 pivots to a substantially horizontal posture, it will be appreciated that the pivotal motion of the upper wall 16 is limited to about 90 degrees in relation to the right side wall 12.

[0029] The container 10 further comprises a lower wall 18 located between the right side wall 12 and the left side wall 14. The lower wall 18 is fabricated from steel and is substantially rectangular in shape. The lower wall 18 is defined by a right longitudinal end 18a, a left longitudinal end 18b, a front end 18c and a rear end 18d. The right longitudinal end 18a is engageable with the lower flange 12e of the right side wall 12 for removable attachment (e.g., by screws and/or bolts). The lower wall 18 has eight lugs 18e disposed on the lower surface of the lower wall 18. The lugs 18e are evenly spaced apart between the front end 18c and the rear end 18d, and each lug 18e extends downwardly from the lower surface of the lower wall 18.

[0030] As best seen in Figs. 4 and 5, in the depicted embodiment, the left longitudinal end 18b has a left flange 18f hingedly attached to the lower longitudinal end 14b of the left side wall 14 such that the lower wall 18 is able to pivot in relation to the left side wall 14 via that hinged connection. As best shown in Fig. 6, 9 and 12, given that the left longitudinal end 18b of the lower wall 18 will abut with the lower longitudinal end 14b of the left side wall 14 as the lower wall 18 pivots to a substantially horizontal posture, it will be appreciated that the pivotal motion of the lower wall 18 is limited to about 90 degrees in relation to the left side wall 14.

[0031] The container 10 further comprises eight upper link members 20 and eight lower link members 22. Each of the upper and lower link members 20, 22 is elongate and formed from steel. Each upper link member 20 has a first end 20a hingedly attached to the upper flange 14e and a second end 20b hingedly attached to a respective lug 16e of the upper wall 16 such that the upper link members 20 are able to pivot in relation to the left side wall 14. Each lower link member 22 has a first end 22a hingedly attached to the lower flange 12e and a second end 22b hingedly attached to a respective lug 18e of the lower wall 18 such that the lower link members 22 are able to pivot in relation to the right side wall 12.

[0032] The container 10 further comprises a front end assembly 24 and a rear end assembly 26, the front and rear end assemblies 24, 26 being designed for closing the front and rear ends of the container 10 in the erected configuration and for controlling access to the interior of the container 10. In this embodiment, the end assemblies 24, 26 include door panels for accessing the interior of the container 10 in the erected configuration. As such, the front and rear end assemblies 24, 26 are also referred to herein as front and rear door assemblies 24, 26. An end assembly of the collapsible intermodal container 10 not having any door will typically simply include an end wall supported within a peripheral rigid frame.

[0033] The front door assembly 24 comprises a rectangular peripheral rigid frame which is formed from steel and defines a doorway. The rigid frame of the front door assembly 24 has a right upright member 24a, a left upright member 24b, an upper cross-bar member 24c and a lower cross-bar member 24d. At each corner of the rigid frame of the front door assembly 24, there is disposed a corner casting 25 for engagement with twistlocks and/or bridge clamps. In the depicted embodiment, the left member 24b is hingedly attached to the front end 14c of the left side wall 14 such that the front door assembly 24 is able to pivot in relation to the left side

wall 14. Specifically, the front door assembly 24 is able to pivot from a closed position in which the front door assembly 24 extends substantially perpendicularly from the left side wall 14 (see Fig. 1) and an open position in which the front door assembly 24 extends substantially parallel and adjacent the left side wall 14 (see Fig. 2). The front door assembly 24 further comprises a right door panel 24e hingedly attached to the right member 24a and a left door panel 24f hingedly attached to the left member 24b such that the door panels 24e, 24f are able to open and close the doorway in a similar manner to French doors.

[0034] With reference to Figs. 1 and 1a, the front door assembly 24 further comprises a flap member 24g in the form of an elongate planar steel piece. The flap member 24g is hingedly attached to the right member 24a along one of its longitudinal sides such that flap member 24g is able to pivot in relation to the right member 24a. The flap member 24g has four openings 24h that are evenly spaced apart along its length and each opening 24h is adapted to receive a respective protrusion 12g on the front end 12c for removable attachment of the right member 24a of the front door assembly 24 to the front end 12c of the right side wall 12. The front door assembly 24 further comprises four corner brackets 24z disposed at each corner. As best seen in Fig. 1a, each corner bracket 24z defines an opening for slidably receiving a respective corner plate 12i, 14g on the front ends 12c, 14c such that the respective corner plate 12i, 14g abuts with an adjacent corner casting 25 when received.

[0035] Given that, in this depicted embodiment, the front door assembly 24 and the rear door assembly 26 are substantially identical, only the front door assembly 24 is described above in detail. A person skilled in the art will understand that the rear door assembly 26 operates in substantially the same manner and comprises substantially identical components to those described above. However, in the rear door assembly 26, it will be appreciated that the left member is hingedly attached to the rear end 14d of the left side wall 14 and the openings of the flap member of the rear door assembly 26 are adapted to respectively receive the protrusions 12g on the rear end 12d for removable attachment of the right member of the rear door assembly 26 to the rear end 12d of the right side wall 12. Further, in the rear door assembly 26, the openings defined by the corner brackets are adapted to respectively receive the corner plates 12i, 14g on the rear ends 12d, 14d.

[0036] The container 10 is configurable between an erected configuration and a collapsed configuration.

[0037] As best shown in Figs. 1 to 6, in the erected configuration, the upper wall 16 extends from the upper longitudinal end 12a of the right side wall 12 to the upper longitudinal end 14a of the left side wall 14 such that the upper wall 16 is substantially perpendicular to the right and left side walls 12, 14. The left longitudinal end 16b abuts and engages the upper flange 14e of the left side wall 14. The upper link members 20 are located above the upper wall 16. Additionally, in the erected configuration, the lower wall 18 extends from the lower longitudinal end 14b of the left side wall 14 to the lower longitudinal end 12b of the right side wall 12 such that the lower wall 18 is substantially perpendicular to the right and left side walls 12, 14. The right longitudinal end 18a abuts and engages the lower flange 12e of the right side wall 12.

The lower link members 22 are below the lower wall 18.

[0038] In the erected configuration, the upper wall 16 is spaced apart from the lower wall 18 and the upper wall 16 extends parallel to the lower wall 18 such that an inner surface of the upper wall 16 is generally parallel to an inner surface of the lower wall 18. Accordingly, as best shown in Fig. 6, the right side wall 12 and the left side wall 14 are spaced apart by a first normal distance D1 of about 221 centimetres to define an interior 28 for storing goods. The first normal distance D1 (i.e., the width of the interior 28) is in accordance with requirements outlined by the International Standard Organization (ISO) in relation to standardised intermodal containers.

[0039] It will be appreciated that, in other embodiments, the first normal distance D1 may be between 201 centimetres to 226 centimetres.

[0040] Referring specifically to Figs. 1 and 1a, when the container 10 is in the erected configuration, the door assemblies 24, 26 are in the closed position with the rigid frame of the front door assembly 24 abutting the front ends 12c, 14c, 16c, 18c and the rigid frame of the rear door assembly 26 abutting with the rear ends 12d, 14d, 16d, 18d to enclose the interior 28. In addition, the openings of the flap members of the door assemblies 24, 26 receive the respective protrusions 12g for removable attachment. It will be appreciated that, once received, the protrusions 12g may be fixed to the flap members of the door assemblies 24, 26 by bolting or any other means. Furthermore, the openings defined by the corner brackets of the door assemblies 24, 26 receive the corner plates 12i, 14g such that the corner plates 12i, 14g abut with respective adjacent corner castings 25. This locates the front and rear door assemblies 24, 26 with respect to the side walls 12, 14 in the erected configuration and allows the walls 12, 14, 16, 18 to be supported by the rigid frames of the door assemblies 24, 26 such that the weight of the walls 12, 14, 16, 18 is transferred to the door assemblies 24, 26. This also allows the rigid frames of the door assemblies 24, 26 to lock the container 10 in the erected configuration by limiting movement between the right and left side walls 12, 14 and to provide the container 10 in the erected configuration with sufficient structural strength and rigidity. In the depicted embodiment, the structural strength of the container 10 in the erected configuration meets the requirements outlined by ISO in relation to standardised intermodal containers. It will be appreciated that access to the interior 28 can be controlled by opening and closing the door panels of each door assembly 24, 26.

[0041] To configure the container 10 from the erected configuration to the collapsed configuration, the protrusions 12g are removed from the openings of the flaps of the door assemblies 24, 26 by pivoting the flaps of the door assemblies 24, 26 away from the right wall 12. The corner plates 12i, 14g are then slidingly removed from the openings defined by the brackets of the door assemblies 24, 26 as the door assemblies 24, 26 are pivoted to the open positions (see Figs. 2, 3 and 6). Then, as the container 10 configures from the erected configuration to the collapsed configuration (see Figs. 7 to 9), the upper wall 16 pivots towards the right side wall 12 and the lower wall 18 pivots towards the left side wall 14. Consequently, the upper link members 20 pivots towards the left side wall 14 and the lower link members 22

pivots towards the right side wall 12. These rotations allow the right side wall 12 to move closer to the left side wall 14. In the depicted embodiment, as the container 10 configures from the erected configuration to the collapsed configuration, the upper wall 16 will still remain extending substantially parallel to the lower wall 18 as best shown in Fig. 9.

[0042] As best shown in Figs. 10 to 12, once the steel rods 14f abut with the stopping members 12f and the steel rods 12h abut with the lower longitudinal end 14b of the left side wall 14, the right side wall 12 will be prevented from further moving towards the left side wall 14 and the container 10 will be in the collapsed configuration. In this configuration, the upper wall 16 extends downwardly from the upper longitudinal end 12a of the right side wall 12. The upper link members 20 extend downwardly from the upper flange 14e and are located between the left side wall 14 and the upper wall 16. Additionally, in the collapsed configuration, the lower wall 18 extends upwardly from the lower longitudinal end 14b of the left side wall 14. The lower link members 22 extend upwardly from the lower flange 12e of the right side wall 12 and are located between the right side wall 12 and the lower wall 18.

[0043] In the collapsed configuration, the upper wall 16 is adjacent to, or abutted with, the lower wall 18. The upper wall 16 extends substantially parallel to the lower wall 18 such that the inner surface of the upper wall 16 is substantially parallel to the inner surface of the lower wall 18. Accordingly, the right side wall 12 and the left side wall 14 are spaced apart by a second normal distance D2 of about 33 centimetres, which is less than the first normal distance D1.

[0044] It will be appreciated, in other embodiments, the second normal distance D2 may be between 23 centimetres and 98 centimetres.

[0045] In an exemplary method, the container 10 is configured from the erected configuration to the collapsed configuration by manually moving the door assemblies 24, 26 to the open positions. Then, the right wall 12 is fixed relative to a stationary structure and the left wall 14 is moved towards the right wall 12 by an actuator, such as a hydraulic actuator, until the steel rods 14f abut with the stopping members 12f and the steel rods 12h abut with the lower longitudinal end 14b of the left side wall 14. To reverse this process (i.e., configure the container 10 from the collapsed configuration to the erected configuration), the right wall 12 is again fixed to the stationary structure and the left wall 14 is moved from the right wall 12 by the actuator until the link members 20, 22 prevent further movement of the left wall 14.

[0046] According to the depicted embodiment, the container 10 in the erected configuration meets the specifications required by ISO, specifically ISO 1496-1:2013 - Series 1 Freight Containers, and therefore can be readily used with existing transportation infrastructure. Further, when the container 10 configures from the erected configuration to the collapsed configuration, the container 10 is able to significantly reduce its width. This allows a greater number of empty containers 10 to be transported in a single shipment compared to standard intermodal containers. Also, this allows a greater number of containers 10 to be stored in a defined area compared to standard containers. Furthermore, the container 10 can be readily

configured between the erected configuration and the collapsed configuration without the need for assembly and/or removal of parts.

[0047] Figs. 13 to 21 of the accompanying drawings show a second embodiment of a collapsible intermodal container 10'. Features of the collapsible intermodal container 10' that are substantially identical or similar to those of the collapsible intermodal container 10 are provided with the same reference numerals.

[0048] The collapsible intermodal container 10' is substantially identical to the collapsible intermodal container 10. However, as best seen in Fig. 13, the collapsible intermodal container 10' further comprises four lifting systems 30a, 30b, 30c, 30d for use in configuring the container 10' to the erected configuration. Each of the lifting systems 30a, 30b, 30c, 30d includes an elongate flexible strap 32 for use in lifting the upper wall 16 into position when configuring the container 10' to the erected configuration. For this reason, the lifting systems 30a, 30b, 30c, 30d are also referred to herein as strap systems 30a, 30b, 30c, 30d, and one of these strap systems 30a will now be described in greater detail.

[0049] The strap system 30a comprises a strap 32 with one end 34 attached to the left longitudinal end 16b of the upper wall 16 (see Fig. 18) and another end 36 attached to a foot hold 38 (see Fig. 19). The foot hold 38 is in the form of a steel frame with a shoulder portion 40 and an aperture 42. The strap system 30a further comprises a roller mechanism 44 having a body 46 attached to the upper longitudinal end 14a and a pair of opposing rollers 48, 50 rotatably attached to the body 46 such that the roller 48 is located on the outside of the left wall 14 and the roller 50 is located on the inside of the left wall 14. The strap 32 is threaded through the body 46 of the roller mechanism 44 and engaged with the rollers 48, 50 such that upward or downward movement of one of the ends 34, 36 of the strap 32 causes an opposite movement at the other end 34, 36. The strap system 30a further comprises a bracket 52 attached to the outside of the left wall 14 at or near the lower longitudinal end 14b. The bracket 52 has a pair of protruding members 53. Each of the protruding members 53 has an upwardly extending recess to receive a portion of the foot hold 38 for securement therewith. The strap system 30a further comprises a pair of guide rails 54 attached to the outside of the left wall 14. The guide rails 54 extend from the upper longitudinal end 14a to the bracket 52. Each guide rail 54 defines a channel which receives a portion of the foot hold 38 such that the foot hold 38 is able to slide upwardly and downwardly along the guide rails 54. It will be appreciated, however, that the guide rails 54 limit the sideward movement of the foot hold 38.

[0050] As best seen in Figs. 15 and 21, the container 10' is configured to the collapsed configuration. In this configuration, as the left longitudinal end 16b of the upper wall 16 is located towards the lower longitudinal end 14b of the left wall 14, the strap 32 causes the foot hold 38 to be located near the upper longitudinal end 14a of the left wall 14.

[0051] To configure the container 10' to the erected configuration, the foot hold 38 is slidably moved downwards along the guide rails 54 by a user. This causes the strap 32 to pull the left longitudinal end 16b in an upward direction as best seen in Fig. 20. When the foot hold 38 is

near the bracket 52, the user stands on the shoulder portion 40 of the foot hold 38 to force the container 10' into the erected configuration. Then, as best seen in Figs. 13, 14, and 16 to 19, the foot hold 38 is manipulated such that the pair of protruding members 53 extend through the aperture 42 of the foot hold 38 such that the recesses of the protruding members 53 receive portions of the foot hold 38. This effectively locks the container 10' in the erected configuration.

[0052] It will be appreciated that, in order to unlock the container 10' from the erected configuration, the user will stand on the shoulder portion 40 of the foot hold 38 to remove portions of the foot hold 38 from the recesses of the protruding members 53. Then, the user will manipulate the foot hold 38 so that the protruding member 53 are removed from the aperture 42 and the foot hold 38 is free to slide upwardly along the guide rails 54. This will allow the container 10' to configure to the collapsed configuration.

[0053] Given that, in this depicted embodiment, each of the strap system 30a, 30b, 30c, 30d are substantially identical, only the strap system 30a is described above in detail. A person skilled in the art will understand that the other strap systems 30b, 30c, 30d operate in substantially the same manner and comprises substantially identical components to those described above.

[0054] Figs. 22 to 25 of the accompanying drawings show a third embodiment of a collapsible intermodal container 10". The features of the collapsible intermodal container 10" that are substantially identical or correspond to those of the collapsible intermodal containers 10, 10' of the first and second embodiments are provided with the same reference numerals and will not be described further.

[0055] As can be seen in Figs. 22 and 23, this third embodiment of a collapsible intermodal container 10" differs in relation to the closure mechanism for locating and securing the front and rear door assemblies 24, 26 in the closed position when the collapsible intermodal container 10" is being configured to the erected configuration. In this embodiment, instead of a closure mechanism comprising a flap member 24g hingedly attached to the right upright member 24a of the front door assembly 24, with openings 24h adapted to receive respective protrusions 12g on the front end 12c of the right side wall 12, the closure mechanism comprises two closure levers 24i fixed to the front end 12c of the right side wall 12, spaced apart as upper and lower closure levers 24i. Each closure lever 24i has a handle 24j that is operable to extend a latch arm 24k for engaging a catch 24m that is fixed to the upright member 24a of the front door assembly 24 and aligned with the latch arm 24k. The handle 24j is further operable to retract the latch arm 24k as it engages the catch 24m to draw the front door assembly 24 into the closed position. An inner side of the door frame members 24a, 24b, 24c, 24d may include a flexible seal or gasket, such as a rubber bead, to cushion and seal the front door assembly 24 against the front ends of the walls 12, 14, 16, 18 in the closed position shown in Fig. 25.

[0056] It will be apparent from Fig. 24 that the rear door assembly 26 also has such a closure

mechanism with two closure levers 26i fixed to the rear end 12d of side wall 12, spaced apart as upper and lower closure levers 26i. Again, each closure lever 26i has a handle 26j that operates to extend a latch arm 26k to engage a catch 26m that is fixed to the upright 26a of the rear door assembly 26 and aligned with the latch arm 26k. The handle 26j is operable to retract the latch arm 26k when it engages the catch 26m to draw the rear door assembly 26 into the closed position.

[0057] Referring to Figs. 23 and 24, the intermodal container 10" of this embodiment includes engagement members formed as forwardly and rearwardly extending corner block members 12j that present a tapered end face 12k to matingly engage with or be received by complementary corner elements 24n, 26n of the front and rear door assemblies, respectively. In this way, the respective corner block members 12j cooperate with the corner elements 24n, 26n to locate the door assemblies 24, 26 correctly with respect to the side wall 12 as the door assemblies 24, 26 are moved into the closed position. Furthermore, the corner block members 12j abut with an adjacent corner casting 25 and allow the walls 12, 14, 16, 18 to be at least partly supported by the rigid frames of the door assemblies 24, 26. In this way, the weight of the walls 12, 14, 16, 18 is partly transferred to the door assemblies 24, 26. The corner block members 12j and corner elements 24n, 26n thus replace the corner plates 12i, 14g and the brackets 24z, 26z of the first embodiment. In this case, the forwardly and rearwardly extending corner block members 12j include a steel pin 12p that is captured but movable within a bore through those block members 12j. When each door assembly 24, 26 is in the closed position, the pin 12p may be driven (e.g. with a hammer) through the block 12j to project into a corresponding hole 25o provided in the corner casting 25. Accordingly, in addition to the closure levers 24i, 26i, the pins 12p operate to fix and lock the front and rear door assemblies 24, 26 in their closed positions.

[0058] Figs. 26 to 33 of the accompanying drawings show four collapsible intermodal containers 110a, 110b, 110c, 110d assembling together to form an embodiment of a collapsible intermodal container assembly 100 as shown in Figs. 31 to 33. In the depicted embodiment, each of the four collapsible intermodal containers 110a, 110b, 110c, 110d is identical to the collapsible intermodal container 10 described above. Accordingly, features of the collapsible intermodal containers 110a, 110b, 110c, 110d that are identical to those of the collapsible intermodal container 10 are provided with the same reference numerals.

[0059] In the depicted embodiment, when all the containers 110a, 110b, 110c, 110d are initially in the erected configurations and separated from each other, the sequential steps set out below are taken to form the collapsible intermodal container assembly 100.

[0060] In a first step, the door assemblies 24, 26 of the container 110d are moved to the open positions. The right wall 12 of the container 110d is then fixed relative to a stationary structure (not shown) and the left wall 14 of the container 110d is moved towards the right wall 12 of the container 110d until the container 110d is configured to the collapsed configuration.

[0061] In a second step, the right wall 12 of the container 110c is abutted against the door

assemblies 24, 26 of the container 110d. The door assemblies 24, 26 of the container 110c are moved to the open positions. As the right wall 12 of the container 110d remains fixed relative to the stationary structure, the left wall 14 of the container 110c is moved towards the right wall 12 of the container 110c until the container 110c is configured to the collapsed configuration.

[0062] In a third step, the right wall 12 of the container 110b is abutted against the door assemblies 24, 26 of the container 110c. The door assemblies 24, 26 of the container 110b are moved to the open positions. As the right wall 12 of the container 110d remains fixed relative to the stationary structure, the left wall 14 of the container 110b is moved towards the right wall 12 of the container 110b until the container 110b is configured to the collapsed configuration.

[0063] In a fourth step, as best seen in Fig. 26, the right wall 12 of the container 110a is abutted against the door assemblies 24, 26 of the container 110b. As best seen in Fig. 27, the door assemblies 24, 26 of the container 110a are moved to the open positions. As the right wall 12 of the container 110d remains fixed relative to the stationary structure, as best seen in Figs. 24 and 25, the left wall 14 of the container 110a is moved towards the right wall 12 of the container 110a until the container is configured to the collapsed configuration. As best seen in Fig. 29, the containers 110a, 110b, 110c, 110d are now in a sidewardly stacked formation.

[0064] In a fifth step, as best seen in Figs. 30 to 33, the door assemblies 24, 26 of the container 110a are moved to the closed positions such that at least the front ends 12c, 14c of the containers 110a, 110b, 110c, 110d abut with the rigid frame of the front door assembly 24 of the container 110a and the rear ends 12d, 14d of the containers 110a, 110b, 110c, 110d abut with the rigid frame of the rear door assembly 26 of the container 110a. It will be appreciated that the door assemblies 24, 26 of the container 110a in the closed positions will substantially limit forward and rearward movement of the containers 110a, 110b, 110c, 110d. Further, as best seen in Figs. 28 and 29, the openings defined by the corner brackets of the door assemblies 24, 26 of the container 110a receive the corner plates 14g of the container 110a and the corner plates 12i of the container 110d such that the corner plates 14g of the container 110a and the corner plates 12i of the container 110d abut with respective adjacent corner castings 25 of the door assemblies 24, 26 of the container 110a. This secures the left wall 14 of the container 110a with respect to the right wall 12 of the container 110d. Furthermore, the openings of the flap members of the door assemblies 24, 26 of the container 110a receive the protrusions 12g of the container 110d for removable attachment such that the door assemblies 24, 26 of the container 110a are locked in the closed positions. As best seen in Figs. 32 and 33, the corner plates 12i of the container 110a and the corner plates 14g of the container 110d abut with the upper and lower members of the rigid frames of the door assemblies 24, 26 such that the right wall 12 of the container 110a and the left wall 14 of the container 110d are located between the door assemblies 24, 26 of the container 110a and limited in relative vertical movement. Also, the corner plates 12i, 14g of the containers 110b, 110c abut with the upper and lower members of the rigid frames of the door assemblies 24, 26 of the container 110a such that the containers 110b, 110c are located between the door assemblies 24, 26 of the container 110a and limited in relative vertical movement.

[0065] The above five steps form the collapsible intermodal container assembly 100 as best seen in Fig. 31. It will be appreciated that all components of the containers 110b, 110c, 110d and the walls 12, 14, 16, 18 of the container 110a are substantially supported by the rigid frames of the door assemblies 24, 26 of the container 110a. In the depicted embodiment, the assembly 100 has the same periphery as the container 10 in the erected configuration and the structural strength of the assembly 100 meets the requirements outlined by ISO in relation to a standardised intermodal container. Also, it will be appreciated that left wall 14 of the container 110a and the right wall 12 of the container 110d are spaced apart by an assembled distance which is the same as the first normal distance D1 of the container 10 described above.

[0066] According to the depicted embodiment, the assembly 100 meets the specifications required by ISO, specifically ISO 1496-1:2013 - Series 1 Freight Containers, and therefore can be readily used with existing transportation infrastructure. Further, the assembly 100 allows up to four empty containers 110a, 110b, 110c, 110d to be transported in the same periphery as a single container.

REFERENCES CITED IN THE DESCRIPTION

Cited references

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Patent documents cited in the description

- [CN203359247U \[0005\]](#)
- [WO2013025676A1 \[0006\]](#)
- [US2010025397A1 \[0007\]](#)
- [WO2008104193A1 \[0008\]](#)

Patentkrav**1. Sammenklappelig, intermodal container (10), der omfatter:**

første og anden modstående, parallelle sidevægge (12, 14), hvor den første sidevæg (14) er forbundet med den anden sidevæg (12), således at den sammenklappelige, intermodale container (10) kan konfigureres mellem en oprejst konfiguration, hvori første og anden sidevægge (12, 14) er adskilt af en første afstand (D1) for at definere et indre (28) til oplagring af varer, og en sammenklappet konfiguration, hvori første og anden sidevægge (12, 14) er adskilt af en anden afstand (D2), der er mindre end den første afstand (D1); og

hvor for- og bagendesamlinger (24, 26) til lukning af containerens (10) for- og bagender i den oprejste konfiguration og til styring af adgang til det indre (28), hver af for- og bagendesamlingerne (24, 26) er hængslet til den første sidevæg (14), hvor, når den sammenklappelige, intermodale container (10) er i den oprejste konfiguration, for- og bagendesamlingerne (24, 26) kan gå i indgreb med den anden sidevæg (12) for at fastgøre den første sidevæg (14) i forhold til den anden sidevæg (12), og, når den sammenklappelige, intermodale container er i den sammenklappede konfiguration, for- og bagendesamlingerne (24, 26) kan gå i indgreb med mindst en yderligere sammenklappelig, intermodal container (10') for at fastgøre den første sidevæg (14) i forhold til den yderligere sammenklappelige, intermodale container (10'),

kendetegnet ved, at hver af for- og bagendesamlingerne (24, 26) kan dreje mellem: en lukket position, hvori den tilsvarende endesamling (24, 26) strækker sig i alt væsentligt vinkelret fra den første sidevæg (14), og en åben position, hvori den tilsvarende endesamling (24, 26) strækker sig i alt væsentligt parallelt med og stødende op til en udvendig side af den første sidevæg (14).

2. Sammenklappelig, intermodal container ifølge krav 1, hvor, når den sammenklappelige, intermodale container (10) er i den sammenklappede konfiguration, for- og

bagendesamlingerne (24, 26) endvidere kan gå i indgreb med den anden sidevæg (12) for at placere den anden sidevæg (12) mellem for- og bagendesamlingerne (24, 26).

3. Sammenklappelig, intermodal container ifølge krav 1 eller 2, hvor hver af første og anden sidevægge (12, 14) omfatter:

øvre og nedre fremadstrækkende elementer (12j); og

øvre og nedre bagudstrækkende elementer (12j),

5 hvor de øvre og nedre fremadstrækkende elementer (12j) af første og anden sidevægge (12, 14) er tilpasset til at gå i indgreb med forendesamlingen (24), og de øvre og nedre bagudstrækkende elementer (12j) af første og anden sidevægge (12, 14) er tilpasset til at gå i indgreb med bagendesamlingen (26), således at første og anden sidevægge (12, 14) i alt væsentligt understøttes af for- og bagendesamlingerne (24, 26).

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4. Sammenklappelig, intermodal container ifølge krav 3, hvor hver af for- og bagendesamlingerne (24, 26) fortrinsvis omfatter en stiv flap (24g, 26g) hængslet fastgjort til en tilsvarende anden sidestolpe (24a, 26a) og drejbar for fastgørelse til den anden sidevæg (12),
15 og hvor hver af for- og bagendesamlingerne (24, 26) omfatter en periferisk stiv ramme, der omfatter:

første og anden sidestolper (24a, 24b, 26a, 26b), hvor hver af første og anden sidestolper (24a, 24b, 26a, 26b) har øvre og nedre ender;

fire hjørnedele, fortrinsvis en hjørnestøbning (25) til drejelåsning og/eller

20 brofastspændingsindgreb, henholdsvis monteret på enderne af første og anden sidestolper (24a, 24b, 26a, 26b); og

øvre og nedre tværstænger (24c, 24d, 26c, 26d), hvor den øvre tværstang (24c, 26c)

strækker sig fra hjørnedelen (25) monteret på den øvre ende af den første sidestolpe

(24b, 26b) til hjørnedelen (25) monteret på den øvre ende af den anden sidestolpe (24a,

25 26b), og den nedre tværstang (24d, 26d) strækker sig fra hjørnedelen (25) monteret på den nedre ende af den første sidestolpe (24b, 26b) til hjørnedelen (25) monteret på den nedre ende af den anden sidestolpe (24a, 26a).

30 **5.** Sammenklappelig, intermodal container ifølge krav 4, hvor, når de øvre og nedre fremadstrækkende elementer (12j) af første og anden sidevægge (12, 14) er i indgreb med forendesamlingen (24), hvert af de øvre fremadstrækkende elementer (12j) ligger an mod én af hjørnedelene (25) monteret på de øvre ender af første og anden sidestolper (24a, 24b) af forendesamlingen (24) eller den øvre tværstang (24c) af forendesamlingen (24) og hvert af de

nedre fremadstrækkende elementer (12j) ligger an mod én af hjørnedelene (25) monteret på de nedre ender af den første og anden sidestolper (24a, 24b) af forendesamlingen (24) eller den nedre tværstang (24d) af forendesamlingen (24).

5 **6.** Sammenklappelig, intermodal container ifølge krav 4 eller 5, hvor, når de øvre og nedre bagudstrækkende elementer (12j) af første og anden sidevægge (12, 14) er i indgreb med bagendesamlingen (26), hvert af de øvre bagudstrækkende elementer (12j) ligger an mod én af hjørnedelene (25) monteret på de øvre ender af den første og anden sidestolper (26a, 26b) af bagendesamlingen (26) eller den øvre tværstang (26c) af bagendesamlingen (26) og hvert af de
10 nedre bagudstrækkende elementer (12j) ligger an mod én af hjørnedelene (25) monteret på de nedre ender af den første og anden sidestolper (26a, 26b) af bagendesamlingen (26) eller den nedre tværstang (26d) af bagendesamlingen (26).

7. Sammenklappelig, intermodal container ifølge et hvilket som helst af kravene 1 til 6, der
15 endvidere omfatter et eller flere løftesystemer, fortrinsvis en flerhed af løftesystemer (30a, 30b, 30c, 30d) anbragt med afstand langs en længde af den første sidevæg (14), til anvendelse i konfigurering af containeren (10) til den oprejste konfiguration, hvert løftesystem (30a, 30b, 30c, 30d) omfatter aflangt snor- eller spændingselement (32) til anvendelse ved løft af en øvre væg (16) af containeren (10) ved konfigurering af containeren (10) til den oprejste
20 konfiguration.

8. Sammenklappelig, intermodal container ifølge krav 7, hvor hvert løftesystem (30a, 30b, 30c, 30d) endvidere omfatter en rullemekanisme (44) til at understøtte bevægelse af det fleksible snor- og spændingselement (32), når der trækkes i det, og et holdeelement (38), således at en
25 operatør kan holde i og trække i det aflange snor- eller spændingselement (32);

 hvor ét endekområde af det aflange snor- og spændingselement (32) er fastgjort eller sikret til et frit kantområde af den øvre væg (16), hvorfra det aflange snor- eller spændingselement (32) strækker sig for at passere gennem eller over rullemekanismen (44) til en udvendig side af den anden sidevæg (12), og
30 hvor holdeelementet (38) er fastgjort til et modstående endekområde af det aflange snor- eller spændingselement (32), således at en operatør kan holde i og trække det aflange snor- eller spændingselement (32) gennem eller over rullemekanismen (44) for at løfte det frie kantområde af den øvre væg (16), når containeren (10) er konfigureret til den oprejste konfiguration, og

hvor hvert løftesystem (30a, 30b, 30c, 30d) fortrinsvis indbefatter et spor eller en skinne (54) fastgjort til den udvendige side af den første sidevæg (14) til at føre bevægelse af holdeelementet (38), når den sammenklappelige, intermodale container (10) er konfigureret til den oprejste konfiguration.

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9. Sammenklappelig, intermodal container ifølge krav 7 eller 8, hvor hvert løftesystem (30a, 30b, 30c, 30d) indbefatter et beslag (52) fastgjort til den udvendige side af den første sidevæg (14) i nærheden af den nedre ende af den første sidevæg (14), hvortil holdeelementet (38) er fikseret eller fastgjort, når den intermodale container (10) er i den oprejste konfiguration.

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10. Sammenklappelig, intermodal containeranordning, der omfatter:

første og anden sammenklappelige, intermodale containere (110a, 110b) ifølge et hvilket som helst af kravene 1 til 9, hvor hver af den første og anden sammenklappelige, intermodale containere (110a, 110b) er i den sammenklappede konfiguration,

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hvor for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a) er i indgreb med den første sidevæg (14) af den første sammenklappelige, intermodale container (110a) og den anden sidevæg (12) af den anden sammenklappelige, intermodale container (110b), således at den første sidevæg (14) af den første sammenklappelige, intermodale container (110a) er fastgjort til den anden sidevæg (12) af den anden sammenklappelige, intermodale container (112b), og fortrinsvis endvidere omfatter tredje og fjerde sammenklappelige, intermodale containere (110c, 110d) ifølge et hvilket som helst af kravene 1 til 9,

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hvor hver af den tredje og fjerde sammenklappelige, intermodale containere (110c, 110d) er i den sammenklappede konfiguration,

25

hvor hver af for- og bagendesamlingerne (24, 26) af den tredje sammenklappelige, intermodale container (110c) strækker sig i alt væsentligt parallelt med og stødende op til den første sidevæg (14) af den tredje sammenklappelige, intermodale container (110c) og hver af for- og bagendesamlingerne (24, 26) af den fjerde sammenklappelige, intermodale container (110d) strækker sig i alt væsentligt parallelt med og stødende op til den første sidevæg (14) af den fjerde sammenklappelige, intermodale container (110d), og

30

hvor for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a) endvidere er i indgreb med tredje og fjerde sammenklappelige, intermodale containere (110c, 110d), således at den tredje og fjerde sammenklappelige, intermodale containere (110c, 110d) befinder sig mellem for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a) og i alt væsentligt understøttes deraf.

11. Sammenklappelig, intermodal containeranordning ifølge krav 10, hvor for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a) strækker sig i alt væsentligt vinkelret fra den første sidevæg (14) af den første sammenklappelige, intermodale container (110a) til den anden sidevæg (12) af den anden sammenklappelige, intermodale container (110b), og hvor for- og bagendesamlingerne (24, 26) af den anden sammenklappelige, intermodale container (110b) strækker sig i alt væsentligt parallelt med og stødende op til den første sidevæg (14) af den anden sammenklappelige, intermodale container (110b) og befinder sig mellem for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a).

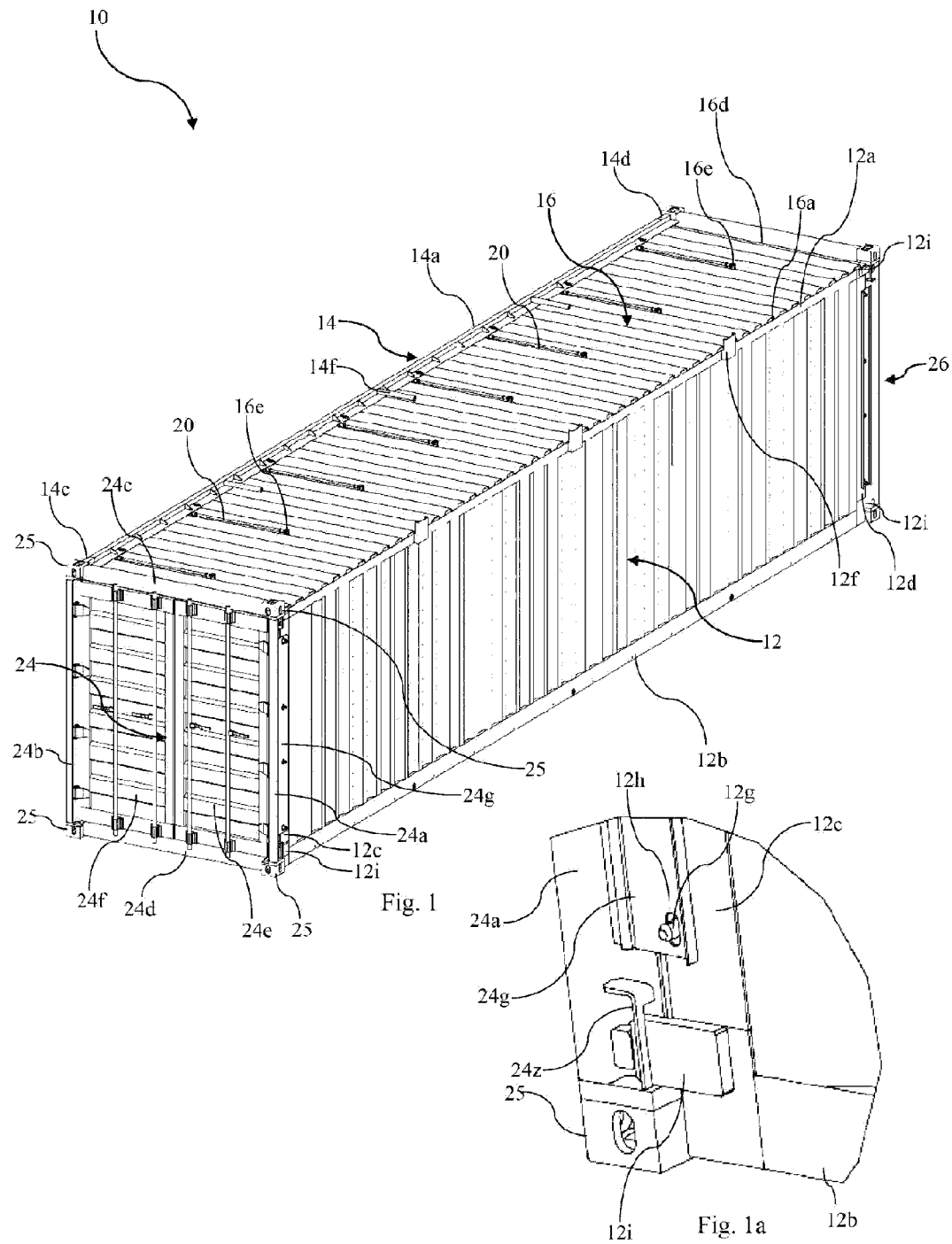
12. Sammenklappelig, intermodal containeranordning ifølge krav 10 eller 11, hvor for- og bagendesamlingerne (24, 26) endvidere er i indgreb med den anden sidevæg (12) af den første sammenklappelige, intermodale container (110a) og den første sidevæg (14) af den anden sammenklappelige, intermodale container (110b), således at den anden sidevæg (12) af den første sammenklappelige, intermodale container (110a) og den første sidevæg (14) af den anden sammenklappelige, intermodale container (110b) befinder sig mellem for- og bagendesamlingerne (24, 26) af den første sammenklappelige, intermodale container (110a).

13. Sammenklappelig, intermodal containeranordning ifølge krav 10, når den omfatter den tredje og fjerde sammenklappelige, intermodale container (110c, 110d), hvor den første, anden, tredje og fjerde sammenklappelige, intermodale container (110a, 110b, 110c, 110d) er i en sideværts stakket formation, således at den anden sidevæg (12) af den første sammenklappelige, intermodale container (110a) ligger an mod for- og bagendesamlingerne (24, 26) af den tredje sammenklappelige, intermodale container (110c), den anden sidevæg (12) af den tredje sammenklappelige, intermodale container (110c) ligger an mod for- og bagendesamlingerne (24, 26) af den fjerde sammenklappelige, intermodale container (110d),

og den anden sidevæg (12) af den fjerde sammenklappelige, intermodale container (110d) ligger an mod for- og bagendesamlingerne (24, 26) af den anden sammenklappelige, intermodale container (110b).

- 5 **14.** Sammenklappelig, intermodal containeranordning ifølge et hvilket som helst af kravene 10 til 13, hvor en sammensat afstand mellem den første sidevæg (14) af den første sammenklappelige, intermodale container (110a) og den anden sidevæg (12) af den anden sammenklappelige, intermodale container (110b) i alt væsentligt svarer til den første afstand (D1) for den første intermodale container (110a).

DRAWINGS



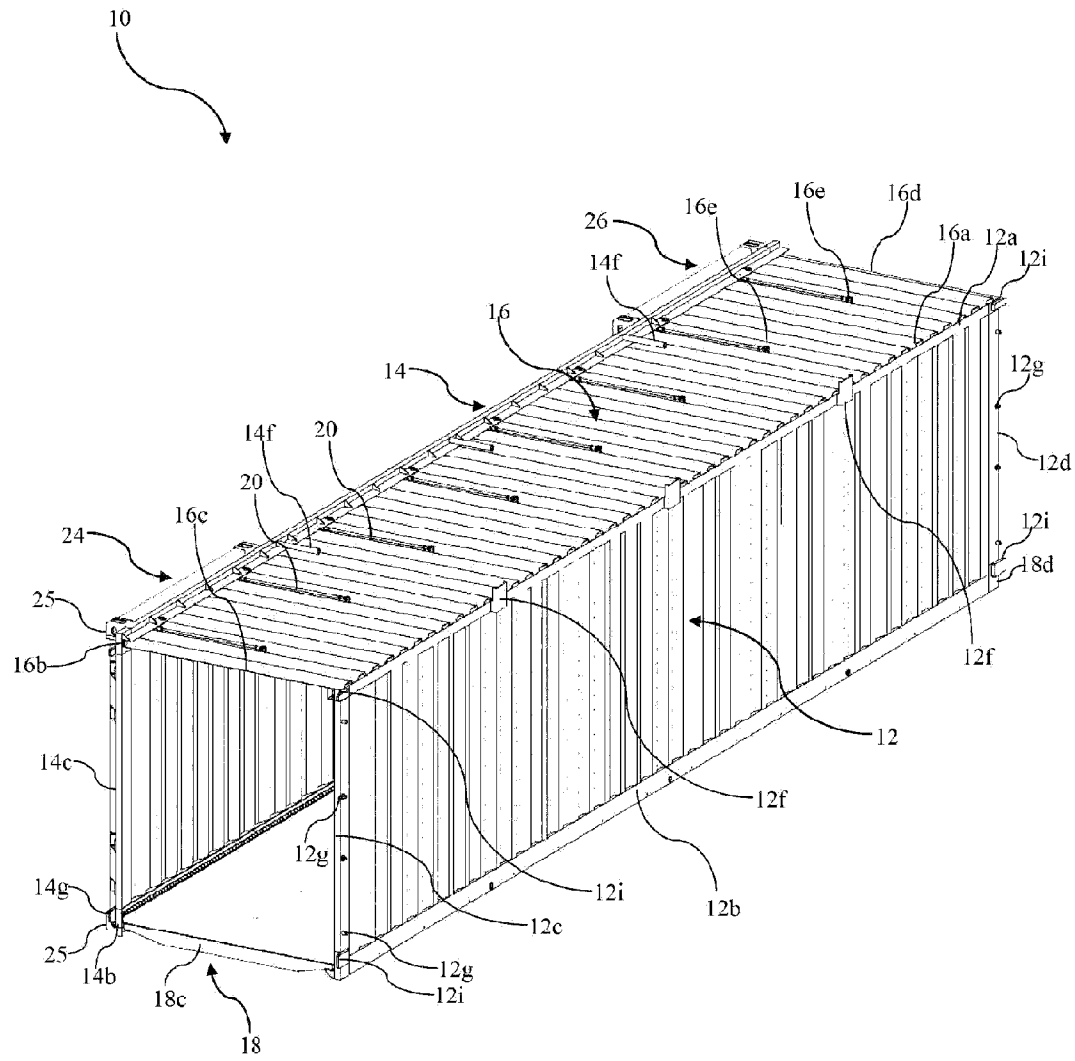
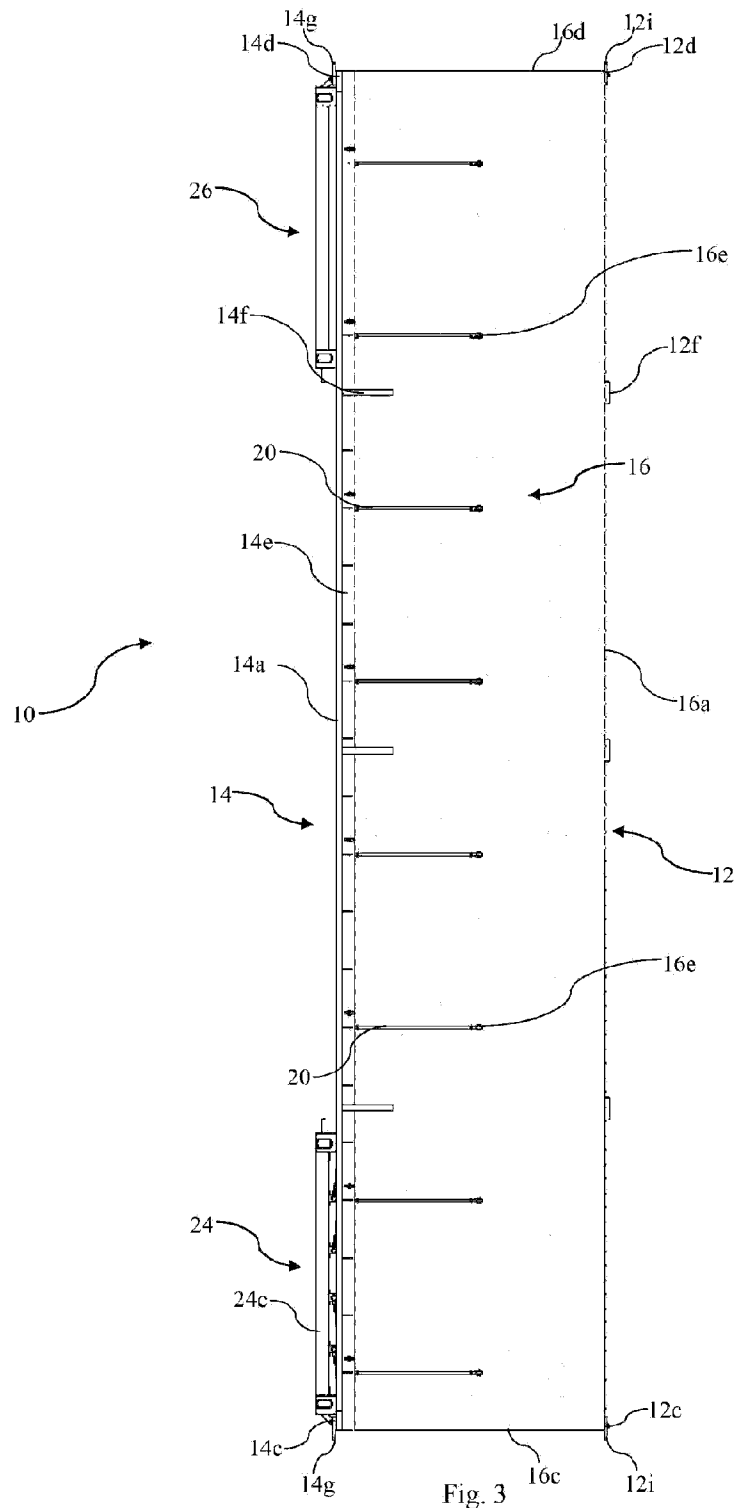


Fig. 2



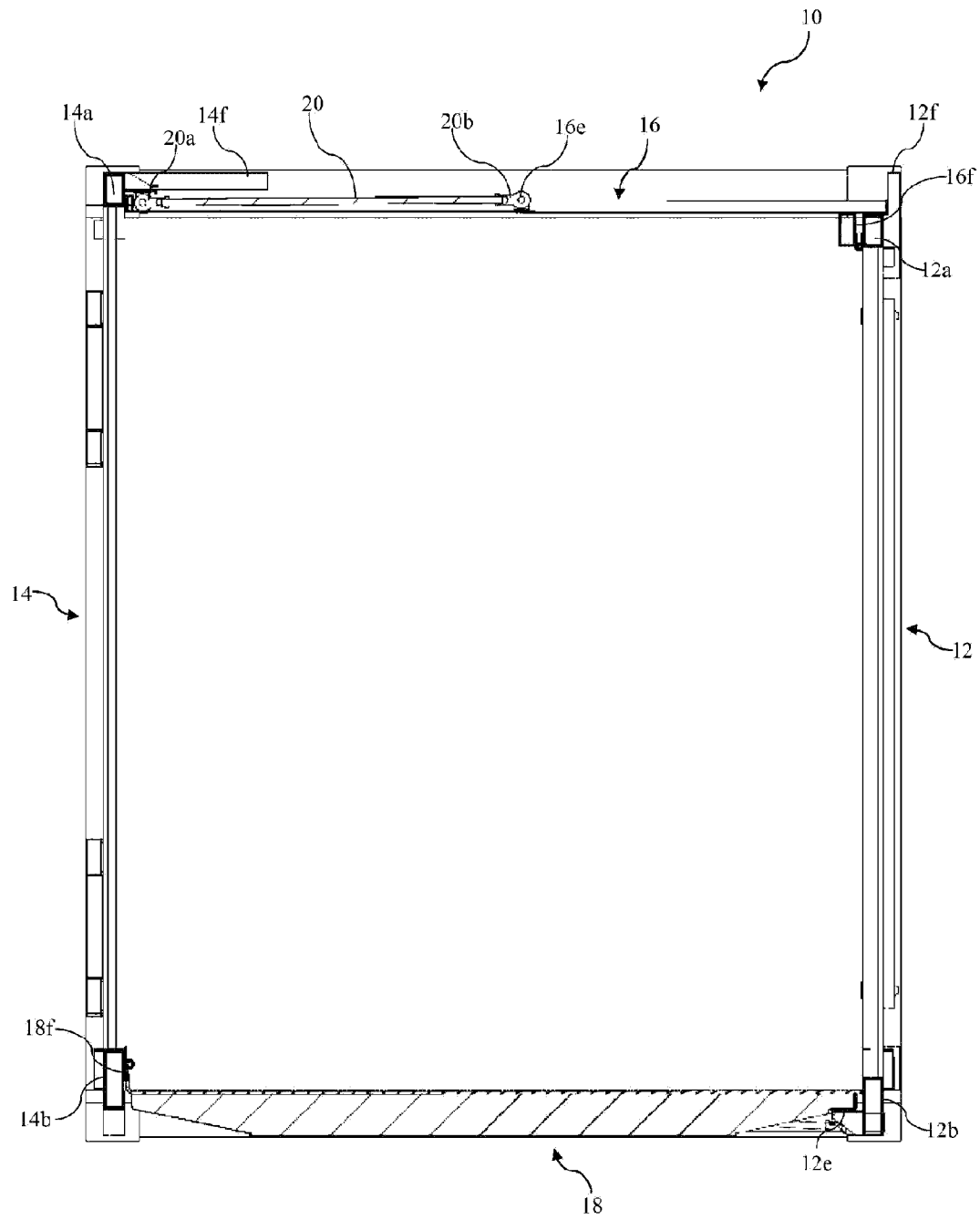
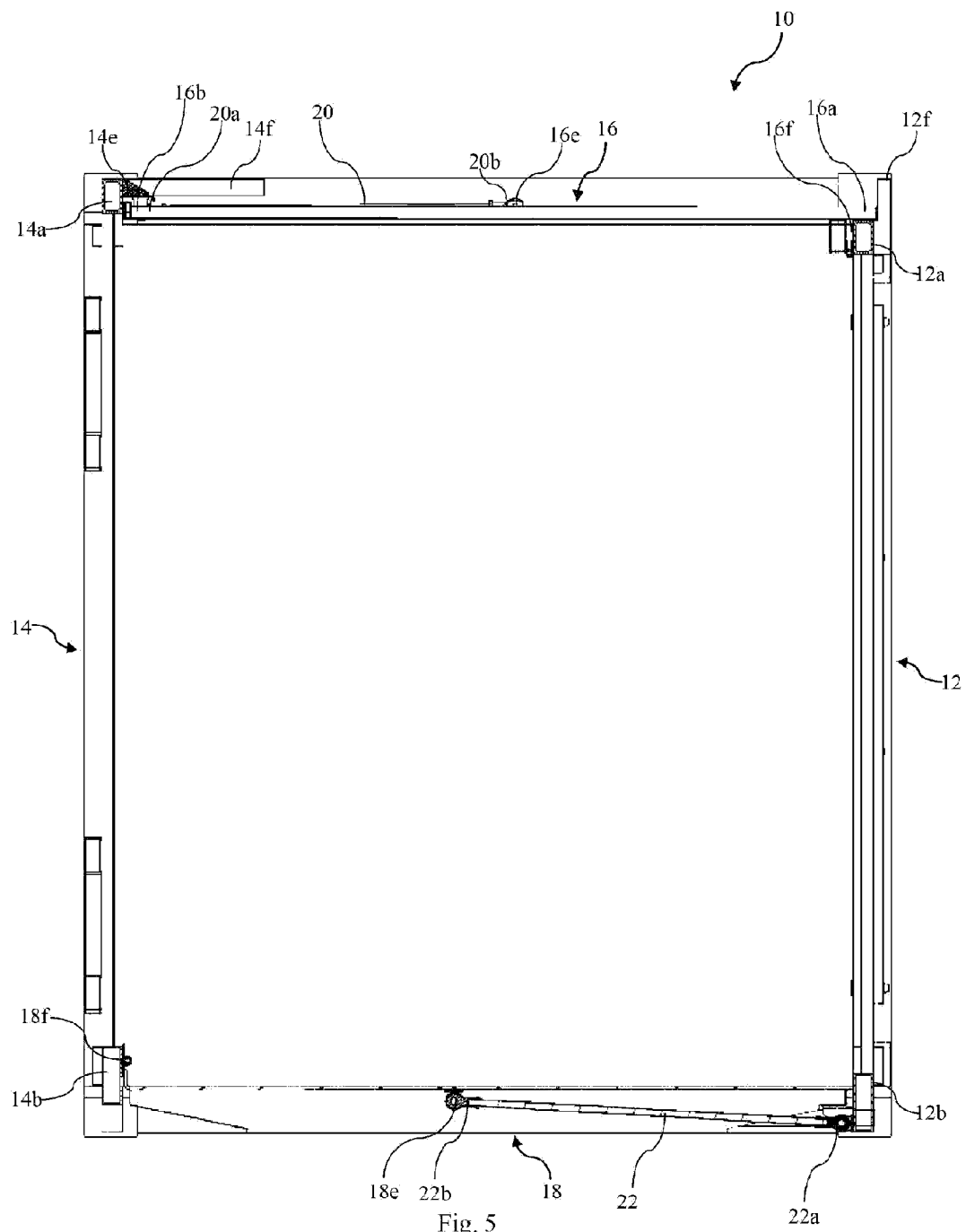


Fig. 4



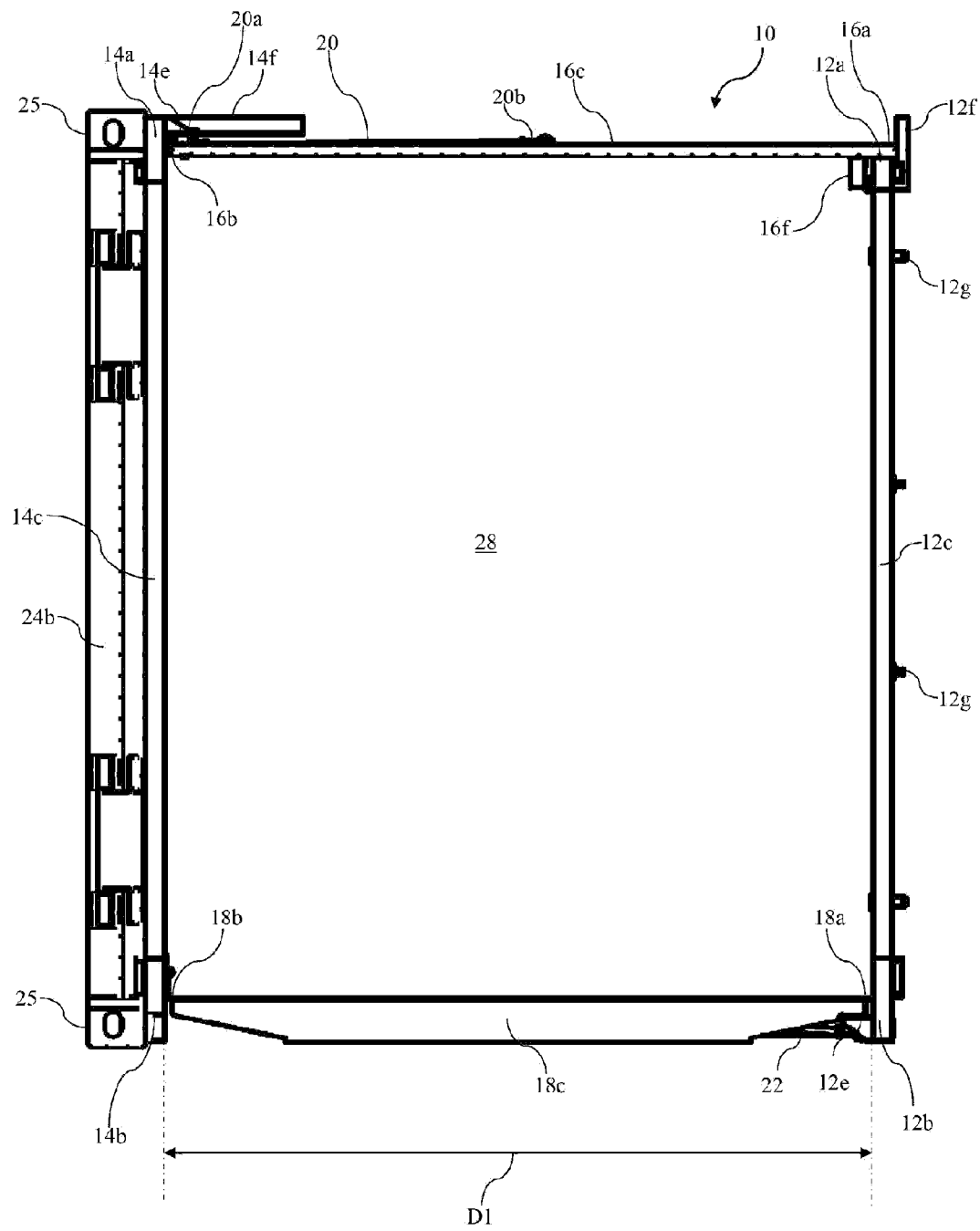


Fig. 6

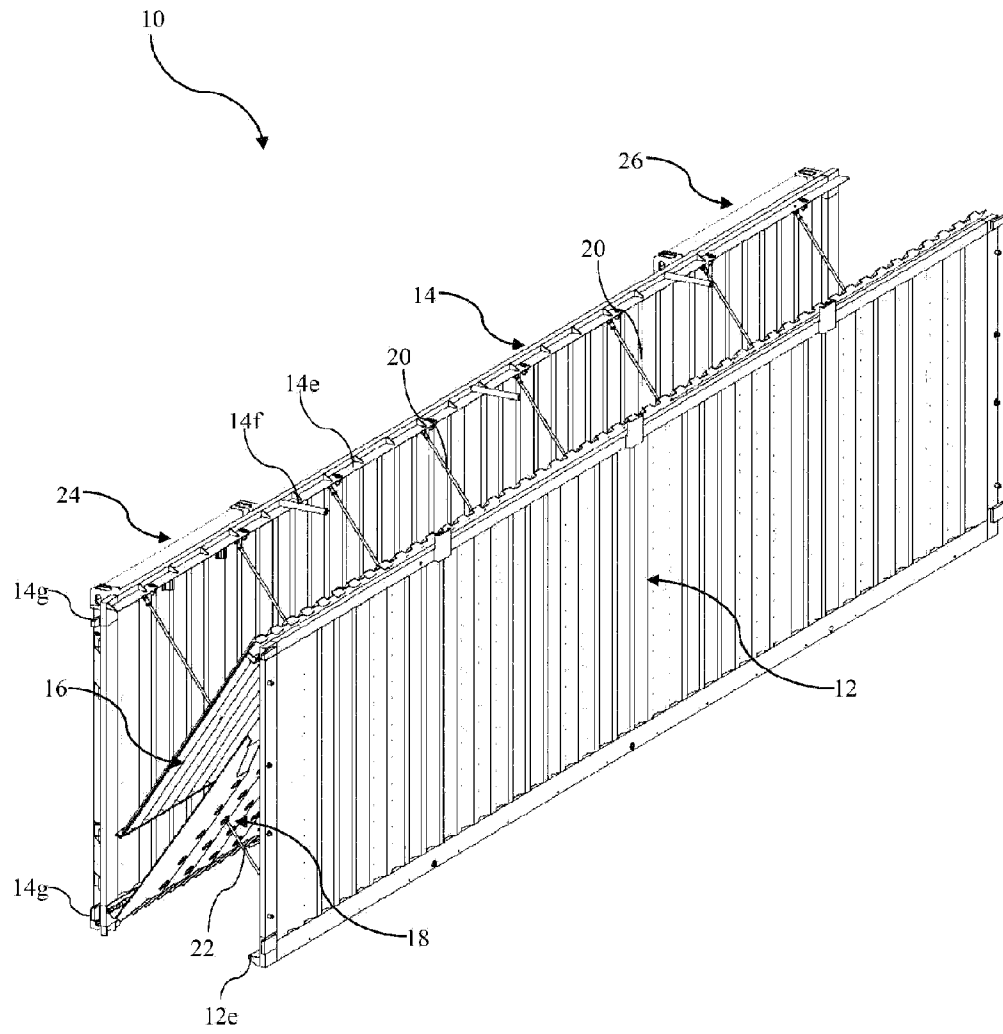


Fig. 7

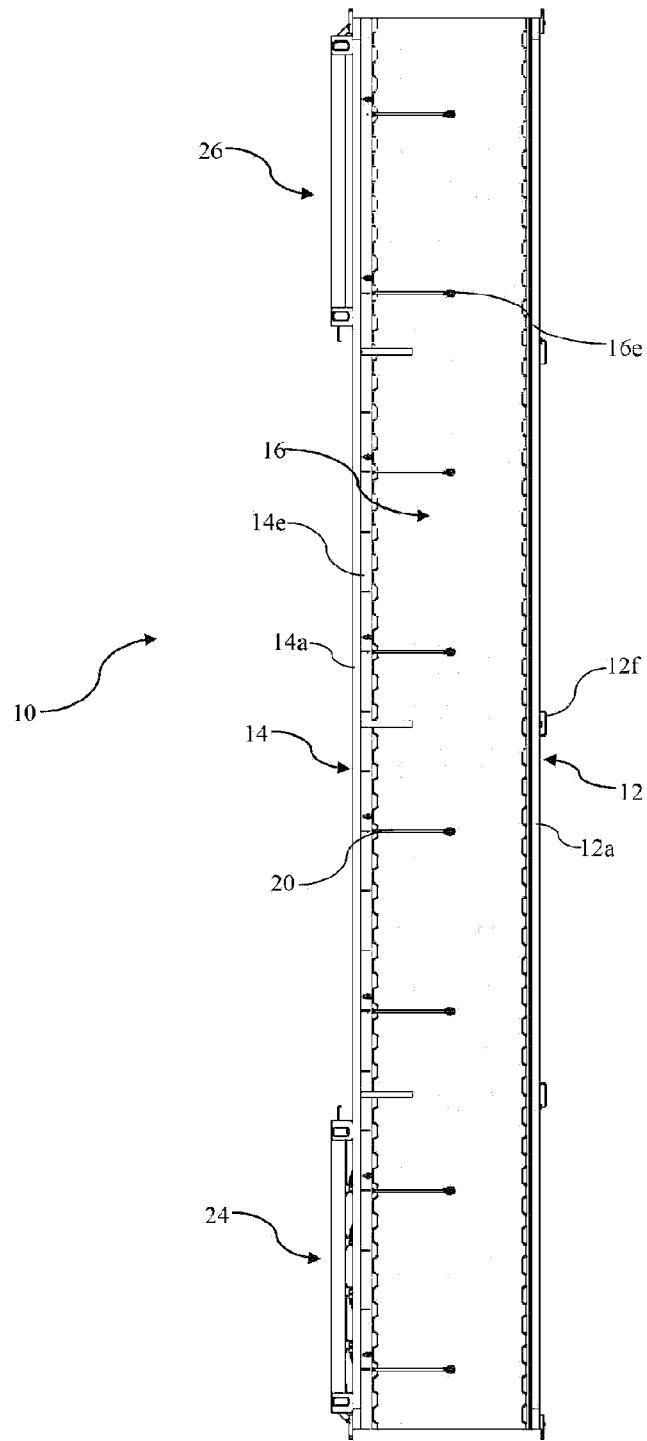


Fig. 8

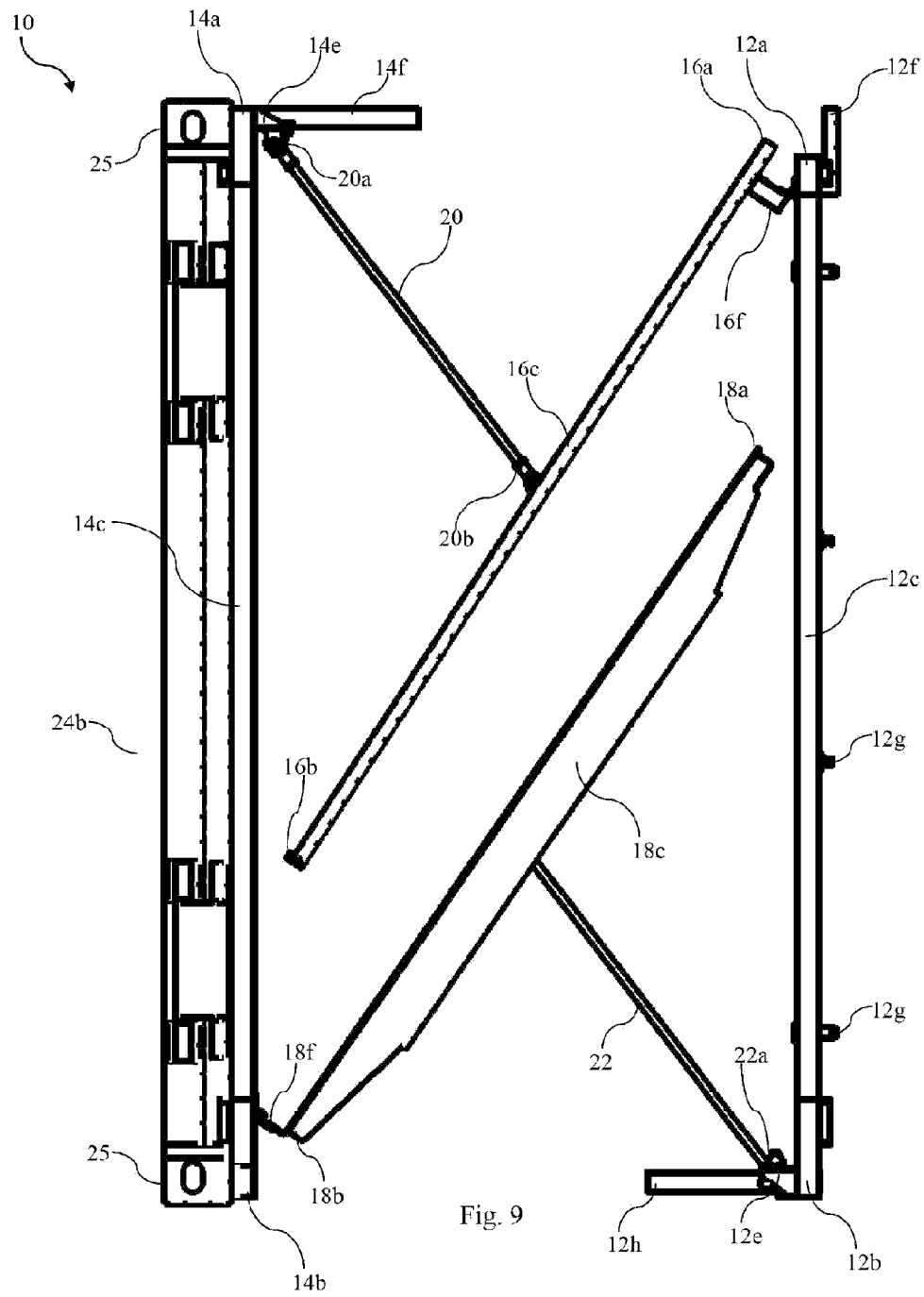


Fig. 9

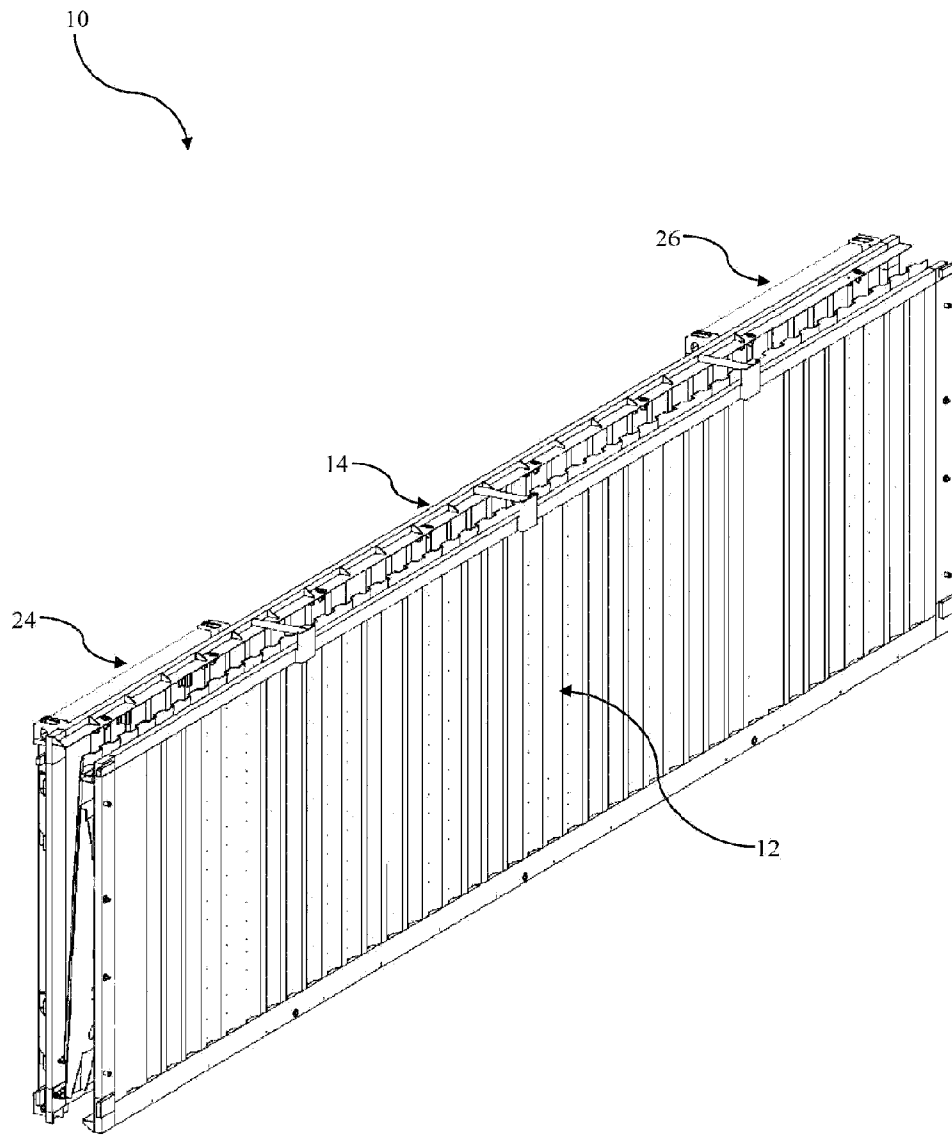


Fig. 10

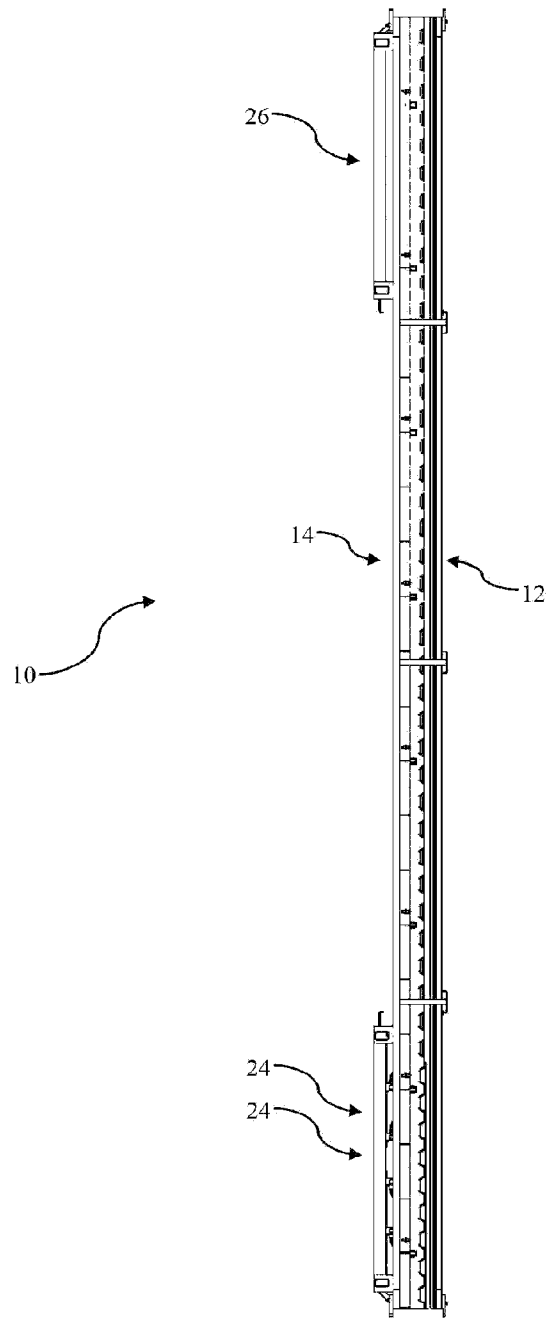


Fig. 11

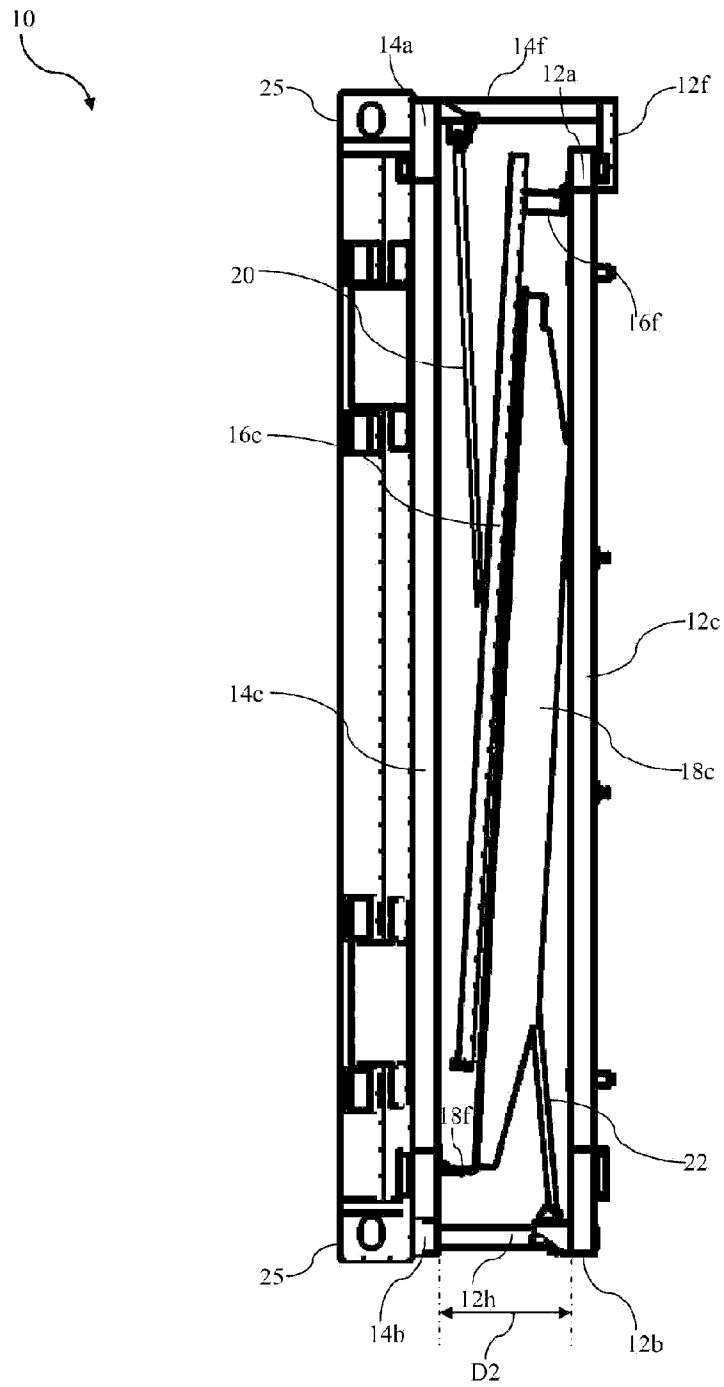
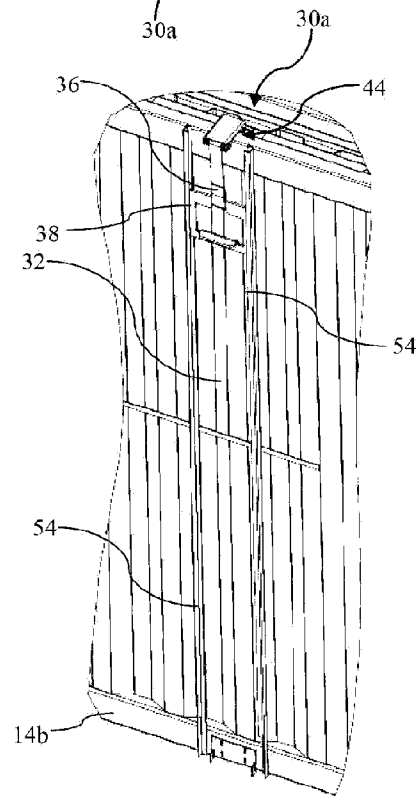
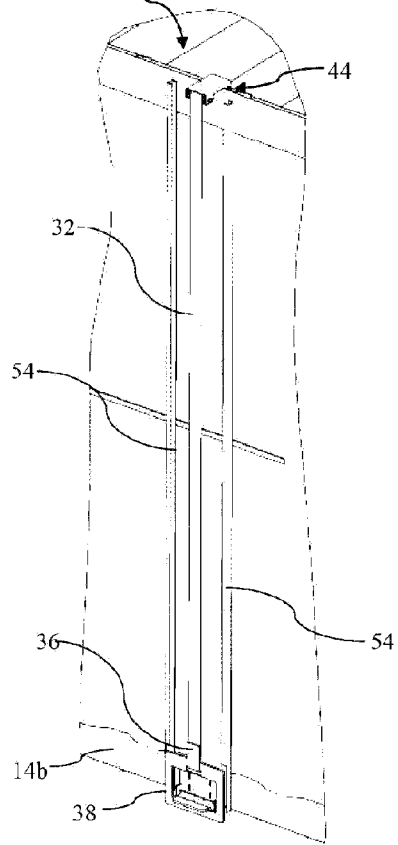
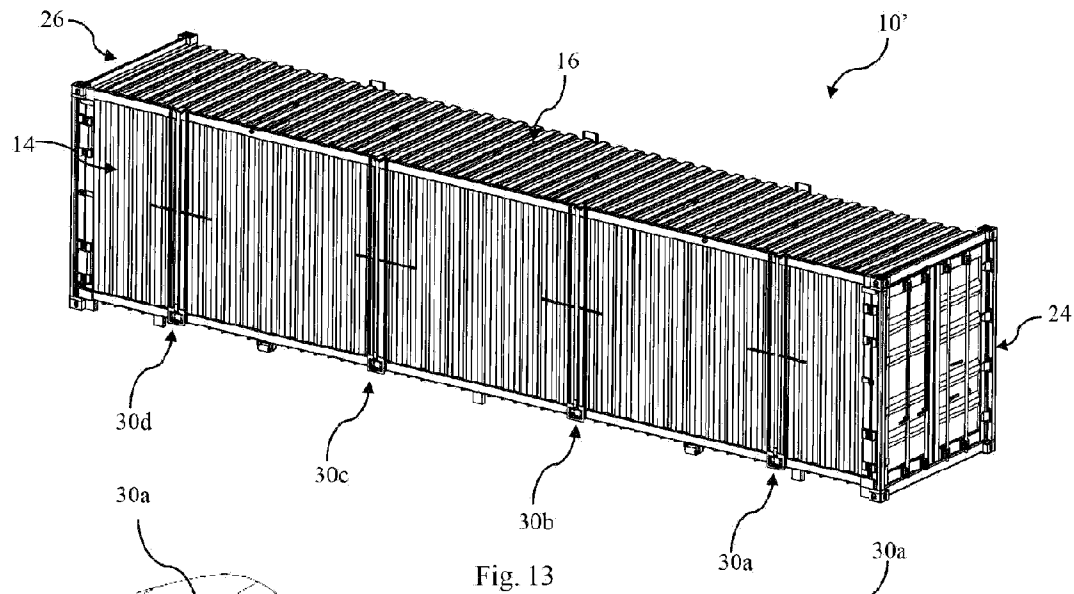


Fig. 12



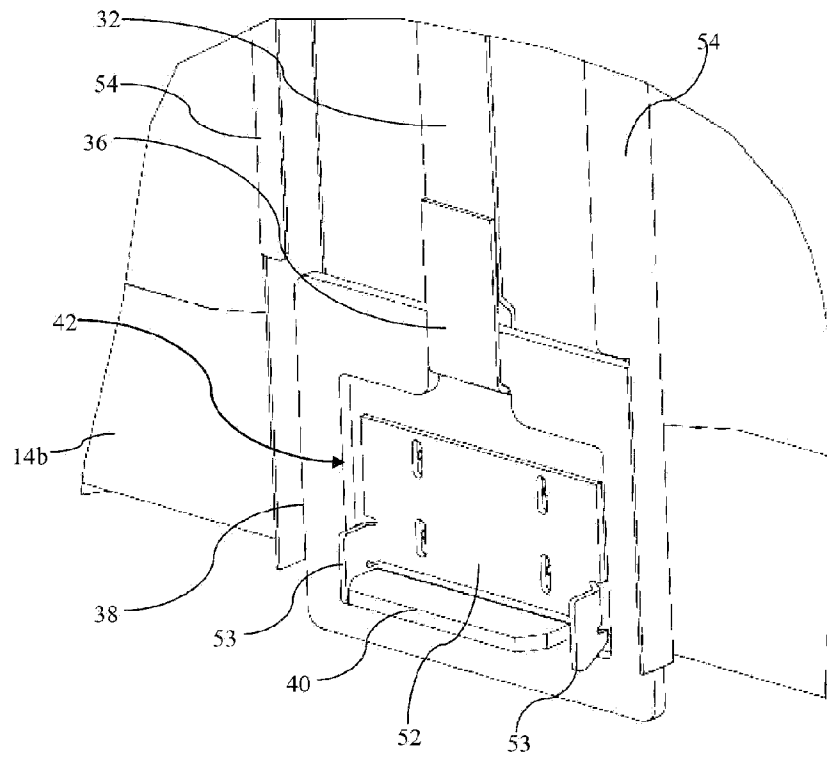


Fig. 16

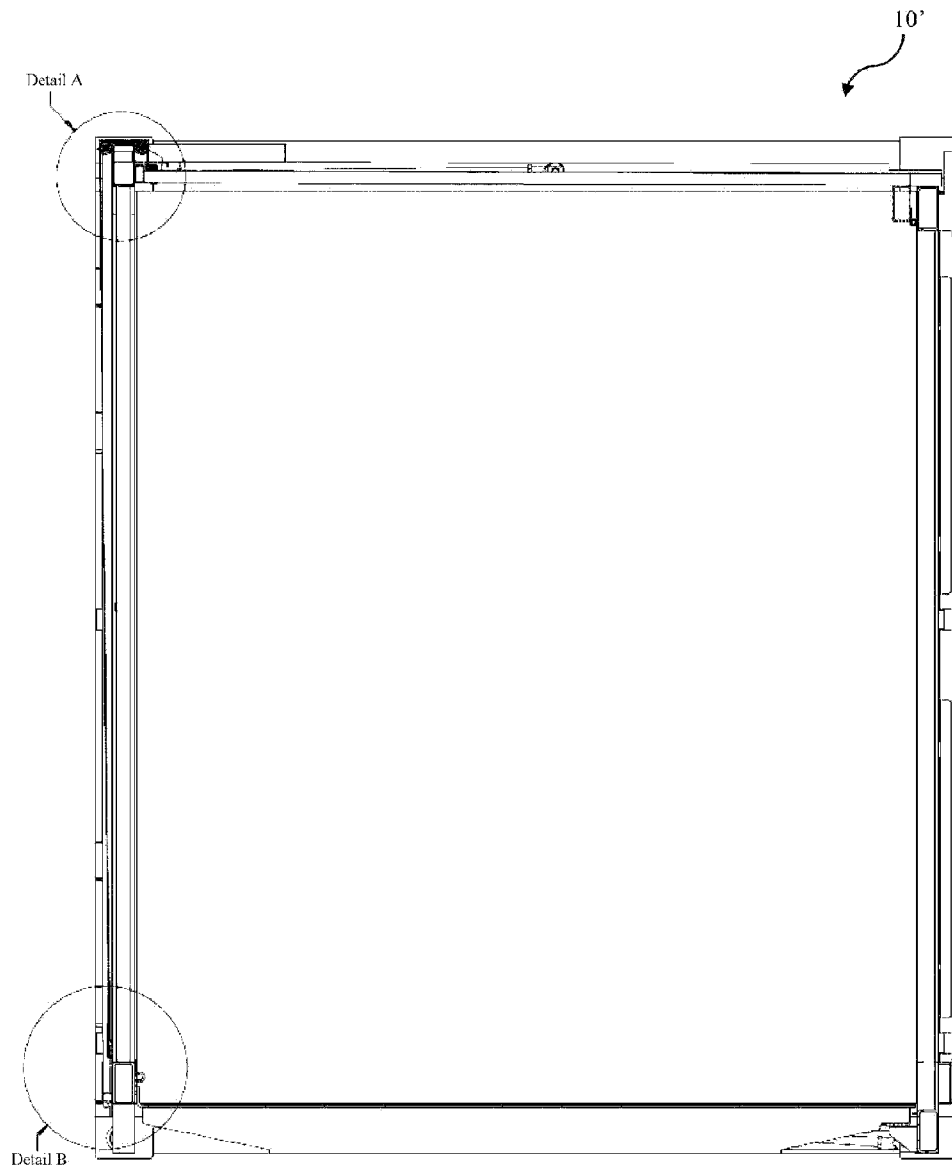


Fig. 17

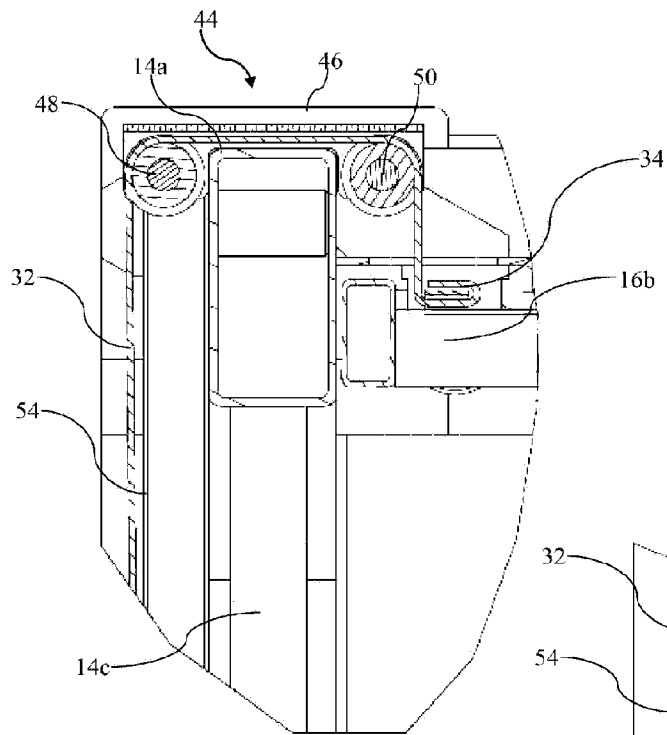


Fig. 18

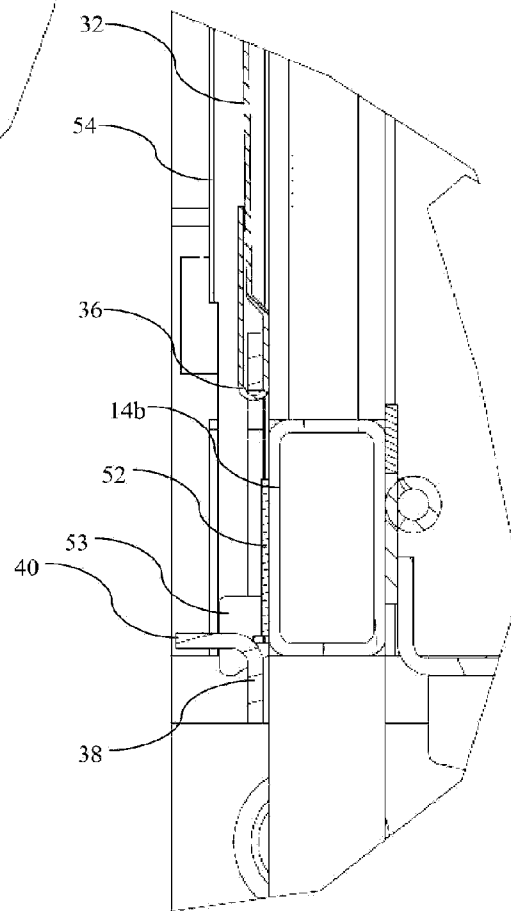


Fig. 19

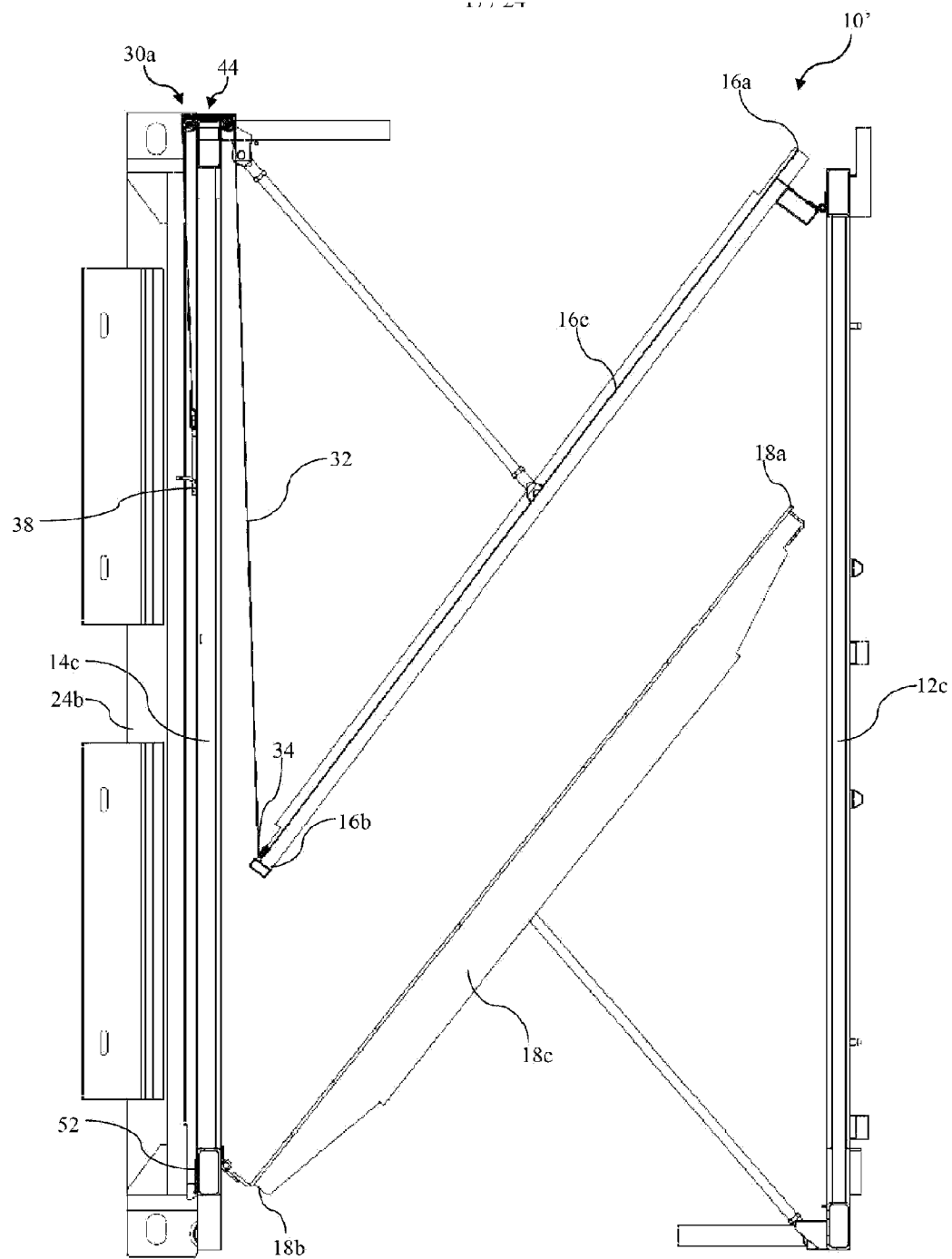


Fig. 20

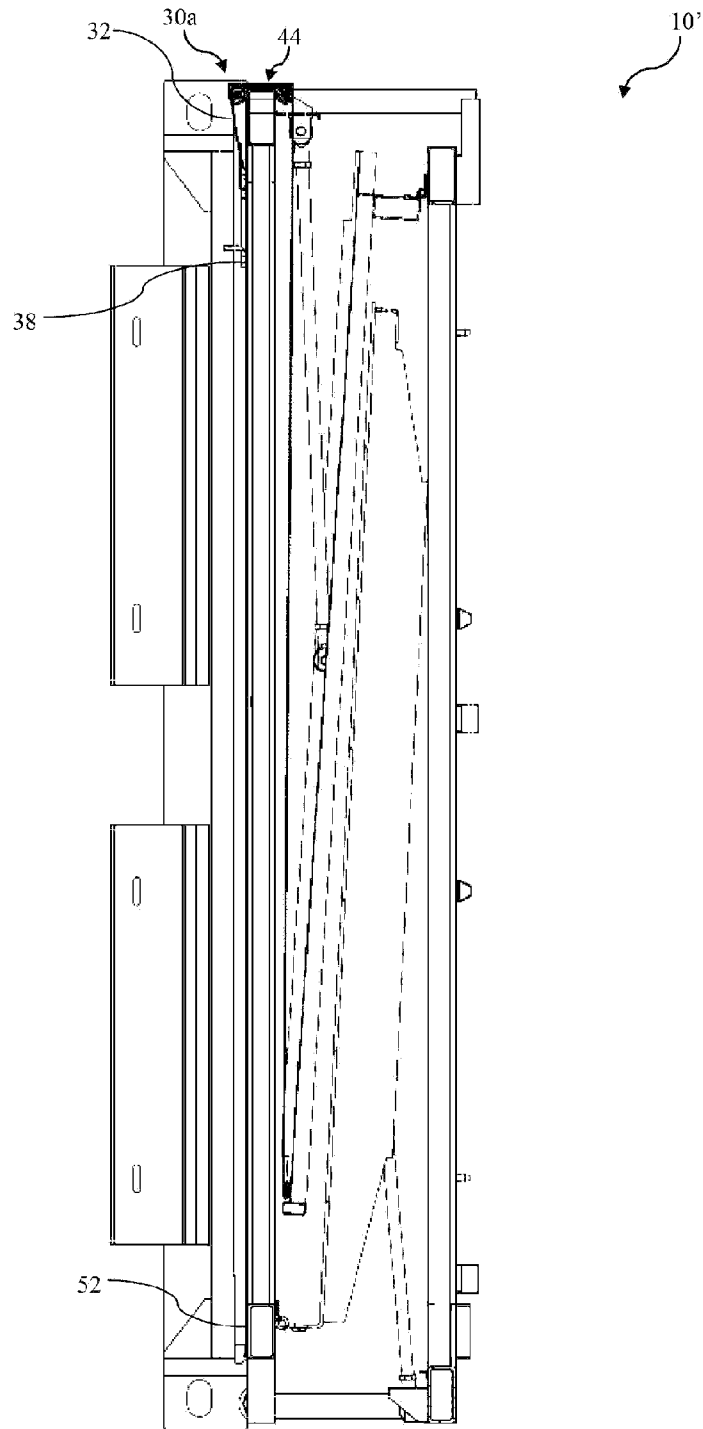
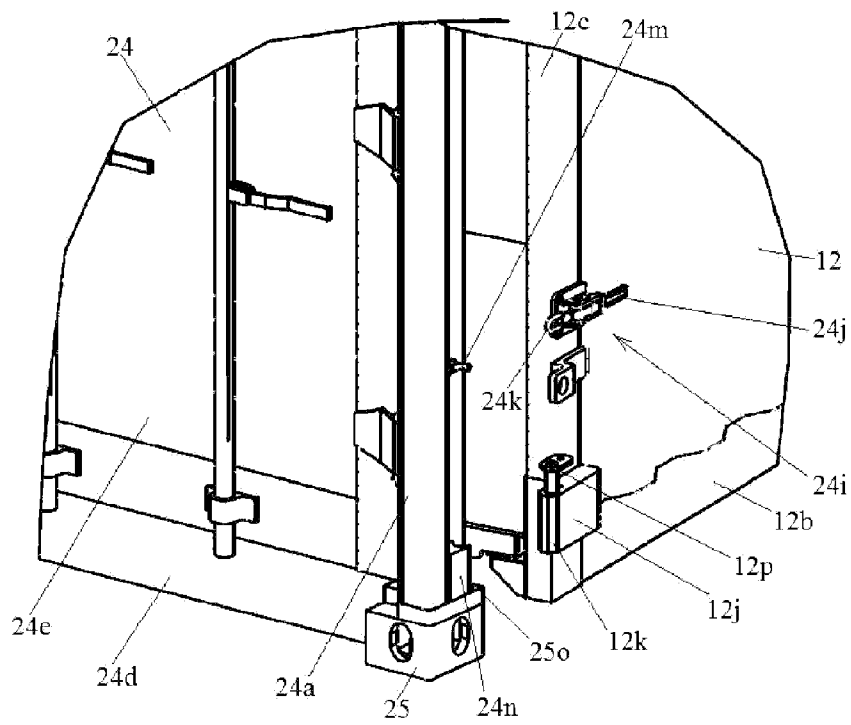
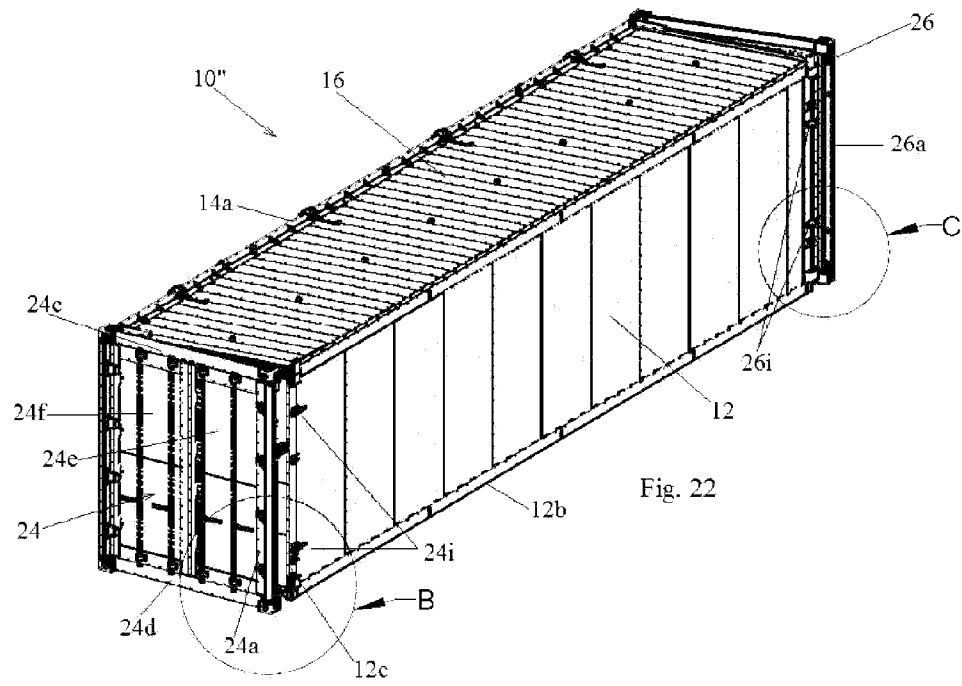


Fig. 21



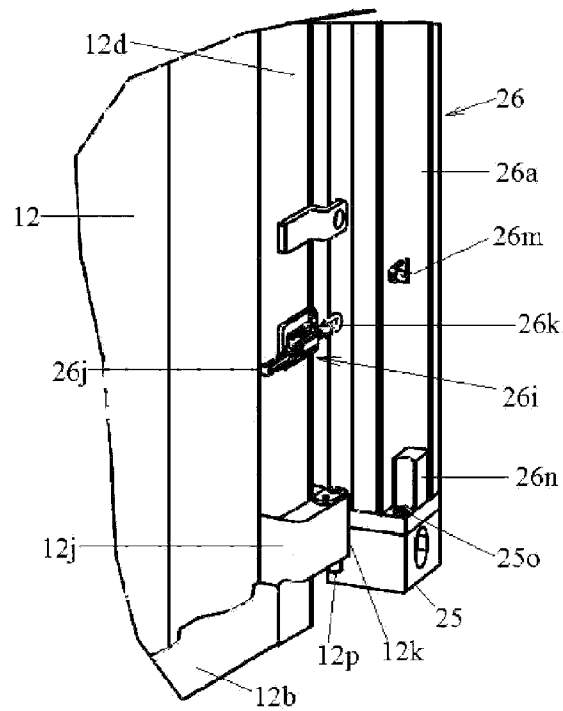


Fig. 24

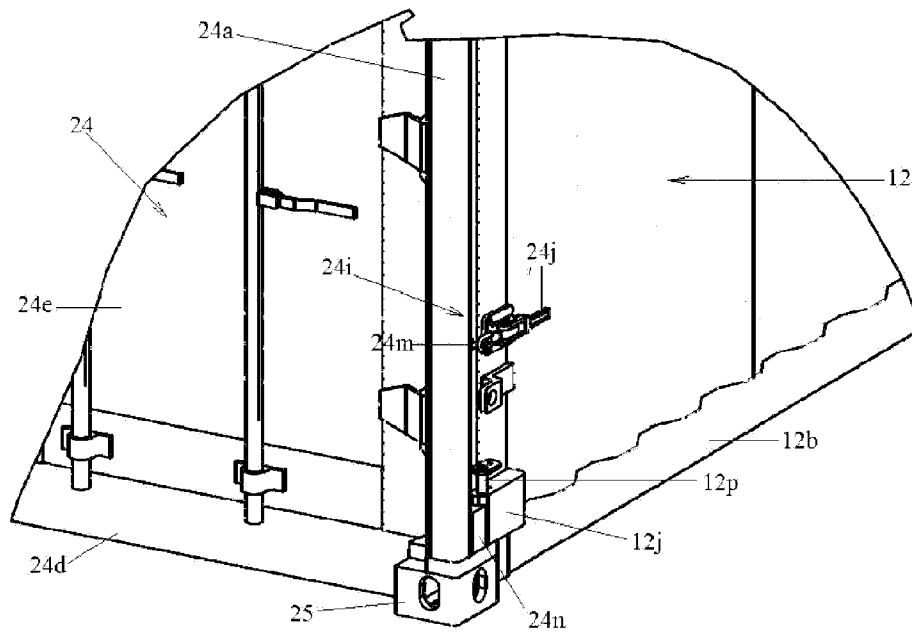


Fig. 25

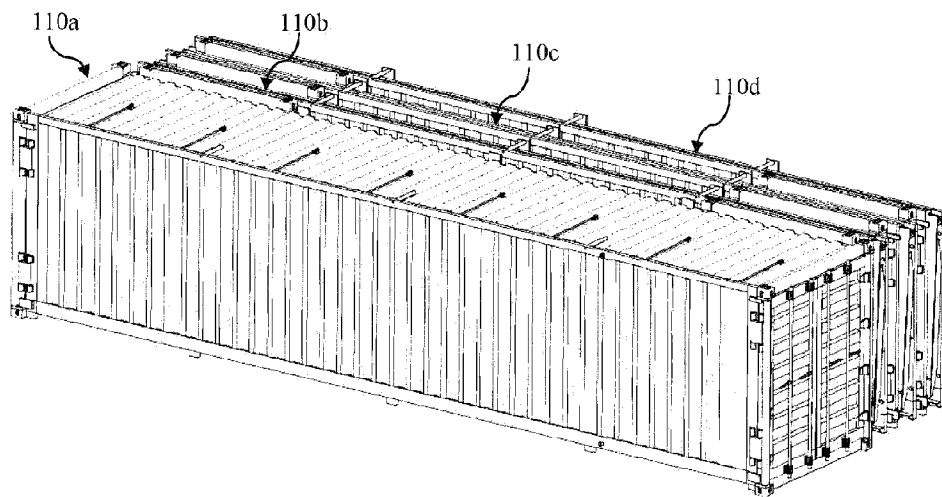


Fig. 26

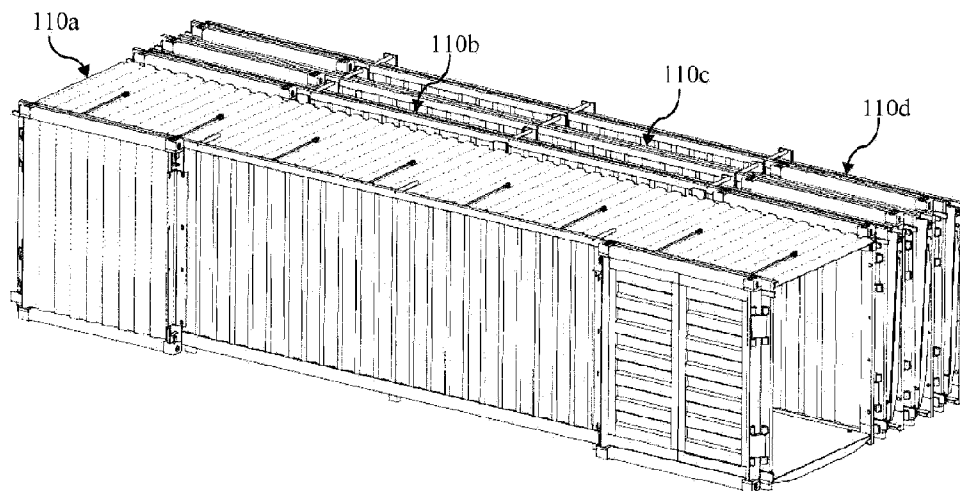


Fig. 27

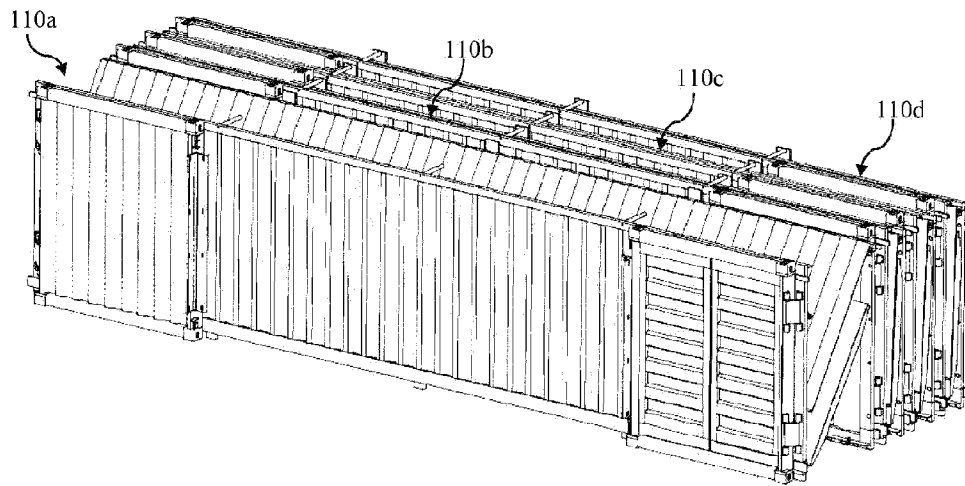


Fig. 28

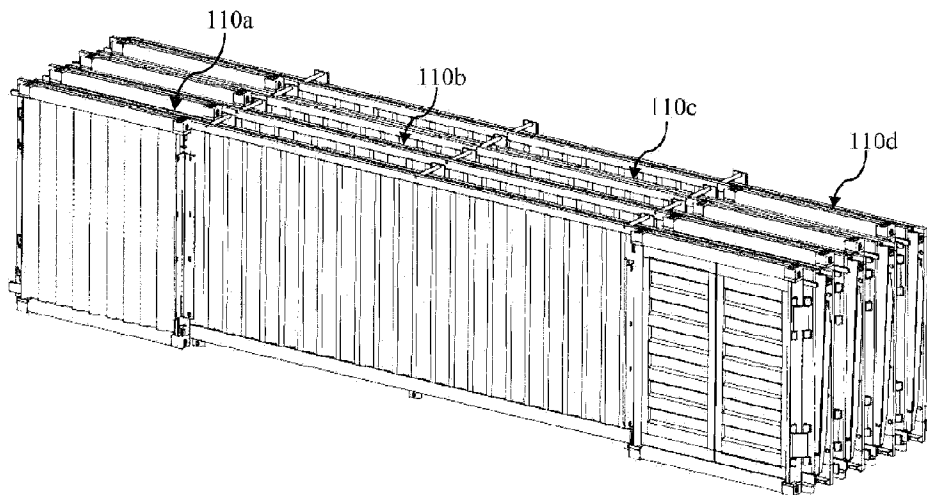


Fig. 29

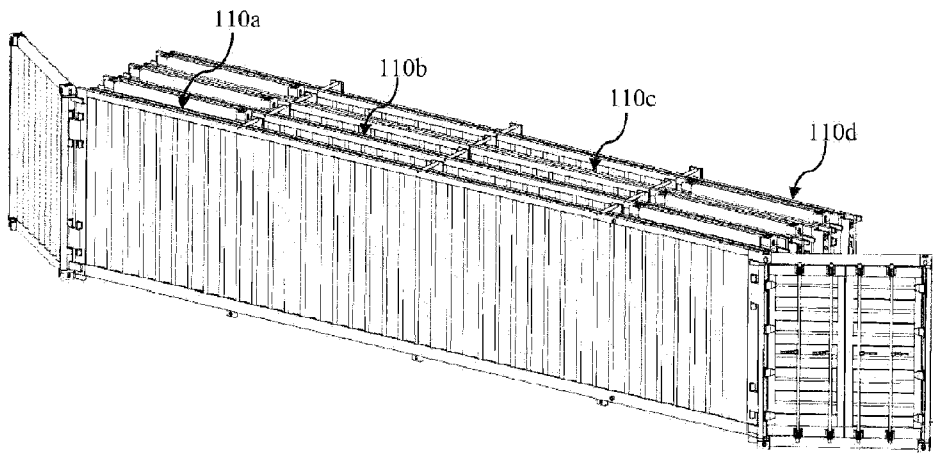


Fig. 30

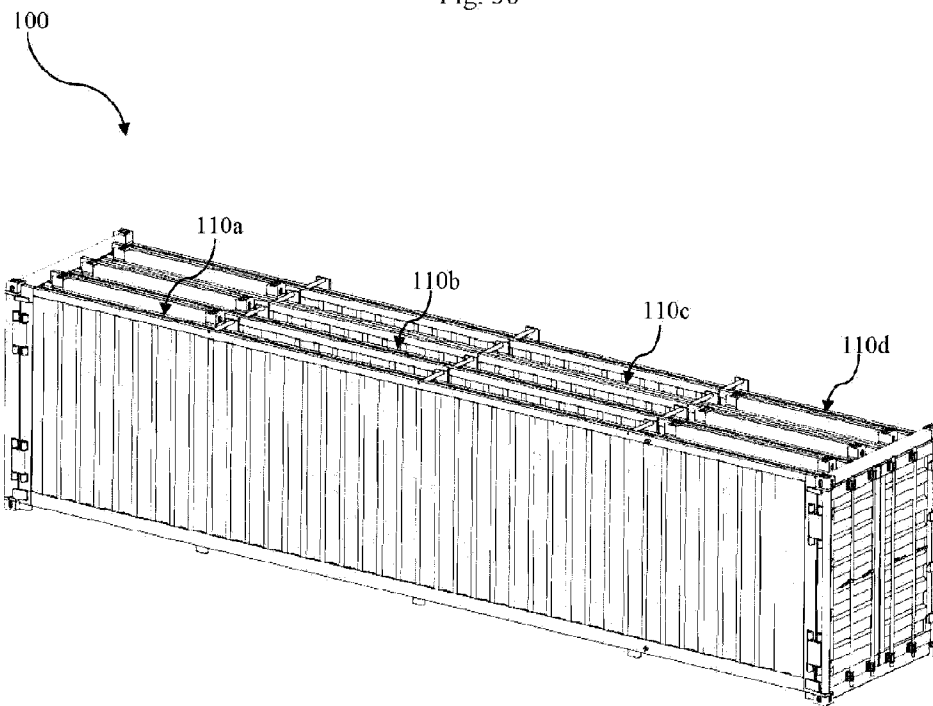


Fig. 31

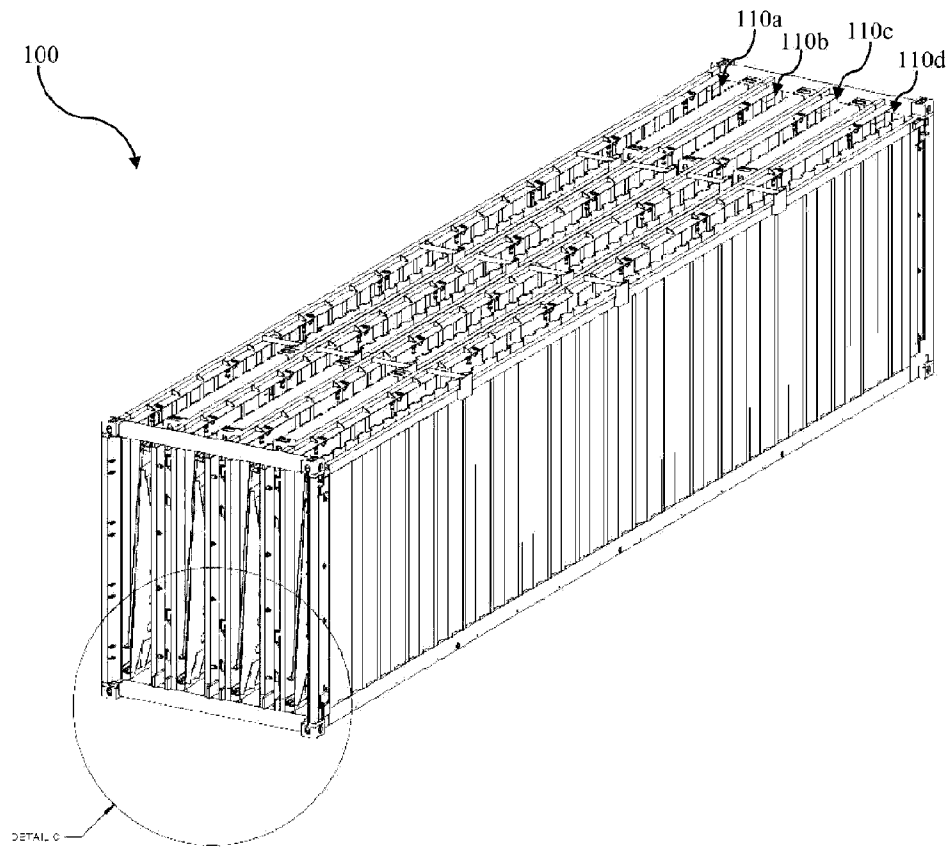


Fig. 32

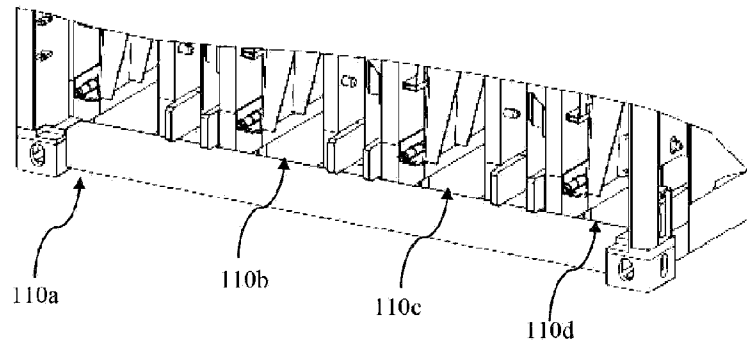


Fig. 33