(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 368 595 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **89311480.1**

(51) Int. Cl.5: **B65D 19/44**

(22) Date of filing: **06.11.89**

(30) Priority: **05.11.88 GB 8825943**

(43) Date of publication of application:
16.05.90 Bulletin 90/20

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

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(54) Container locating pallet.

(57) A moulded-plastics container-locating pallet (1), particularly for beer barrels, has an array of circular base frames (3a) with dependent and upstanding peripheral flanges (7) such that it can rest on one group of barrels and support a second group in a stack with the flanges providing positive location by engaging the rims of the barels. The base frames (3a) are spaced apart but interconnected by integrally-moulded strut members (10, 11) each comprising a strut (10a, 11a) connected to the frames (3a) by webs (12, 13) of the plastics material. The webs (12, 13) are L-sectioned with a flat horizontal portion (12) connected to a frame (3a) and a flat vertical portion (13) connected to a strut (10a or 11a). The connections between the webs (12) and the frames (3a) are formed as hinges to allow adjoining frames to pivot slightly relative to each other, out of a common plane, so as to accommodate barrels of slightly differing heights in a stack.

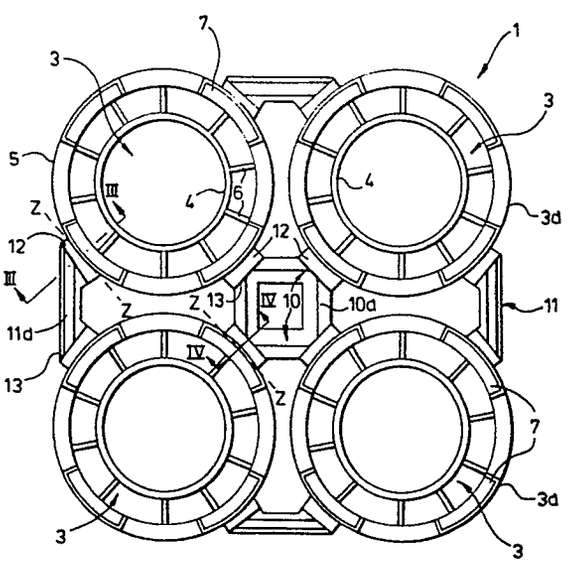

FIG 1

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Container locating pallet

The present invention relates to a container-locating pallet, particularly for locating a plurality of generally-cylindrical containers so that they can be stacked in groups on top of each other. The invention is particularly applicable to beer containers, and the term "generally-cylindrical container" is intended to include beer barrels.

It is known to provide container-locating pallets which can be placed on top of one group of cylindrical containers arranged with their axes vertical so as to support a second group of the containers on top of the first group, the pallets having means for engaging the upper edges of the lower group and lower edges of the upper group to prevent relative movement. Such known pallets, however, are generally rigid and any vertical displacement of one portion thereof is transmitted so as to unbalance a container resting on another portion thereof.

The object of the present invention is to provide a container-locating pallet which is sufficiently strong to withstand the considerable stresses to which such pallets are subject in use but which is arranged to allow at least a limited degree of relative pivotal movement between adjacent parts.

Accordingly there is provided a container-locating pallet defining positions for supporting and positively locating generally-cylindrical containers on its upper surface, the positions being interconnected by hinge means which allow them to pivot relative to each other to a limited extent.

Such a pallet may be arranged to rest on a flat surface but is preferably arranged to rest on one group of containers and to support a second group of the containers directly above the first. The number of containers supported by the pallet may vary but preferably comprises multiples of two: a pallet arranged to support four containers in a square arrangement is convenient.

The size of the pallet and of the positions defined thereby may vary according to the size and shape of the containers to be supported and located thereby but each position preferably has a circular base, which may be solid or consist of an open framework, with upstanding and dependent flanges around its periphery for engaging the lower and upper edges respectively of containers on and beneath the pallet.

The circular bases are preferably slightly spaced from each other and interconnected by members formed with the hinge means for allowing the desired relative pivoting The hinge means used may vary according to the material used for the pallet itself but, in a preferred embodiment, the pallet is moulded from plastics material and the hinge means are preferably constituted by integrally-moulded hinges. Each such hinge is preferably formed at the junction of the periphery of a circular base with a web of plastics material which connects that base to the adjacent base either directly or with the interpositioning of a strengthening strut.

Connecting webs and/or struts are preferably provided between adjacent portions of the bases at the centre of the pallet and near the periphery of the pallet. The webs and/or struts may also be arranged to provide supports for supporting the pallet on a flat surface.

The preferred plastics materials for the pallet is a high-density polyethylene, or a polypropylene but a polyamide (e.g. NYLON) or acrylonitrile butadiene styrene (ABS) copolymer is also usable. The pallet is preferably made by injection moulding.

One embodiment of the invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a pallet according to the invention;

Figure 2 is a side-elevational view showing the pallet in use between two layers of containers;

Figure 3 is a cross-section taken on line III-III of Figure 1 on an enlarged scale; and

Figure 4 is a cross-section taken on line IV-IV of Figure 1, on an enlarged scale.

With reference to the drawings, a container-locating pallet is shown generally indicated 1 for use with beer barrels indicated 2 in Figure 2.

The pallet 1 is integrally moulded from plastics material and defines a support plane indicated X-X with four container-locating positions each indicated 3 arranged in a square formation, that is, with their centres arranged at the corners of a square.

Each position 3 is formed for lightness, strength and economy of material by a circular locating frame 3a constituted by two concentric circular members 4, 5 joined by radial connectors 6. The inner member 4 is of simple square section but the outer member 5 is formed with projecting flanges 7 which project alternately upwardly and downwardly out of the support plane X-X, in the normal orientation of use of the pallet 1. Conveniently there are four flanges 7 projecting upwardly and four downwardly but there could equally well be a different number. The outer surfaces 8 of the flanges 7 are substantially perpendicular to the support plane X-X but the inner surfaces 9 are inclined and arranged to contact the inclined surface of a barrel 2 located in the respective position 3 above or below the pallet 1. The flanges 7 may be solid, as shown, but are preferably channel-

shaped, and provided with internal reinforcing struts.

The four locating frames 3a are slightly spaced from each other and interconnected by four inner connecting strut members 10, each of which interconnects the frame members 5 of two adjacent frames 3a such that the four strut members form a square framework in the centre of the pallet 1. The frames 3a are also interconnected by four outer connecting strut members 11, each of which interconnects two adjacent frame members 5 such that the four strut members 11 lie on a square near the outer periphery of the pallet 1.

Each strut member 10, 11 includes a strut proper 10a, 11a which is connected to a locating frame 3a at each end by flat webs 12 and 13 of plastics material, each of the order of 1mm-2mm thick: each web 12 lies in the plane X-X and is connected to the external periphery of the respective frame member 5 along one edge while each web 13 is dependent from the opposite free edge of the web 12 and supports the respective end of a strut 10a or 11a which thus lies beneath the plane X-X. The struts 10a, 11a may be solid, as shown, but are preferably constituted by downwardly-open channel sections with their lower edges terminating in flat bases. The lower edges 14 of the strut members 10, 11 are, in any case, parallel to the plane X-X and at the level of the lower edges of the lower flanges 7: the pallet 1 can thus be rested on a flat surface supported by the edges 14 and the lower flanges 7.

The advantage of the above construction is that the connections of the webs 12 to the respective frame members 5 constitute hinges, the axes of some of which are indicated Z-Z in the drawings. The webs 12 are in fact notched along these line to form the hinges. These hinges Z-Z allow each locating frame 3a to be pivoted through a few degrees relative to the other three frames, out of the plane X-X, without this pivoting disturbing the other frames. In the case of the pallet shown, designed to accommodate beer barrels, each frame 3a can be displaced up to about 100mm out of the plane X-X.

This feature enables the pallets 1 to be used with beer barrels of slightly different sizes as made by different manufacturers. It is, in fact, found that such barrels, which are nominally the same size, differ in height by as much as 10mm or more: in palleted stacks, eight barrels high, the base of one barrel on the top pallet is frequently 100mm higher than the bases of the other barrels. When it is tried to use prior art pallets in such stacks, they are found to be unstable whereas the pallets of the present invention accommodate such differences while still having sufficient strength and rigidity to support the stack.

Claims

1. A container-locating pallet (1) defining positions (3) for supporting and positively locating generally-cylindrical containers on its upper surface, characterised in that the positions (3) are interconnected by hinge means (12) which allow them to pivot relative to each other to a limited extent.

2. A container-locating pallet according to Claim 1, characterised in that the positions (3) comprise circular bases (3a) which are spaced apart and interconnected by strut members (10, 11), each adjacent pair of bases being interconnected by two such members, one on either side of a line interconnecting the centres of the two bases, and each strut member being hinged at at least one end to a base.

3. A container-locating pallet according to Claim 2, characterised in that the pallet (1) includes four bases (3a) arranged in a square formation and in that the four strut members (10) interconnecting the adjacent portions of the bases facing the centre of the square are also arranged in a square formation.

4. A container-locating pallet according to Claim 2 or Claim 3, characterised in that each strut member (10, 11) comprises a substantially rigid strut (10a, 11a) with a flat web or plate (12) at each end which is hinged to a respective base (3a).

5. A container-locating pallet according to Claim 2, Claim 3 or Claim 4, characterised in that the strut (10a, 11a) of each strut member (10, 11) is located below the horizontal supporting plane (X-X) of the pallet (1) defined by the bases (3a) in the normal orientation of use of the pallet, and is connected to each respective base (3a) by an L-section web or plate (12, 13) comprising a horizontal portion (12) connected to the base (3a) and a dependent vertical portion (13) connected to the strut (10a, 11a), such that the lower edges of the struts (10a, 11a) are coplanar and can support the pallet 1 on a flat surface.

6. A container-locating pallet according to Claim 5, characterised in that each base (3a) has peripheral upstanding and dependent flanges (7) constituting means for positively locating the containers and in that the lower edges of the dependent flanges are coplanar with the lower edges of the struts (10a, 11a).

7. A container-locating pallet according to any one of Claims 2 to 6, characterised in that the pallet bases and interconnecting strut members are moulded from plastics material.

8. A container-locating pallet according to any one of the preceding claims, characterised in that the pallet is integrally moulded with the hinge means from plastics material.

9. A container-locating pallet according to Claim 8 as dependent from any one of Claims 4 to 6, characterised in that each hinge is defined by an elongate notch in a connecting web (12), the notch extending adjacent the periphery of the base to which the web is connected.

10. A container-locating pallet according to any one of the preceding claims, characterised in that the hinge means are such as to allow any one position in the pallet to be displaced from the plane of an adjacent position by a factor of up to about 20% of the diameter of the position.

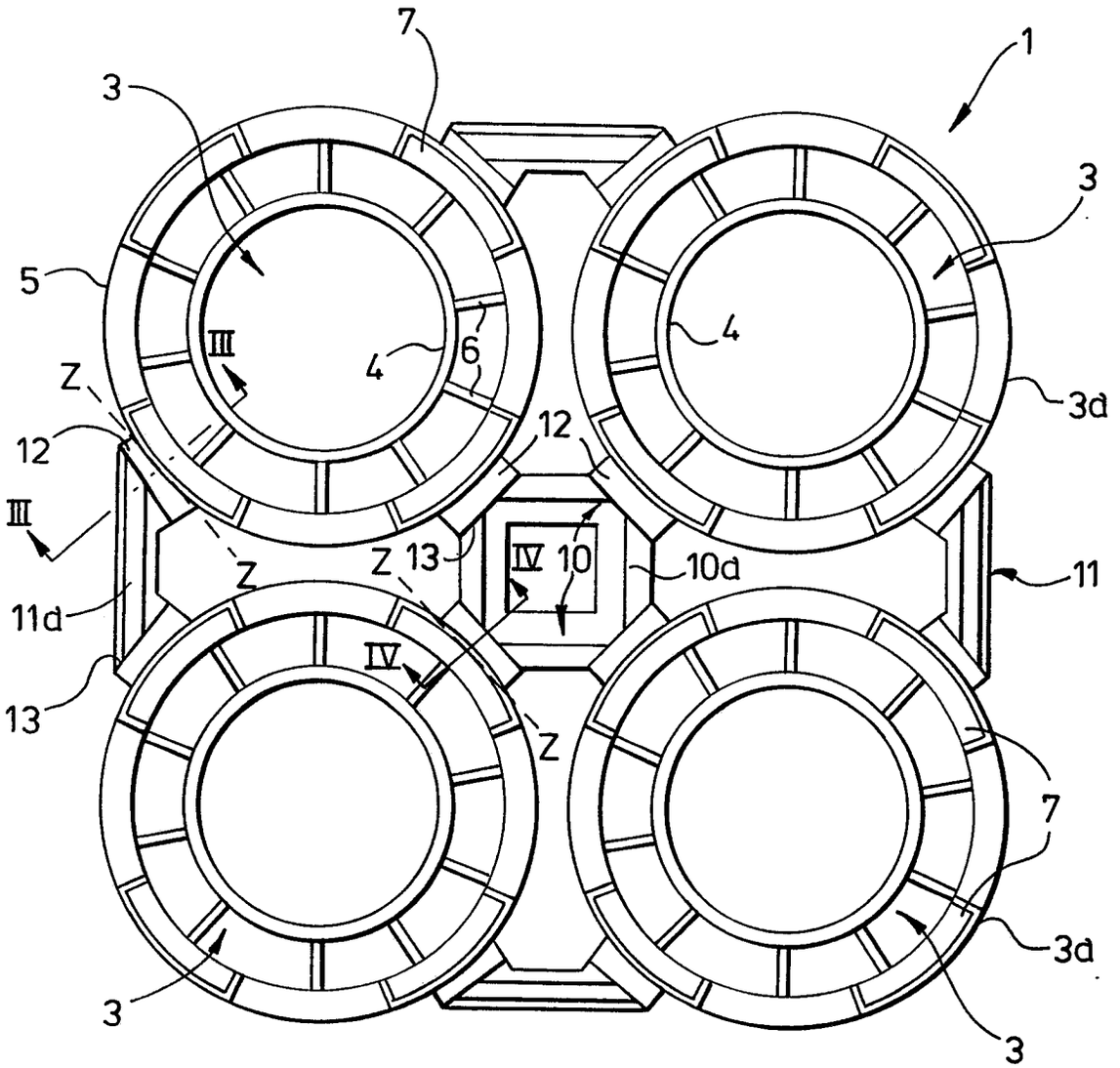

FIG 1

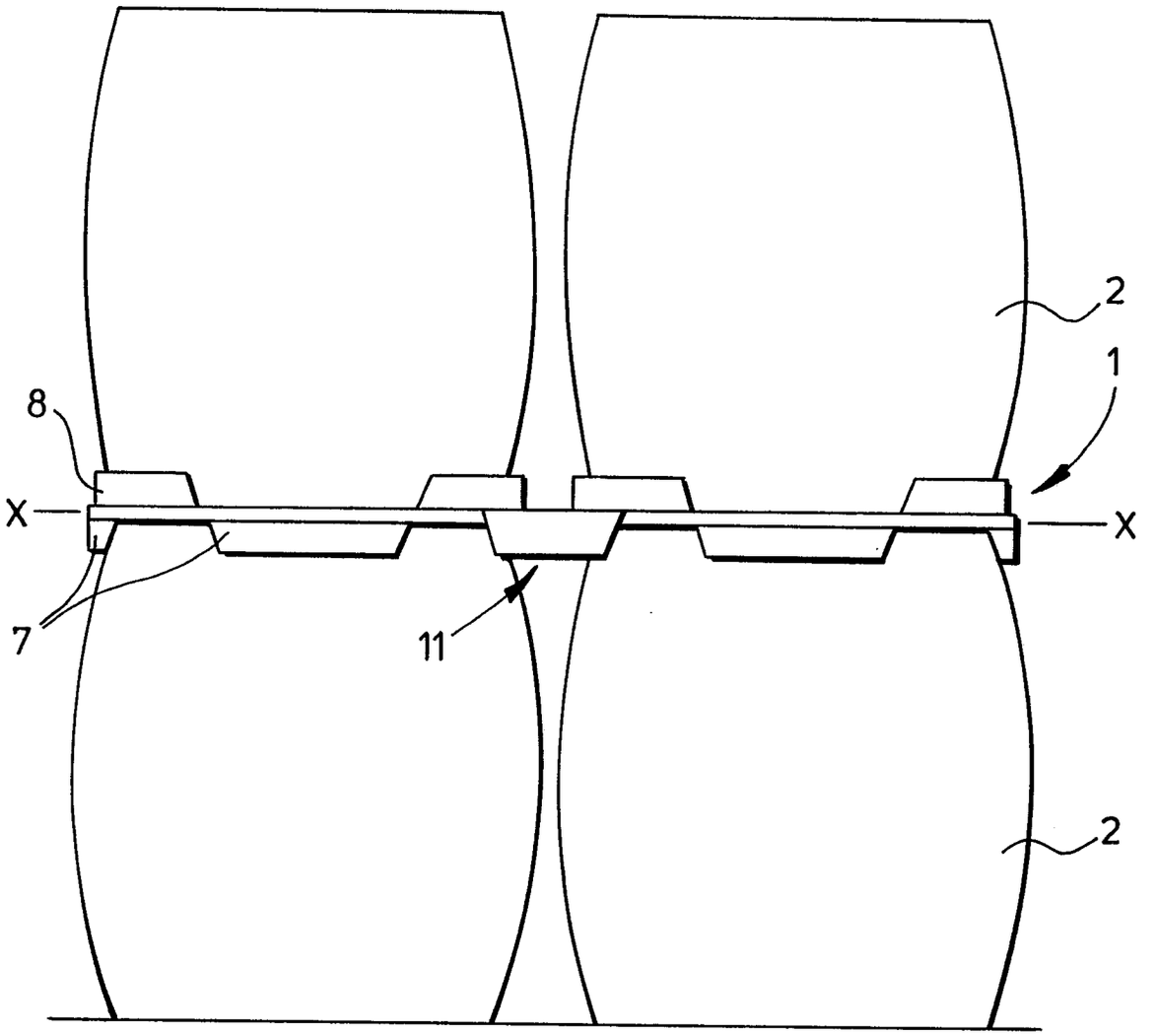

FIG 2

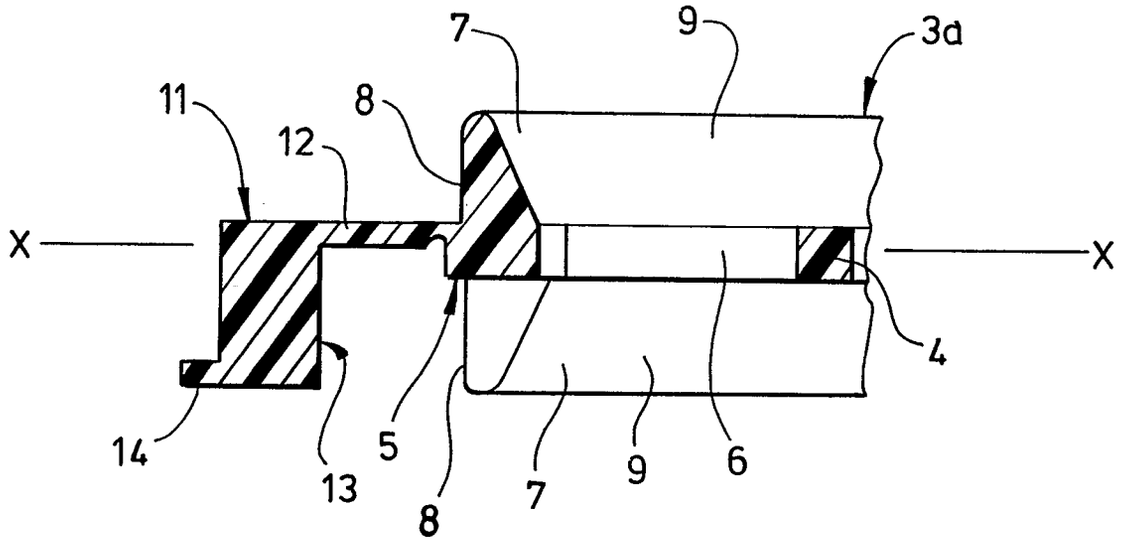

FIG 3

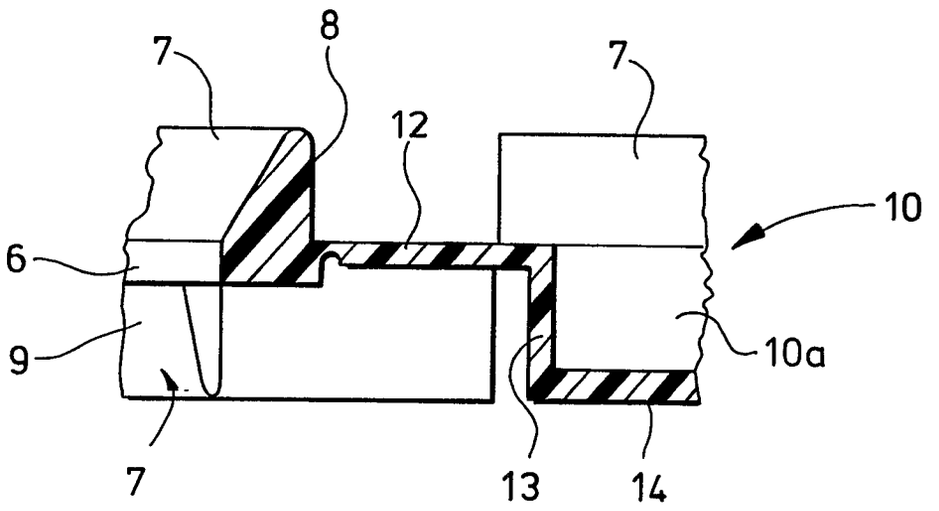

FIG 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 31 1480

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)
A	US-A-3 948 190 (COOK) * col 1, line 64 - col 3, line 62; figures *	1	B 65 D 19/44
A	US-A-4 263 855 (LAWLOR) * col 3, line 21 - col 5, line 5; figures *	1	
A	GB-A-2 175 878 (DIAMONITE PRODUCTS LTD)		
A	NL-A-7 215 073 (SNIEDERS)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19-01-1990	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
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O : non-written disclosure
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E : earlier patent document, but published on, or after the filing date
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