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(54) Container base.

(57) A container base which is suitable as either the top or the bottom of a container comprises a rectangular base piece (11), upstanding side walls (12,14) surrounding the base piece and tapered outwardly to allow nesting of container bases, a pair of opposite side walls (12) having a slot (15) on their centre line (16) extending at least half the height of the walls from their free edge, the walls of said pair on one side of said centre line being wider apart than said walls on the other side of said centre line by at least twice the thickness of each wall of said pair. Two such bases could interfit directly, the bases facing each other mouth to mouth with the wider apart walls of one base surrounding the less wide apart walls of the other base. A larger container could be made by fitting walls between the two bases, preferably in grooves (150) in their base pieces.

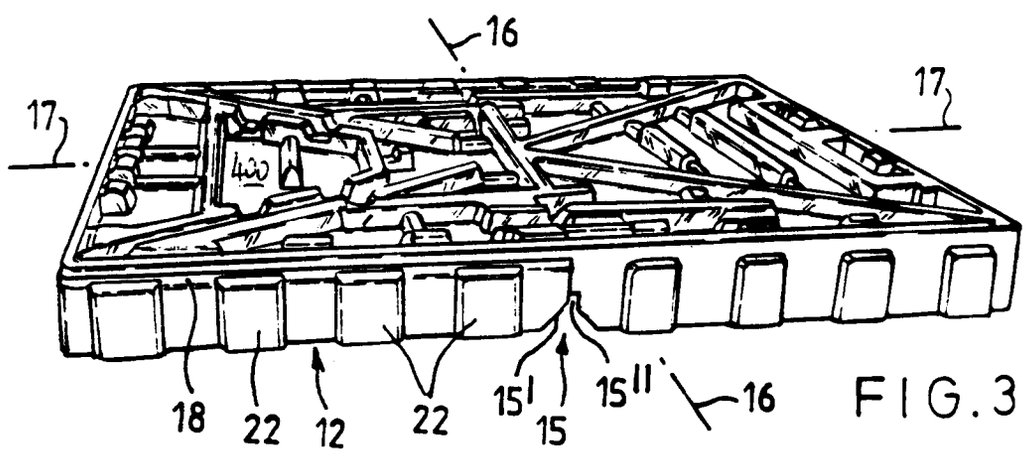


FIG. 3

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If a container is to be re-usable, it is desirable that the container when it is being returned empty should occupy less space than when it is in its operative mode carrying goods.

In one aspect the present invention provides a container base suitable for such purposes. The base comprises a rectangular base piece, upstanding side walls surrounding the base piece and tapered outwardly to allow nesting of container bases, a pair of opposite side walls having a slot on their centre line extending at least half the height of the walls from their free edge, the walls of said pair on one side of said centre line being wider apart than said walls on the other side of said centre line by at least twice the thickness of each wall of said pair. With this arrangement when two such bases are arranged with one base having its open mouth facing upwardly and a second base having its open mouth facing downwardly and with its wider apart walls aligned with the narrower apart walls of the first base, the mouths of the bases facing each other, the walls of the two bases will interfit, the walls of one base crossing over from being on the inside of the walls of the other to being on the outside at said slots which slots fit one into the other.

Ribs may be formed in the side walls to give them strength, particularly when the base is moulded from plastics material, thus preventing the side walls sagging from their desired shape. The ribs extend transversely to the base piece and will follow the general taper of the walls and so will not interfere with the nesting of the container base within another; the ribs are preferably arranged so that they are of the same width as the spaces between the ribs (mark/space ratio = 1) and ribs on one side of the said centre line are matched by ribs at the equivalent distance on the other side of the said centre line so there is an even number of ribs on each side wall transverse to said centre line. The ribs on the side walls parallel to said centre line are arranged symmetrically about their centre, the number and size of the ribs on the two opposite side walls parallel to said centre line being equal. The number can be odd or even.

The base piece is preferably formed with portions at a plurality of different levels, in order to give rigidity to the base piece, to provide bearing surfaces and to provide a nesting arrangement when two bases are placed base piece-to-base piece (with their mouths facing away from each other) and yet allowing the nesting portions to be easily disengaged.

A continuous groove may extend around the base piece at the junctions with the walls to receive box wall panels. Without the panels two container bases can interfit mouth-to-mouth to form a shallow container. If such bases are drawn apart and box wall panels inserted between the continuous grooves, a much deeper container is formed.

An example of the invention will now be described with reference to the accompanying drawings in which:

Fig. 1 is an under plan of the container base,

Fig. 2 is a side elevation of a side wall transverse to a centre line,

Fig. 3 is a side elevation of a side wall parallel to the centre line, and

Fig. 4 is a diagram showing the side walls of two interfitting boxes, mouth-to-mouth, the lower base walls being shown in full lines and the upper base walls in dashed lines.

The container base is a tray moulded from a sheet of plastics material with a rectangular base piece 11 and side walls 12, 14 of uniform height. The side walls are tapered very slightly outwards from the base, so that a plurality of trays will nest in each other, taking up minimum space in the nesting arrangement.

The base piece 11 of a tray is formed on its underside with distributed bearing surfaces for bearing on a horizontal plane without distortion of the tray. There is a large and well distributed area of the internal floor of the tray at an upper level to support articles. The tray is designed so that a pair of trays can fit together open mouth-to-open mouth to form a strong container. Furthermore, a plurality of such containers can be stacked one on top of the other and protrusions on the undersides of adjacent trays will interfit to prevent relative lateral movement of aligned trays.

Each tray is formed with open-ended slots 15 at the mid points of two opposite side walls 12, the slots extending at least half way from the top of the wall at right angles to the base panel. The slots 15 lie on the centre line 16 of the tray. On one side of the centre line 16 the tray is slightly wider than on the other side, by an amount equal to the thickness of the side walls. The "bulge" of this extra width is shown at 18 in Fig. 3. When two trays are placed mouth to mouth with the narrow end of the top tray over the wider end of the bottom tray, the trays will fit together with each narrow end resting in the wider end of the other tray, and the slots 15 interfitting (see Fig. 4). To aid interfitting of trays the mouth 15' of each slot is V-shape, the blind end 15" of the slot extending from the apex of the V being parallel-sided. The free edge of each side wall 12-14 will rest on the base panel 11 of the opposite tray. The resulting container will enclose a volume equal to that enclosed by a single tray up to the level of the top of its side walls.

As an optional feature, to provide rigidity to the side walls, the walls are ribbed. On the two non-slotted walls 14, the ribs 21 are aligned - i.e. an outward-going rib lies opposite an outward-going rib on the opposite wall. A handle 13 is provided at the centre of the walls 14 which can be removed if necessary to assist stacking empty trays. On the slotted walls 12, the ribs 22 on each wall must be symmetrically arranged about the slot 15 in that wall, in order that these ribs

on two trays can interfit in the Fig. 4 arrangement. The ribs 22 are preferably equispaced as illustrated - i.e. the width of each outward-going rib is equal to the width of the space between ribs. There is no rule governing the relationship of the ribs on wall 12. The ribs 22 could be arranged so that one rib or one space between ribs straddles the slot 15 (not illustrated).

The base piece 11 shown in Fig. 1 is rectangular and has areas arranged at at least four different levels. In use these levels are horizontal. In general each area having a horizontal component has a reference number with three digits, of which the first digit indicates the level of that component. Considering a tray with its mouth opening downwards, the top levels are those of the bearing surfaces which have reference numbers in the range 100 - 199. The intermediate levels have reference numbers in the range 200 - 299. The next lower levels have reference numbers in the range 300 - 399. The lowest levels have reference numbers in the range 400 - 499.

When a tray is located mouth uppermost, the underside of components with reference numbers in the range 100 - 199 bears on a horizontal supporting surface. When a tray is located mouth uppermost on another tray located mouth facing downwards and mutually reversed around a vertical axis through 180° the areas with reference numbers in the range 200 - 299 engage other areas with reference numbers in the range 200 - 299 in the other tray, and some areas with reference numbers in the range 100 - 199 engage other areas with reference numbers in the range 300 - 399 in the other tray. Where a tray is located mouth uppermost, the components with reference numbers in the range 400 - 499 form the supporting plane for a liner defining the base of the tray, the effective storage volume of the tray being the product of the liner area and the height of the side walls above the components with reference numbers in the range 400 - 499.

The areas at the different level will not be described in detail, since they are not important to the invention.

The horizontal surface on which the underside of components 100 - 199 can bear may be that of a conventional pallet. Although the various components 101 - 199 are individually discontinuous, it is pointed out that across the width of the tray and across the length of the tray there is at least one of the components 101 - 199 present at every point. This means that the tray will move on a roller conveyor without allowing a roller to enter a space between two of the components 101 - 199.

Besides forming a small volume container by two such trays facing each other mouth to mouth directly, a larger volume container can be formed by placing panels in the peripheral grooves 150 immediately inside the side walls, the panels spacing the trays apart. The four panels may be joined at the corner edges of the container volume.

Claims

1. A container base comprising a rectangular base piece, upstanding side walls surrounding the base piece and tapered outwardly to allow nesting of container bases, a pair of opposite side walls having a slot on their centre line extending at least half the height of the walls from their free edge, the walls of said pair on one side of said centre line being wider apart than said walls on the other side of said centre line by at least twice the thickness of each wall of said pair.

2. A base as claimed in claim 1 wherein a said wall is ribbed, the ribs being arranged symmetrically about the mid point of said wall.

3. A base as claimed in claim 2 wherein the ribs and the spaces between adjacent ribs are of equal width.

4. A base as claimed in any one of claims 1 to 3 comprising a groove extending around the periphery of the base piece within said walls.

5. A base as claimed in any one of claims 1 to 4 wherein said base piece is found with portions at a plurality of different levels.

6. A base as claimed in claim 5 wherein at all points in one direction across the base there is a portion at the lowest level at some point across the base transverse to said one direction.

7. A container formed by two said container bases as claimed in any one of claims 1 to 6, the bases facing each other mouth to mouth with the wider apart walls of one base surrounding the less wide apart walls of the other base.

8. A container formed by two said container bases as claimed in any one of claims 1 to 6, the bases facing each other mouth to mouth and panel walls releasably mounted between the base pieces of the two bases.

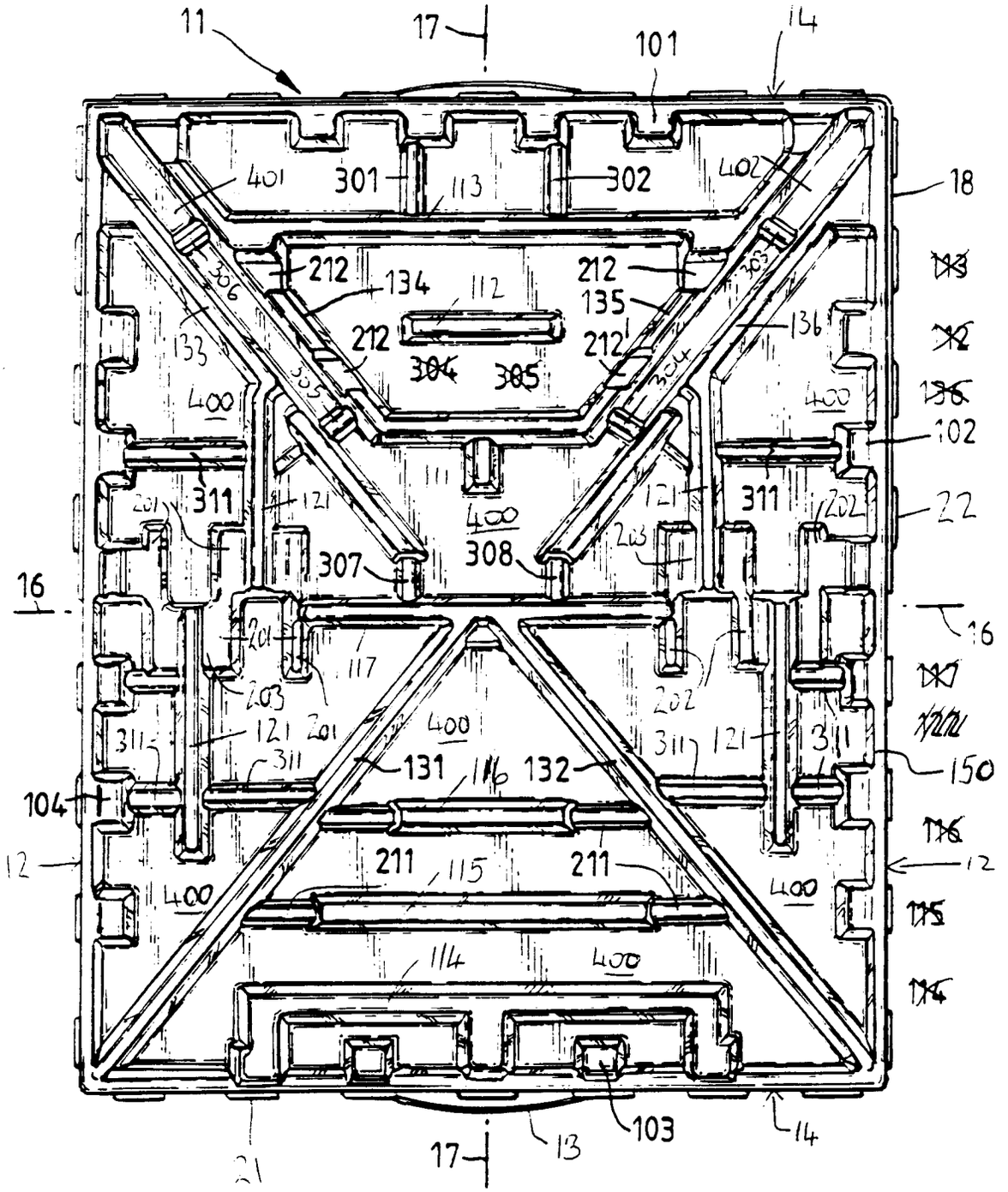

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FIG.1

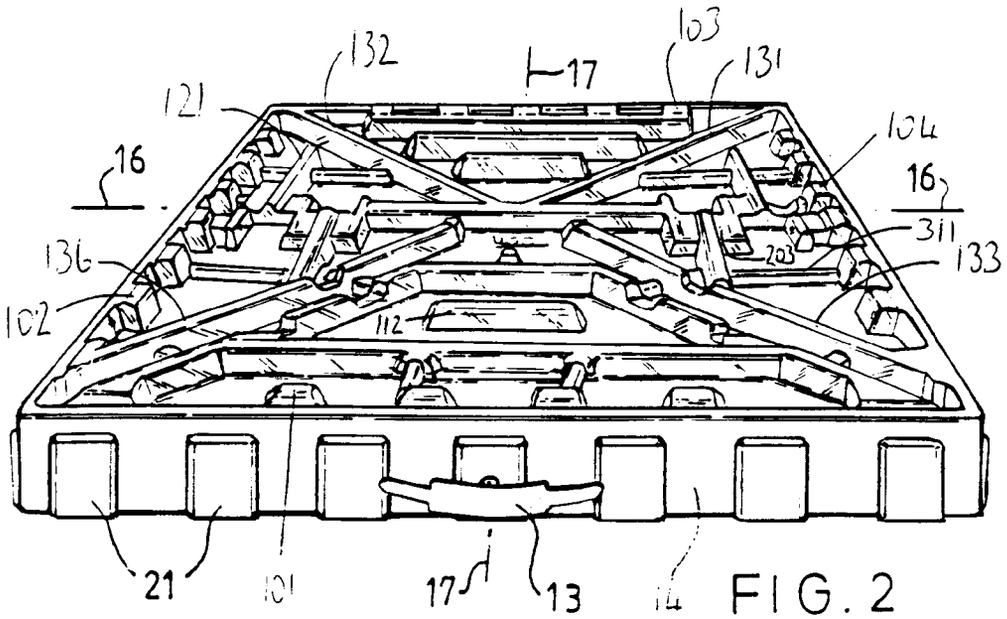


FIG. 2

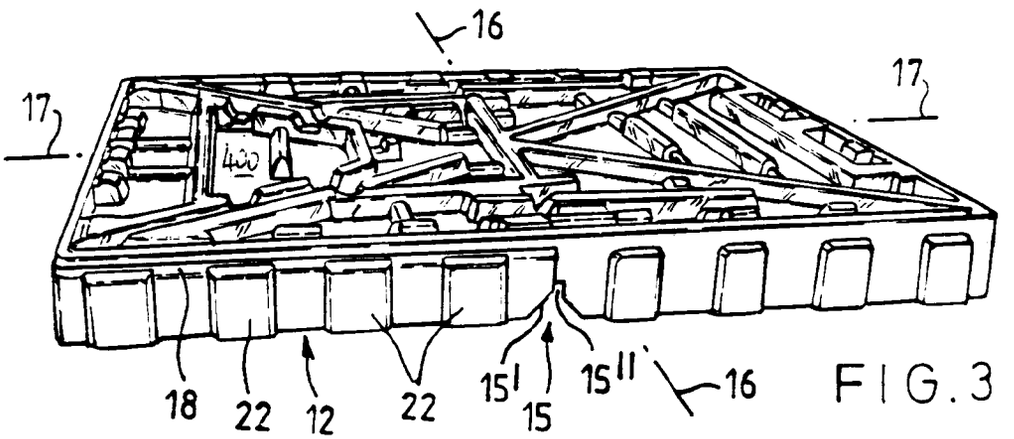


FIG. 3

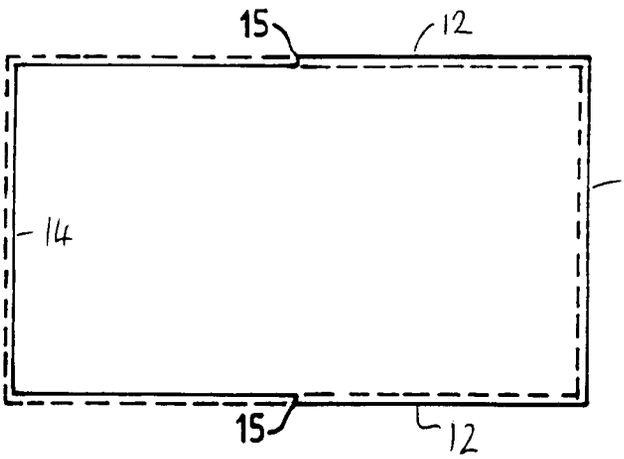


FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 30 1359

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.6)
Y	FR-A-2 101 264 (GIRAUDET) * page 3, line 15 - line 30; figures 3,4 *	1,5,7	B65D21/02 B65D21/08
Y	US-A-2 986 300 (PARRISH) * the whole document *	1,5,7	
A	FR-A-2 201 045 (GUIGOU) * figures *	1-4,7	
A	WO-A-92 09491 (SCHÖLLER-PLAST SA) * page 3, paragraph 5 - page 4, paragraph 1; figures *	1-3,7,8	
A	FR-A-2 190 682 (PAULY) * figures *	1,7,8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 June 1995	Gino, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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