



(11) **EP 2 431 290 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.03.2012 Bulletin 2012/12

(51) Int Cl.:
B65D 19/00 (2006.01)

(21) Application number: **11181872.0**

(22) Date of filing: **19.09.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventor: **Mallan, Lee**
Manchester, Cheshire CW8 3AQ (GB)

(74) Representative: **Jacob, Reuben Ellis et al**
R.G.C. Jenkins & Co
26 Caxton Street
London
SW1H 0RJ (GB)

(30) Priority: **21.09.2010 GB 1015810**

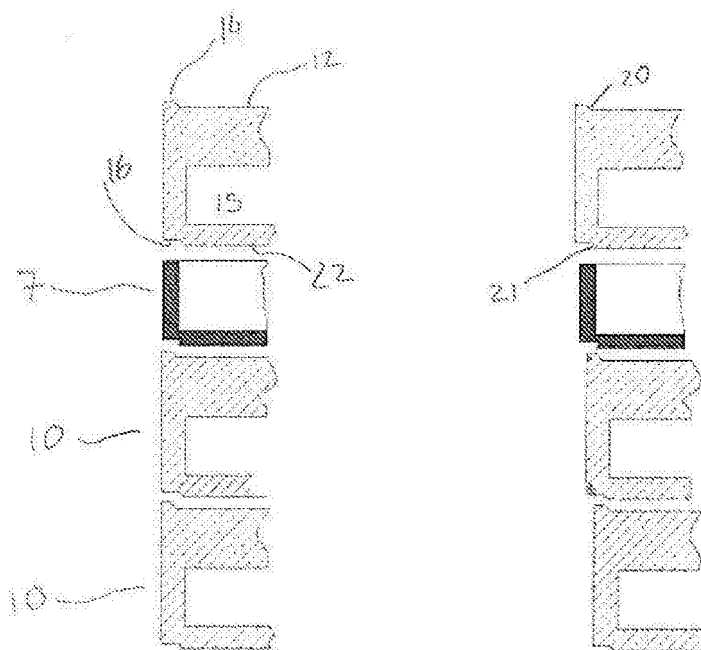
(71) Applicant: **Linpac Allibert Limited**
Birmingham
B37 7YN (GB)

(54) **Stackable article for transporting goods**

(57) The present invention relates to an article (7,10) for transporting goods for stacking with a second article (7,10) for transporting goods, wherein the article (7,10)

comprises means (14,23,16,18) for guiding the article (7,10) and the second article (7,10) into a stacked position.

Figure 5



Description

[0001] The present invention relates to articles for transporting goods and more particularly, to stackable pallets and containers with a modified profile for improved stacking.

[0002] Pallets are commonly used in many industries to store and transport all types of manufactured and agricultural goods and produce in bulk. The pallets are loaded in central distribution warehouses and placed into delivery vehicles to be delivered to the different stores. The pallets are usually designed to withstand heavy loads and also to permit easy handling by, for example, a forklift during unloading or loading of the products from a delivery vehicle or other transport container. Loaded pallets are often vertically stacked which risks toppling or other relative movement that can cause damage to the goods or the pallets themselves.

[0003] Once pallets have been unloaded they can be returned to the supplier of the goods. For the return journey, the empty pallets are generally stored in a vehicle or transport container and can be damaged in transit. Furthermore, they can occupy significant volume that could be used for other storage purposes and is liable to shipping costs.

[0004] In the distribution system described above, considerable amounts of time and energy are devoted to the loading and unloading of pallets. Standard pallets usually have a flat surface for receiving containers and are not designed to be stackable. Known stackable pallets have a retaining rim on its receiving surface to secure a pallet or containers into place. However, these rims are such that accurate positioning is required of the top pallet relative to the bottom pallet. Such an exact positioning is often not possible or very time-consuming when the pallets are handled with a forklift and often several attempts are often necessary.

[0005] It is an object of the invention to at least alleviate the above-mentioned disadvantages, and to provide an alternative to existing products. More particularly, it is an object of the invention to provide pallets which can be securely stacked whilst, at the same time, are easily stacked on top of each other.

[0006] Accordingly, there is provided a pallet for stacking with a second pallet, wherein the pallet comprises means for guiding the pallet and the second pallet into a stacked position. Thus, there is no longer a need for accurately aligning the top pallet with the bottom pallet. The top pallet can be roughly placed on top the bottom pallet with a forklift and guided into a stacked position.

[0007] The pallet comprises a surface for receiving a second pallet and the guiding means may be located on the receiving surface. The guiding means may comprise a rib with a sloping surface at an angle α relative to the receiving surface. Thus, when the second top pallet is dropped on top of the pallet, the sloping surface guides the second top pallet towards the receiving surface of the pallet, in the correct position for secure stacking.

[0008] The angle α between the sloping surface of the rib and the receiving surface is preferably greater than 90° and smaller than 180°, preferably between 155° and 115°, most preferably substantially 135°. It has been found that at substantially 135°, the best compromise between easy stacking and secure stacking.

[0009] Preferably, the rib comprises an angled and/or a curved portion. When the forklift user deposits the top pallet on the bottom pallet, the supporting surface of the top pallet is swivelled into the correct stacking position. Thus, this feature allows for more tolerance when placing the pallets on top of each other.

[0010] The pallet comprises a supporting surface and the guiding means may be located on the supporting surface. The guiding means comprises a recess with a sloping surface at an angle β relative to the supporting surface. Thus, when the pallet is dropped on top of a second pallet, the sloping surface guides the pallet towards the receiving surface of the second pallet, in the correct position for secure stacking.

[0011] The angle β between the sloping surface of the recess and the supporting surface of the pallet is preferably greater than 0° and smaller than 90°, preferably between 25° and 65°, most preferably substantially 45°. It has been found that at substantially 45°, the best compromise between easy stacking and secure stacking.

[0012] Preferably, the recess comprises a curved and/or angled portion. When the forklift user deposits the top pallet on the bottom pallet, the supporting surface of the top pallet is swivelled into the correct stacking position. Thus, this feature allows for more tolerance when placing the pallets on top of each other.

[0013] The invention will be further described with reference to the drawings and figures, in which:

figures 1 and 2 are schematic cross-sectional views of prior art pallets;
figure 3 is a schematic cross-sectional view of prior art stackable pallets and containers;
figure 4 is a schematic bottom view of the pallet of figure 2;
figure 5 is a schematic partial cross sectional view of pallets according to the present invention;
figure 6 is a schematic bottom view of a pallet of figure 5;
figure 7 is a photograph of a pallet according to the present invention;
figure 8 is a further photograph of the pallet of figure 7
figure 9 is a photograph of a container stacked on top of a pallet according to the invention;
figure 10 is a photograph of two containers stacked on top of a pallet according to the invention;
figure 11 is a photograph of a pallet according to the invention stacked on top of containers;
figure 12 is a schematic view of a rib used in the present invention; and
figure 13 is a schematic view of a recess used in the present invention.

[0014] Figure 1 is a partial cross section of a first prior art pallet-pallet system in which a bottom receiving pallet 1 has flat upper surface 2 for receiving a top pallet 3. In this system, the pallets are easily stackable because no positioning is required; the pallets are merely placed on top of each other. However, the pallets 1, 3 will move relative to each other in transport since there are no means of securing them to one another.

[0015] Figure 2 is a partial cross section of a second prior art pallet-pallet system in which a bottom pallet 1 has an upper surface 2 for receiving a top pallet 3. The bottom pallet 1 comprises ribs 4 extending perpendicularly from its receiving surface 2 and along the periphery of the receiving surface 2 of the pallet 1. The top pallet 3 comprises a complementary recess or cut-out portion 6 along the outer edge of the outer runner so that the pallets 1, 3 can be stacked and the movement in transport between top and bottom pallet is minimal. As can be seen in figure 3, similar ribs 4 and recesses 6 can be used to stack containers 7 on top of a pallet 1 and secure them in transport. When the top pallet or container does not comprise a complementary recess, a sidewall of the pallet or container is usually aligned with the rib of the bottom pallet.

[0016] As shown in figure 4, the recesses 6 are located in the supporting surface of the runners 5 and partially along the periphery of the pallet. The top pallet 3 may also comprise recesses 8 in the supporting surface of the central runner 9 to receive corresponding rib(s) 4 located on the receiving surface 2 of the bottom pallet 1. The pallets of figure 2 to 4 may be stacked on top of each other and movements between the pallets is minimised because of the ribs and complementary recesses. However, tedious manoeuvring of the forklift is required to accurately align the recesses 6 with the ribs 4.

[0017] Figure 5 shows a pallet 10 according to the invention comprising an upper surface 12 for receiving a second pallet 10 or one or more containers 7. In this embodiment, the pallet 10 comprises two outer runners 15 that support the receiving platform. The outer runners 15 are substantially parallel to two opposed sides of the pallet 10. The pallet 10 may further comprise a central runner 19 parallel to the outer runners 15 (that can be seen on figure 6). The runners 15, 19 may be hollow in order to decrease the weight of the pallet 10.

[0018] The pallet 10 may be made of plastic, wood and/or any other material suitable for the manufacture of pallets. If the pallet 10 is partially or completely made of plastic materials, it may be produced by injection moulding, blow moulding, rotational moulding or vacuum moulding.

[0019] The pallet 10 may comprise a rib 14 which extends from the receiving surface 12. The ribs 14 are (partially or completely) parallel to the runners 15, 19. The ribs may extend (partially or completely) along the edge of the receiving surface 12, as can be seen on figure 7, as a continuation of the sidewall of the pallet 10.

[0020] In the present invention, the rib 14 comprises a

sloping surface 20 which meets the receiving surface 12 of the pallet 10 at an angle α smaller than 180° and greater than 90° , preferably between 155° to 115° , ideally substantially 45° .

[0021] The pallet 10 may also comprise one or more elongate central ribs 23 on the receiving surface 12. The central rib 23 may comprise one or more sloping surfaces at an angle α smaller than 180° and greater than 90° , preferably between 155° to 115° , ideally substantially 45° , relative to the receiving surface 12 of the pallet 10. The sloping surface(s) of the ribs 14 and 23 is arranged and constructed so that the upper surface 12 of the pallet 10 can receive one or more containers within the space created between the ribs 14, 23.

[0022] The sloping surfaces 20 which guide the outer runners of a top pallet towards the receiving surface 12 of the receiving pallet 10. This lead-in slope provides greatest target onto which the pallet is placed. The latitude provided by the sloping surface 20 enables a forklift driver to roughly align the top pallet above the receiving pallet 10 and the runners 15 of the top pallet will be guided into the correct stacking position by the sloping surface 20.

[0023] On one hand, the shallower the slope, the greater the latitude provided for the top pallet to be fitted on top of the bottom pallet in the correct position. On the other hand, the closer the angle α to perpendicular, the better stability. It has been found that when the angle α is from 155° to 115° (or more preferably α is substantially 45°) the best compromise between ease of stacking and security is reached. The sloping surface(s) of the ribs 14 is arranged and constructed so that the top pallet is directed towards the space created between the ribs 14.

[0024] The height of the rib 14, i.e. the distance between the receiving surface 12 of the pallet 10 and the top of the rib 14, depends on the application. For example, a height of 5 mm is preferred for fruits and vegetables; 10 mm for agricultural produce and larger items; for containers or pallets capable of containing or supporting up to 500 kilograms of goods a height of 20 mm is preferred.

[0025] The ribs 14 may be integrally moulded with the receiving surface 12 or the sides of the pallet 10 or they may be secured on top of the receiving surface. It is preferred that the ribs and the receiving surface are integrally moulded for robustness.

[0026] The pallet 10 may comprise one or more recesses 16 on the supporting surface of the pallet, i.e. in this embodiment on the surface 22 of the runners contacting the receiving surface of a second pallet when stacked on top of said second pallet or the floor. The pallet 10 may also comprise one or more recesses 18 on the supporting surface of the central runner 19. The recesses 16, 18 comprise one or more sloping surface 23 at an angle β smaller than 90° and greater than 0° , preferably between 25° to 65° , ideally substantially 45° , relative to the supporting surface 22 of the pallet.

[0027] The sloping recess 16, 18 preferably extends (partially or completely) along the edge of the runners

15, 19. It may be a chamfer, i.e. a cut-out portion along the arris between the supporting surface 22 and the side-wall of the runner 15. Alternatively, one or more ribs or layers may be provided on the supporting surface 22 of the runners 15, 19, with said ribs or layers comprising one or more sloping surfaces 23.

[0028] The recesses 16, 18 of pallet 10 are preferably arranged and configured so that the supporting surface 22 of the pallet fits within the mouth or ribs of a bottom pallet.

[0029] The pallet 10 may comprise one or more sloping ribs on its receiving surface 12 and/or one or more sloping recesses 21 on the supporting surface 22 of the runners 15, 19.

[0030] Referring to figure 6 showing a bottom view of a pallet 10 comprising two outer runners 15 located along two opposed edges of the pallet and a central runner 19 located substantially along the central axis of the pallet 10 and substantially parallel to the outer runners 16.

[0031] The ribs 14 and/or recesses 16, 18 of the pallet 10 preferably comprise one or more angled and/or curved portions 13, 17. When the curved and/or angled portion is located on an outer runner 15, then the curved and/or angled portion is preferably curved or angled outwardly relative to the centre of the pallet 10. When the curved and/or angled portion is located on a central runner 19, then the curved and/or angled portion is preferably curved or angled inwardly relative to the centre of the runner 19.

[0032] These specific profiles enable the top pallet to be guided towards the correct stacking position relative to the bottom pallet. The profile of the recess 16, 18 may be a combination of straight, angled and/or curved portions to optimise the retention of the pallet versus ease of location. Because the locations on the underside of the pallet runners are not parallel to the outside shape, but angled or curved instead, the top pallet swivels round into position.

[0033] In use, a standard pallet can be lifted with a forklift and roughly aligned above a bottom pallet 10 with one or more ribs 14 as described above. As the top pallet is lowered onto the receiving surface of the bottom pallet 10, the runners of the top pallet will contact the rib 14 which (1) will swivel the runners of the top pallet into the correct position relative to the receiving surface of the bottom pallet due to the angled and/or curved portion; and (2) will guide the runners of the top pallet towards the receiving surface of the top pallet due to the angle with the receiving surface.

[0034] Standard containers can also be stacked on top of a pallet according to the present invention. In the embodiment of figures 9-11, the pallet 10 comprises sloping ribs 14, central rib 23 and sloping recess 16. In figure 9, the standard container is stacked on top of the receiving surface 12 of the pallet 10, within a space created between the ribs 14 and the central rib 23. The ribs 14, 23 aid the easy stacking of the container on the pallet. Similarly, the second container (see figure 10) is placed within

a second space created between the ribs 14 and the central rib 23. Both containers are easily stacked on top of the pallet and secured because of the ribs 14, 23.

[0035] A pallet 10 with one or more sloping recess 16 can be stacked on top of (one or) two standard containers as shown in figure 10. The recesses 16 aid the positioning and guiding of the pallet 10 onto the containers.

[0036] Where the top pallet (or container) comprises one or more sloping recesses and the bottom pallet (or container) comprises one or more sloping ribs, the pallets may be stacked in a complementary manner.

[0037] Within the scope of the invention, one can envisage other articles for transporting goods, such as a container comprising a base, two opposing side walls and two opposing end walls, the container further comprising a sloping rib along the free top edge of the side and/or end walls and sloping towards the mouth of the container and/or a sloping recess as described above in connection with the pallet 10, in the supporting surface of the base.

[0038] Thus, from the above description, it can be seen that the present invention provide transport articles which can be easily stacked on top of each other, i.e. without the need of tedious positioning of the pallets/containers with a forklift, and which are securely stacked on top of each other to minimise damage to the pallets, containers and goods during transport.

Claims

1. An article for transporting goods for stacking with a second article for transporting goods, wherein the article comprises means for guiding the article and the second article into a stacked position.
2. The article according to claim 1, wherein the article comprises a surface for receiving a second article and the guiding means is located on the receiving surface.
3. The article according to claim 2, wherein the guiding means comprises a rib with a sloping surface at an angle α relative to the receiving surface.
4. The article according to claim 3 wherein α is greater than 90° and smaller than 180° , preferably between 155° and 115° , most preferably substantially 135° .
5. The article according to claim 2 or 3 wherein the rib comprises an angled and/or a curved portion.
6. The article according to claim 1, wherein the pallet comprises a supporting surface and the guiding means is located on the supporting surface.
7. The article according to claim 6, wherein the guiding means comprises a recess with a sloping surface at

an angle β relative to the supporting surface.

8. The article according to claim 7, wherein β is greater than 0° and smaller than 90° , preferably between 25° and 65° , most preferably substantially 45° . 5
9. The article according to claim 7, wherein the recess comprises a curved and/or angled portion.
10. The article according to any one of claims 1 to 9 10
wherein the article is a pallet.
11. The article according to any one of claims 1 to 9
wherein the article is a container. 15
12. An article substantially as described herein with reference to the accompanying figures.

20

25

30

35

40

45

50

55

Figure 1

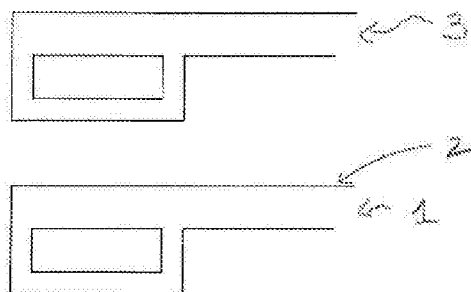


Figure 2

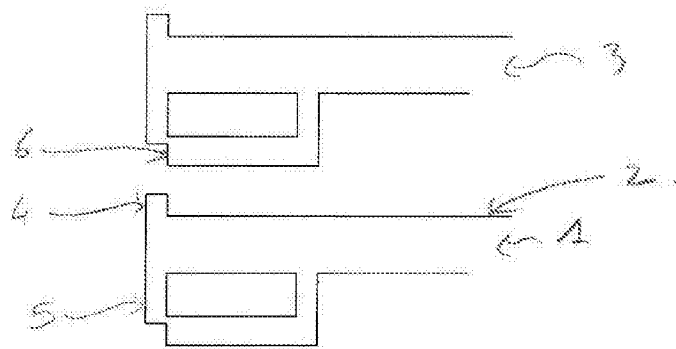


Figure 3

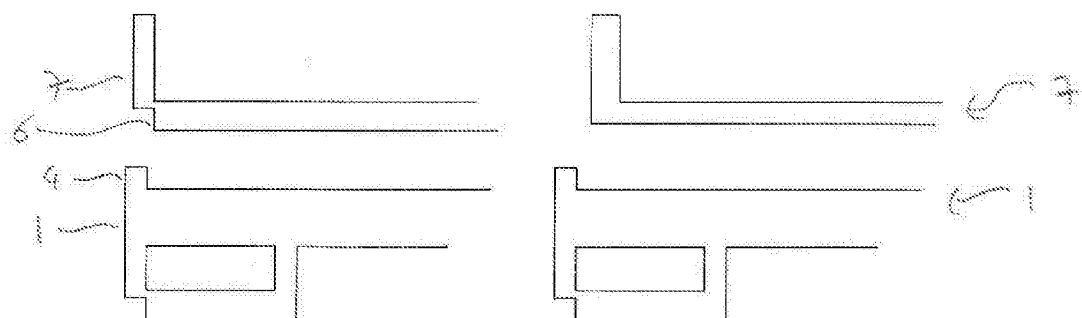


Figure 4

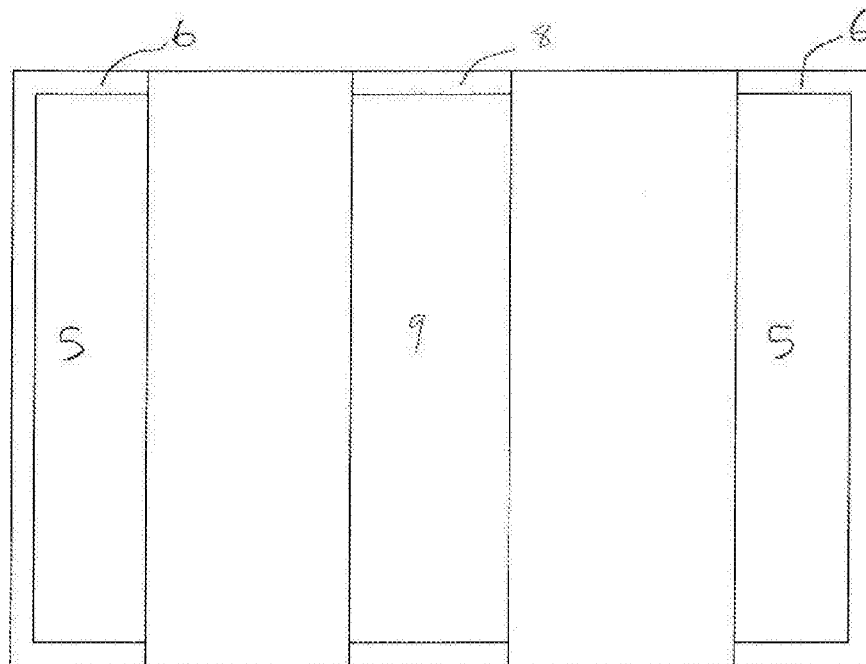


Figure 5

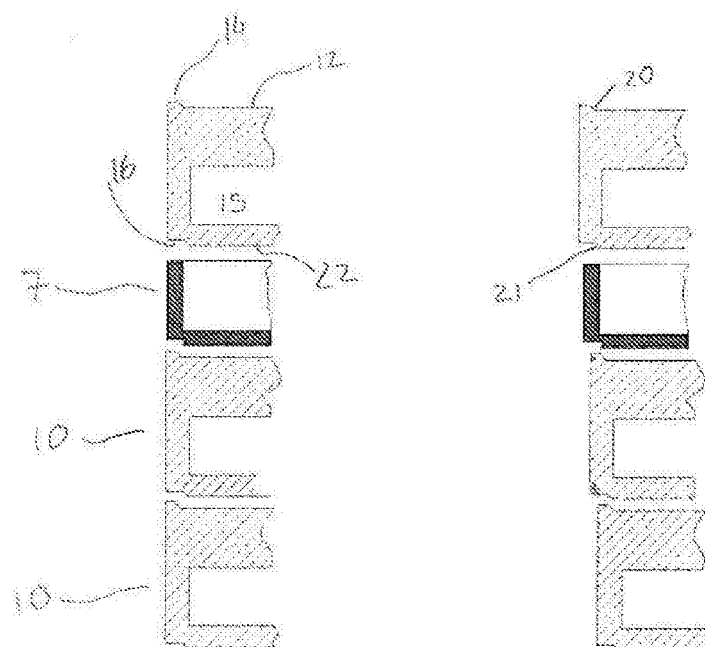


Figure 6

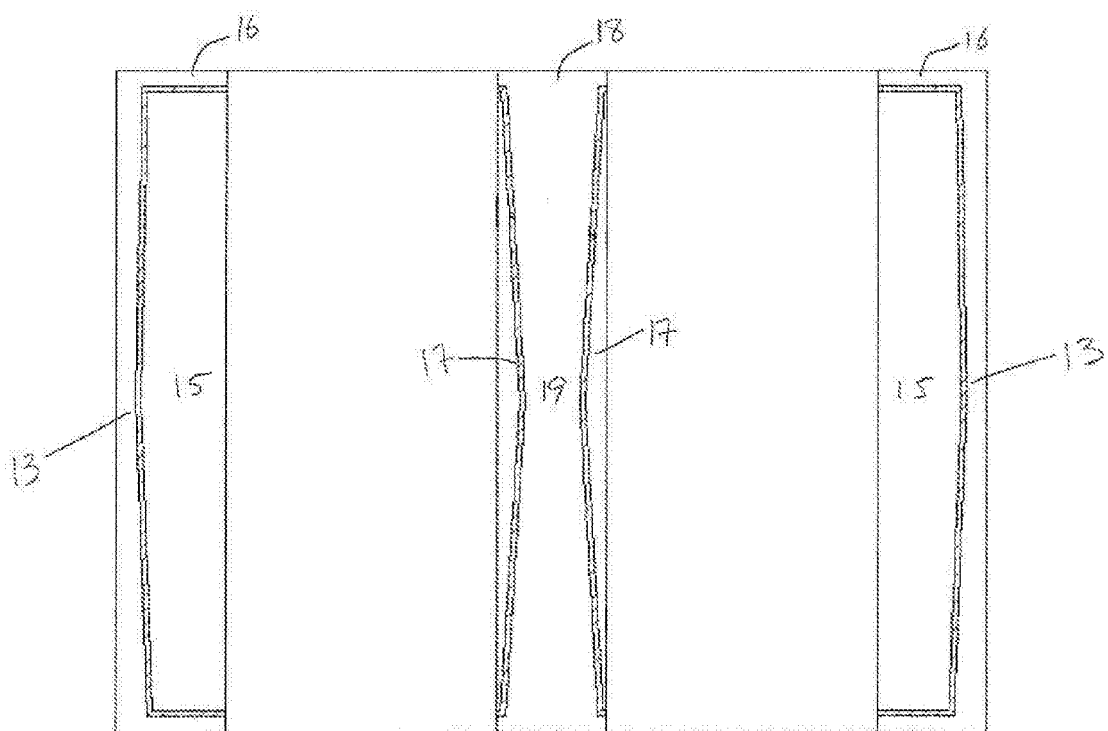


Figure 7

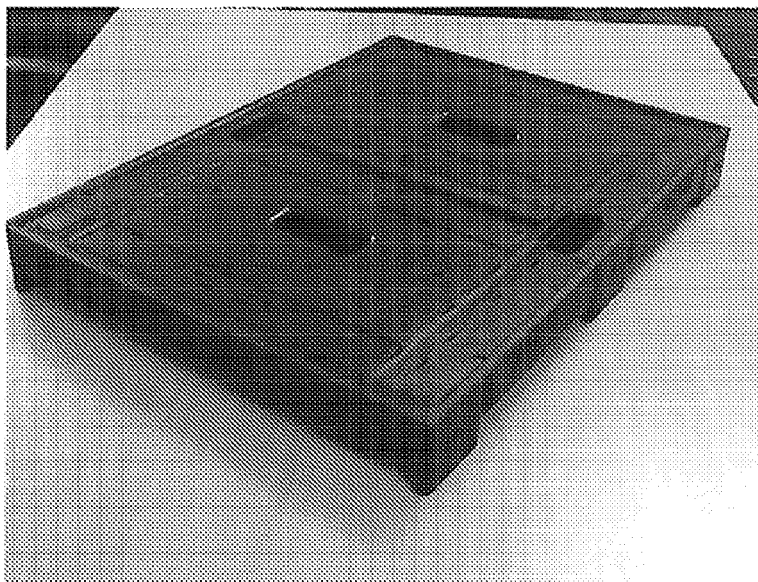


Figure 8

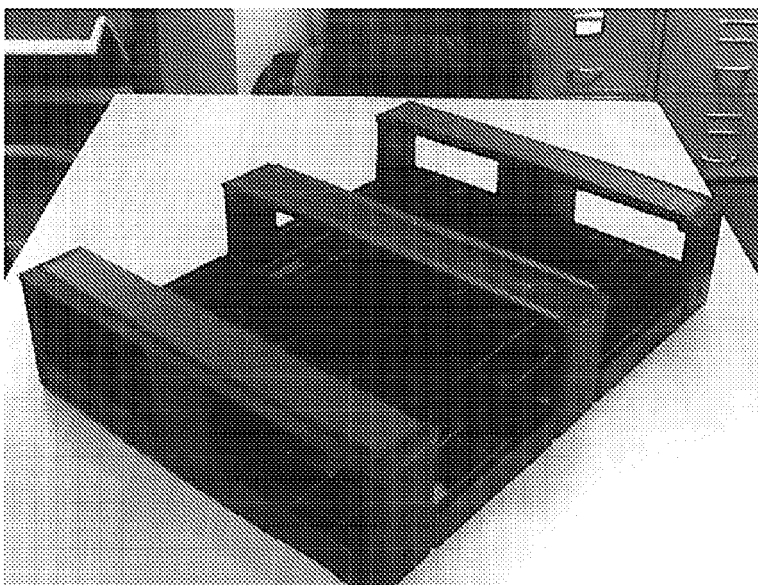


Figure 9

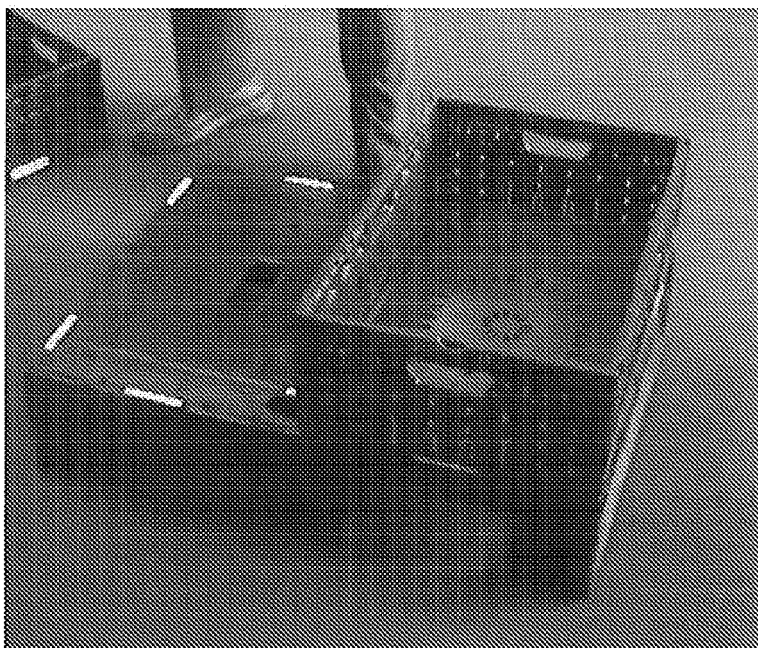


Figure 10

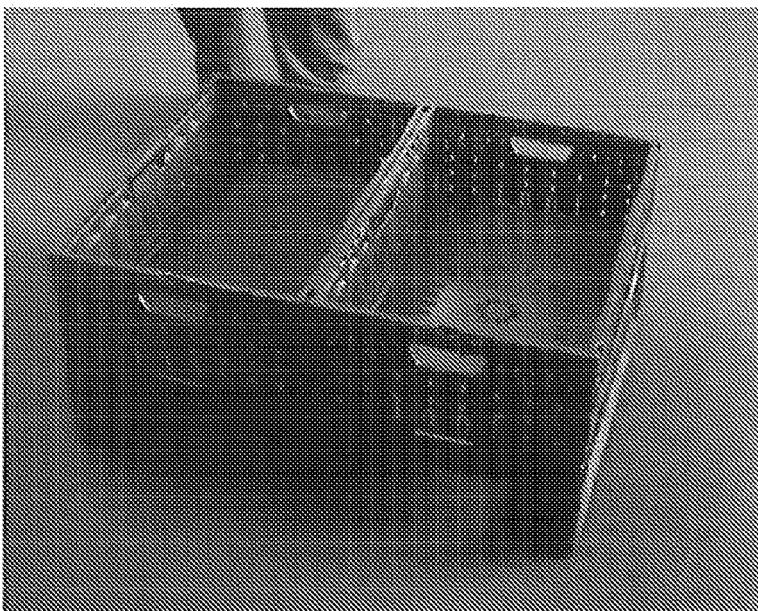


Figure 11

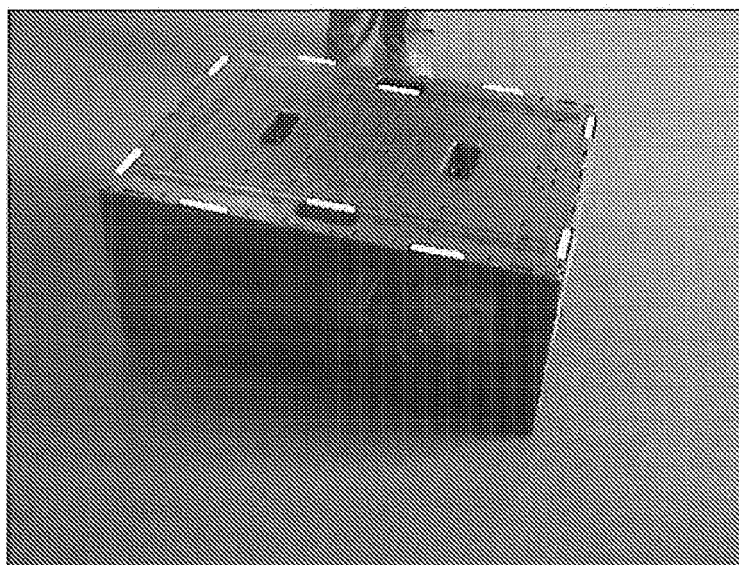


Figure 12

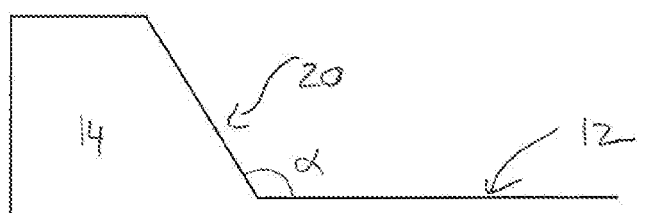
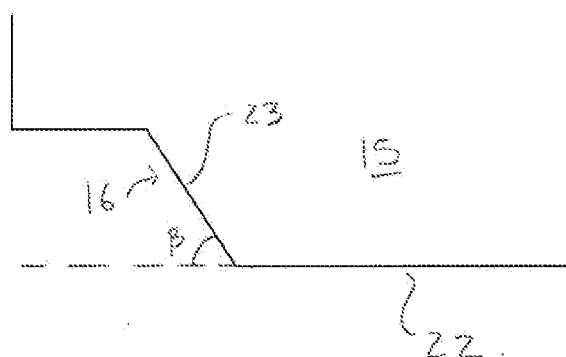


Figure 13





EUROPEAN SEARCH REPORT

Application Number
EP 11 18 1872

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 456 529 A1 (RENAULT [FR]) 13 November 1991 (1991-11-13) * abstract; figures 1-4 *	1-10,12	INV. B65D19/00
X	WO 2006/130191 A1 (REHRIG PACIFIC CO [US]; APPS WILLIAM P [US]) 7 December 2006 (2006-12-07) * page 3, line 15 - page 4, line 4 * * page 5, lines 12-28 * * figures 1-5, 11, 12 *	1-10,12	
X	JP 2001 328632 A (SANKO CO LTD) 27 November 2001 (2001-11-27) * abstract; figures 1-6 *	1-6,10,12	
X	DE 299 04 563 U1 (RUCH NOVAPLAST GMBH & CO KG [DE]) 10 June 1999 (1999-06-10) * page 5, lines 1-11 * * figure 1 *	1-5,11,12	
X	FR 2 923 465 A1 (VALEO SYSTEMES THERMIQUES [FR]) 15 May 2009 (2009-05-15) * page 5, line 30 - page 7, line 3; figures 1-5 *	1,2,5-10,12	TECHNICAL FIELDS SEARCHED (IPC) B65D
A	FR 2 694 739 A1 (CAVE [FR]; STEEL PLAST CAVE [FR]; STEEL PLAST; STEEL PLAST [FR]) 18 February 1994 (1994-02-18) * page 1, lines 1-11 * * figures 1-6 *	1	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 December 2011	Examiner Piolat, Olivier
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			

 2
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 18 1872

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-12-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0456529 A1	13-11-1991	EP 0456529 A1	13-11-1991
		FR 2661891 A1	15-11-1991
-----	-----	-----	-----
WO 2006130191 A1	07-12-2006	US 2006272556 A1	07-12-2006
		WO 2006130191 A1	07-12-2006
-----	-----	-----	-----
JP 2001328632 A	27-11-2001	NONE	
-----	-----	-----	-----
DE 29904563 U1	10-06-1999	DE 29904563 U1	10-06-1999
		EP 1035026 A1	13-09-2000
-----	-----	-----	-----
FR 2923465 A1	15-05-2009	EP 2219962 A1	25-08-2010
		FR 2923465 A1	15-05-2009
		JP 2011502901 A	27-01-2011
		US 2011005433 A1	13-01-2011
		WO 2009062885 A1	22-05-2009
-----	-----	-----	-----
FR 2694739 A1	18-02-1994	NONE	
-----	-----	-----	-----