

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: 83102366.8

(51) Int. Cl.³: **B 65 D 19/16**
B 65 D 6/24

(22) Date of filing: 10.03.83

(30) Priority: 16.03.82 AU 3150/82

(43) Date of publication of application:
21.09.83 Bulletin 83/38

(84) Designated Contracting States:
DE FR GB IT

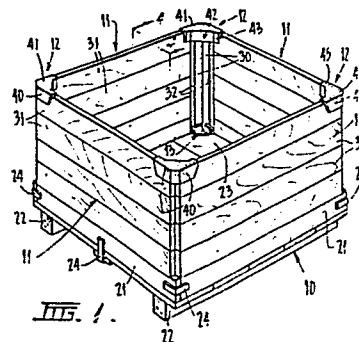
(71) Applicant: Tosevski, Dimitri
11 Hallidon Close
Greensborough Victoria 3088(AU)

(72) Inventor: Tosevski, Dimitri
11 Hallidon Close
Greensborough Victoria 3088(AU)

(74) Representative: Zeitler, Giselher, Dipl.-Ing.
Herrnstrasse 15
D-8000 München 22(DE)

(54) Improved bin.

(57) A bin for transporting articles and materials which can readily be assembled, when articles are to be transported, and disassembled for transport of the bin, comprising a base assembly (10) and four side wall assemblies (11), the wall assemblies each being adapted to be located on the base, around the periphery thereof, and each being in abutment with two adjacent wall assemblies, complementary means (30) on each adjacent wall assembly arranged so that, when the two assemblies are in abutment, inward movement is restricted, the base (10) being formed to restrict outward movement of the wall assemblies and fastening means (12) whereby adjacent wall assemblies can be held against outward movement.



IMPROVED BIN

This invention relates to an improved bin and, in particular, to an improved bin of the type used for bulk packaging of products.

Many products, particularly fruit and vegetables, are very satisfactorily handled in bulk bins which conventionally may have a side length of approximately 1160 mm and a useable height of some 630 mm. Conventionally, the bins have been formed of wood and comprise a base which stands free from a surface so that fork lift tynes can pass therebeneath to enable the bin to be handled. The bin can thus be considered to be a pallet having extended side walls.

These bins are perfectly satisfactory in operation when they are full and can be arranged to enable stacking and can be satisfactorily manipulated, usually, as mentioned, by fork lift.

However, when the bins are empty, they still occupy the same volume as when full. Many attempts have been made to enable such bins to fold for storage and transport but such arrangements have tended to be clumsy, do not reduce the total volume substantially and have not been acceptable in the market place.

It is an object to provide a bin of the general type described which is readily demountable and the components of which can occupy a minimal amount of space when the bin is demounted whilst, at the same time, providing a robust and sturdy bin when it is assembled.

In its broadest sense, the invention includes a bin comprising a base assembly including a floor and four side wall assemblies, the wall assemblies each being adapted to be located on the base, about the periphery thereof, and each being in abutment with the two adjacent wall assemblies; each assembly being formed at each side with complementary means so that, when two assemblies are in abutment,

0089017

inward movement is restricted, the base being formed to restrict outward movement of the wall assemblies and fastening means whereby adjacent wall assemblies can be held against outward movement.

Preferably each complementary means includes a face which lies along the inner edge of the wall assembly and is directed inwardly at an angle of approximately 45° to the normal through the edge whereby, when the two edges of adjacent wall assemblies are in contact and at right angles, the faces are in abutment.

The base assembly is provided with a peripheral upward extension to provide a skirt thereabouts and, inside which skirt, the side members of the wall assemblies are located.

The fastening means are preferably of a synthetic plastics material but, alternatively, could be of sheet metal and may have two members at right angles which are adapted to locate against the outer surfaces of two adjacent assemblies and restraining members which are adapted to pass over the top and within each adjacent assembly.

I may also prefer to provide secondary fastening means, associated with the base, which means can restrict relative outward movement of the wall assemblies relative to the base.

In order that the invention may be more readily understood, I shall describe, in relation to the accompanying drawings, one particular form of bin made in accordance with the invention.

In these drawings:-

Fig. 1 is a perspective view of an assembled bin made in accordance with the invention;

Fig. 2 is an exploded view of the components which constitute the bin, only one of the fastening means and the secondary fastening means being shown;

Fig. 3 is a perspective view of a demounted bin;

Fig. 4 is a section along line 4-4 of Fig. 1 looking in the direction of the

arrows;

Fig. 5 is a partial plan view of a corner of the bin showing the location of the fastening means;

Fig. 6 is a view similar to Fig. 5 showing the corners of two adjacent wall assemblies separated; and

Fig. 7 is a section along line 7-7 of Fig. 4 showing the operation of the secondary fastening means.

The bin illustrated can be considered to be of conventional dimensions having a total height of 730 mm and a useable height of 630 mm and being 1160 mm square. It is to be appreciated that these dimensions are exemplary only and the bin may be of any required size.

However, if the wall assemblies are to be stacked within the base, as is described hereinafter, the maximum height is 1050 mm.

The form of bin to be described will be of wood but it will be appreciated that some or all of the components can be formed or fabricated from other materials.

The bin has five major components, a base assembly 10 and four side wall assemblies 11. It also has four upper corner fasteners which are preferably of a synthetic plastics material, but may be of metal and four lower corner fasteners 13, which are also, preferably, of plastic.

The base assembly 10 can be considered to be a pallet 20 having an upstanding peripheral skirt or dam 21. The actual formation of the pallet is not critical and, as illustrated, it is formed having at least two spaced edge members 22 to space the floor 23 from the ground to enable the receipt of fork lift tynes and the floor 23 may either be solid or in the form of wooden slats.

Around the periphery of the floor 23 there is an upwardly directed skirt or dam 21 which can readily be formed of four wooden members which abut or otherwise join. As illustrated, the interconnection between the floor 23 and the skirt 21 and between adjacent wooden members is by angle members 24, which may be made of a plastics material.

Each wall assembly 11 is identical in form and may have two side members 30 which are joined by a number of boards 31 which may abut or which may be spaced to permit ventilation into the interior of the bin.

The formation of the side members 30 is of importance to the correct operation of the invention in that the outer edges 32, at least, are chamfered inwardly at an angle of 45° to the plane of the face of the side member. This can best be seen from Fig. 6.

These chamfered edges are flush with the ends of the boards 31 from which these assemblies 11 are constituted.

In practice, of course, it is preferable that both sides of the side members are chamfered during a milling process so that there is no correct or incorrect way of location of these members when the side assembly is being fabricated.

The side members 30 extend below the boards 31 at one side a distance equal at least to the height of the skirt 21 of the base and, preferably, a distance slightly greater than this.

The spacing between the outer edges 32 of the two side members of a wall assembly 11 is equivalent to the spacing between the inner surfaces of the skirts 21 of the wall of the base, at right angles to the side against which the wall assembly is to be located.

The upper corner fasteners 12, comprise, basically, a pair of arms 40 at right angles, which arms are adapted to abut the outer surfaces of adjacent side wall assemblies 11 and adjacent their inner ends.

The arms 40 are integral with an inwardly directed top portion 41 which overlays the top of the wall assembly 11 and which has a downwardly directed inner portion 42 which has two parts 43, each adapted to abut the inner surface of the boards 31 of the adjacent wall assemblies and a centre part 44 which, as illustrated, lies across the inner edge of the side member 30.

Each of the fasteners 12 has a web 46 between each arm 45 and its associated parts 43, which webs 46 co-act with a slot or groove 34 formed in the upper member of each side assembly adjacent the outer edge thereof which web 46/slot 34 interaction aids in stabilizing the assembly.

0089017

The lower corner fastener 13 has a base 50 which is adapted to be connected to the floor 23 of the pallet, the base being generally a right isosceles triangle, the two equal sides of which are located closely adjacent the position which will be occupied by the side member 30 of adjacent wall assemblies.

Connected to this base there are a pair of arms 51, each of which has an outwardly directed spigot 52. The arms 51 are moveable relative to the base 50, as the connection is resilient.

Each side member 30 has an aperture 33 located to receive a spigot 52.

To assemble the bin it is only necessary to locate two adjacent wall assemblies 11 within the skirt 21 of the base 20 and with the extending side members 30 being downwardly directed so that the chamfered edges 32 of the side members abut along their length and the boards 31 forming the walls lie above and over the peripheral skirt 21 of the base.

The arrangement of the lower corner fasteners 13 in the corner of the base is such as to permit distortion of the arms 51 until the spigot 52 can enter the apertures 33 in the side members.

An upper corner fastener member 42 is then passed over the top of the adjacent wall members 11 so that its arms 40 abut each side and the top portion 41 and downwardly directed portions 42 restrain the wall members 11.

This operation is repeated with the other two wall assemblies so that a finished bin is formed.

It will be appreciated that the bin has no tendency to collapse inwardly, because of the chamfered side members, and is restrained from being forced outwardly because of the peripheral skirt 21 of the base and the upper corner fasteners 12.

The lower corner fasteners 13 prevent any relative outward movement of the wall assemblies 11 relative to the base 10 if, for example, the bin is to be upended in unloading.

The bin can be readily disassembled simply by removing the fasteners 12, 13 and then the side wall assemblies 11 and, because of their formation, the side wall assemblies can then be located on the floor of the base, each adjacent assembly 11 being at

right angles to the one therebeneath so that the total height of the stacked wall assemblies is approximately the same as the height of the peripheral skirt 21 of the base and, thus, the whole disassembled bin occupies only the volume of the base alone. This is illustrated in Fig. 3. The upper corner fasteners 12 can, when the bin is disassembled, be located over the lower corner fasteners 13, as is illustrated in Fig. 3. This feature is particularly useful for freight and storage purposes as the total volume occupied can be of the order of 15% of the volume occupied when the bin is assembled.

It will also be appreciated that as all of the side wall assemblies are identical, bins can readily be constructed from any four of these without the necessity of them having to be matched.

Where a bin is not likely to be inverted, it is not essential that the lower corner fasteners be used, as the bin is stable without these.

The top of the upper corner fasteners 12 may be provided with protruberences 45 thereon, which provide a rough surface to retain a further bin from slipping if bins are stacked.

Whilst I have described one particular form of the invention, it will be appreciated that the physical construction can well be varied without, in any way, departing from the invention, as claimed in the appended claims.

It can be shown that the bin of the invention, over a conservatively estimated life, can cost approximately half the cost of disposable cardboard containers and the bins are more sturdy and give better protection to their contents than do cardboard containers.

0089017

CLAIMS:

1. A bin comprising a base assembly (10) including a floor (23) and four side wall assemblies (11), the wall assemblies each being adapted to be located on the base, about the periphery thereof, and each being in abutment with the two adjacent wall assemblies; each assembly being formed at each side with complementary means (30) so that, when two assemblies are in abutment, inward movement is restricted, the base being formed to restrict outward movement of the wall assemblies and fastening means (12) whereby adjacent wall assemblies can be held against outward movement.
2. A bin as claimed in claim 1 wherein each complementary means (30) includes a face (32) which lies along the inner edge of the wall assembly and is directed inwardly at an angle of approximately 45° to the normal through the edge whereby, when the two edges of adjacent wall assemblies are in contact and at right angles, the faces (32) are in abutment.
3. A bin as claimed in claim 2 wherein each face is formed on a side member, between two of which side members the wall assembly is formed.
4. A bin as claimed in any one of claims 1 to 3 wherein the base assembly is provided with a peripheral upward extension (21) to provide a skirt thereabouts and, inside which skirt, the side members (30) of the wall assemblies are located.
5. A bin as claimed in claim 4 wherein the body (31) of the wall assembly overlays the top of the skirt (21).
6. A bin as claimed in claim 4 or claim 5 wherein secondary fastening means (13) are provided on the floor of the base assembly which can interact with the wall assemblies and prevent outward movement thereof.
7. A bin as claimed in claim 6 wherein each secondary fastening means has a body (50) attached to the floor and two arms (51) resiliently connected to the body and extending upwardly therefrom and each arm having an outwardly extending spigot (52) which can enter an aperture (33) in the associated side member of the wall assembly.
8. A bin as claimed in any preceding claim wherein the fastening means (12)

0089017

comprise two members (40) at right angles which are adapted to be located over the outer surfaces of the wall assemblies adjacent their abutment, a top portion (41) which passes over the upper surfaces of the wall assemblies and a downwardly directed inner portion (43) locatable against the inner surface of the wall members.

9. A bin as claimed in claim 8 wherein the fastening means are of a synthetic plastics material.
10. A bin as claimed in claim 9 wherein the member (41) which passes over the upper surfaces of the wall assemblies is formed to give a non-slip surface.

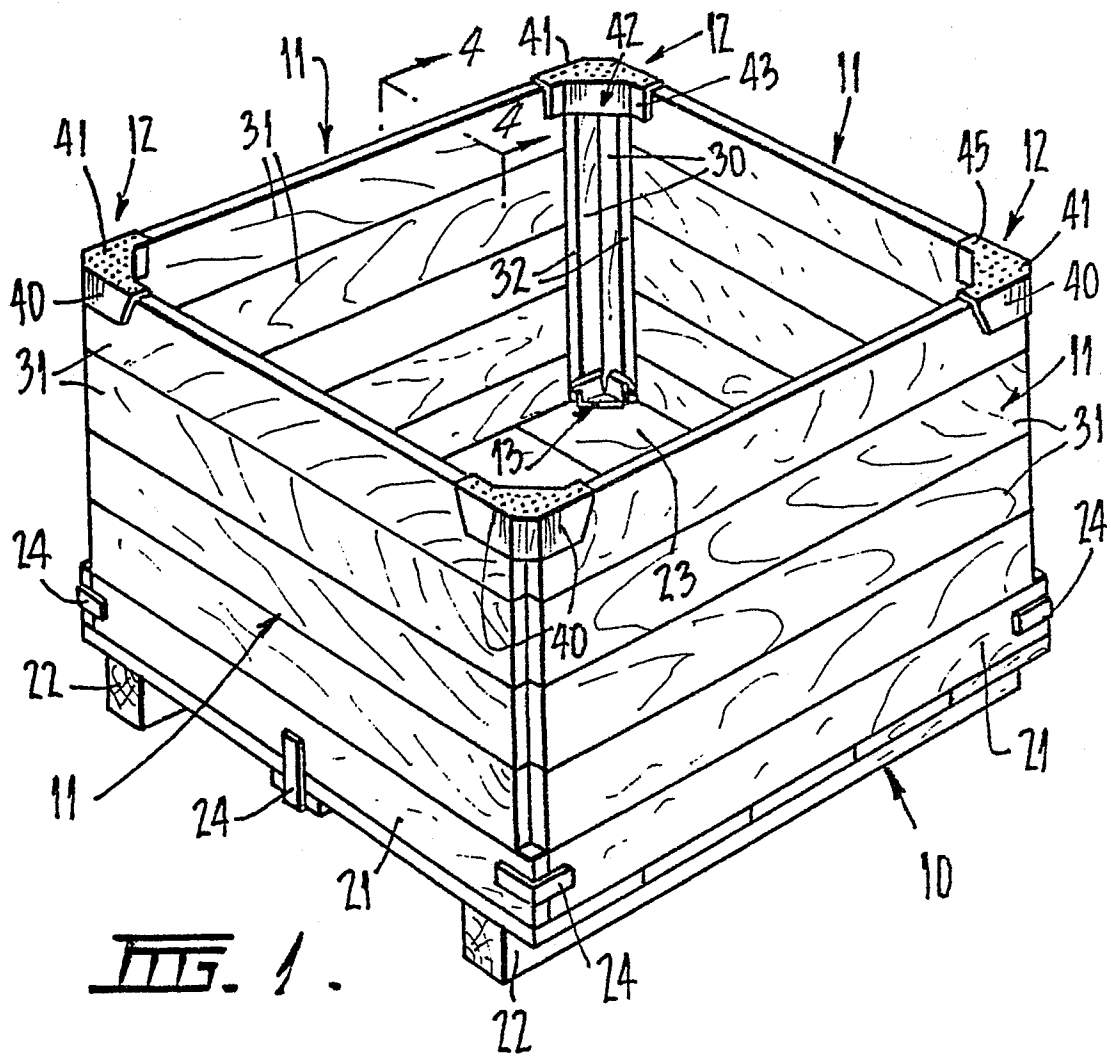


FIG. 1.

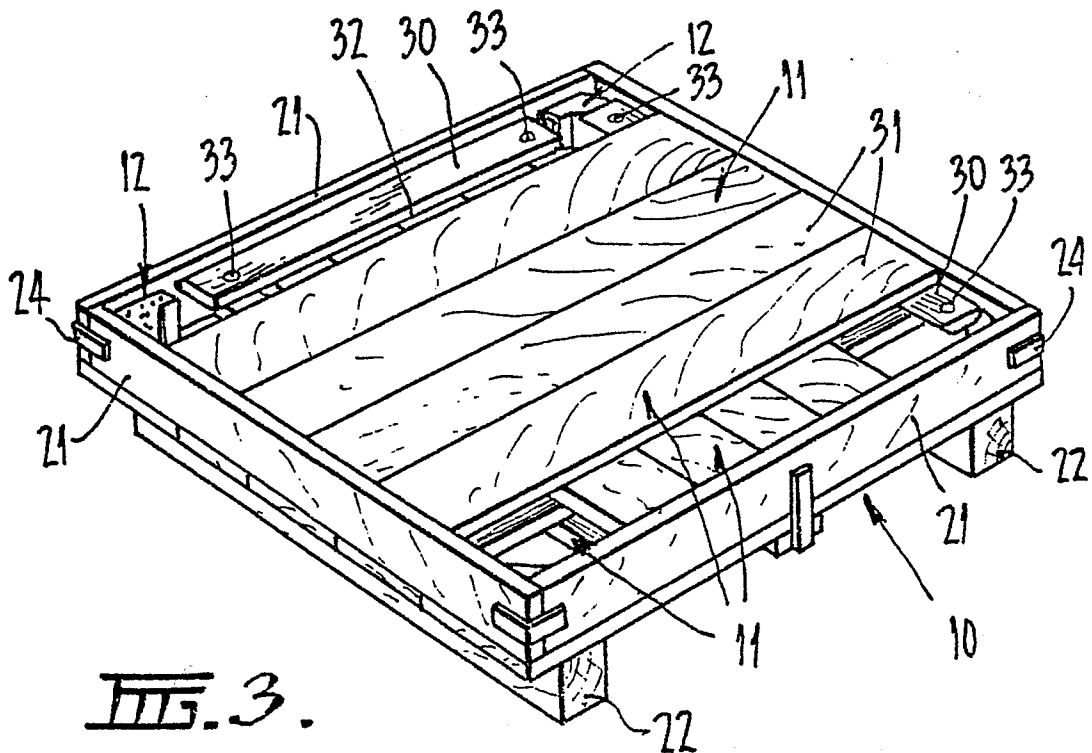


FIG. 3.

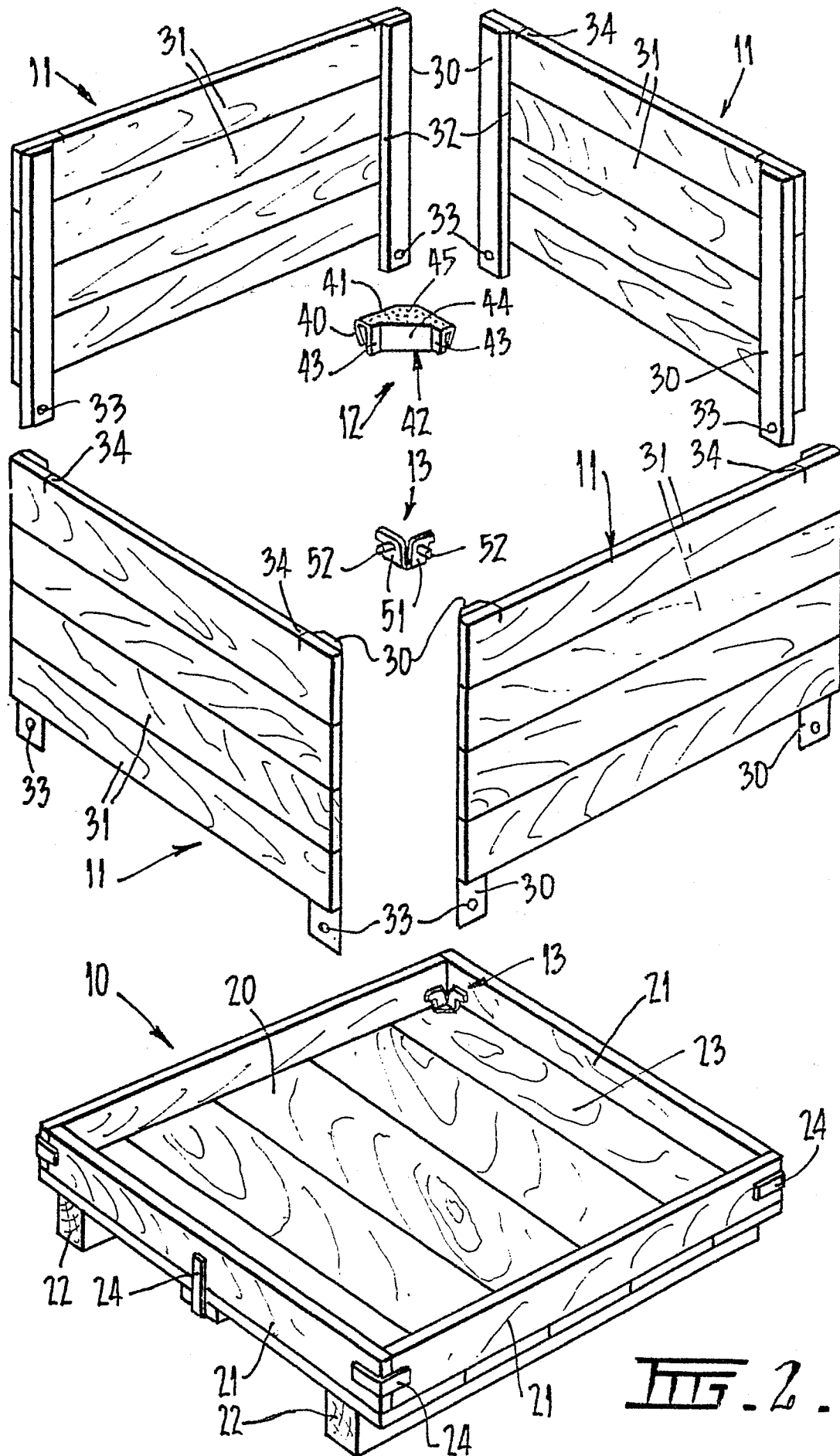


FIG. 2.

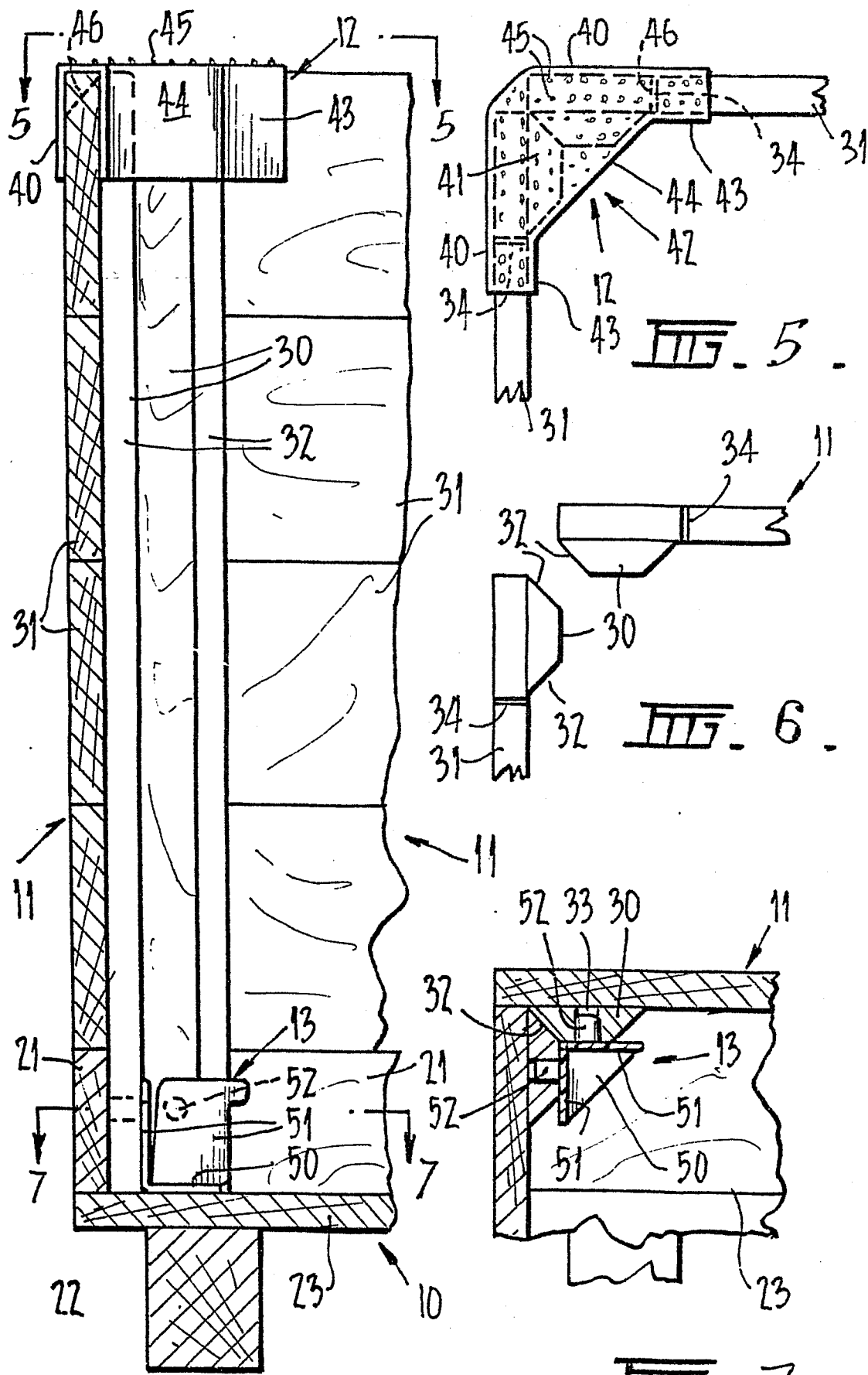


FIG. 4.

FIG. 7.



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. ³)
Y	DE-A-1 904 699 (HAMBURGER SEGMENT-BEHÄLTER BAU- UND VERTRIEBSGESELLSCHAFT) * Page 6, line 7 - page 7, line 15; page 7, paragraph 3 - page 8, paragraph 4; figures 1-7 *	1-5,8-10	B 65 D 19/16 B 65 D 6/24
Y	FR-A-2 344 457 (LABAT-MERLE) * Page 3, line 27 - page 6, line 3; figures *	1-5,8-10	
Y	FR-A- 411 105 (GERFAUD) * Page 2, lines 3-43; figures 1,6,7 *	4,5	
Y	US-A-3 047 183 (R. PAPA) * Whole document *	8	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
Y	FR-A-2 419 226 (ALLIBERT) * page 2, lines 6-13; figures 1,2 *	9,10	B 65 D
A	US-A-3 071 277 (M. OLSON) * Whole document *	1,6-8	
A	FR-A-1 426 375 (BORDIER) * Whole document *	4,5	
A	CH-A- 245 862 (STAUBER)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-06-1983	Examiner MARTENS L.G.R.
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			



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. 3)
A	AU-B- 29 629 (FORMWOOD LTD.) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-06-1983	Examiner MARTENS L.G.R.
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	