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㉔ Applicant: **Bell Lines Limited, 18 Buckingham Gate, London SW1E 6LB (GB)**

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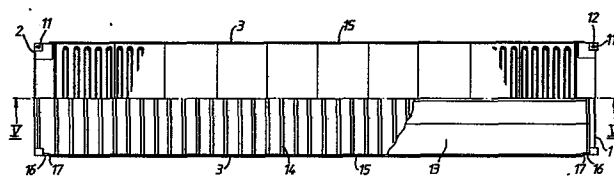
㉕ Inventor: **Harrison, William Michael, 12 Avon Close, Caldicot Gwent, NP6 4NH Wales (GB)**

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㉖ Representative: **Bardo, Julian Eason et al, Abel & Imray Northumberland House 303-306 High Holborn, London, WC1V 7LH (GB)**

㉗ **Improvements in or relating to freight containers.**

㉗ A freight container of generally cuboidal shape includes a pair of sides (3) which define the lateral extremities of the container and extend between ends (1, 2) of the container. The exterior surfaces of the pair of sides are spaced apart by a greater distance along their middle portions (15) than along their end portions (16), whereby the overall width of the container is less at the end portions than at the middle portions. The container is therefore able to have an increased capacity for a given size of each end.



Improvements in or relating to Freight Containers

This invention relates to freight containers and has particular, but not exclusive, reference to containers adapted to be transported by sea.

5 Such freight containers are commonly of cuboidal shape having a width of 8 feet (2,438 mm) and a length of 20, 30 or 40 feet (6,096, 9,144 or 12,192 mm). When such containers are transported at sea they are commonly located in a hold which is split into a number
10 of cells each of a width sufficient to hold one container. These guides are fixed with a lateral spacing of a little over 8 feet (2,438 mm) so that the ends of a container 8 feet wide can just be fitted between them.

15 It is sometimes desired to carry metric pallets in such containers, these pallets having a standard size of 1.2 m X 1.0 m. In order to accommodate two pallets side by side with their major dimensions extending across the container, the latter must have an internal width of
20 2.4 m and this is not possible when the overall width of the container is 8 ft (2,438 mm). One solution to this problem is to make the containers 2.5 m wide but this then means that they cannot fit into the standard cells provided in a ship's hold. Also, the corner fittings
25 that are usually fitted to such containers cannot be fitted at extremities of corners of a 2.5 m wide

container if they are to be spaced apart by the standard distance required by load handling apparatus, trailers and the like and this causes difficulties in the design of the container.

5 It is an object of the invention to provide an improved form of freight container which overcomes at least in part the problems referred to above.

 According to the invention there is provided a freight container of generally cuboidal shape including a pair of sides which define the lateral extremities of the container and extend between ends of the container wherein the exterior surfaces of the pair of sides are spaced apart by a greater distance along their middle portions than along their end portions which are joined to the ends of the container, whereby the overall width of the container is less at the end portions than at the middle portion.

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 With a container of the invention the spacing of the end portions of the pair of sides can be made such that the ends of the container can just be fitted between the cell guides of a container carrying ship, while away from the cell guides the sides are spaced further apart so that the internal width of the container over most of its length can be increased.

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25 The difference in spacing between the middle and end portions of the container sides may not be very great. For example it may be in the range of 20 to

100 mm and in one embodiment of the invention it is of the order of 60 mm. Such a relatively small increase in the spacing of the middle portions of the sides does, however, enable the width of the container to be
5 increased to a small extent. This small increase, however, may be very useful; for example preferably it provides an internal width of at least 2.4 m to enable two metric pallets to be accommodated side by side in a container with their major dimensions extending across
10 the container. The ends of the container are not of course able to accommodate two containers in this way but that only reduces the capacity of the container by a small amount.

Preferably, the end portions of the sides extend
15 parallel to the longitudinal axis of the container and are connected to the middle portions by interconnecting portions inclined to the longitudinal axis of the container. The interconnecting portions may be inclined to the longitudinal axis at an angle in the range of 10
20 to 90 degrees and in one embodiment of the invention are inclined at an angle of the order of 25 degrees. Such an arrangement facilitates the manufacture of a container having side walls of varying spacing.

The end portions of the sides, which end portions
25 may be all of the same length, are preferably substantially shorter than the middle portions, and are preferably at least five times or more preferably ten

times shorter while in one embodiment of the invention they are of the order of 30 times shorter. This increases the amount of additional internal volume obtainable from the arrangement of the invention.

5 The container preferably includes corner fittings at extremities of corners of the container.

 The container of the invention will usually have top and bottom walls in addition to the side and end walls mentioned above. One end wall of the container may
10 be fitted with a pair of doors.

 In an embodiment of the invention which will now be described the ends of the container are conventional and are sized as on a standard 8 foot (2438 mm) wide container.

15 By way of example a freight container embodying the invention will now be described with reference to the accompanying drawings of which:

 Fig. 1 is a plan view of the container cut away to different extents in different views,

20 Fig. 2 is a side view of the container,

 Fig. 3 is an end view of a door end of the container,

 Fig. 4 is a sectional view along the lines IV-IV in Fig. 2 of part of the container,

25 Fig. 5 is a sectional view along the lines V-V in Fig. 1,

 Fig. 6 is a sectional view along the lines VI-VI in

Fig. 2 to a larger scale than Fig. 2 of part of the container,

Fig. 7 is a sectional view along the lines VII-VII in Fig. 6, and

5 Fig. 8 is a diagrammatic plan view of the container positioned in the hold of a standard container-carrying ship.

The freight container shown in the drawings is of generally cuboidal shape having ends 1, 2, sides 3, a top
10 5 and a bottom 6. The end 1 of the container is provided with a pair of double doors 7 (Fig. 3) mounted on hinges 8. The container is symmetrical about a vertical longitudinal plane.

The container has a pair of steel tubes 9 of square
15 cross-section along the junctions of the top 5 with the sides 3, and a pair of steel tubes 10 of height greater than their width along the junctions of the bottom 6 with the sides 3. At the eight corners of the container corner fittings 11 with sockets 12 are provided. The
20 sockets 12 can be engaged by a fastener on a road trailer or railway wagon on which the container is to be carried, or during handling.

The bottom 6 of the container has a wooden floor 13 supported along its length by transverse I beams 14
25 (Fig. 5) which span the width of the floor between a pair of longitudinal steel beams 20 which are connected to the steel tubes 10 as will be more fully described later.

The construction of the freight container is in most respects entirely conventional and will not be described further.

As can be seen clearly in Fig. 1, the exterior surfaces of the sides 3 of the freight container are spaced apart by a greater distance along their middle portions 15 than along their end portions 16. Inter-connecting portions 17, inclined at an acute angle to the longitudinal axis of the container, connect the middle portions 15 to the end portions 16.

Referring now to Fig. 6, each side 3 is made of corrugated panelling 18 extending between a respective upper tube 9 (Fig. 4) and a respective lower tube 10. Where the middle portion 15 of each side meets the inclined portion 17 the tubes 9 and 10 are bent inwardly and the panelling 18 terminates. Where the inclined portion 17 meets the end portion 16 the tubes 9 and 10 are bent back to lie parallel with the longitudinal axis of the container. In Fig. 6 only the bends in a lower tube 10 can be seen but it will be appreciated that the upper tubes 9 are bent in the same way. A separate shaped section of panelling 19 is provided between each end of the panelling 18 and each end 12 of the container. While reference is made above to "bending" of the tubes it will be appreciated that the configuration of the tubes may not be formed by a bending operation but for example by fabrication from separate

tube sections.

Along the middle portion 15 of each side, the lower tubes 10 are welded to the outside of the top portions of the steel beams 20 as shown in Fig. 4. However, the beams 20 are straight along their entire length and do not bend in the region of the inclined portions 17 of the sides. In order to allow the tubes 9 to be bent inwardly the top portions of the beams 20 are cut away and the tubes 9 sit on top of the remaining portions of the beams 20, being welded thereto, as shown in solid outline in Fig. 7.

In one particular example of the invention the overall spacing of the exterior surfaces of the sides of the container was 2,500 mm while the spacing of the exterior surfaces of the end portions 16 of the sides was 2,438 mm, the inclined portion began 305 mm from the end of the container and had a length of 70 mm being inclined at an angle of about 26° . The overall length of the container was 12,192 mm (40 ft) and the overall height was 2,591 mm. The internal width of the container along the middle portion was 2,444 mm. In two further similar examples of the invention, the overall length of the container was reduced to 6,096 mm (20 ft) and 9,144 mm (30 ft) by reducing the lengths of the middle portions 15 of the sides, all the other dimensions being the same.

The container described above is designed to be

able to fit within the location guides that are a standard feature of a container ship. Referring now to Fig. 8, two such containers 30 are shown located in a ship's hold. The hold is divided into a number of
5 separate cells by guides 3, which extend perpendicularly from rails 32 and which have gaps just over 8 ft (2,438 mm) wide between them. The rails 32 are arranged with gaps of just over 20 ft, 30 ft or 40 ft (6,096 mm, 9,144 mm or 12,192 mm) between them. Such spacings are
10 standard on a container ship. As can be seen in Fig. 8 the guides 31 are relatively short, having a length of less than 300 mm. Thus the ends of the containers 30 are able to fit between adjacent cell guides 31 and between adjacent rails 32. Away from the rails 32 the
15 overall widths of the containers 30 are greater than the gaps between the sides of adjacent containers and thus the spaces between the sides of adjacent containers are at least partially filled.

While the invention has been described above in
20 relation to a closed sided freight container, it will be appreciated that it may also be applied to other forms of freight containers, for example containers having an open framework construction and carrying tanks of approximately cylindrical shape.

Claims:

1. A freight container of generally cuboidal shape including a pair of sides which define the lateral extremities of the container and extend between ends of the container wherein the exterior surfaces of the pair of sides are spaced apart by a greater distance along their middle portions than along their end portions which are joined to the ends of the container, whereby the overall width of the container is less at the end portions than at the middle portions.
2. A container as claimed in claim 1 in which the difference in spacing between the middle and end portions of the container sides is in the range of 20 to 100 mm.
3. A container is claimed in claim 2 in which the difference in spacing is of the order of 60 mm.
4. A container as claimed in any preceding claim in which the end portions of the sides extend parallel to the longitudinal axis of the container and are connected to the middle portions by interconnecting portions inclined to the longitudinal axis of the container.
5. A container as claimed in claim 4 in which the interconnecting portions are inclined to the longitudinal axis at an angle in the range of 10 to 90 degrees.
6. A container as claimed in claim 5 in which the interconnecting portions are inclined to the

longitudinal axis at an angle of the order of 25 degrees.

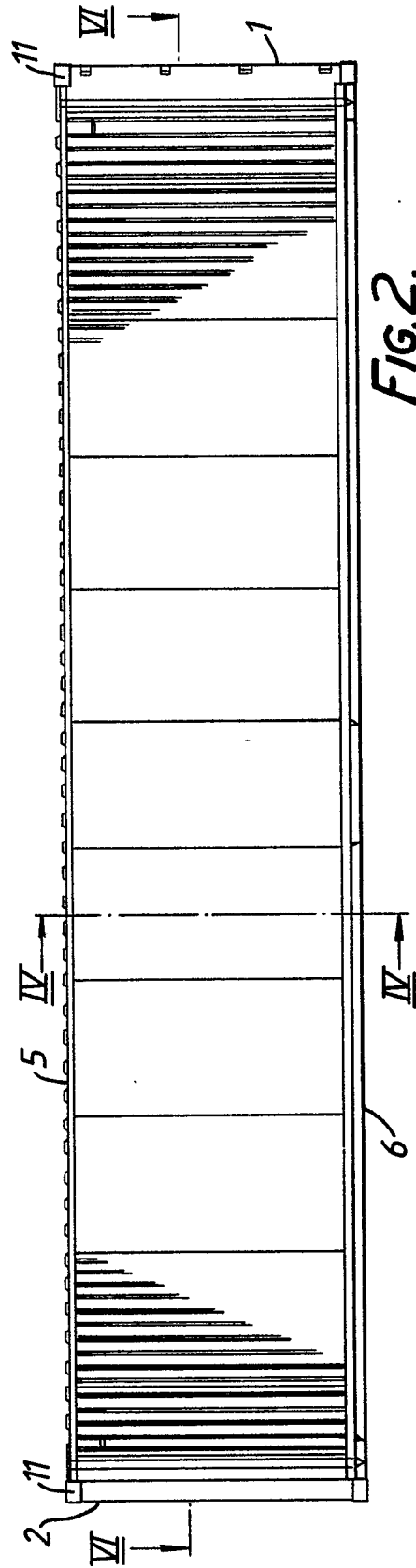
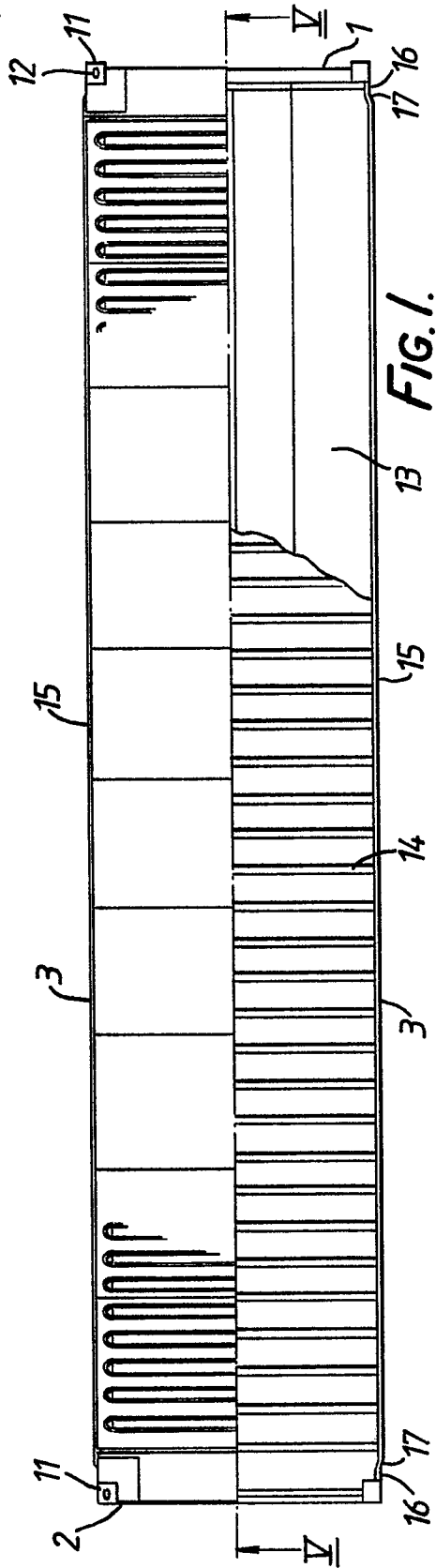
7. A container as claimed in any preceding claim in which the end portions of the sides are substantially shorter than the middle portions.

5 8. A container as claimed in claim 7 in which the end portions of the sides are at least 5 times shorter than the middle portions.

9. A container as claimed in claim 8 in which the end portions of the sides are at least 10 times shorter
10 than the middle portions.

10. A container as claimed in any preceding claim including corner fittings at extremities of corners of the container.

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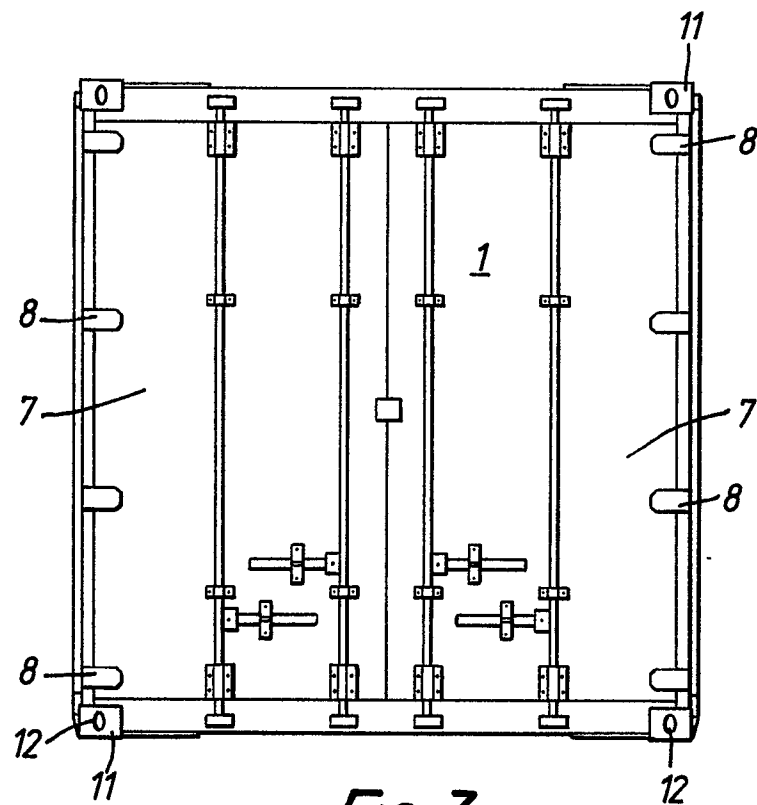
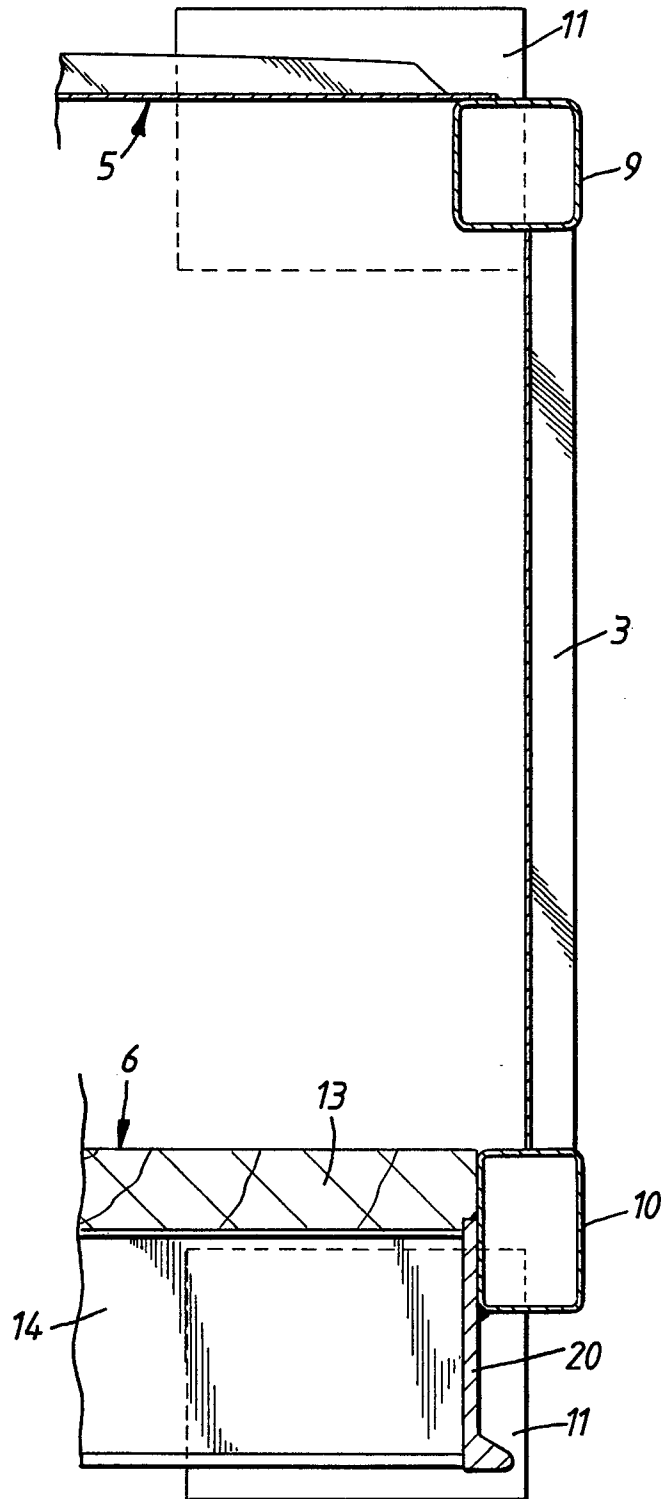


FIG. 3.

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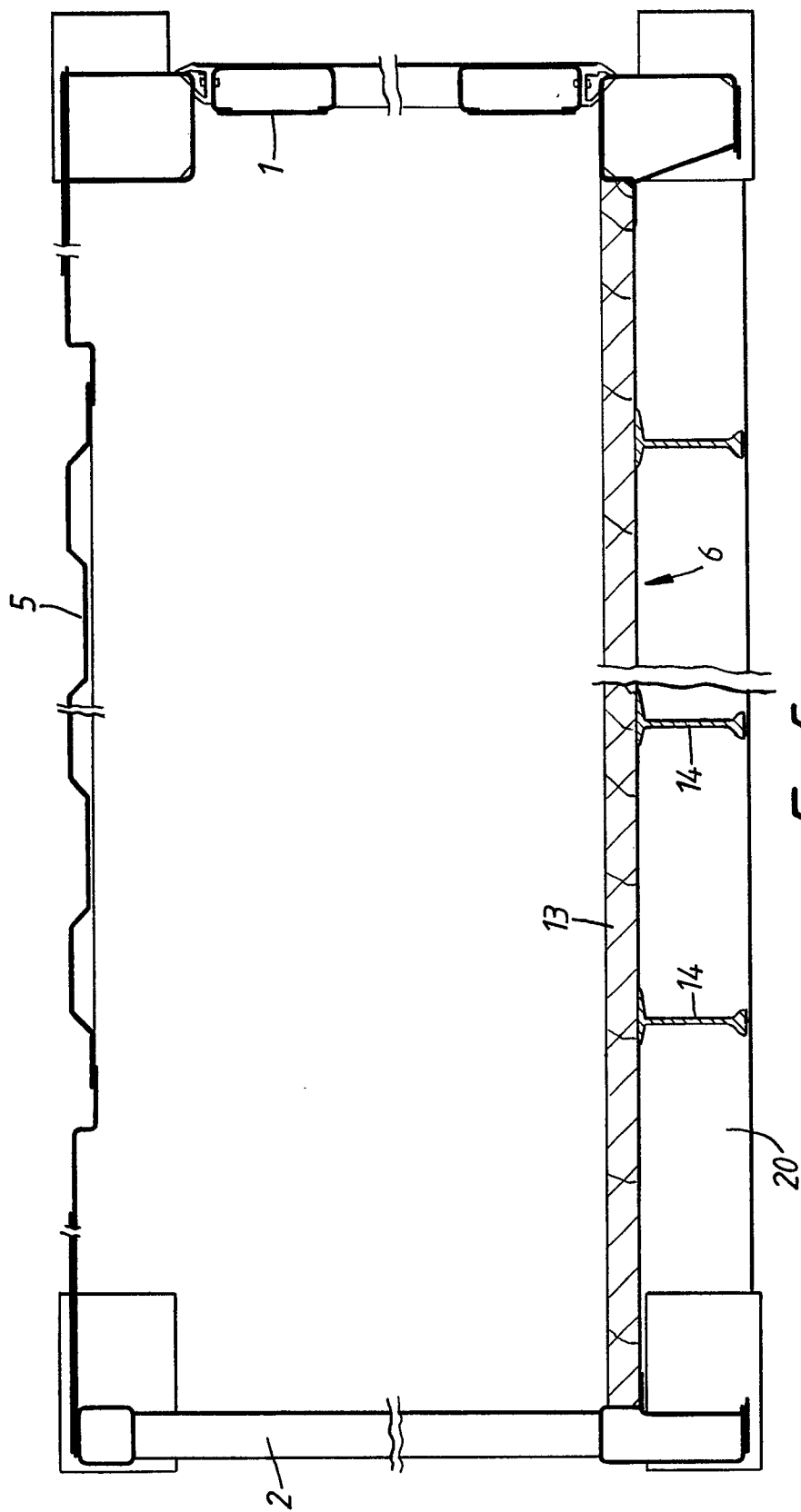


FIG. 5.

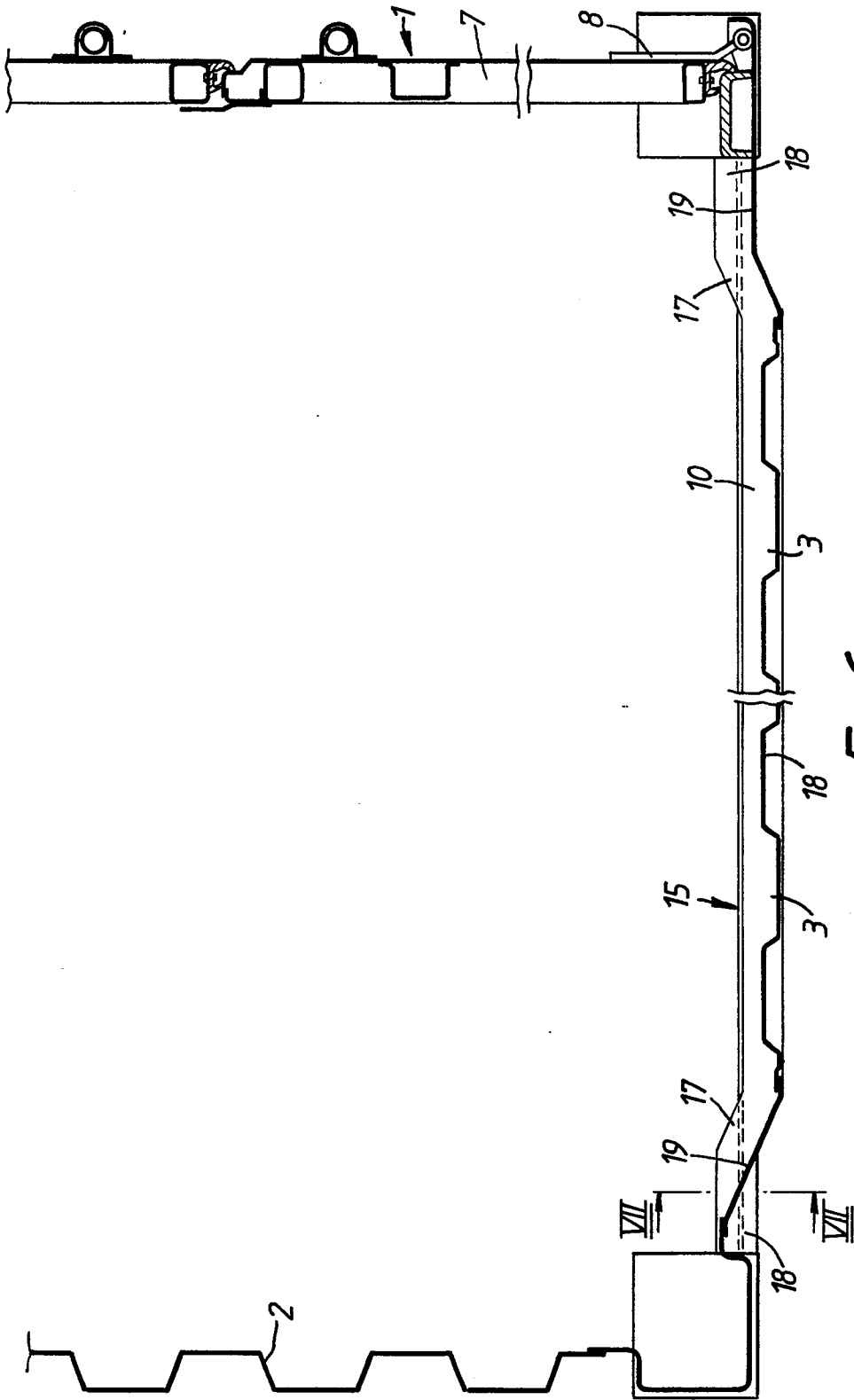
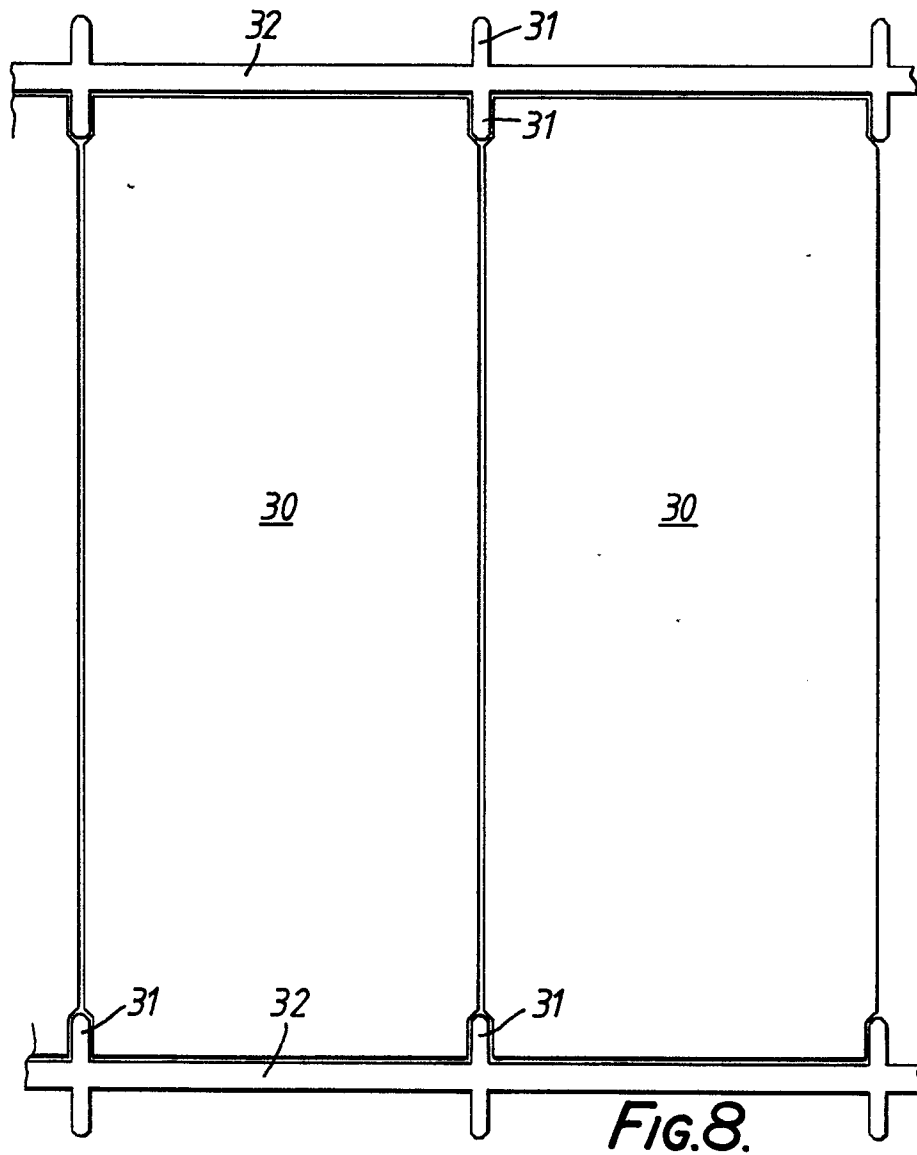
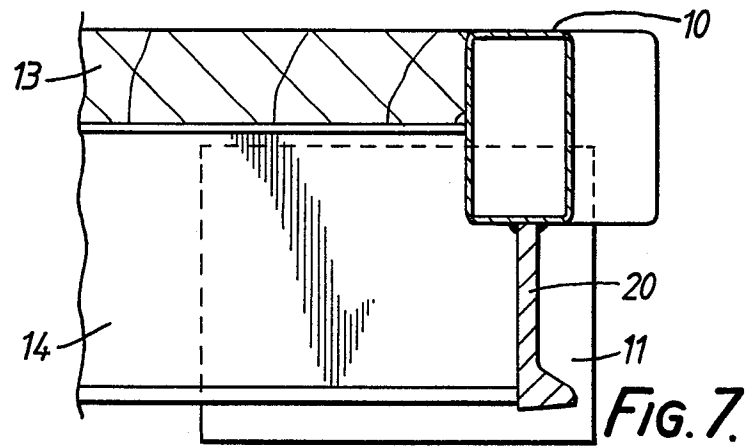


FIG. 6.

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European Patent
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EUROPEAN SEARCH REPORT

0206542

Application number

EP 86 30 4015

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB-A-1 202 566 (CRANE FRUEHAUF TRAILERS LTD.) * Figures 1-4 *	1,10	B 65 D 88/12
A	DE-A-3 329 744 (GRAAFF KG) * Figure *	1,10	
A	US-A-3 410 439 (BURDA et al.) * Figures 1,2 *	1	
A	FR-A-2 360 481 (BELL LINES LTD.) * Whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 65 D 88/00 B 65 D 90/00 B 63 B 25/00
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11-09-1986	Examiner RAYBOULD B.D.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	