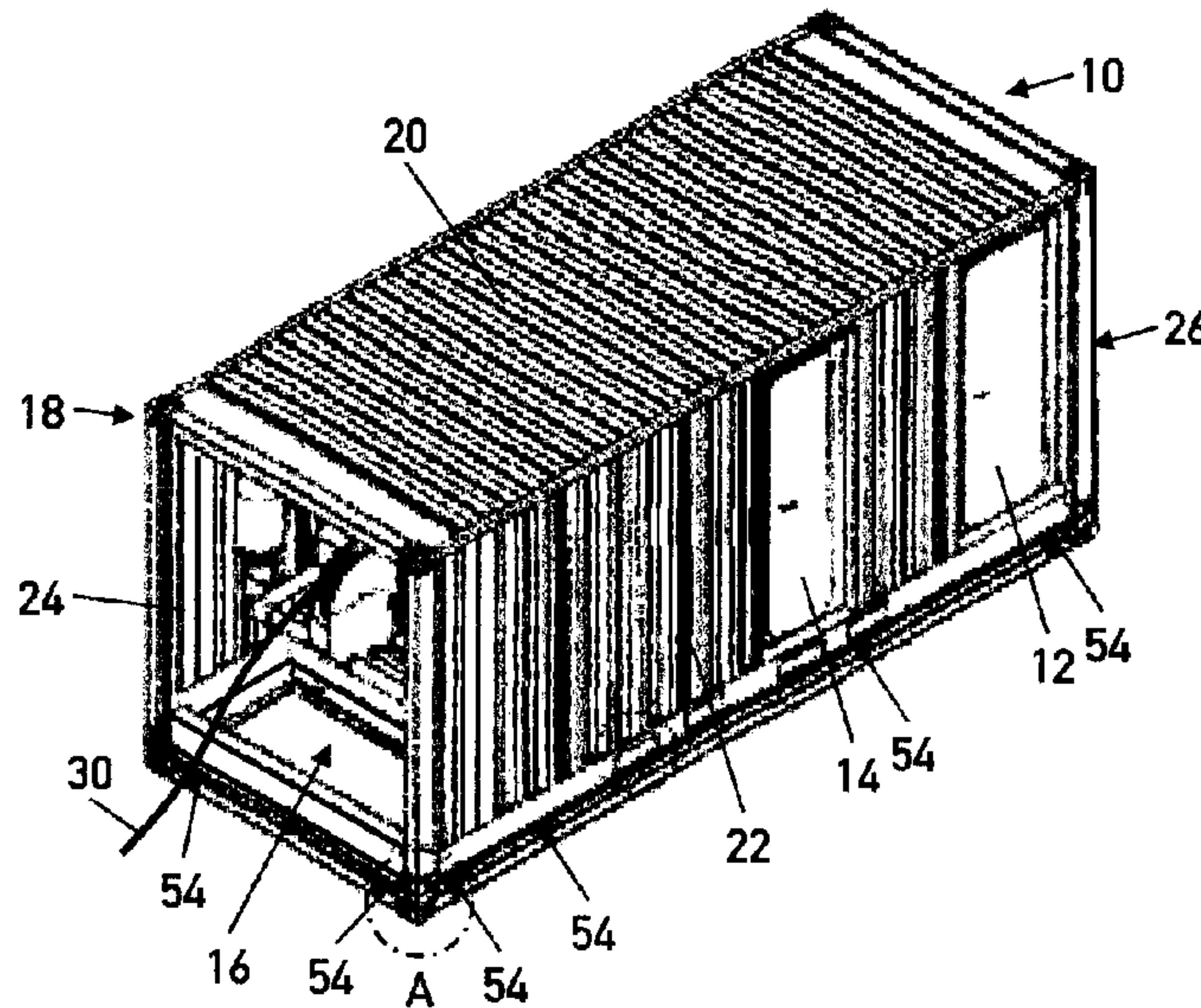




(86) Date de dépôt PCT/PCT Filing Date: 2012/02/23
 (87) Date publication PCT/PCT Publication Date: 2012/08/30
 (45) Date de délivrance/Issue Date: 2017/10/31
 (85) Entrée phase nationale/National Entry: 2013/07/16
 (86) N° demande PCT/PCT Application No.: EP 2012/053103
 (87) N° publication PCT/PCT Publication No.: 2012/113885
 (30) Priorité/Priority: 2011/02/25 (DE10 2011 000 950.7)

(51) Cl.Int./Int.Cl. *B65D 88/12* (2006.01),
B65D 90/12 (2006.01), *E04B 1/343* (2006.01)
 (72) Inventeurs/Inventors:
DINTER, JENS-HEIKO, DE;
FASS, UWE, DE
 (73) Propriétaire/Owner:
ATLAS ELEKTRONIK GMBH, DE
 (74) Agent: NEXUS LAW GROUP LLP

(54) Titre : CONTENEUR MARITIME FERMABLE SUR TOUTES SES FACES
 (54) Title: SEA CONTAINER THAT CAN BE CLOSED ON ALL SIDES



(57) Abrégé/Abstract:

The invention relates to a sea container (10) that can be closed on all sides, comprising a base frame (28), which has four corner posts (44, 46, 48, 50), a top-side frame (32), and a bottom-side frame construction (42), wherein the corner posts are rigidly connected to the top-side frame (32) and to the bottom-side frame construction (42). The bottom-side frame construction (42) has a bearing frame (52), wherein installations in the container (10) are fastened to the bearing frame and the bearing frame (52) has tie-down means (54) for tying down and for absorbing forces acting horizontally. Thus the invention makes it possible to accommodate installations such as a deploying device for a trailing antenna in a sea container even though traditional sea containers are unsuitable therefor.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges

Eigentum

Internationales Büro

(43) Internationales

Veröffentlichungsdatum

30. August 2012 (30.08.2012)



(10) Internationale Veröffentlichungsnummer

WO 2012/113885 A4

(51) Internationale Patentklassifikation:

B65D 88/12 (2006.01) E04B 1/343 (2006.01)

B65D 90/12 (2006.01)

(21) Internationales Aktenzeichen: PCT/EP2012/053103

(22) Internationales Anmeldedatum:

23. Februar 2012 (23.02.2012)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:

10 2011 000 950.7

25. Februar 2011 (25.02.2011)

DE

(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): ATLAS ELEKTRONIK GMBH [—/DE]; Sebaldsbrücker Heerstraße 235, 28309 Bremen (DE).

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): DINTER, Jens-Heiko [DE/DE]; Meisenweg 8, 28857 Syke (DE). FASS, Uwe [DE/DE]; Winterthurerstr. 11, 28325 Bremen (DE).

(74) Anwalt: JABBUSCH, SIEKMANN & WASILJEFF; Otto-Lilienthal-Straße 25, 28199 Bremen (DE).

(81) Bestimmungsstaaten (soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Bestimmungsstaaten (soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Veröffentlicht:

— mit internationalem Recherchenbericht (Artikel 21 Absatz 3)

[Fortsetzung auf der nächsten Seite]

(54) Title: SEA CONTAINER THAT CAN BE CLOSED ON ALL SIDES

(54) Bezeichnung : ALLSEITIG VERSCHLIESSBARER SEECONTAINER

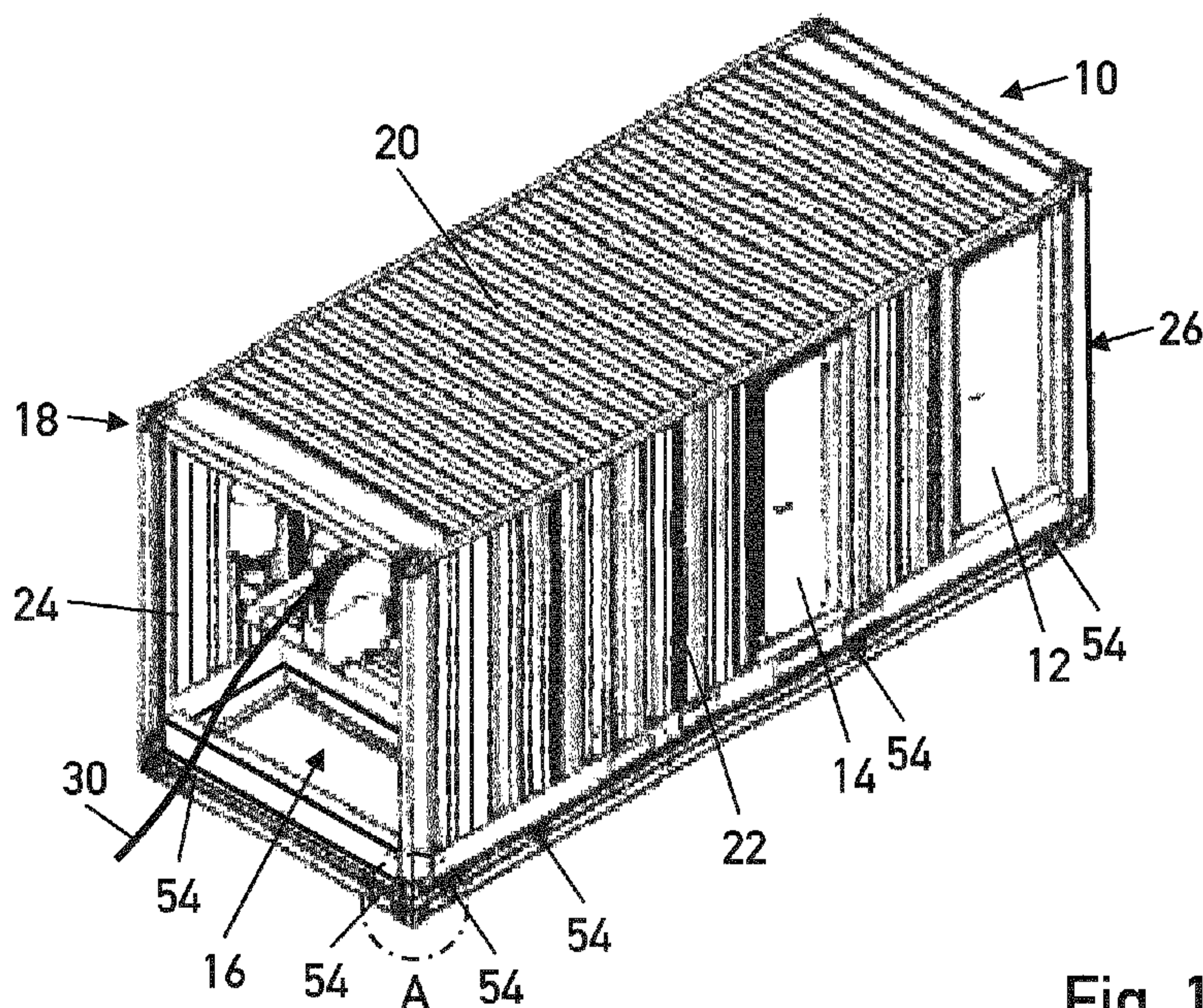


Fig. 1

(57) Abstract: The invention relates to a sea container (10) that can be closed on all sides, comprising a base frame (28), which has four corner posts (44, 46, 48, 50), a top-side frame (32), and a bottom-side frame construction (42), wherein the corner posts are rigidly connected to the top-side frame (32) and to the bottom-side frame construction (42). The bottom-side frame construction (42) has a bearing frame (52), wherein installations in the container (10) are fastened to the bearing frame and the bearing frame (52) has tie-down means (54) for tying down and for absorbing forces acting horizontally. Thus the invention makes it possible to accommodate installations such as a deploying device for a trailing antenna in a sea container even though traditional sea containers are unsuitable therefor.

(57) Zusammenfassung: Die Erfindung betrifft einen allseits verschließbaren Seecontainer 10 mit einem Grundgerüst 28, welches vier Ecksäulen 44, 46, 48, 50, einen dachseitigen Rahmen 32 und eine bodenseitige Rahmenkonstruktion 42 aufweist, wobei die Ecksäulen fest mit dem dachseitigen Rahmen 32 und der bodenseitigen

Rahmenkonstruktion 42 verbunden ist. Die bodenseitige Rahmenkonstruktion 42 weist einen Tragrahmen 52 auf,

[Fortsetzung auf der nächsten Seite]

WO 2012/113885 A4 

— *mit geänderten Ansprüchen gemäss Artikel 19 Absatz 1*

Veröffentlichungsdatum der geänderten Ansprüche:

13. Dezember 2012

wobei an dem Tragrahmen Einbauten in den Container 10 befestigt sind und der Tragrahmen 52 Verzurrmittel 54 zum Verzurren und zur Aufnahme horizontal wirkender Kräfte aufweist. Die Erfindung ermöglicht somit in einem Seecontainer Einbauten, wie eine Ausbringeinrichtung für eine Schleppantenne, aufzunehmen, obwohl herkömmliche Seecontainer hierfür ungeeignet sind.

Sea container that can be closed on all sides

The invention relates to a sea container that can be closed on all sides.

Such sea containers comprise a basic frame which has four corner posts, a top-side frame and a bottom-side frame structure, the corner posts being fixedly connected to the top-side frame and the bottom-side frame structure.

Corner fittings on the bottom-side frame structure, on the one hand, serve for positioning containers on mounting points provided on the deck of a vessel. Corner fittings on the top-side frame also serve for receiving lashing bars which are intended to prevent a container tipping over with the movement of the vessel.

The mounting points in combination with the corner fittings prevent the container from slipping on-board a vessel. Such corner fittings as well as the mounting points, however, are only able to absorb horizontal forces to a very limited extent.

It is conventionally not provided to deposit containers on the deck of a vessel outside such mounting points, as containers deposited in this manner are at risk of slipping which constitutes a danger for the vessel and the crew.

The object of the invention, therefore, is to increase the potential use of such known sea containers.

The invention achieves this object by means of a sea container according to the preamble of Claim 1, in that the bottom-side frame structure comprises a bearing frame, installations in the container being fastened to the bearing frame and the bearing frame comprising lashing means for lashing down and for absorbing horizontally-acting forces.

The invention thus permits heavy and large installations to be implemented in sea containers, said installations exerting tensile forces and/or torques onto the container from outside the container. Said tensile forces and/or torques are introduced via the installations directly onto the bearing frame which is of robust configuration. The resulting forces may be transmitted from said bearing frame to the vessel via cables or chains. Thus a stable structure, which is also able to absorb high tensile forces, is produced. Such high tensile forces may, for example, be produced when the installations comprise a winch mounted on the bearing frame for a trailing antenna of a sonar system or a deploying system, for example a crane mounted on the bearing frame, for underwater vessels or surface vessels or underwater moving bodies. Generally, containers are only used for transport or storage purposes. By means of the invention, however, there is also the possibility of using containers as part of mobile devices which are subjected to significantly greater forces and torques

than containers provided simply for transport or storage purposes.

By means of the invention, a container may also be deposited at a position on the deck of a vessel which has not been prepared for depositing containers. For example, therefore, a container may be deposited on a helicopter deck of a vessel, which conventionally does not have any mounting points for receiving corner fittings of the container.

As a whole, therefore, a container according to the invention permits the potential use of sea containers to be substantially increased due to the additional bearing frame and the lashing means for receiving horizontally-acting forces.

According to a particular embodiment, the bottom-side frame structure above the bearing frame comprises an upper bottom-side frame, which is welded to the bearing frame. Said upper bottom-side frame comprises four corner fittings, two longitudinal members and two transverse members, said corner fittings in each case being connected fixedly to one end of one of the corner posts.

In such a structure, a standard container may be used without the conventionally provided bottom wooden panels, said standard container being positioned on the bearing frame according to the invention and being welded thereto. Said construction permits a cost-effective structure, as it is possible to use standard

components of the container structure. In this case, however, the particular stress due to specific installations in the container does not have to be borne by the components of the standard container but simply by the specific structure of the bearing frame, which receives at least some of the mechanically demanding installations, such as winches, cranes and the like. In this case, the forces and torques introduced into the bearing frame do not enter the components of the standard container but are transmitted directly to the vessel via the lashing means. The components of a standard container thus remain unloaded and primarily serve for covering the top of the installations. The installations are thus able to be protected from environmental influences and unauthorised access.

According to a particular embodiment, the bearing frame comprises four corner fittings at its corners as well as two longitudinal bearing frame members fixedly connected to said corner fittings and two transverse bearing frame members fixedly connected to said corner fittings. The lashing means are provided between one or more pairs of adjacent corner fittings of the bearing frame on one or both longitudinal bearing frame members and/or on one or both transverse bearing frame members. The container according to the invention thus comprises corner fittings in the bottom region thereof, notwithstanding the additional bearing frame, whereby the transport of the container may be effected by conventional trailers. Moreover, said additional receiving points permit the container to be

deposited at normal container positioning points on-board a vessel. Said corner fittings, however, are not available for receiving horizontal tensile forces as they are conventionally provided for lashing bars acting substantially perpendicularly and/or obliquely. Thus, between said corner fittings the lashing means are advantageously provided for horizontal lashing down and for receiving horizontally-acting forces. Advantageously, said lashing means are located in opposing positions, i.e. symmetrically to the longitudinal axis and/or transverse axis of the container, so that the lashing forces and the resulting mechanical stresses are able to be distributed uniformly over the bearing frame.

In a further particular embodiment, the bearing frame comprises transverse members which are arranged between the longitudinal bearing frame members and are fixedly connected thereto and to which at least some of the installations are fastened. Advantageously, a stable fastening is produced for heavy installations which may introduce large forces and torques into the container. Preferably, the aforementioned lashing means are provided in the region of the connection of the longitudinal bearing frame members to the transverse members. This reduces bending moments in the longitudinal bearing frame members.

In a further specific embodiment, the installations comprise a winch for a trailing antenna of a sonar system, a winch frame for receiving the winch being fastened to the bearing frame, in particular to two of

the aforementioned transverse members. Advantageously, therefore, a mobile trailing antenna sonar system may be provided which may be used on merchant vessels, for example for protecting against pirates and/or for protecting a group of vessels, in particular merchant vessels and/or marine vessels. Merchant vessels generally do not have complex sonar systems for locating other vessels and/or boats, by means of which vessels or boats may also be located beyond the horizon. In particular, therefore, when detecting potential enemy vessels, in particular pirates, merchant vessels are often limited to a range as far as the visible horizon. In contrast, sonar systems have a considerably greater range. A merchant vessel is thus able to identify potential enemy vessels or boats even over a great distance and thus take suitable measures, including changing course or setting off an emergency signal.

By means of the container according to the invention, therefore, trailing antenna sonar systems may be installed on-board virtually any vessel or other floating platforms or even on land, for example in the region of harbours, in particular on a quay, and even temporarily, for example when an area of the ocean subject to frequent pirate assaults has to be crossed. Moreover, larger groups of merchant vessels and/or marine vessels may be provided cost-effectively with trailing antenna sonar systems - even temporarily - which increases the safety of ocean navigation.

In a further particular embodiment, the installations comprise a deploying system for unmanned and/or manned underwater vessels and/or surface water vessels and/or underwater moving bodies for deploying such a vessel and/or underwater moving body in sea water, the deploying system being fastened to the bearing frame, in particular to two of the transverse members. Advantageously, therefore, a mobile deploying system may be provided for unmanned underwater vessels, in particular autonomous unmanned underwater vessels, but also remotely-controlled underwater vessels and unmanned surface water vessels but also for underwater moving bodies of any type. Such underwater vessels are, in particular, used in mine sweeping and/or mine clearance. By means of the invention, therefore, a mine sweeping and/or mine clearance system which is able to be deployed easily, is mobile and thus cost-effective, may also be provided. In particular, due to the invention such systems may also be accommodated on vessels not actually provided for the respective purpose so that the invention not only significantly increases the potential use of containers but also marine vessels as a whole.

In a further particular embodiment, the bearing frame comprises one or more floor panels for shielding the container interior from the surroundings on the bottom-side, the floor panel(s) comprising one or more draining means, in particular bilge plugs, bilge flaps and/or bilge pumps. Thus, in an advantageous manner, admitted sea water or rain water as well as condensation water may be easily discharged. In

particular when retrieving a trailing antenna or a water vessel, sea water may regularly come on-board and thus enter the container. Due to the aforementioned draining means, said water may be easily removed again from the container.

According to a particular embodiment, the container interior is divided into two by a partition and thus comprises a control room and a working space, the control room being hermetically sealed and/or being able to be hermetically sealed from the surroundings. The control room serves as a control station for one or more operators who have to perform their duties even in adverse environmental conditions over many hours or even days in the control room. The control room is thus intended to be equipped as comfortably as possible in order to be able to perform correctly a task requiring a high degree of concentration even in difficult weather conditions. Moreover, a hermetic seal also permits the protection of electronic components, in particular against moisture, and thus permits the use of many different types of electronic devices, such as for example conventional computer screens, printers, etc. in the control room.

The working space is, in particular, provided for the aforementioned winch of a trailing antenna or, for example, for the deploying system for underwater vessels and/or surface water vessels as well as underwater moving bodies. A hermetic seal of the working space is not necessary as the working space is

open during operation in any case and thus air is exchanged with the ambient air.

In a further particular embodiment, the control room comprises an access door, an emergency exit for leaving the control room in an emergency, a window to the working space, an air conditioning system, heat insulation for insulating the control room relative to the surroundings, a heating system, fire extinguishing means, first-aid means, a satellite telephone system, communication devices for communication, including data communication, with devices on-board the vessel accommodating the container and/or with devices outside said vessel, signal processing devices of a sonar system, electronic data processing devices, amongst other things, for processing, for example, sonar data, an emergency power supply, a satellite navigation system, for example a GPS (Global Positioning System) i.e. a satellite-assisted position locating system, an AIS i.e. an automatic identification system and/or further office equipment, such as chairs and tables. Thus, a control station fully equipped with all necessary devices is advantageously provided for round-the-clock use by personnel.

In particular, in the case where the installations comprise a sonar system, the operation of such a sonar system requires a high degree of concentration on the part of the operator over many hours or days. Thus, extreme environmental conditions, for example at very low temperatures or very high temperatures and at a

high level of air humidity, may be reduced to a tolerable level as far as possible.

In a further advantageous embodiment, the installations comprise a voltage transformer for providing a predetermined and/or predeterminable initial voltage at variable input voltage. Preferably, said voltage transformer is accommodated in the working space. By means of a cable through-guide and/or a connection to the outside of the container, therefore, an external power supply may be connected to the container, said power supply not requiring any particular specification. Instead, the voltage transformer installed in the container ensures that the further electrical and electronic components inside the container receive the required electrical voltages. Thus the container and, in particular, the installations thereof may be operated on many different types of vessel with different on-board power supply systems. The container according to the invention may be used and its installations may be operated even on a vessel without its own power supply, for example a sailing vessel. In this case, it would merely be required to connect an external power generator to the container.

In a further particular embodiment, the bottom-side frame structure, in particular the bearing frame, comprises external earthing points for the electrical earthing of the container. Due to said earthing points, it is possible to discharge even large electrical loads which may be produced for example by

moving parts, such as a winch, or a malfunction, for example a short circuit.

In a further particular embodiment, the longitudinal members and/or transverse members of the basic frame, in particular of the upper bottom-side frame and/or the bearing frame, are provided as cable ducts. Such supports are often H-girders (I-girders), the transverse web thereof being arranged perpendicularly, or U-shaped girders. Thus said H-girders and/or U-shaped girders provide the option of receiving cables. In this case, however, care has to be taken that the cables do not fall out of said hollow spaces of the H-girders and/or U-shaped girders. To this end, sealing elements are provided on the girders which partially seal the recesses externally, so that the region between the girders and the sealing element forms a cable guide. This is advantageous as "floating" cables are thus avoided in the region of the container. This increases the occupational safety, as the risk of tripping due to such "floating" cables is avoided.

In a further particular embodiment, the working space comprises an access door arranged on a side wall of the container, the container comprising a safety circuit which, when the access door is open, interrupts the electrical supply of an electrical drive in the working space, in particular of the winch and/or the deploying system and when the access door is closed, connects said electrical supply to the electrical drive. Thus, the risk of personnel entering the working space is avoided, as an opening of the

access door automatically stops such drives. In this manner, the occupational safety is enhanced in the working space.

In a further particular embodiment, the access door of the control room and/or the access door of the working space is offset inwardly relative to the external dimensions of the container. Thus, it is ensured that even door handles or door locks of said access doors do not protrude beyond the external dimensions of the container and thus the container is able to be transported and stored in the manner of any other standard sea container.

In a further particular embodiment, the winch of the trailing antenna comprises a mechanical locking brake. Thus, even in the case of failure of the electrical power supply, the trailing antenna is prevented from unwinding in an uncontrolled manner. Moreover, however, even when deploying any length of trailing antenna, the winch may be stopped without further electrical power being required after the stopping thereof.

In a further particular embodiment, the winch comprises a slip ring for transmitting electrical and/or optical signals. This is advantageous, as trailing antennae of sonar systems already require an electrical power supply inside the trailing antenna to supply electro-acoustic transducers and for signal processing, and the sensor signals thus produced have to be transmitted from the trailing antenna into the

data processing system of the sonar system. This preferably takes place by means of electrical and/or optical signals. The particular design of the winch permits the transport of said signals.

In a further particular embodiment, the winch comprises an impulse transmitter for determining the dispensed length of cable and/or trailing antenna, and a winch control unit which is configured such that, during operation of the winch, a minimum number of windings, for example at least three windings, of the tensioning cable remains on the winch drum. Such a minimum number of windings ensures traction relief in the region of the winch drum.

Further preferred embodiments are revealed from the sub-claims as well as from the exemplary embodiments described in more detail with reference to the drawings, in which:

Fig. 1 shows a perspective view of a sea container that can be closed on all sides according to a first exemplary embodiment of the invention;

Fig. 2 shows a basic frame of the sea container according to Fig. 1;

Fig. 3 shows a bearing frame of a basic frame according to Fig. 2 with further details;

- Fig. 4 shows an enlarged detail A according to Fig. 1 in the region of a corner fitting;
- Fig. 5 shows the sea container according to Fig. 1 in a view from above to illustrate the position of the lashing means;
- Fig. 6 shows a side view of a sea container according to a second exemplary embodiment;
- Fig. 7 shows a side view of the door side of the sea container according to Fig. 6;
- Fig. 8 shows a side view of the front face of the container according to Fig. 6;
- Fig. 9 shows a view from above of the sea container according to Fig. 6 but with the roof cut open;
- Fig. 10 shows a side sectional view along the line X-X according to Fig. 9 and
- Fig. 11 shows a view from above of the sea container according to Fig. 6.

Fig. 1 shows a sea container 10 that can be closed on all sides and for this purpose comprises an access door 12 to a control room and an access door 14 for an working space, in which installations 16 fixedly installed in the sea container 10 are accommodated. The front face 18 on the rear side is able to be

closed by means of a door, in particular a 2-leaf door (not shown).

The top surface 20, the side walls 22, 24, the front wall 26 and optionally also the door surfaces in the region of the front face 18 on the rear side are made from profiled steel sheets and connected to a basic frame 28 which is described in more detail hereinafter in connection with Fig. 2.

The installations 16 according to Fig. 1 comprise an electrically-operated winch for receiving and deploying and retrieving a trailing antenna 30 of a sonar system. Said trailing antenna has a tensioning cable having a length of several 100 metres as well as a portion with electro-acoustic transducers and an end section for stabilising and aligning the trailing antenna in the water. In particular, the acoustically relevant components of the trailing antenna have a diameter of ca. 5 to 10 cm. A trailing antenna which has been deployed, therefore, has a considerable flow resistance due to its length, its diameter as well as the end section, so that the aforementioned winch has to apply large tensile forces and/or is subjected to said tensile forces when the trailing antenna 30 is pulled along or is retrieved. Said tensile forces, however, also act on the sea container 10. Standard sea containers of a conventional type merely have wooden floors which are not suitable for fastening winches subjected to such high tensile forces, as said wooden floors would be ripped out of their anchoring points. Also, the remaining structure of such

conventional sea containers is not designed to be subjected to the tensile force which occurs when deploying and/or retrieving such trailing antennae.

The sea container 10 according to the invention, therefore, has a basic frame 28 which is reinforced relative to conventional sea containers and which comprises a top-side frame 32 with two top longitudinal members 34, 36 as well as two top transverse members 38, 40. The basic frame 28 also has a bottom-side frame structure 42, the bottom-side frame structure 42 and the top-side frame 32 being connected fixedly together, in particular welded, via the corner posts 44, 46, 48, 50.

The bottom-side frame structure 42 has a bearing frame 52, at least some of the installations 16, in particular the aforementioned winch, being fastened to the bearing frame 52, and said bearing frame 52 additionally having lashing means 54, shown for example in Figures 1 and 4, for lashing down and for receiving horizontally-acting forces. Said lashing means are preferably configured as eye-plates which are welded in longitudinal bearing frame members 56, 58 as well as transverse bearing frame members 60, 62.

Said longitudinal bearing frame members 56, 58 and transverse bearing frame members 60, 62 are preferably configured as so-called H-girders and/or so-called I-girders. The aforementioned eye plates 54 are welded into the C-shape grooves of the longitudinal bearing frame members 56, 58 as well as transverse bearing

frame members 60, 62. Said eye plates 54 have a recess, in particular a through-hole, for receiving a shackle. They are adapted to the contour of the H-girders and chamfered and welded to said girders by means of a fillet weld.

The bearing frame 52 also has transverse members 64, 66, 68, which in each case are arranged between the longitudinal bearing frame members 56, 58 and fixedly connected thereto, in particular welded thereto. The installations 16 are preferably connected to said transverse members 64, 66, 68, so that forces which are introduced via the installations 16 are forwarded to the bearing frame 52 via the transverse members 64, 66, 68, but without subjecting the structure of the basic frame 28 located above the bearing frame 52 to load in this case. The forces and/or torques introduced into said bearing frame 52 are directly introduced by the lashing means 54 into a vessel or a further offshore or land-based platform on which the container 10 is located.

At its corners, the bearing frame 52 has corner fittings 70, 72, 74, 76 which are fixedly connected, in particular welded, to the longitudinal bearing frame members 56, 58 as well as the transverse bearing frame members 60, 62. Said corner fittings 70, 72, 74, 76 have eyes for receiving lashing bars as well as recesses and/or openings on the bottom for receiving mounting pins.

The bottom-side frame structure 42 has a further frame above the bearing frame 52, namely an upper bottom-side frame 78 which is welded to the bearing frame 52. Said upper bottom-side frame 78 is a component of a conventional sea container. It also has, therefore, four corner fittings 80, 82, 84, 86 which are configured in a similar manner to the corner fittings 70, 72, 74, 76. The corner fittings 80, 82, 84, 86, however, are not necessary due to the provision of the corner fittings 70, 72, 74, 76 and thus may be dispensed with in an alternative embodiment.

Moreover, the top-side frame 32 also has four corner fittings 88, 90, 92, 94. Said corner fittings 88, 90, 92, 94 are configured in a similar manner to the corner fittings 70, 72, 74, 76 and serve, in particular, for receiving lashing bars but also as anchoring points for a further container deposited on the sea container 10.

The upper bottom-side frame 78 has two longitudinal members 96, 98 as well as two transverse members 100, 102 between the corner fittings 80, 82, 84, 86. Transverse beams 104, 106, 108 are attached between the longitudinal members 96, 98 of the upper bottom-side frame 78, said beams serving to receive floor panels, in particular wooden panels, of the control room.

Fig. 3 shows the bearing frame 52 with further details but without the frame structure located thereabove. The transverse members 64, 66, 68 separate the surface

spanned by the longitudinal bearing frame members 56, 58 and the transverse bearing frame members 60, 62 into a plurality of partial surfaces. Each of said partial surfaces has a floor panel 110, 112, 114, 116, which in each case on all sides is fully welded to the respectively surrounding longitudinal bearing frame members 56, 58 as well as the transverse bearing frame members 60, 62 and/or transverse members 64, 66, 68. Said floor panels 110, 112, 114, 116 are reinforced by reinforcements 118, 120, 122, 124, advantageously configured as flat steel.

One or more draining means, in particular bilge plugs, bilge flaps and/or bilge pumps are located in the region of one, several or all floor panels 110, 112, 114, 116, in order to be able to discharge admitted sea water and/or rain water or condensation water.

Fig. 4 shows the region around the corner fitting 70 in a detailed view. The longitudinal bearing frame member 56 is notched at the bottom in the region of the corner fitting 70, so that the corner fitting 70 is fitted into this region. Two steel blocks 126, 128 are located above the corner fitting 70, said steel blocks filling up the hollow space between the remaining end portion of the longitudinal bearing frame member 56 and the corner fitting 70. Said steel blocks 126, 128 are solid and adapted to the shape of the surrounding components, and welded thereto.

Fig. 5 shows the sea container 10 in a view from above, the positions of the lashing means 54 being

shown in more detail. Preferably, said positions are located symmetrically to the longitudinal axis and to the transverse axis of the container 10 so that the container 10 may be lashed down in the simplest possible manner to a flat deck without receiving points for corner fittings. Shackles may be arranged on the lashing means 54, acted upon by tensioning cables or tensioning chains, which are secured to the deck of the vessel and/or the platform. Said tensioning chains and/or tensioning cables do not have to run perpendicular to the bearing frame 52. Angles ranging from +/- 45 degrees to the vertical are permitted relative to the bearing frame 52.

The tensile forces exerted by the trailing antenna 30 on the bearing frame are transmitted by means of said lashing means 54 to the deck of the vessel and/or the platform. The lashing means 54 are located on both longitudinal bearing frame members 56, 58 and on both transverse bearing frame members 60, 62.

Figs. 6 to 11 show a second exemplary embodiment according to the invention which corresponds substantially to the exemplary embodiment according to Figs. 1 to 5, but the regions at the corners of the bearing frame 52' according to Figs. 6 to 8 as well as 10 being configured differently. Moreover, the access doors 12', 14' additionally have windows. The features of the first and the second exemplary embodiment, however, are able to be combined together individually or in any combination.

All access doors 12, 14 and/or 12', 14' are watertight and fitted into recesses of the side wall, so that the doors 12, 12', 14, 14' including the door handles thereof do not protrude beyond the external dimensions of the sea container.

Figs. 6, 9 and 10 show a deploying device 130 for a trailing antenna, which comprises a winch 132 as well as a cable guide carriage 134 for controlled retrieving and deploying of the trailing antenna from the winch drum 136.

The deploying device 130 and/or the winch 132 further comprises an electric motor 138 for driving the winch drum 136. The winch 132 also contains a slip ring for transmitting electrical and optical signals from the trailing antenna to the sonar data processing device 140 which is arranged in the control room 142.

Said control room 142 is separated by means of a partition 144 from the working space 146. Said partition 144 comprises a window 148. Said window 148 permits the operator in the control room 142 to monitor the deploying device 130. If visual monitoring is not possible via the window 148, a camera is also provided in the region of the front face 18' on the rear side which, in particular, is oriented toward the cable guide carriage 134. A further camera in the region of the front face 18' on the rear side is oriented out of the container in the direction of the surroundings, in order to be able to observe the path of the dispensed trailing antenna.

During operation of the sonar system, i.e. when the trailing antenna is deployed, the 2-leaf door 150 is opened in the region of the front face 18' on the rear side. The two door leafs are thus able to be fixed such that wind protection and spray water protection is provided by the door leafs. Additionally, the deployed door leafs 150, optionally together with barrier grilles, prevent personnel from entering the region in which the trailing antenna is deployed.

The winch drum 136 has two different drum diameters. A first smaller drum diameter serves for receiving the thinner but much longer tensioning cable which is provided with electrical and optical lines. A region of the winch drum 136 of greater diameter serves for receiving the acoustically effective antenna part.

The cable guide carriage 134 determines onto which region of the winch drum the respective trailing antenna portion is wound when retrieved.

The sea container according to the invention thus permits a mobile deploying system for a trailing antenna of a sonar system. In this case, the sonar data processing device may be preferably arranged inside the container 140, so that the container shown accommodates a complete sonar system. The deploying device 130 has the purpose of reliably depositing the trailing antenna, together with the associated trailing cable, and receiving it again. The container 10, 10' also provides the possibility of storing a

trailing antenna in addition to the tensioning cable securely and to protect them during transport against damage, the effects of weather and access by unauthorised personnel.

The control room 142 is able to be hermetically sealed against environmental influences so that said control room is able to accommodate directly all the sensitive electronic devices of a sonar system. Thus, the installation cost on-board a vessel and/or any other platform when equipped with a trailing antenna sensor is reduced to a minimum.

The electric motor 138 of the winch 132 is supplied via a central distributor. Moreover, said distributor supplies the lighting device, a heating device for protecting against condensation as well as an air conditioning system. The electrical connection of this distributor preferably takes place via a three-phase supply, which is designed for voltages of 380 volts to 400 volts, a voltage transformer ensuring initial voltages of 230 volts and/or 115 volts. The initial voltage is preferably also provided as three-phase voltage. The container preferably has one or more earthing points on the bearing frame 52, 52' for connecting to the electrical earthing of the vessel.

Moreover, the container 10, 10' has a watertight cable interconnection point. Said interconnection point comprises various cable guide-through elements for the voltage supply as well as for data lines and optionally communication lines to the outside. Said

cables are deposited and/or positioned inside the container. All regions inside and outside the container are able to be illuminated by means of lamps provided in the container, so that even in darkness sufficient light may be provided for operating the deploying device 130.

If the access door 14 and/or 14' is opened, a safety circuit interrupts a winch operation which may be taking place, so that personnel are not at risk from the winch operation.

The winch 132 is able to be operated steplessly in both rotational directions. It has a mechanical locking brake which, in particular in the event of failure of the electrical power supply, grips and secures the winch drum 136 in order to avoid uncontrolled unwinding of the trailing antenna.

The winch 132 also contains an impulse transmitter which displays the dispensed length of the trailing antenna and/or the tensioning cable. The control of the winch ensures that a minimum number of windings of the tensioning cable remains on the winch drum 136, in order to provide thereby traction relief of the end of the cable.

The winch is able to be controlled in both directions from the control room 142, preferably by means of a joystick.

The control room 142 is provided with all devices, including tables and chairs, which are required for lengthy operation of a sonar system. To this end, also included are an air conditioning system as well as heat insulation of the control room 142, as well as fire extinguishers, first-aid means as well as an emergency exit on the front face and/or the wall opposing the access door 12, 12' and/or in the top region.

The sea container according to the invention has been described in connection with a trailing antenna sonar system. Such a container may, however, also be used for accommodating and for operating further sea-based systems, such as for example unmanned and/or manned underwater vessels and/or surface water vessels and/or underwater mobile bodies. Said vessels as well as the aforementioned underwater mobile bodies require a deploying device, for example a crane, which is installed inside the container and in the event of operation may exert considerable torques and forces on the container. Such a crane is also fastened to the bearing frame 52, so that the forces and torques exerted thereon are directly introduced into the bearing frame 52 and from there may be introduced via the lashing means 54 onto the vessel and/or the platform.

By means of the container according to the invention, therefore, complex and expensive systems may be movably mounted and accommodated and operated directly from the container. This applies, in particular, to

sonar systems but also to mine sweeping and/or mine clearance systems and other underwater moving bodies.

All features cited in the above description of the figures, in the claims and in the introduction to the description are able to be used individually and in any combination. The disclosure of the invention is therefore not limited to the described and/or claimed combinations of features. On the contrary, all combinations of features should be considered as being disclosed.

Claims

1. A sea container that can be closed on all sides comprising:

a basic frame which has four corner posts;

a top-side frame; and

a bottom-side frame structure said corner posts being fixedly connected to said top-side frame and to said bottom-side frame structure, wherein said bottom-side frame structure comprises a bearing frame, installations in the sea container being fastened to said bearing frame, and said bearing frame comprising lashing means for lashing down the sea container onto a vessel or a different offshore or land-based platform, and for absorbing horizontally acting forces, and for introducing forces and/or torques introduced into said bearing frame directly into a vessel or a different offshore or land-based platform on which the container is located.

2. The sea container according to claim 1, wherein said bottom-side frame structure above said bearing frame comprises an upper bottom-side frame, which is welded to said bearing frame and comprises four corner fittings, two longitudinal members and two transverse members, said corner fittings in each case being connected fixedly to one end of one of said corner posts.

3. The sea container according to claims 1 or 2, wherein said bearing frame comprises four corner

fittings at its corners as well as two longitudinal bearing frame members fixedly connected to said corner fittings and two transverse bearing frame members fixedly connected to said corner fittings, said lashing means being provided between one or more pairs of adjacent corner fittings of said bearing frame on one or both longitudinal bearing frame members and/or on one or both transverse bearing frame members.

4. The sea container according to claim 3, wherein said bearing frame comprises transverse members which are arranged between said longitudinal bearing frame members and are fixedly connected thereto and to which at least some of said installations are fastened.

5. The sea container according to any one of claims 2 through 4, wherein said installations comprise a winch for a trailing antenna of a sonar system, said winch being fastened to said bearing frame, in particular to one or more of said transverse members.

6. The sea container according to any one of claims 2 through 5, wherein said installations comprise a deploying device for unmanned and/or manned underwater vessels and/or surface water vessels and/or underwater moving bodies for deploying such a vessel and/or underwater moving body in sea water, said deploying device being fastened to said bearing frame, in particular to one or more of said transverse members.

7. The sea container according to any one of claims 2 through 6, wherein said bearing frame comprises one or more floor panels for shielding an interior of the container from the surroundings on said bottom-side frame, said floor panels comprising one or more draining means, in particular bilge plugs, bilge flaps and/or bilge pumps.

8. The sea container according to any one of claims 1 through 7, wherein said container interior is divided into two by a partition, into a control room and a working space, said control room being hermetically sealed and/or being able to be hermetically sealed from the surroundings.

9. The sea container according to claim 8, wherein said control room comprises an access door, an emergency exit, a window to said working space, an air conditioning system, heat insulation for insulating said control room relative to the surroundings, a heating system, fire extinguishing means, first-aid means, a satellite telephone system, communication devices for communication, including data communication, with devices on-board the vessel accommodating the container and/or with devices outside said vessel, data processing devices, in particular signal processing devices of a sonar system, an emergency power supply, a satellite navigation system and/or an automatic identification system.

10. The sea container according to any one of claims 1 through 9, wherein said installations comprise a voltage transformer for providing a predetermined and/or predeterminable initial voltage at variable input voltage.

11. The sea container according to any one of claims 1 through 10, wherein said bottom-side frame structure, in particular said bearing frame, comprises external earthing points for the electrical earthing of the sea container.

12. The sea container according to any one of claims 2 through 11, wherein said longitudinal members and/or transverse members of said basic frame, in particular said upper bottom-side frame and/or said bearing frame, are provided as cable ducts, in particular by recesses of girders comprising sealing elements which seal said recesses externally so that the region between said girders and said sealing element forms a cable guide.

13. The sea container according to any one of claims 8 through 12, wherein said working space comprises an access door arranged on a side wall of the sea container, the sea container further comprising a safety circuit which, when said access door is open, interrupts the electrical supply of an electrical drive in said working space, in particular of said

winch and/or the deploying system and, when said access door is closed, connects said electrical supply.

14. The sea container according to any one of claims 5 through 13, wherein said winch comprises a mechanical locking brake and/or an impulse transmitter for determining the length of dispensed cable and trailing antenna and a winch control unit which is configured such that, during operation of said winch, a minimum number of windings of a tensioning cable remains on a winch drum.

15. The sea container according to any one of claims 5 through 14, wherein said winch comprises a slip ring for transmitting electrical and/or optical signals.

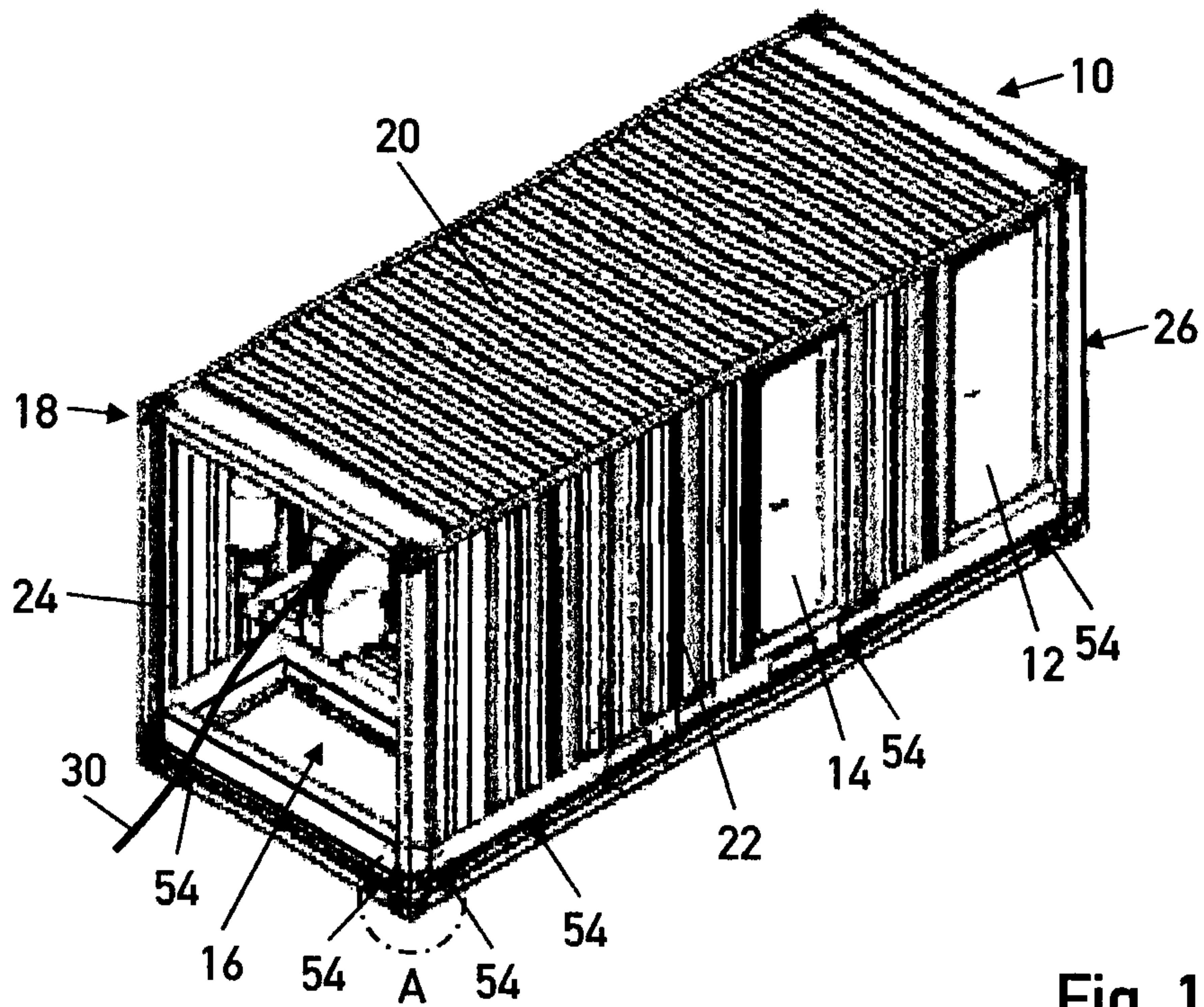


Fig. 1

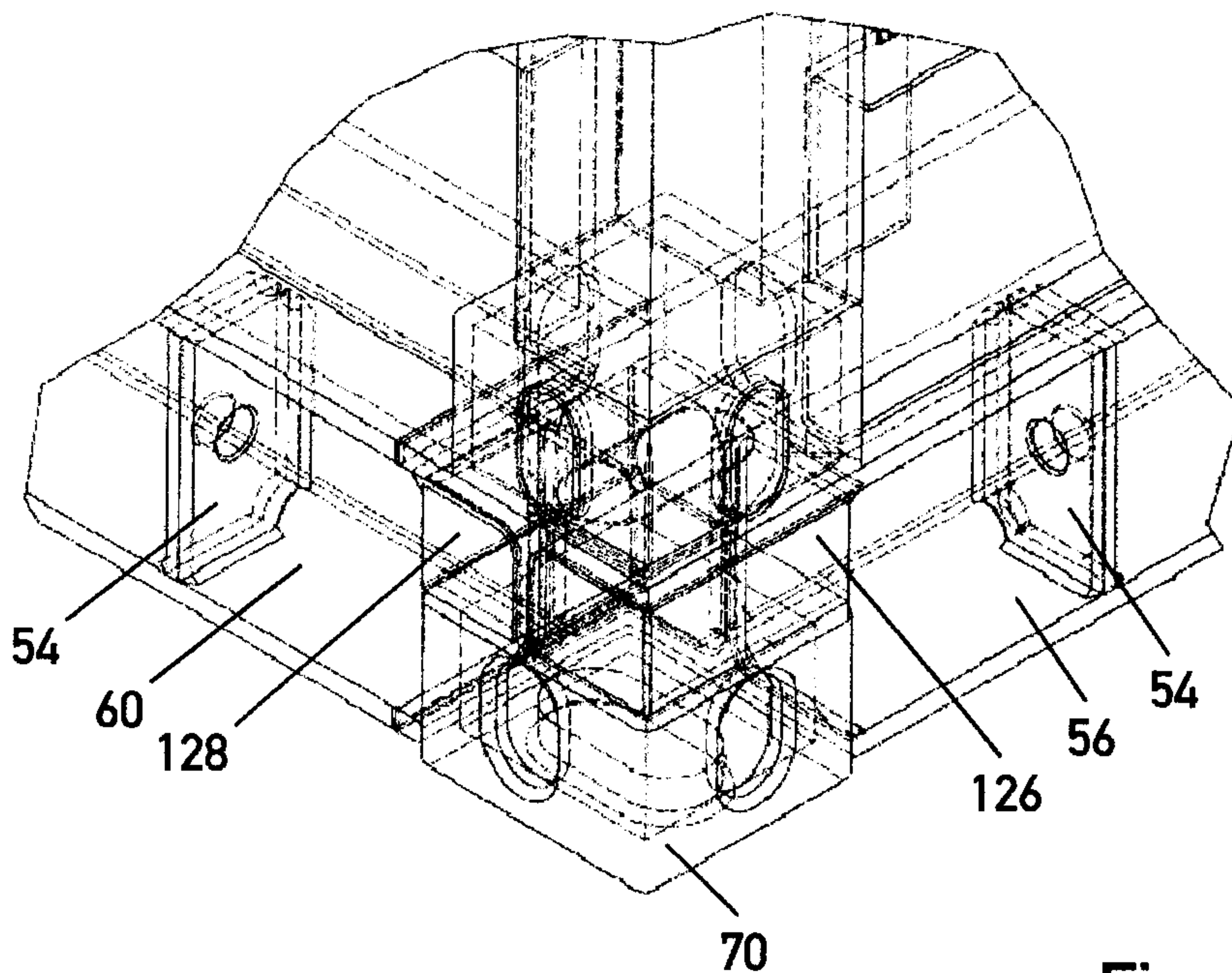


Fig. 4

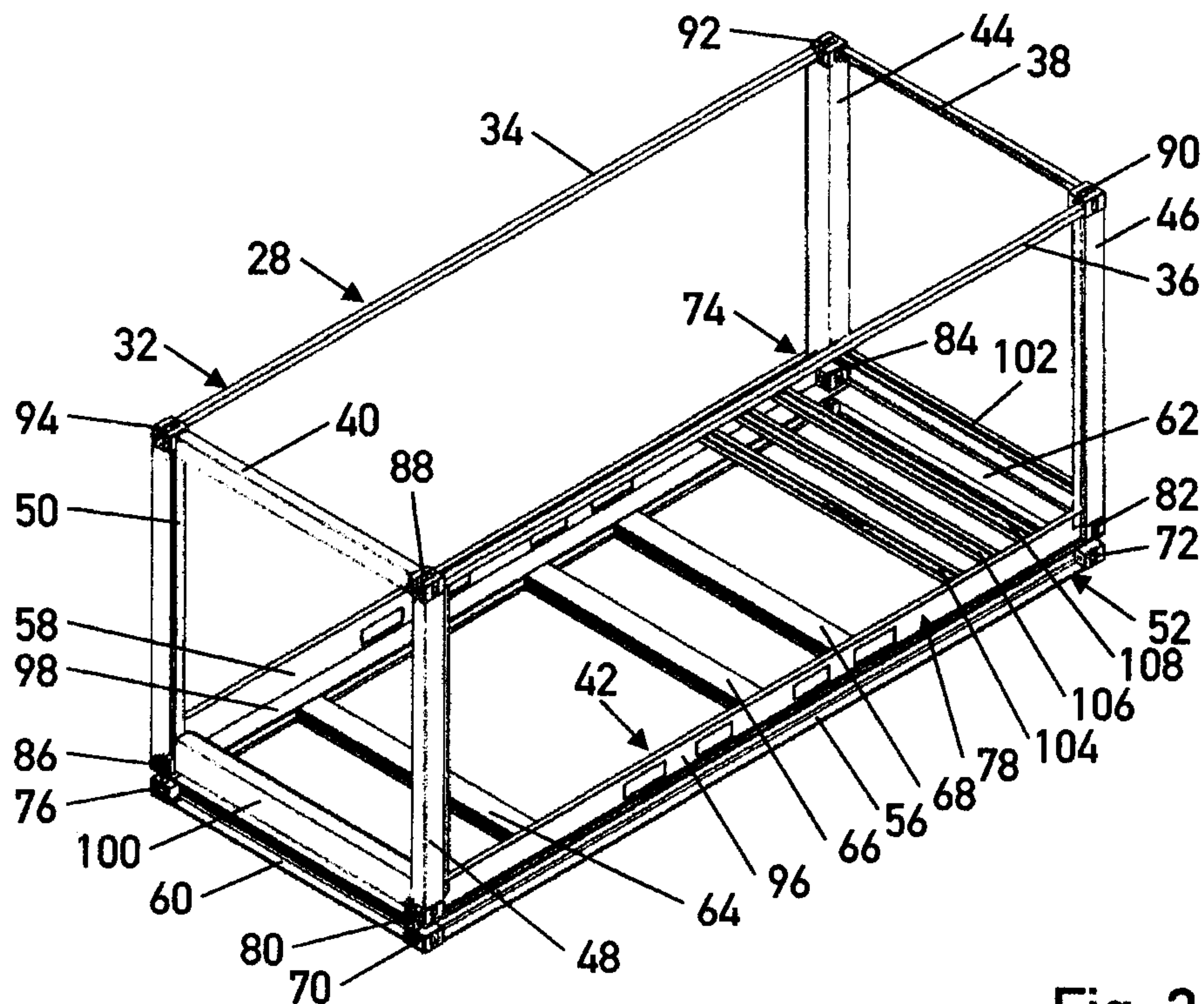


Fig. 2

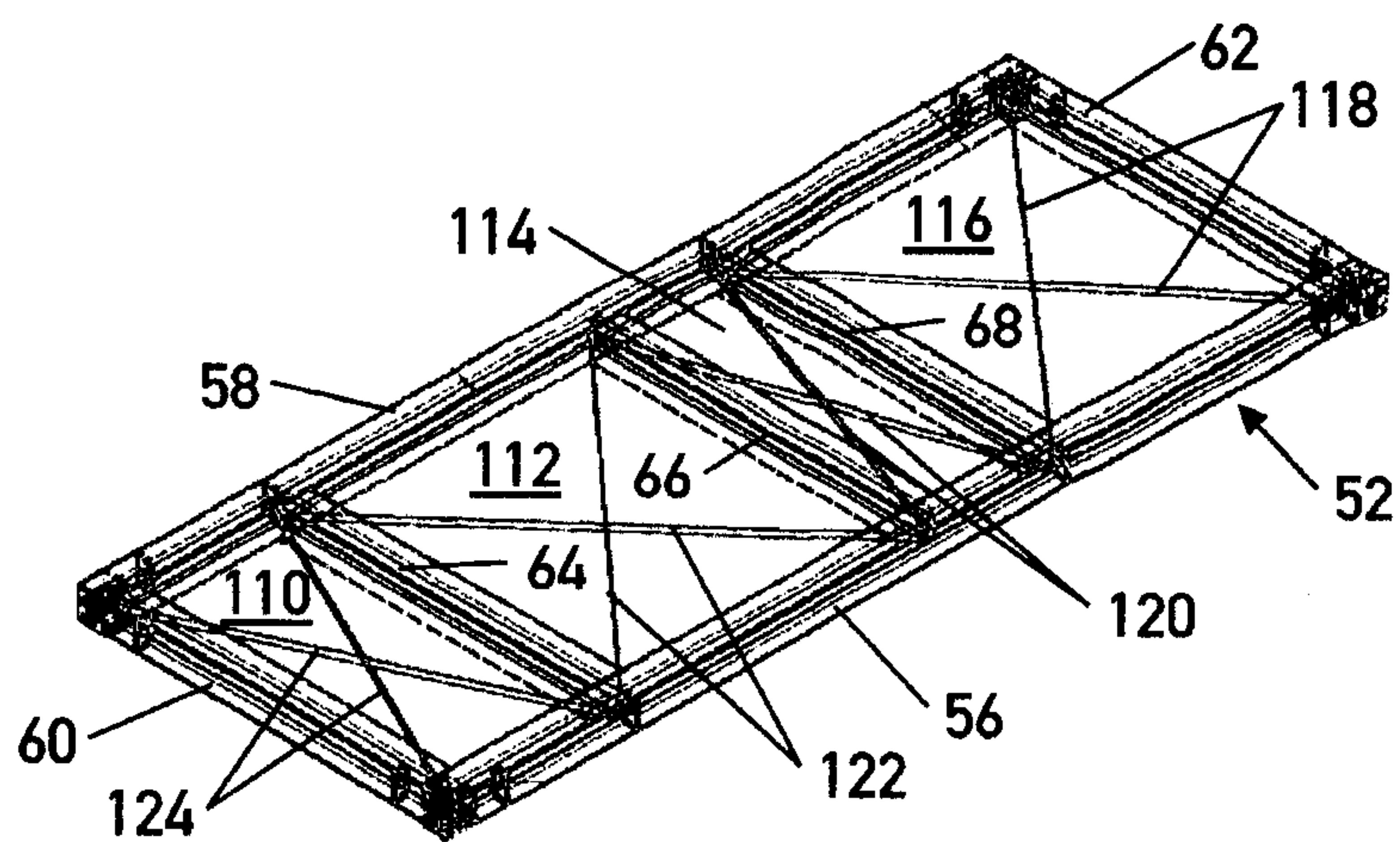


Fig. 3

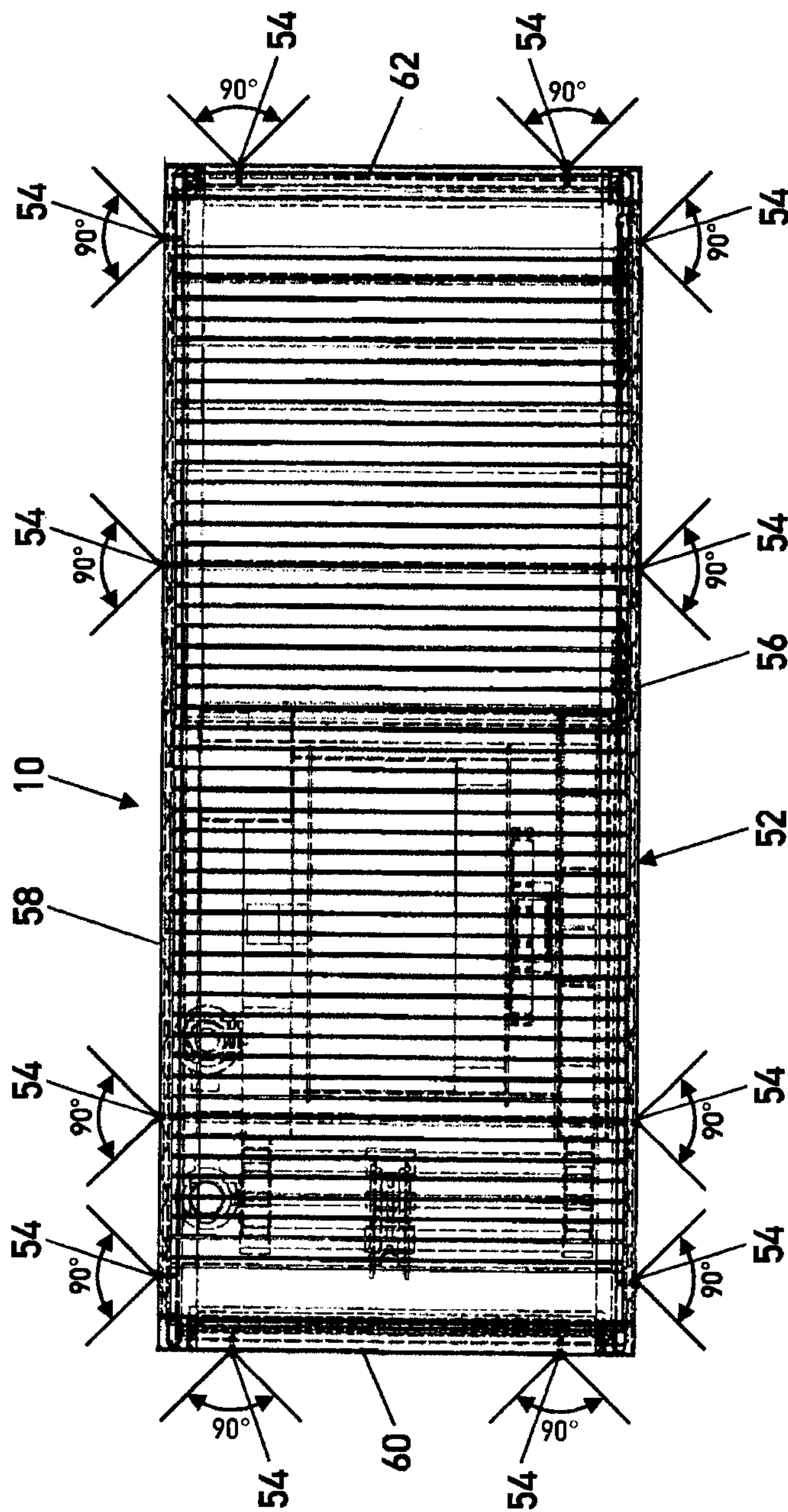


Fig. 5

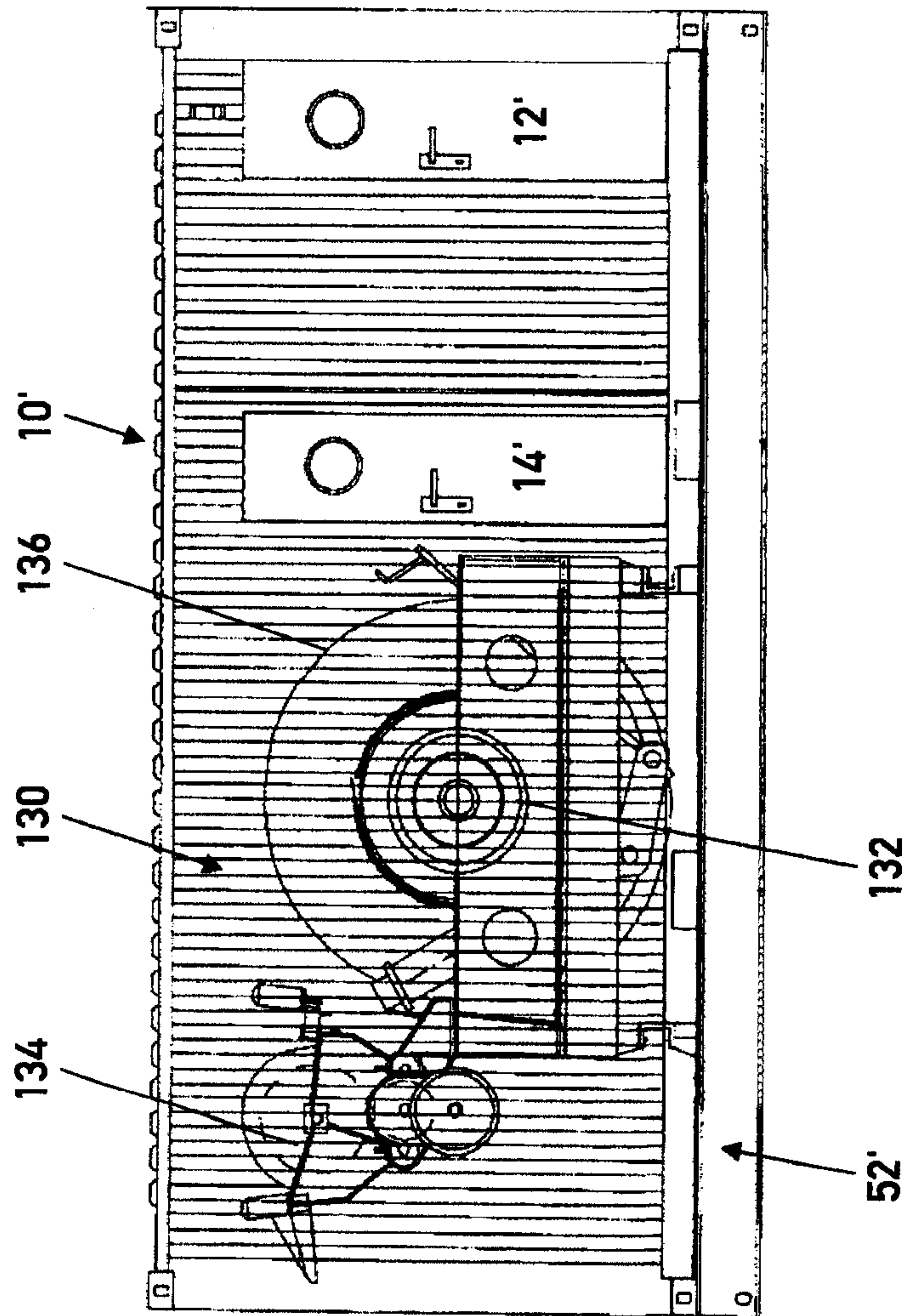


Fig. 6

5/7

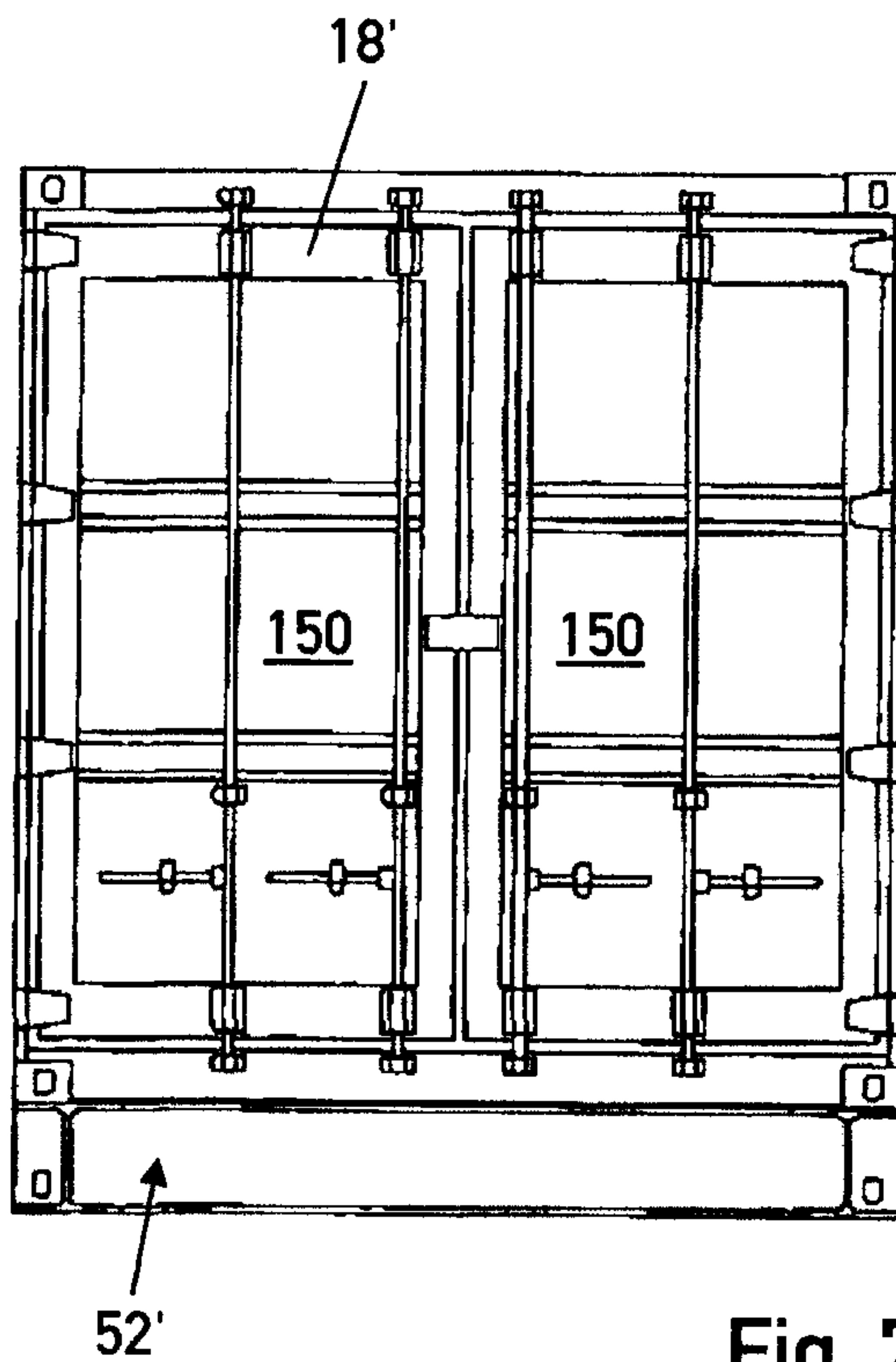


Fig. 7

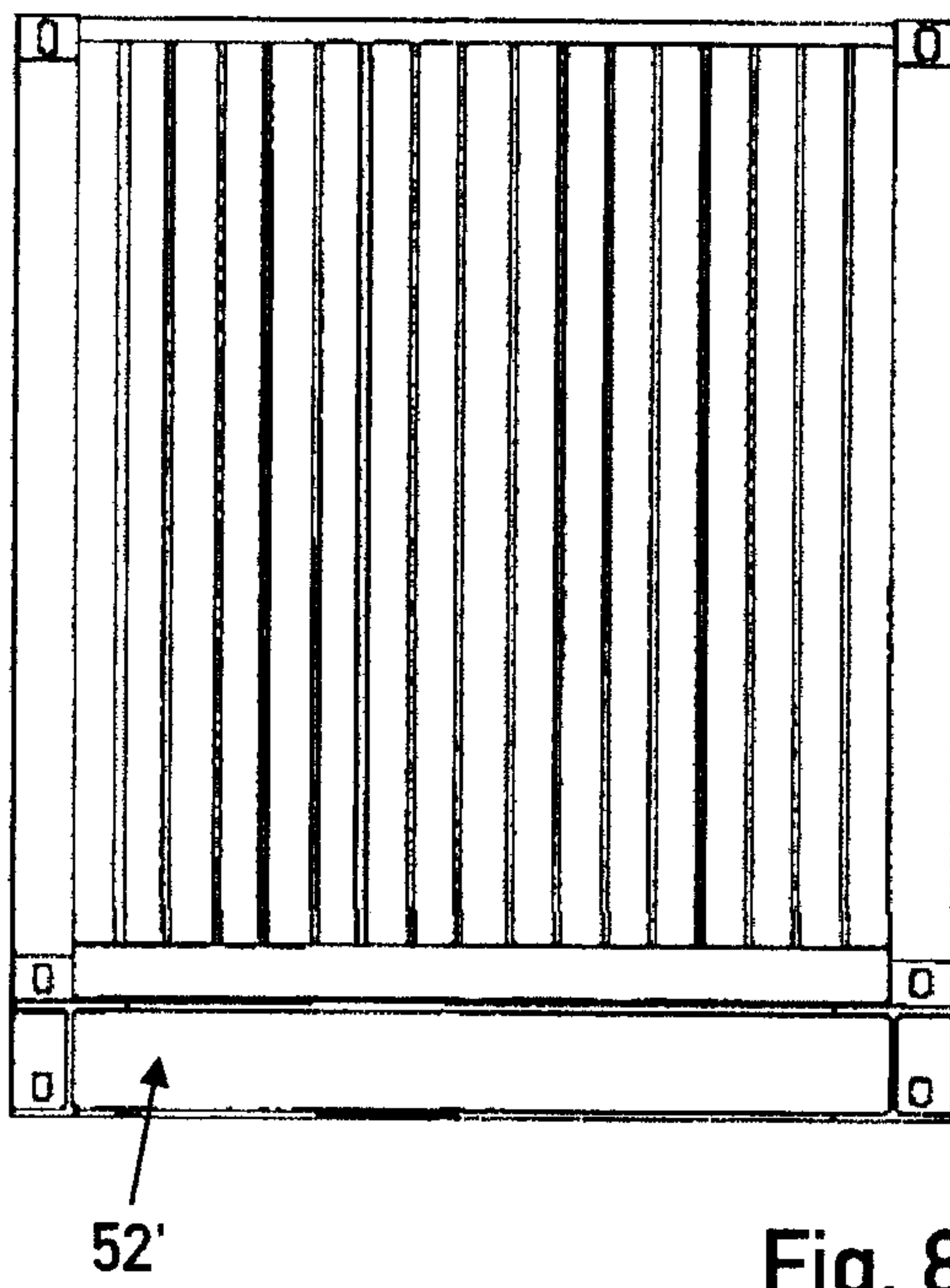


Fig. 8

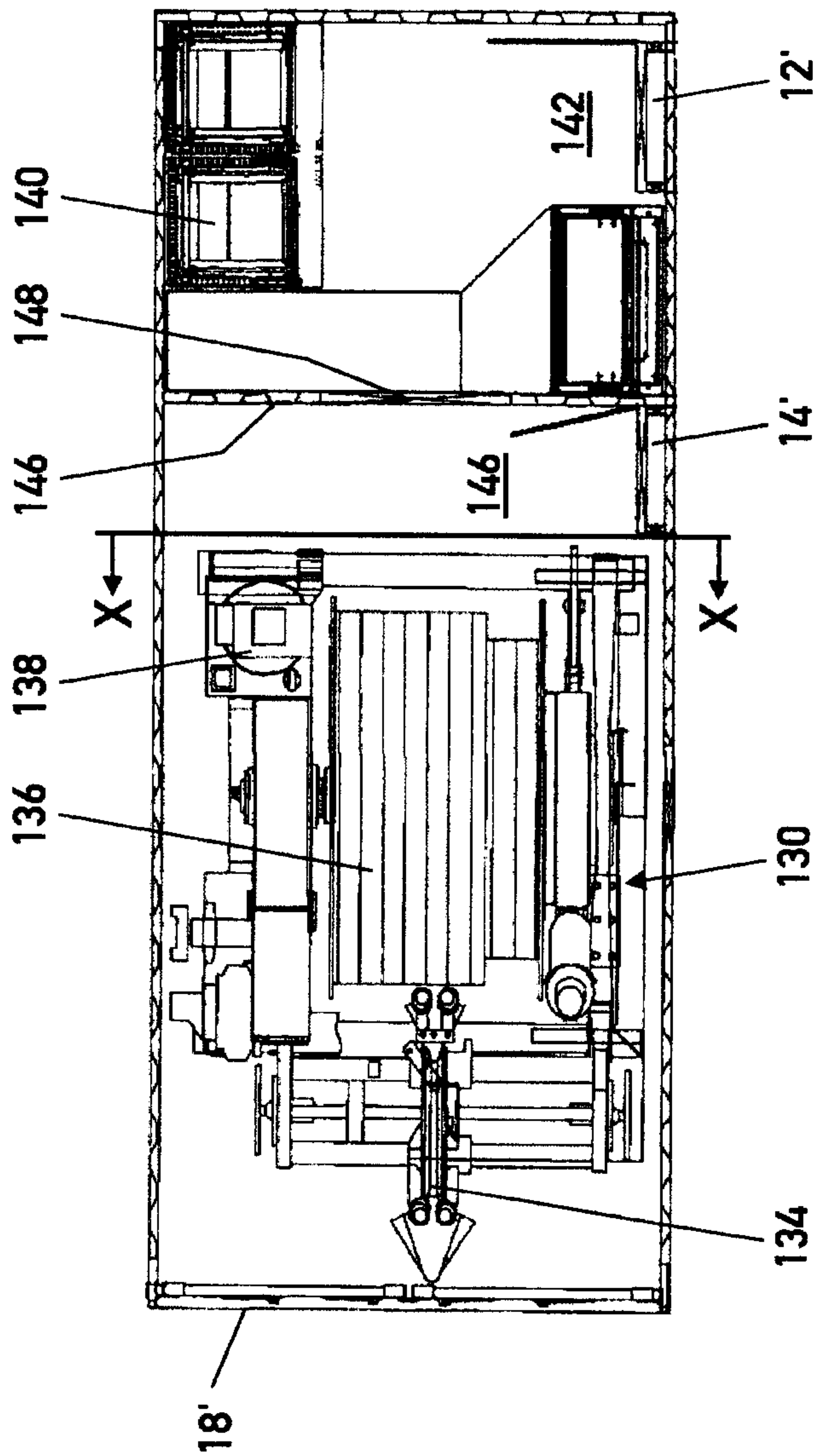


Fig. 9

7/7

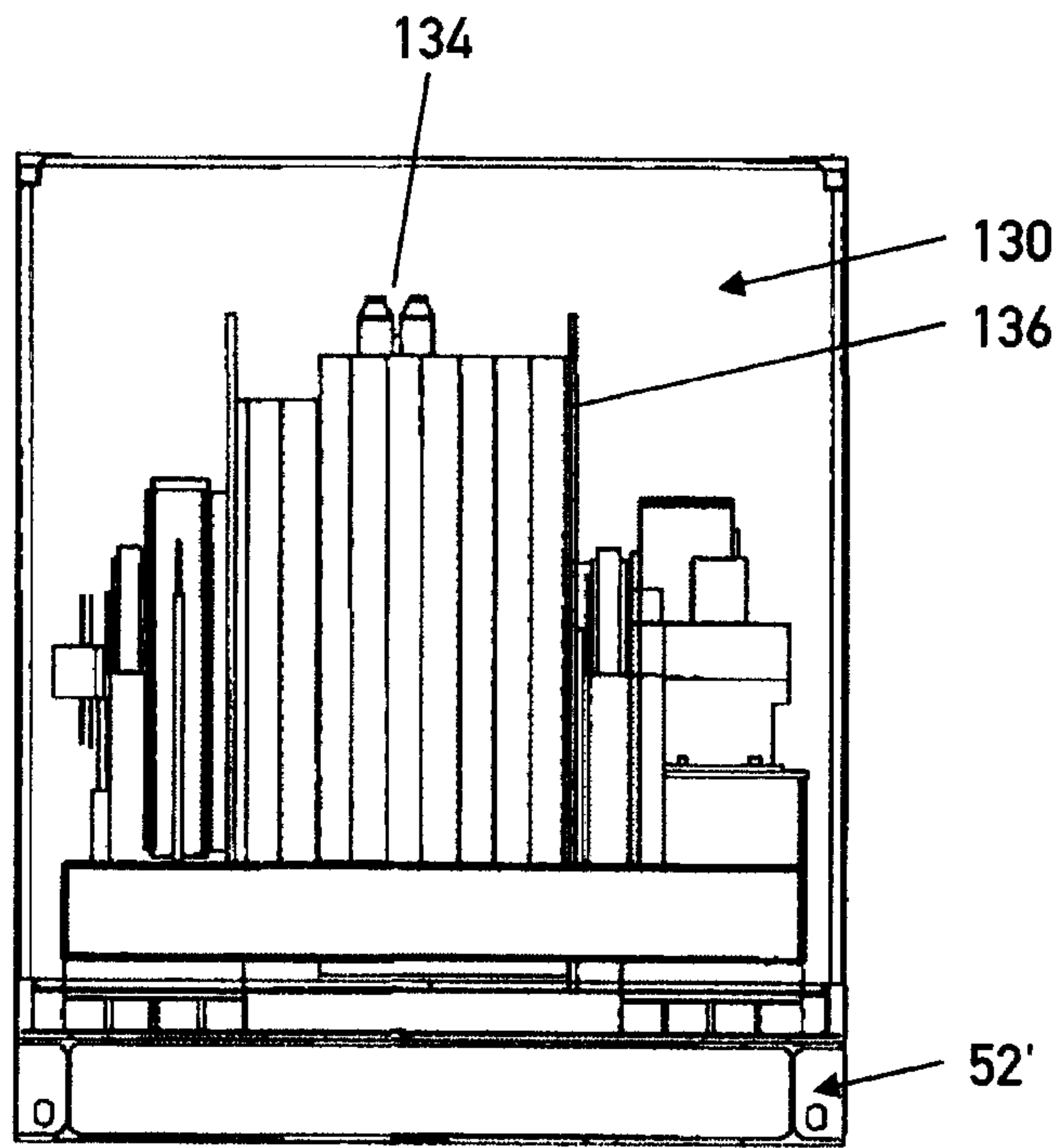


Fig. 10

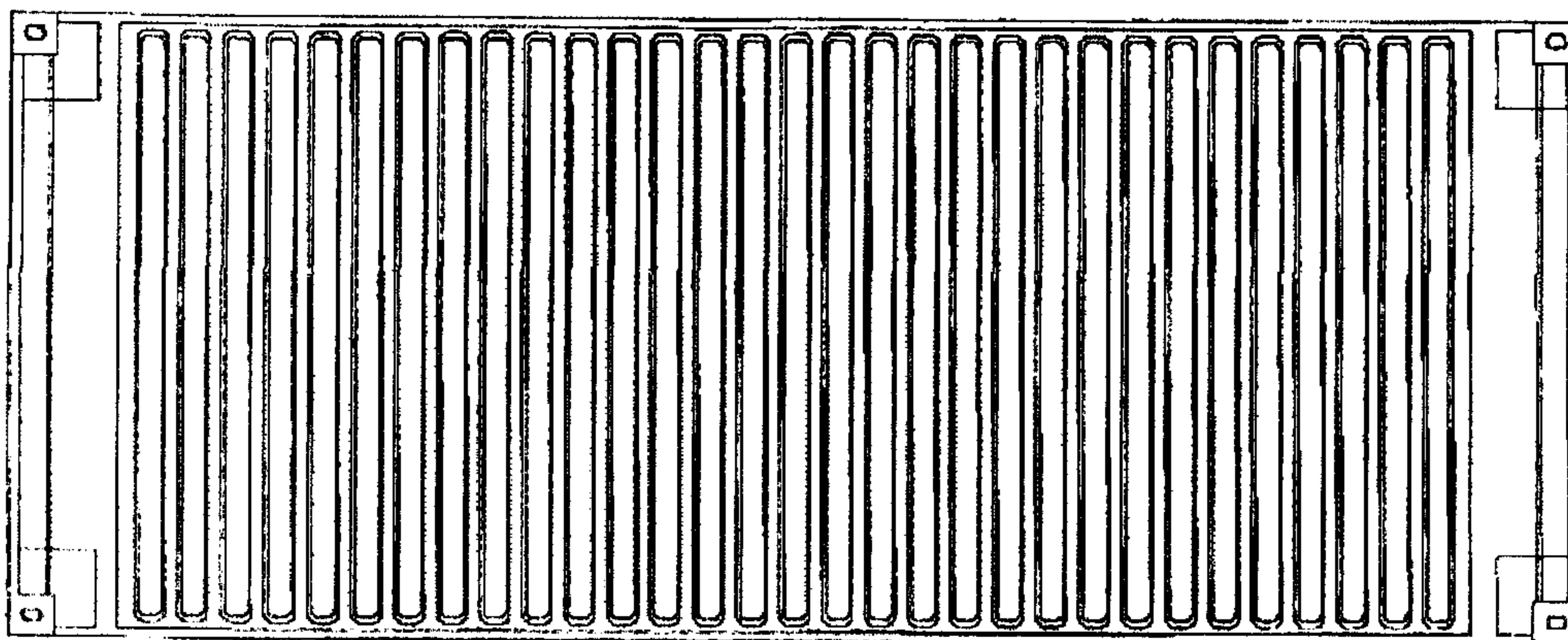


Fig. 11

