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⑤④ **Collapsible bulk container.**

⑤⑦ This invention relates to a collapsible bulk container which is adapted to receive a plastic receptacle for the transport of liquids although the container may be used for other purposes.

The sides of the container are locked to the front end or gate and to the rear end of the container by bolts which project through holes 38 in L-shaped brackets 37 attached to the vertical tubes 29 and 30 which form the upright members of the side frames.

The sides are attached to the base or pallet by tongues 32 having offset portions 32A which project through slots 23A in plates 22, 23 and 26 fixed to the base or pallet.

Other features of the invention relate to the method of securing the top or lid to the container and to methods for providing for stacking of one container on another.

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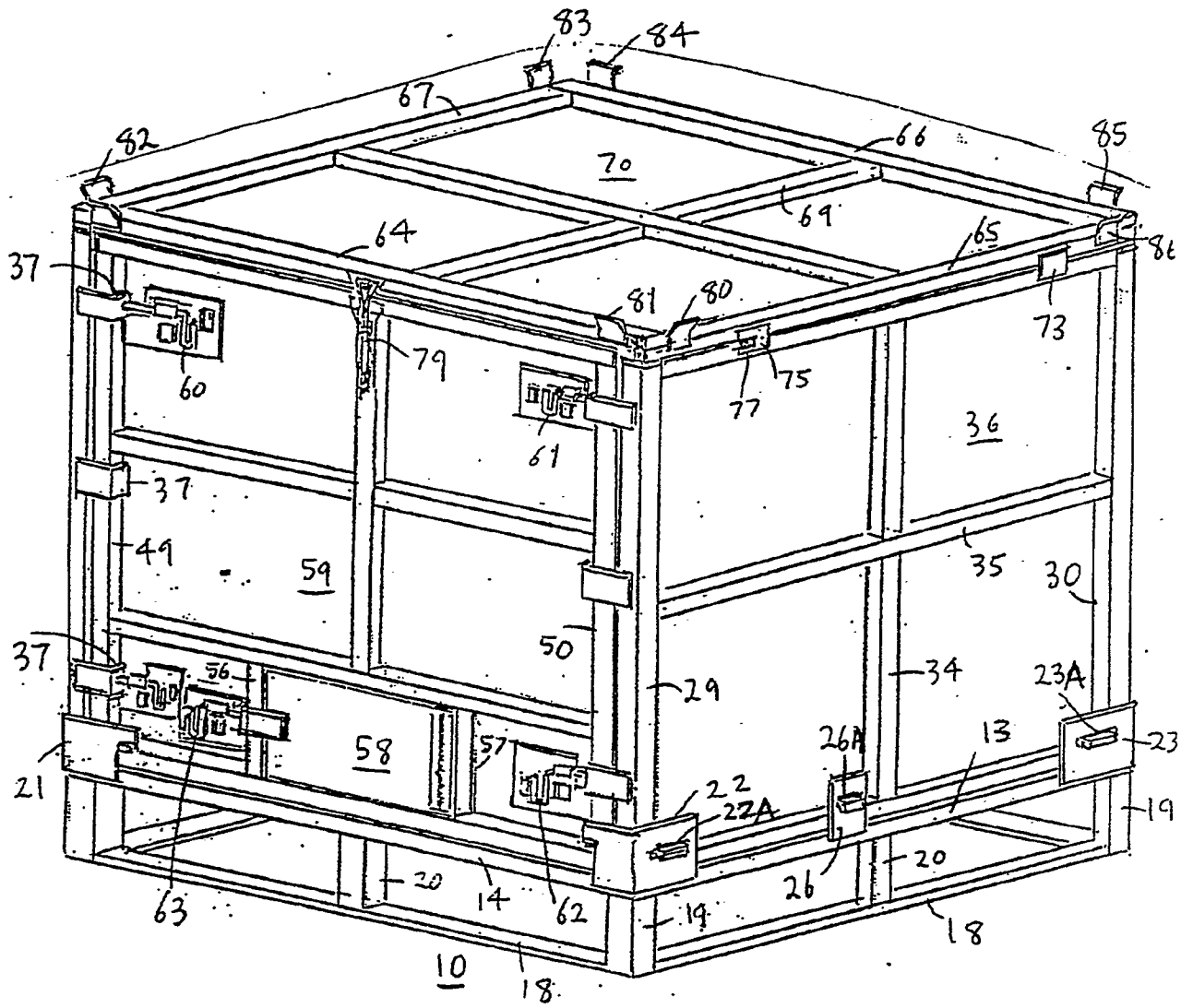


FIG. 6.

This invention relates to a collapsible bulk container particularly, but not exclusively, adapted for the transport of liquids and particulate materials in plastic receptacles.

For the transport of such plastic receptacles and indeed for the transport of many types of goods, it is advantageous to have a container which, when the goods have been delivered or the plastic receptacle emptied, can be collapsed or taken apart and stacked for return to the sender.

An object of the present invention is to provide such a container which is easily assembled and taken to pieces and which is adapted to withstand the stresses and strains which occur both during transport and when the liquid retaining receptacle is being emptied.

A further object of the present invention is to provide such container in which the method of attachment of the sides to the base is such as to facilitate assembly of the container.

In accordance with the present invention there is a collapsible bulk container comprising a base, two sides, a front end or gate and a rear end, and optionally a lid, the sides being attached to the base by means of engagement of substantially horizontally arranged tongues in slots, the tongues having offset portions or curved portions or otherwise being arranged so that when the tongues enter the slots, the sides are held in a substantially upright position or at least prevented from collapsing inwardly.

Preferably the slots are in upstanding plates fixed to the base and the tongues are attached to the sides. The base may be in the form of a pallet.

Preferably the sides and ends are provided with liners and the lid and base may also be lined with sheets of rigid material so that the container may be adapted to receive a plastic bag or receptacle, adapted to be filled with liquid, there being provision in one end of the container for a valve or tap on the receptacle to be exposed, for example, by means of a hinged door.

The sides preferably have brackets which project inwardly and extend around two sides of the vertical tubes forming the upright supports of the ends, and means may be provided to lock the sides to the ends, for example, lockable bolts.

Other features of the invention will be apparent from the following description in which one embodiment of the invention is described in detail.

In the accompanying drawings:-

Figure 1 is a perspective view of a base or pallet for the collapsible bulk container of the present invention;

Figure 2 shows one of the two side panels of the container;

Figure 3 shows one end panel, known as the gate;

Figure 4 shows the other end panel, i.e. the rear end panel;

Figure 5 shows the lid of the container; and

Figure 6 is a perspective view of the assembled collapsible bulk container.

The collapsible bulk container is particularly designed to receive a plastic receptacle or bag adapted to contain liquids, and the container shown in the drawings is arranged to provide for access to a valve or tap on the bag or receptacle. The plastic bag or receptacle is not shown since it can be of conventional form currently in use and forms no part of the present invention.

Referring to Figures 1 and 6, the base 10 of the container shown in Figure 1 and shown assembled in Figure 6 is in the form of a pallet made up of a rectangular frame of steel square tubing consisting of four parts 11, 12, 13 and 14 strengthened by angle section cross members 15 and 16 and longitudinal members 17. The frame is attached to a sub frame 18 by vertical tubes such as 19 and 20.

There are four upstanding corner plates 21, 22, 23 and 24 and two upstanding centre plates 25 and 26, in each of which there is a horizontal slot 21A to 26A.

The two sides of the container, one of which is shown in Figure 2, each consist of a rectangular framework comprising longitudinal members 27 and 28 and vertical members 29 and 30. Welded to the lower longitudinal member 28 of each of the two sides are tongues 31, 32 and 33 each of which has an offset portion 31A, 32A and 33A respectively.

These tongues engage in the slots 22A, 26A and 23A as illustrated in Figure 6. Once the tongues are engaged in the slots, the offset portions 31A, 32A and 33A act to prevent the side falling inwardly. The side may lean inwardly to say 10 or 15 degrees but cannot actually fall flat onto the floor. This aids in assembly of the container because the two sides may be placed in position and remain substantially vertical without being handled while the rest of the assembly takes place.

The side shown in Figure 2 is strengthened by cross members 34 and 35 and is lined with a sheet of rigid material 36 as indeed are all the panels of the container, that is to say the base has a lining, the two sides have linings, the gate and rear end have linings and the top has a lining. Thus the plastic liquid receptacle within the container is completely enclosed by the linings which are attached to the base, sides etc.

On each vertical member 29 and 30 of the two side panels there are L-shaped brackets 37 and at least the upper and lower brackets have locking holes 38 in the foot of the L. These L-shaped brackets are designed to hold in place and assist in locking the front or gate panel and the rear end panel. The rear end panel is shown in Figure 4 and again consists of a rectangular framework consisting of vertical tubes 39 and 40 joined by horizontal tubes 41 and 42 and strengthened by cross tubes 43 and 44. The panel is

completed by a sheet of rigid material 44A and is provided with four sliding, lockable bolts 45, 46, 47 and 48 mounted on plates which are attached to the vertical tubes 39 and 40. Opposite each of the bolts, in the vertical tubes 39 and 40 are holes such as 46A and 48A adapted to receive the bolts.

These bolts co-operate with the upper and lower L-shaped brackets 37 and the holes in them, 38, to lock the end panel to the side panels (see Figure 2 and Figure 6). The front or gate panel is shown in Figure 3 and consists again of a rectangular framework consisting of vertical tubes 49 and 50 joined by horizontal tubes 51 and 52 and strengthened by cross members 53 and 54. An additional cross member 55 co-operates with two short vertical tubes 56 and 57 to support a lockable door 58 which provides access to the valve or tap of the plastic bag within the container.

Attached to the framework of the gate is a rigid sheet 59 and also plates carrying bolts 60, 61, 62 and 63. These are again slidable and lockable bolts and are adapted to co-operate with holes such as 61A and 62A and with corresponding holes 38 in the L-shaped brackets 37 on the side panels as shown in Figure 2.

Inspection of Figure 6 shows more clearly the way in which the bolts, L-shaped brackets and holes co-operate to lock the gate to the vertical tubes of the side panels.

The collapsible container is completed by a lid shown in Figure 5 again consisting of a rectangular framework of tubes 64, 65, 66 and 67 raced by cross tubes 68 and 69 and completed by a sheet of rigid material 70. Attached to end tube 66 are L-shaped brackets 71 and 72 which are adapted to engage the tube 41 of the rear end panel shown in Figure 4. The lid is slid from the rear along the top tubes of the side panels and plates 73 and 74 act as guides. Plates 75 and 76 act as locking plates in that they are provided with slots 77 and 78 which engage in pins projecting outwardly from the upper tubes of the side members. Finally, the lid is locked to the front gate by an over centre catch mechanism 79 of conventional design, shown in Figures 3 and 6.

There are features of this collapsible bulk container are designed to resist undue loads which may arise due to shifting of the liquid within the plastic receptacle both during transit and as the liquid is emptied from the receptacle.

Although the container has been described with reference to its use to contain a liquid receptacle, it may be used for other purposes and may, for instance, be filled with granular material or any other goods for transport. Once the goods have been delivered and taken out of the container, whether by emptying the plastic bag or removing the goods from within the container, the container itself can be collapsed into its component parts for return to the sender and takes-up very little space when it is so collapsed. Containers of this general type are known in the trade

as intermediate bulk containers.

A further feature of the invention which is illustrated in Figures 5 and 6 is the use of upstanding angled lugs 80 to 86 which stand above the lid of the container so as to receive a second container which may be placed on top of the first one and to retain it in position against sideways or forward or rearward movement.

Referring again to Figure 2, the plates 31, 32 and 33 with their offsets 31A, 32A and 33A may be in the form shown or instead of using an offset, plates may simply be curved upwardly as shown in Figure 2 to achieve the same effect or it may be stepped or there may be a flange in the plate or any other form to provide the retention feature which prevents the sides falling inwardly once they have been assembled onto the base or pallet.

Claims

1. A collapsible bulk container comprising:-
A base, two sides, a front end or gate, and a rear end and, optionally a lid,
the sides being attached to the base by means of engagement of substantially horizontally arranged tongues in slots, the tongues having offset or upwardly curved portions so arranged that when the tongues engage in the slots, the sides are held in substantially upright positions or at least prevented from collapsing inwardly beyond a pre-determined limit.
2. A collapsible bulk container according to Claim 1 and in which the slots are in upstanding plates fixed to the base and the tongues are attached to the sides of the container.
3. A collapsible bulk container according to Claim 1 or Claim 2 and in which the base is in the form of a pallet.
4. A collapsible bulk container according to any of Claims 1 to 3 and in which the sides and ends are provided with liners in the form of sheets of rigid material and the container is adapted to receive a plastic bag or receptacle adapted to be filled with liquid or granular material, there being provision in one end of the container to get at a valve or tap on the bag or receptacle.
5. A collapsible bulk container according to Claim 4 and in which said provision is in the form of a hinged door on the gate end of the container.
6. A collapsible bulk container according to any preceding Claim and in which the sides have brackets which project inwardly and extend around two

sides of the vertical tubes forming the upright supports at the ends and means are provided to lock the sides to the ends.

7. A collapsible bulk container according to Claim 6 and in which the brackets are L-shaped and have holes in the feet of the L's and said means consist of lockable bolts which are attached to the ends and project through the holes in the brackets and through the holes in the vertical tubes forming said upright support. 5
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8. A collapsible bulk container according to any preceding Claim and in which the lid is adapted to be held in place by inter-engagement of pin and slot mechanisms. 15
9. A collapsible bulk container according to Claim 8 and in which the slots are in plates which depend downwardly from the side members of the lid and engage pins on the top tube of each of the sides as the lid is slid longitudinally along the top of the container. 20
10. A collapsible bulk container according to Claim 8 or Claim 9 and in which the lid also has downwardly projecting L-shaped members which engage under the top tube of the end panel of the container. 25
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11. A bulk container comprising a base, two sides, two ends and a lid, the sides being attached to the base by means of outwardly projecting lugs which engage horizontal slots in upstanding plates fixed to the base, the lugs being generally horizontal but having a set or curved portion of each lug so arranged that when the lugs are inserted in the slots, the set portions or curved portions prevent the sides from falling inwardly. 35
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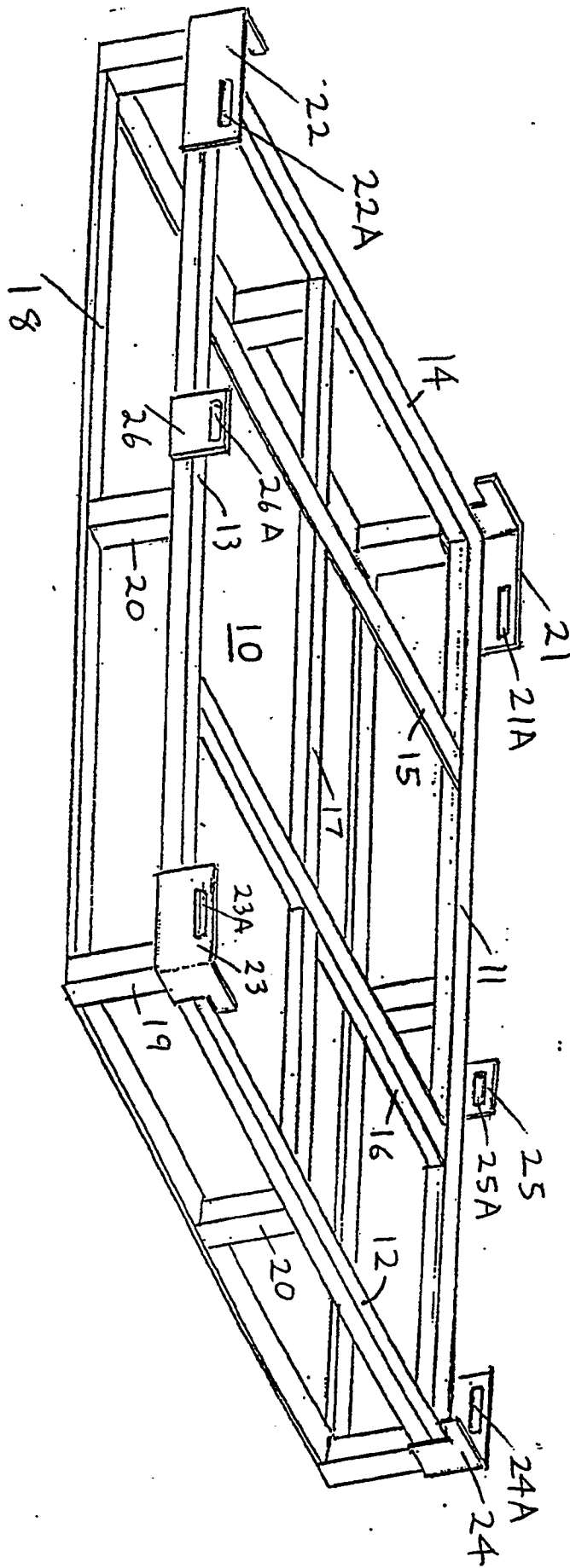
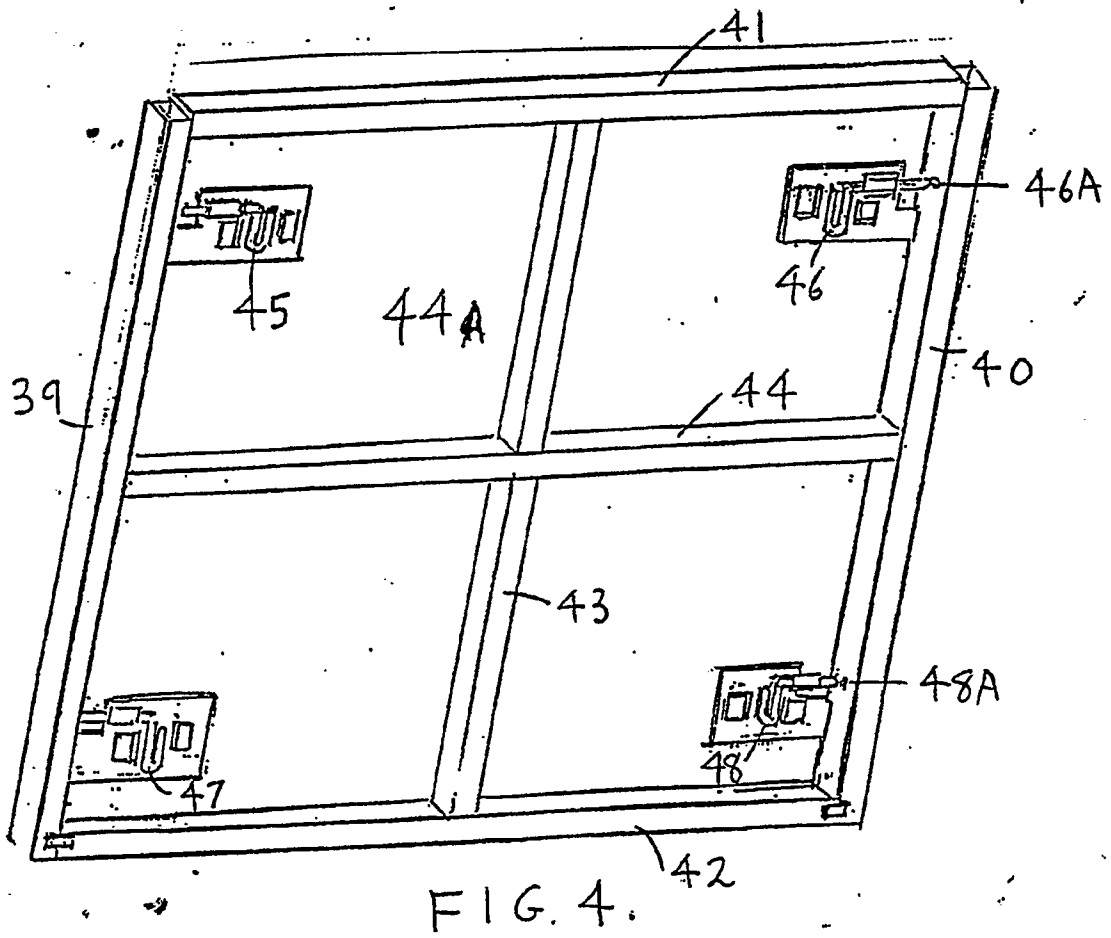
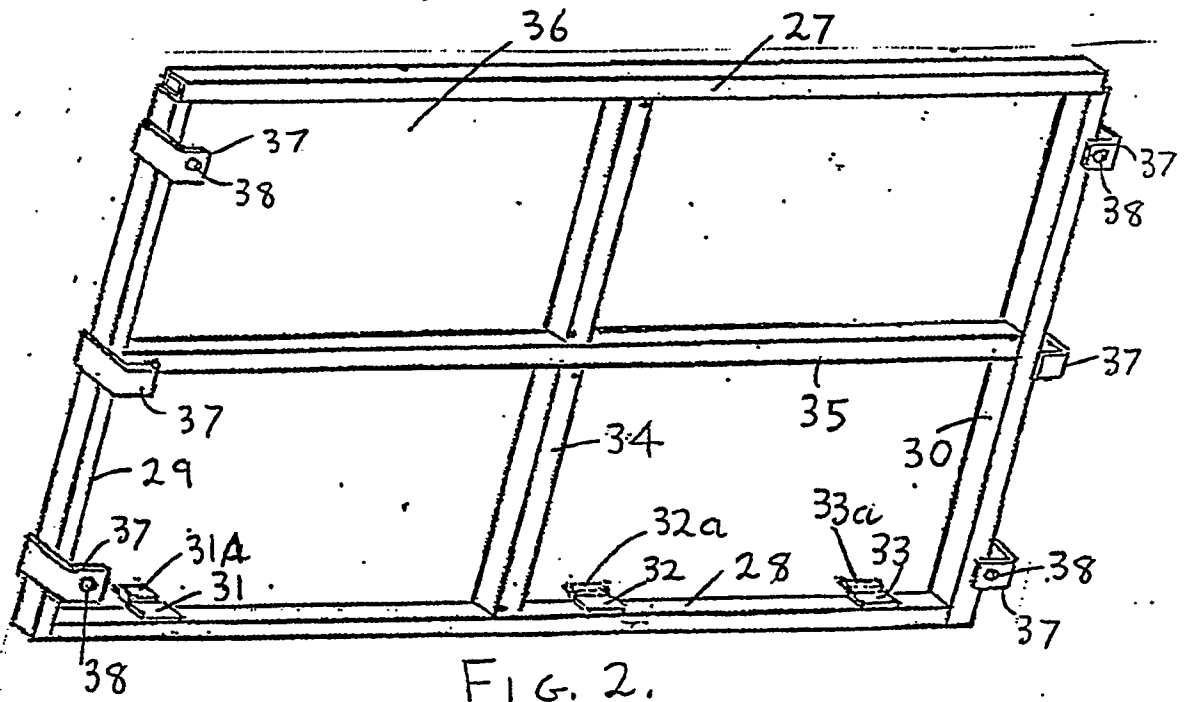
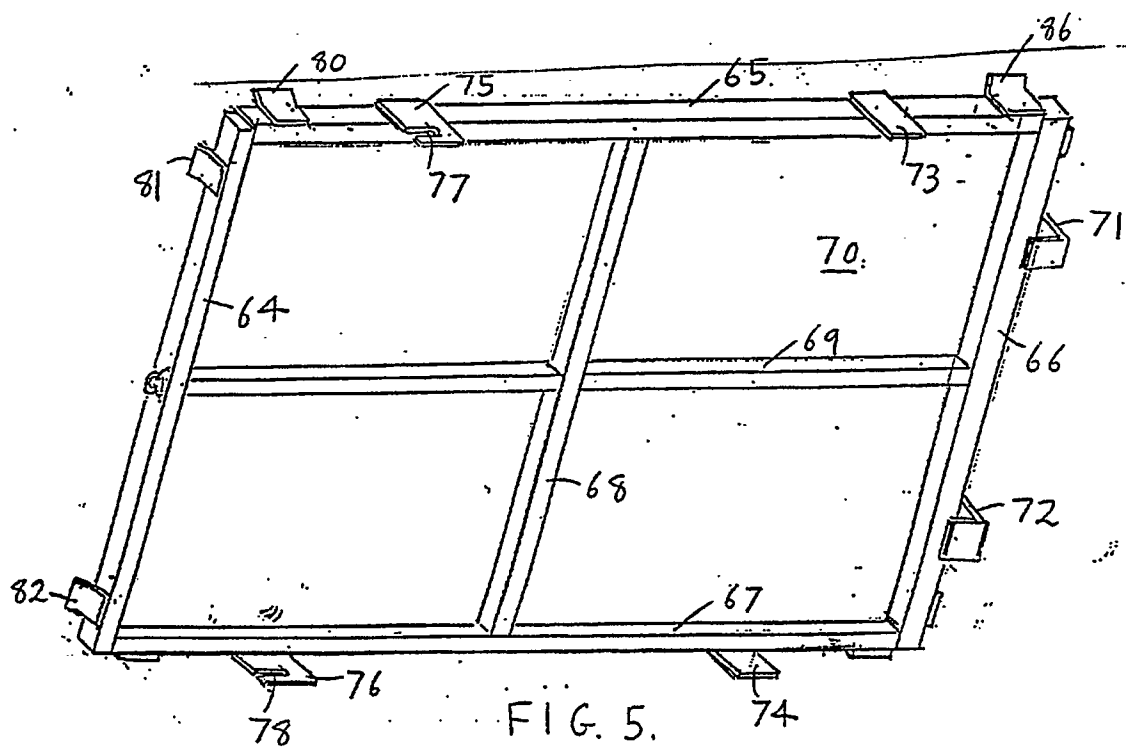
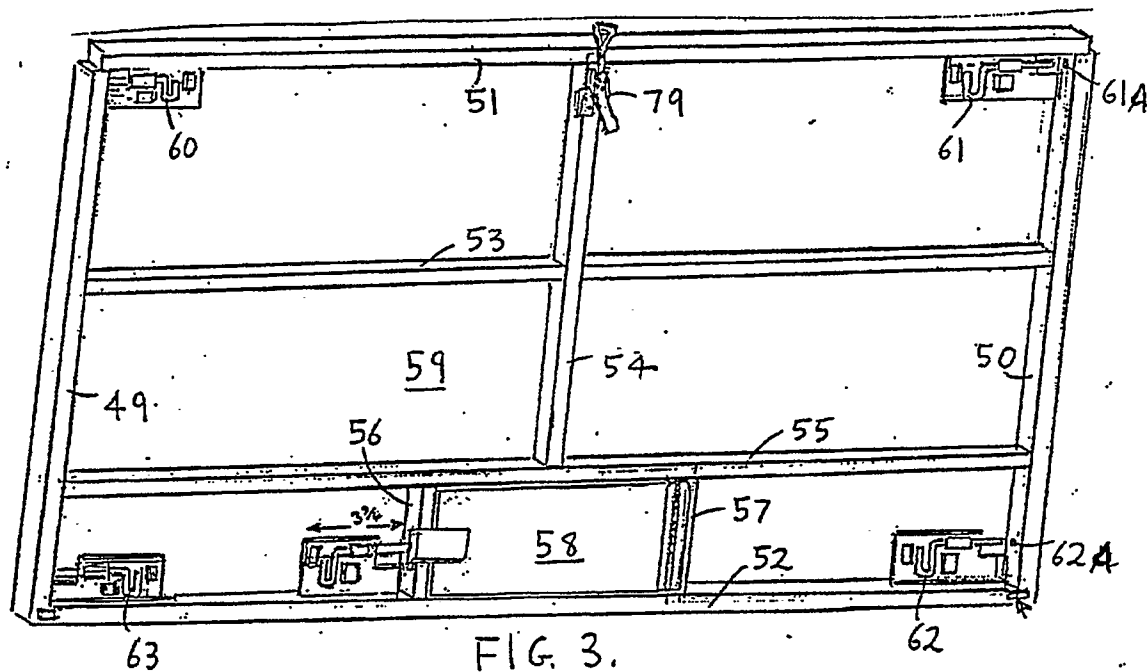


FIG. 1.





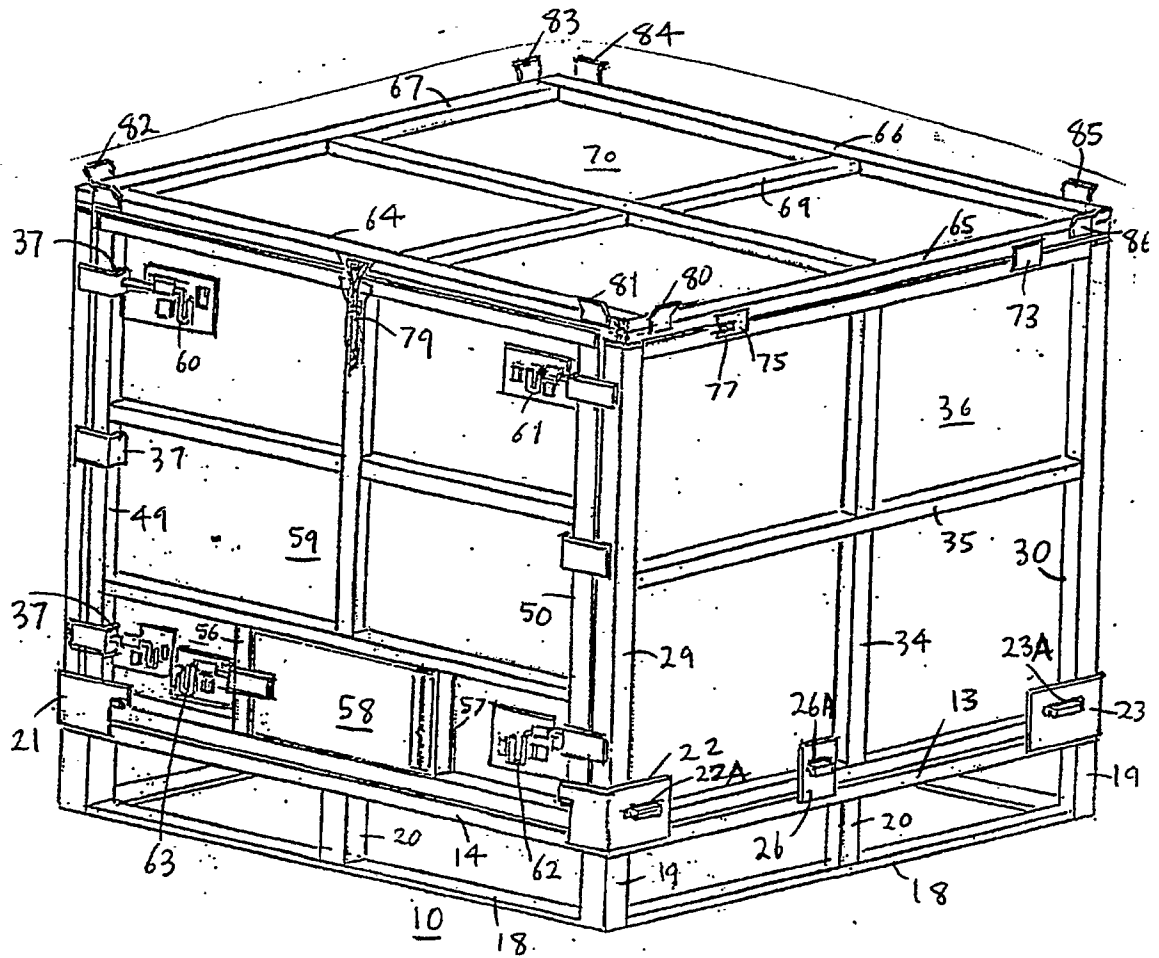


FIG. 6.



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EUROPEAN SEARCH REPORT

Application Number

EP 91 30 3167

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.5)
Y	WO-A-8810223 (GKN CHEP) * page 10, line 27 - page 11, line 33 * * page 13, lines 12 - 17; figures *	1-4, 6, 8, 10	B65D88/52
A		5, 7, 9, 11	
X	US-A-3336043 (BOEYE) * column 3, lines 54 - 61; figures 1-6, 9, 13 *	11	
Y		1-4, 6, 8, 10	
A		7, 9	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 JULY 1991	Examiner NEVILLE 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			

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