



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.01.2011 Bulletin 2011/04

(51) Int Cl.:
B65D 21/06 (2006.01)

(21) Application number: **10169254.9**

(22) Date of filing: **12.07.2010**

(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 SE SI SK SM TR
Designated Extension States:
BA ME RS

(72) Inventor: **Cavalcante, Mauricio D.**
Atlanta,
Georgia 30319 (US)

(74) Representative: **Lamb, Richard Andrew**
Urquhart-Dykes & Lord LLP
New Priestgate House
57 Priestgate
Peterborough
Cambridgeshire PE1 1JX (GB)

(30) Priority: **12.07.2009 US 224882 P**

(71) Applicant: **Rehrig Pacific Company**
Los Angeles, CA 90058 (US)

(54) **Collapsible container**

(57) A container (10) includes a plurality of walls (14,18) extending upwardly from a base (12). The walls (14,18) are movable between an upright position and a collapsed position on the base (12). Interlocking portions

(36), such as hooks, extend outwardly from upper edges of the end walls (18), above supports (20). The hooks interlock with edges of the side walls (14) to prevent the upper ends of the end walls (18) from deflecting outwardly.

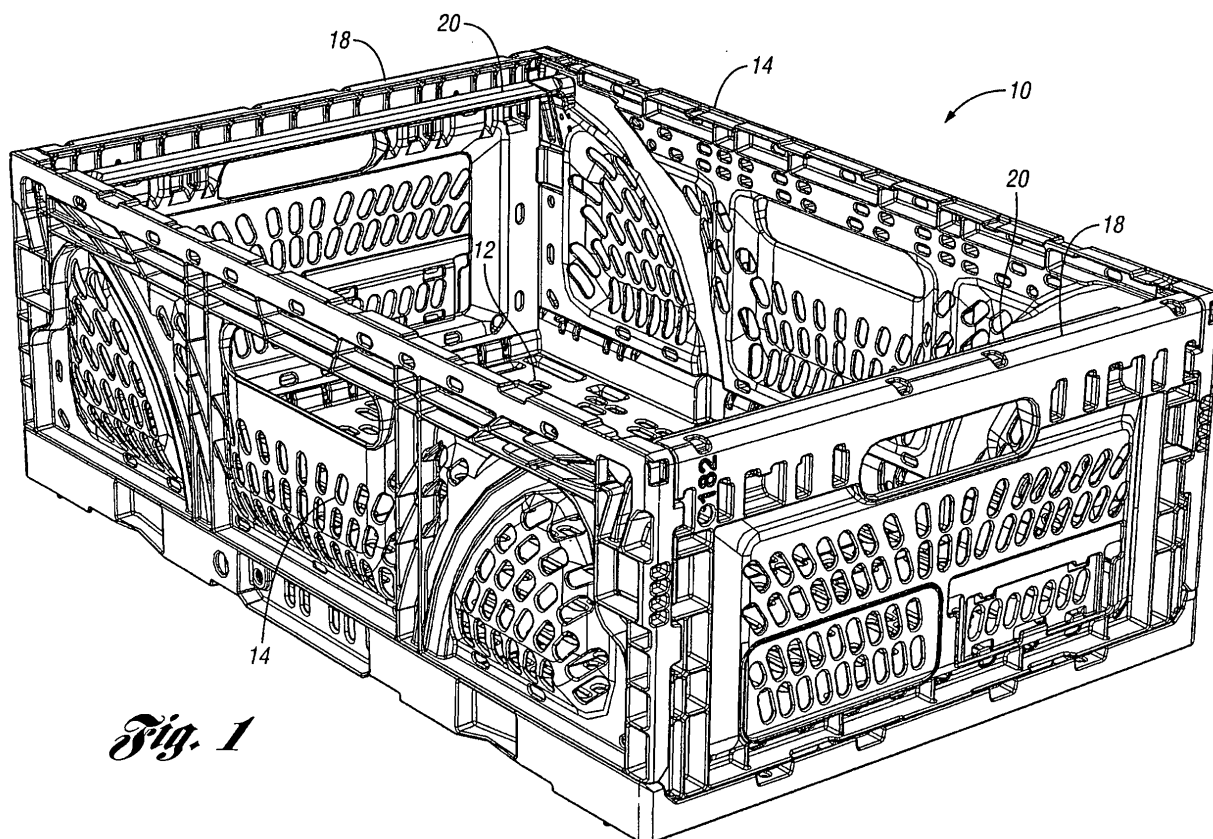


Fig. 1

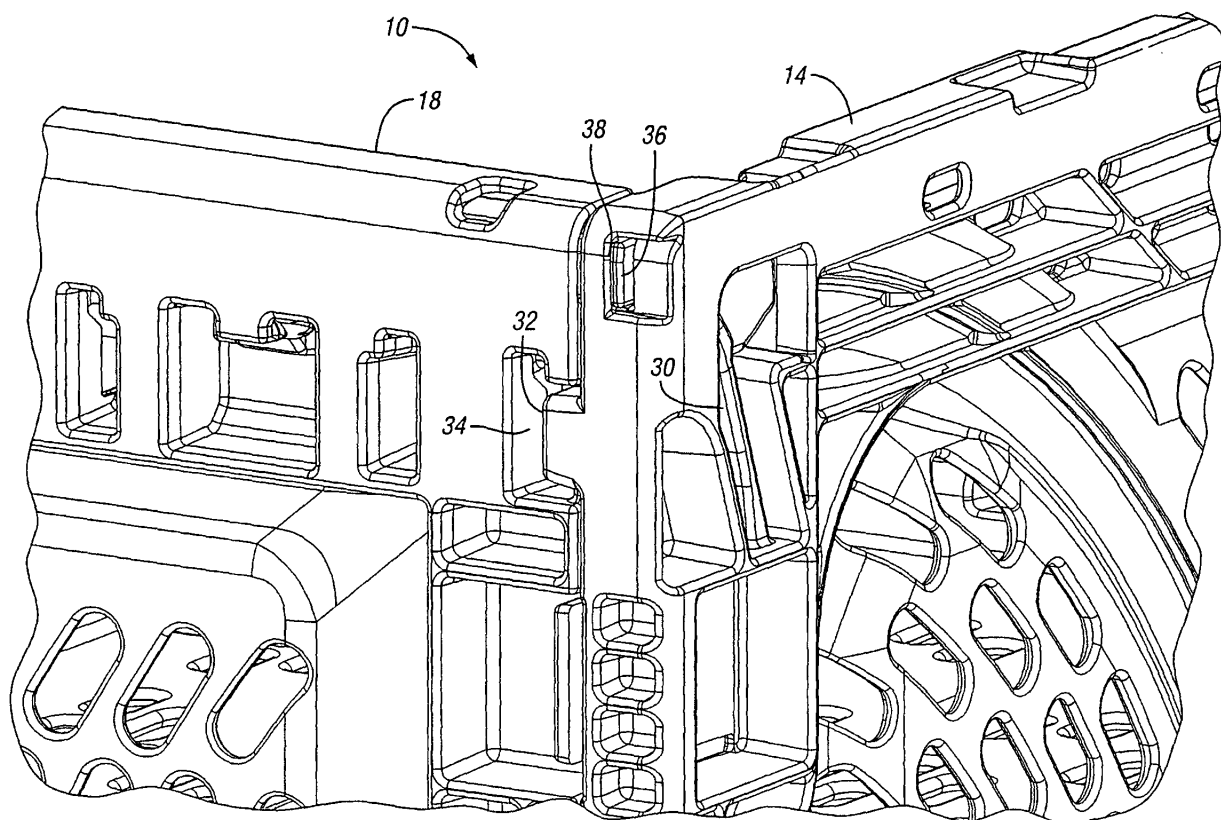


Fig. 4

Description

[0001] Collapsible crates are well known. Four walls each connected via a hinge to a base are selectively movable about the hinge between a use position, in which the wall is generally perpendicular to the base, and a collapsed position onto the base. Various latch mechanisms have been provided to connect adjacent walls at the corner to selectively lock the crate in the use position.

[0002] Some collapsible crates also include retractable supports so that another, non-collapsible, nestable container can be supported thereon. One such collapsible crate includes end walls each having a support that is partially supported on the adjacent walls when in the support position. The nestable containers can be supported on the supports when the supports are in the support position. However, when the nestable container is loaded, the weight of the nestable container placed carelessly onto the supports may be sufficient to deflect the upper portion of one end wall of the collapsible crate outwardly. The deflection of the one end wall may be sufficient so that the opposite end of the nestable container may not be aligned on the opposite support and may consequently fall into the collapsible container.

[0003] It is therefore desirable to provide an improved collapsible crate which addresses the above described problems and/or which more generally offers improvements or an alternative to existing arrangements.

[0004] According to the present invention there is therefore provided a collapsible container as described in the accompanying claims.

[0005] In an embodiment of the invention there is provided a container having a plurality of walls extending upwardly from a base. The walls are movable between an upright position and a collapsed position on the base. Interlocking portions, such as hooks, extend outwardly from upper edges of the end walls, above the supports. The hooks interlock with edges of the side walls to prevent the upper ends of the end walls from deflecting outwardly.

[0006] The present invention will now be described by way of example only with reference to the following figures in which:

Figure 1 is a perspective view of a container according to one embodiment of the present invention in an assembled upright position;

Figure 2 shows the container of Figure 1 in a collapsed position;

Figure 3 is an interior perspective view of a quarter of the container of Figure 1;

Figure 4 is an exterior view of the quarter of the container of Figure 3;

Figure 5 is the interior view of Figure 3 with the end wall collapsed;

Figure 6 is an interior view of one of the end walls, with the support removed;

Figure 7 is an exterior view of the end wall of Figure

6 showing one of the interlocking portions;

Figure 8 shows the end wall of Figure 6 with the support;

Figure 9 is an exterior view of the corner of the side wall of Figure 3;

Figure 10 is an interior view of the corner of the side wall of Figure 9;

Figure 11 shows the quarter of the container of Figure 3 as the end wall is being collapsed;

Figures 1-11 show a collapsible container 10 according to one embodiment of the present invention. Figure 1 shows the container 10 in an upright, assembled, use position. The container 10 includes a base 12, upstanding side walls 14 (or long walls) and upstanding end walls 18 (or short walls). The side walls 14 and end walls 18 are pivotably connected along long and short edges of the base 12, respectively.

[0007] Each end wall 18 has a support 20. The support 20 is pivotably and slidably mounted to the end wall 18 and movable between a retracted position and a support position. The support 20 is shown in Figure 1 pivoted to the support position, where it projects into the interior of the container 10 where it can support another container stacked thereon.

[0008] The end walls 18 are collapsible onto the base 12, and the side walls 14 are collapsible onto the end walls 18, as shown in Figure 2.

[0009] Figure 3 is an interior perspective view of a quarter of a container 10. The remainder of the container 10 would be symmetric. The supports 20 include lateral projections 26 projecting into arcuate channels 22 formed in each side wall 14. The lateral projections 26 of the supports 20 move in the arcuate channels 22 as the end walls 18 are collapsed onto the base 12. The lateral projections 26 include downward projections that slide behind vertical ribs 24 adjacent the arcuate channels 22.

[0010] Figure 4 is an exterior view of the corner of the container 10 of Figure 3.

The side walls 14 include interlocking portions 32 that interlock with complementary portions 34 on the end walls 18 below the supports 20. The end walls 18 further include upper interlocking portions 36 received in openings 38 in the side walls 14 above the supports 20.

[0011] As shown in Figure 5, the end walls 18 are collapsible onto the base 12 (and the side walls 14 are collapsible onto the end walls 18, although the order could be reversed).

[0012] Figure 6 is an interior view of one of the end walls 18, with the support 20 removed. The end walls 18 include hinge pin receivers 40 for slidably and pivotably receiving the hinge pins of the support 20. As shown, the upper interlocking portions 36 project outwardly from the end walls 18.

[0013] Figure 7 is an exterior view of the end wall 18 showing one of the interlocking portions 36. The interlocking portion 36 includes a laterally projecting portion 37 and a vertically oriented, rearwardly projecting portion

39 for being received in the openings 38 in the side walls 14, as shown in Figure 4. The laterally projecting portion 37 and rearwardly projecting portion 39 form a hook. The upper interlocking portions 36 received in openings 38 in the side walls 14 above the supports 20 prevent the upper portions of the end walls 18 from being deflected outwardly by a container stacked on the supports 20. This helps ensure that the upper container is properly stacked on the supports 20.

[0014] Figure 8 shows the end wall 18 with the support 20. In the retracted position, the support 20 may be equally as high (or higher) than the interlocking portions 36, but the interlocking portions 36 should be higher than the supports 20 when the supports are in the support position.

[0015] Figures 9 and 10 show the side wall 14. As shown, the side walls 14 include a lip 42 projecting inward. The openings 38 are formed in the lips 42.

[0016] As shown in Figure 11, when the end wall 18 is collapsed onto the base wall 12, the interlocking portion 36 and the lateral projection 26 are received in the arcuate channel 22 down to the base 12.

[0017] In accordance with the provisions of the patent statutes and jurisprudence, exemplary configurations described above are considered to represent a preferred embodiment of the invention. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.

Claims

1. A collapsible container (10) comprising:

a base (12);
a plurality of walls (14,18) extending upward from the base (12), the plurality of walls (14,18) movable between an upright position and a collapsed position onto the base (12);
at least one support (20) pivotable from a retracted position toward an interior of the container (10) to a support position, the first wall (14) including an interlocking portion (32,36) projecting laterally outward from the first wall (14;18), the interlocking portion (32,36) interlocking with a complementary interlocking portion (34,38) on a second wall (18;14) of the plurality of walls (14,18) when the first wall (14;18) and the second wall (18;14) are in the upright position.

2. The collapsible container (10) of claim 1 wherein the interlocking portion (36) is farther from the base (12) than the support (20) when the support (20) is in the support position.

3. The collapsible container (10) of claim 1 or 2 wherein the interlocking portion (36) includes a laterally projecting portion (37) and a rearwardly projection portion (39) projecting toward an exterior of the container (10) from a lateral end of the laterally projecting portion (37).

4. The collapsible container (10) of claim 3 wherein the rearwardly projecting portion (29) is vertically elongated.

5. The collapsible container (10) of any preceding claim wherein the complementary interlocking portion (38) is a vertically elongated opening (38).

6. The collapsible container (10) of any preceding claim wherein the interlocking portion (36) and the complementary interlocking portion (38) prevent an upper edge of the first wall (18) from deflecting outwardly.

7. A collapsible container (10) comprising:

a base (12);
a plurality of walls (14,18) extending upward from the base (12), the plurality of walls (14,18) movable between an upright position and a collapsed position onto the base (12);
at least one support (20) pivotable from a retracted position toward an interior of the container (10) to a support position, the first wall (18) including a hook (36) projecting laterally outward from the first wall (18), the hook (36) received in an opening (38) in a second wall (14) of the plurality of walls (14,18) when the first wall (18) and the second wall (14) are in the upright position.

8. The collapsible container (10) of claim 7 wherein the hook (36) is farther from the base (12) than the support (20) when the support (20) is in the support position.

9. The collapsible container (10) of claim 7 or 8 wherein the hook (36) includes a laterally projecting portion (37) and a rearwardly projection portion (39) projecting toward an exterior of the container (10) from a lateral end of the laterally projecting portion (37).

10. The collapsible container (10) of claim 9 wherein the rearwardly projecting portion (39) is vertically elongated.

11. The collapsible container (10) of any of claims 7 to 10 wherein the opening (38) is a vertically elongated opening.

12. The collapsible container (10) of any of claims 7 to 11 wherein the hook (36) and the opening (38) prevent an upper edge of the first wall (18) from deflecting outwardly.

13. The collapsible container (10) of any preceding claim wherein the first wall (18) is a short wall and wherein the second wall (14) is a long wall, wherein the first wall is collapsible directly onto the base (12) and the second wall (14) is collapsible onto the first wall (18). 5
14. The collapsible container (10) of any preceding claim wherein the interlocking portion or hook (36) are received in an arcuate channel (22) in the second wall (14) as the first wall (18) is collapsed onto the base (12). 10
15. The collapsible container (10) of any preceding claim wherein the second walls (14) further comprise interlocking portions (32) the interlock with complementary portions (34) on the first walls (18) when the first wall (18) and the second wall (14) are in the upright position. 15

20

25

30

35

40

45

50

55

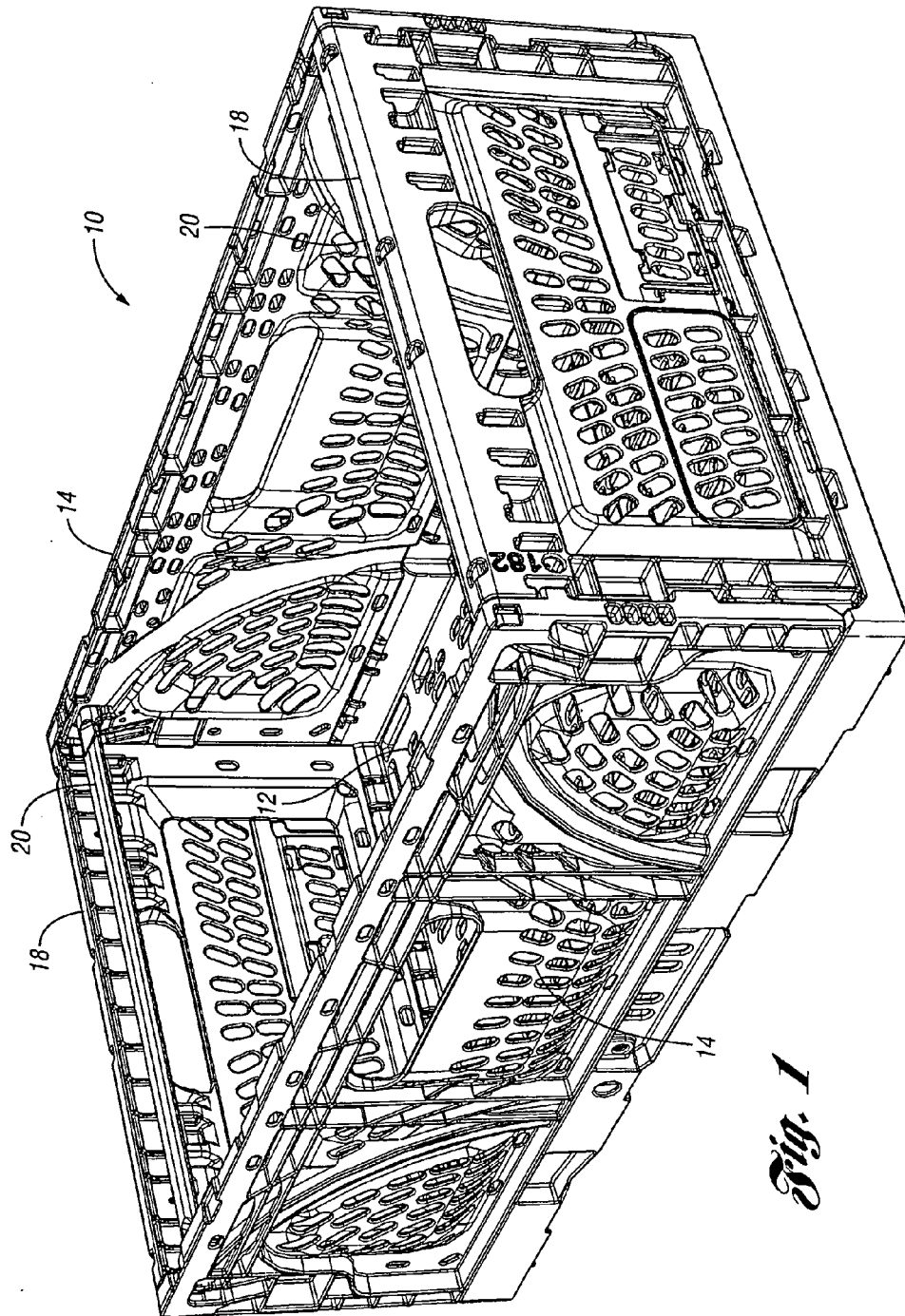


Fig. 1

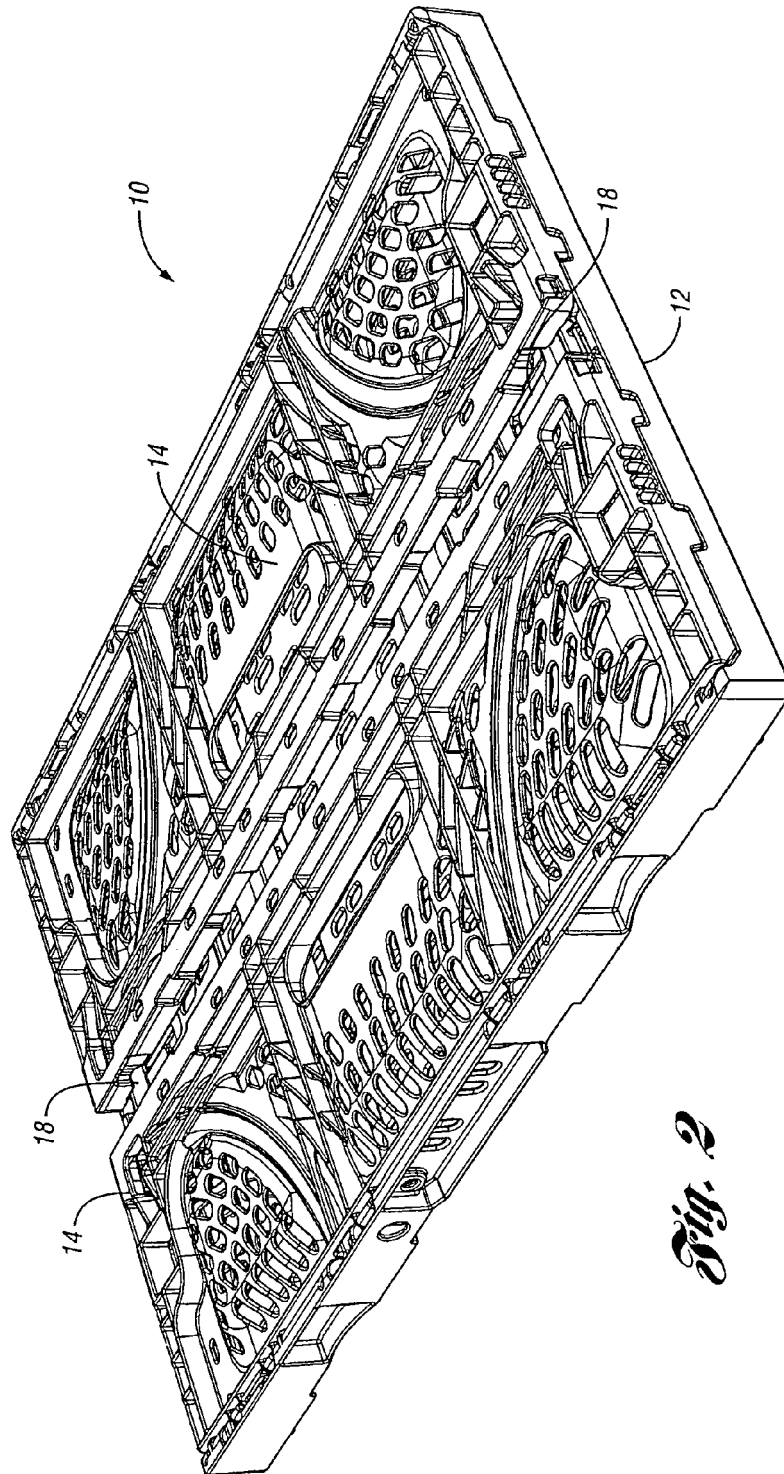


Fig. 2

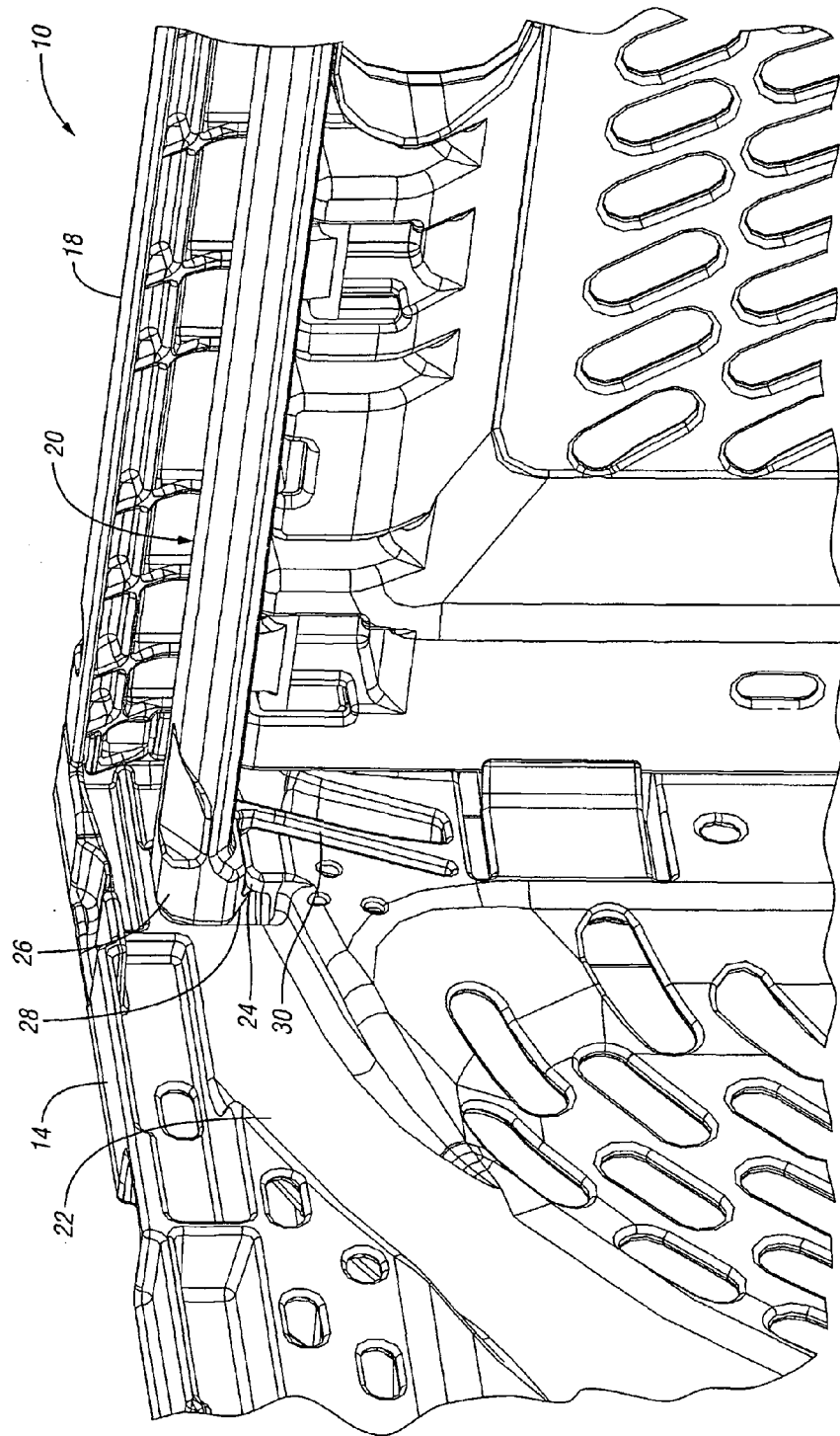


Fig. 3

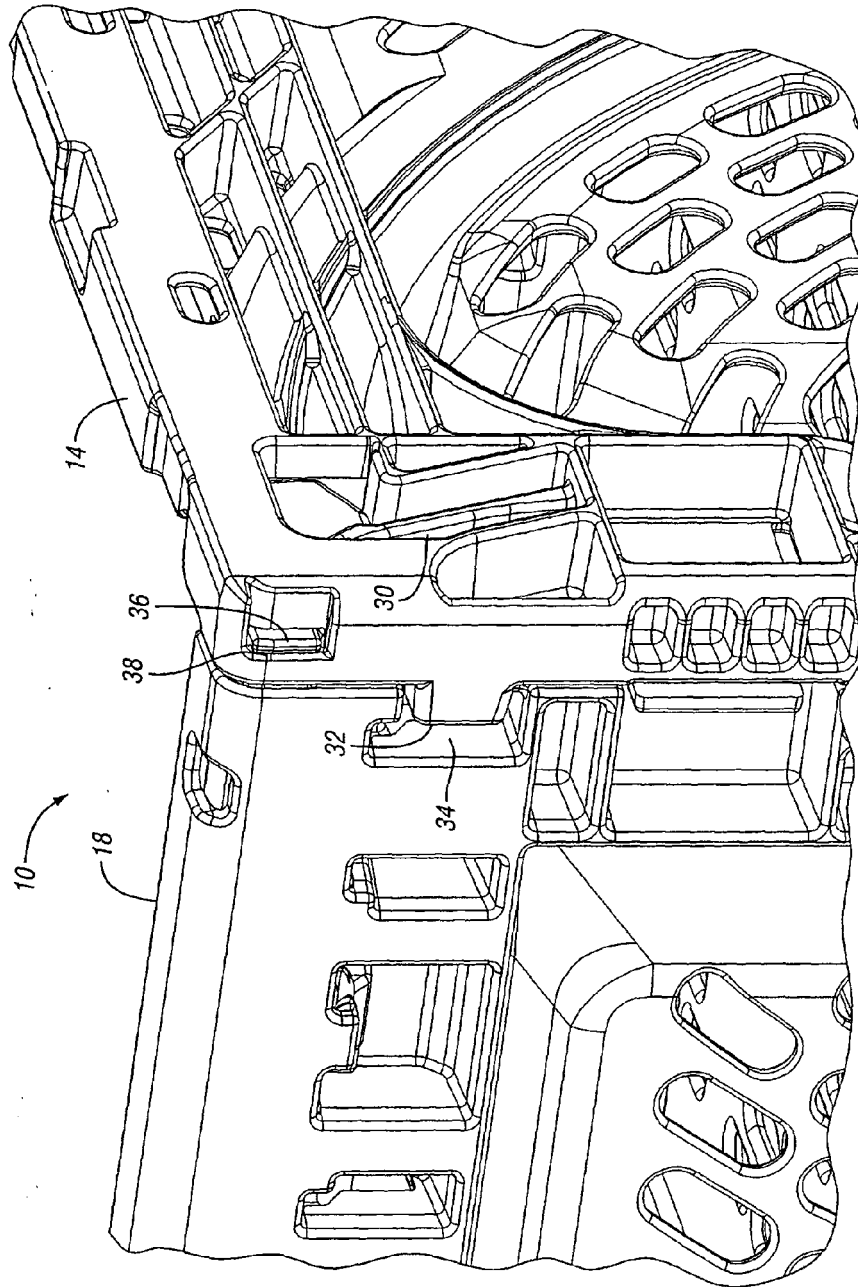


Fig. 4

Fig. 5

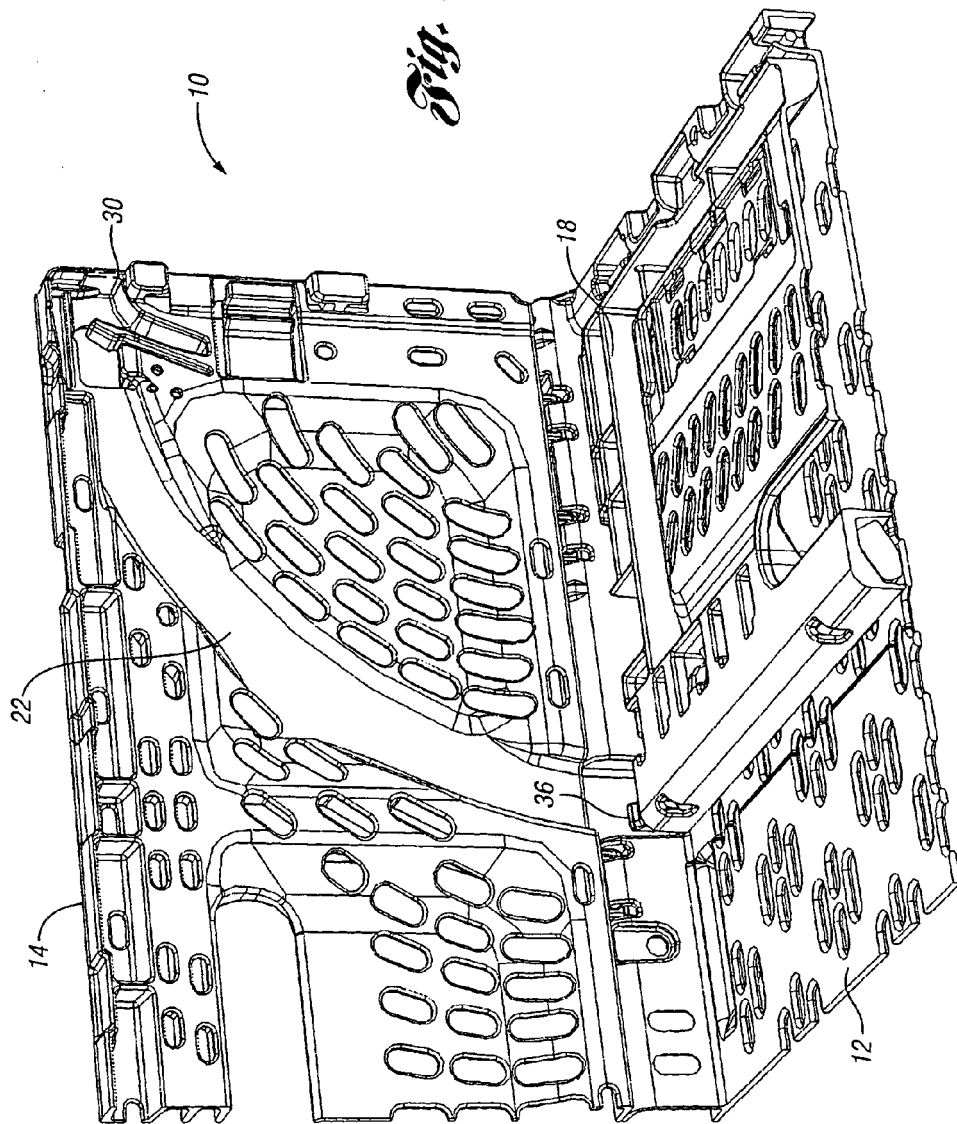
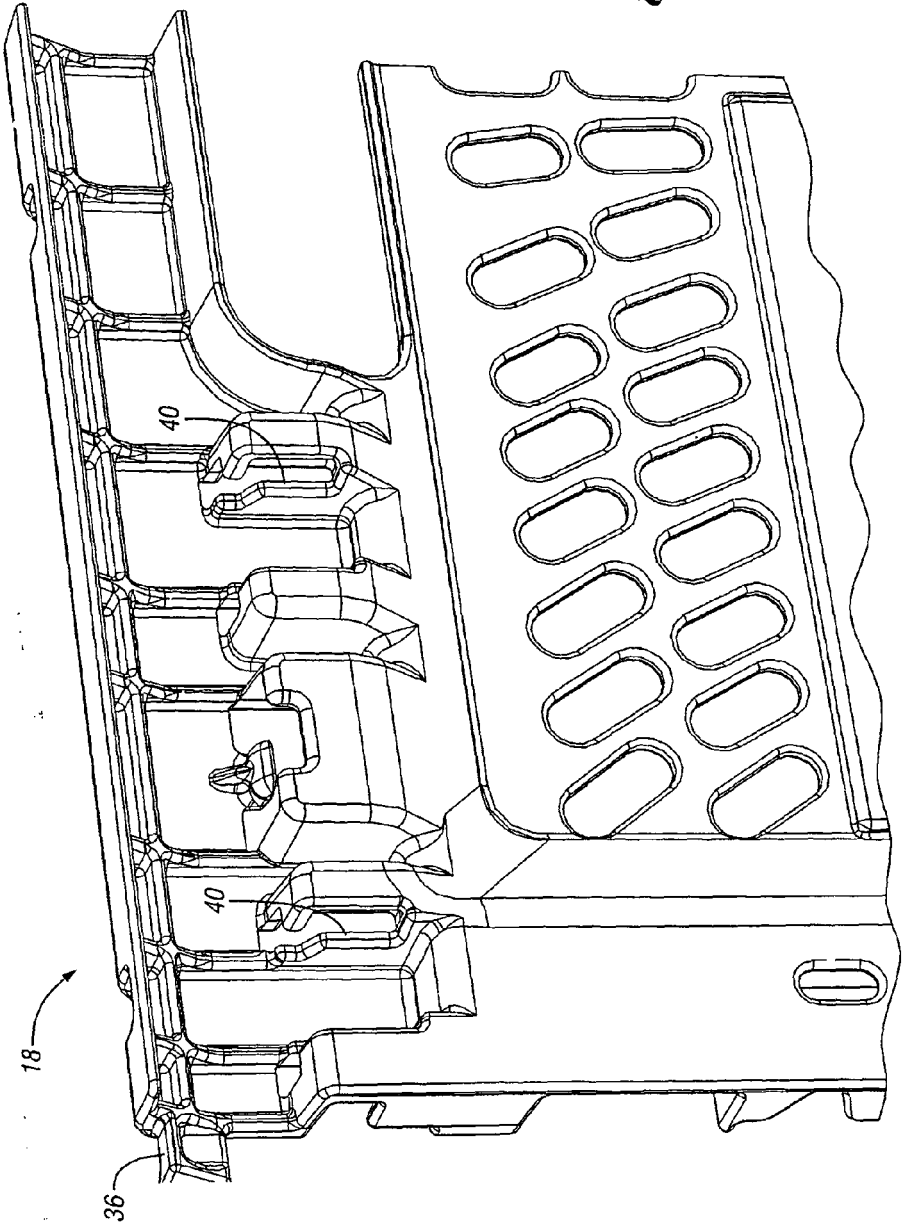


Fig. 6



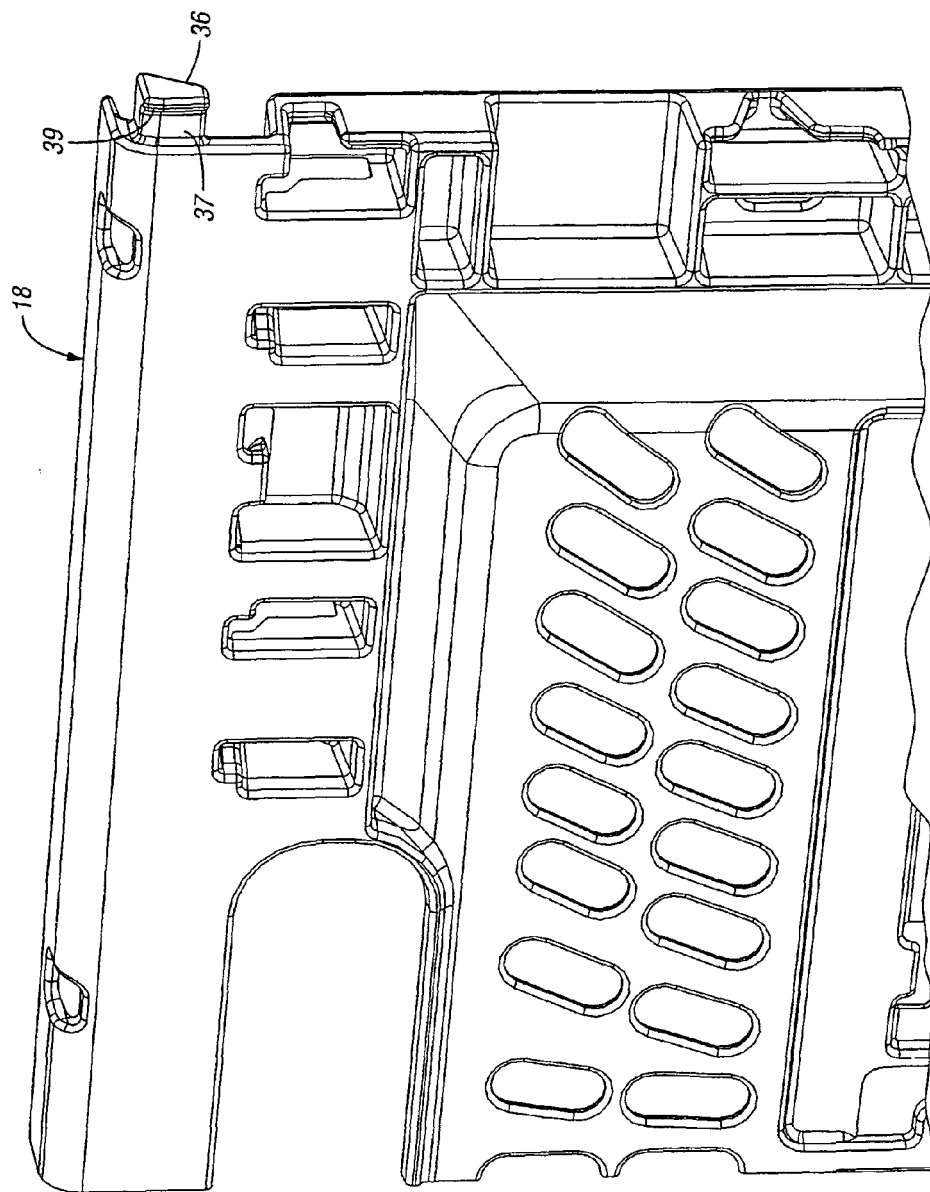


Fig. 7

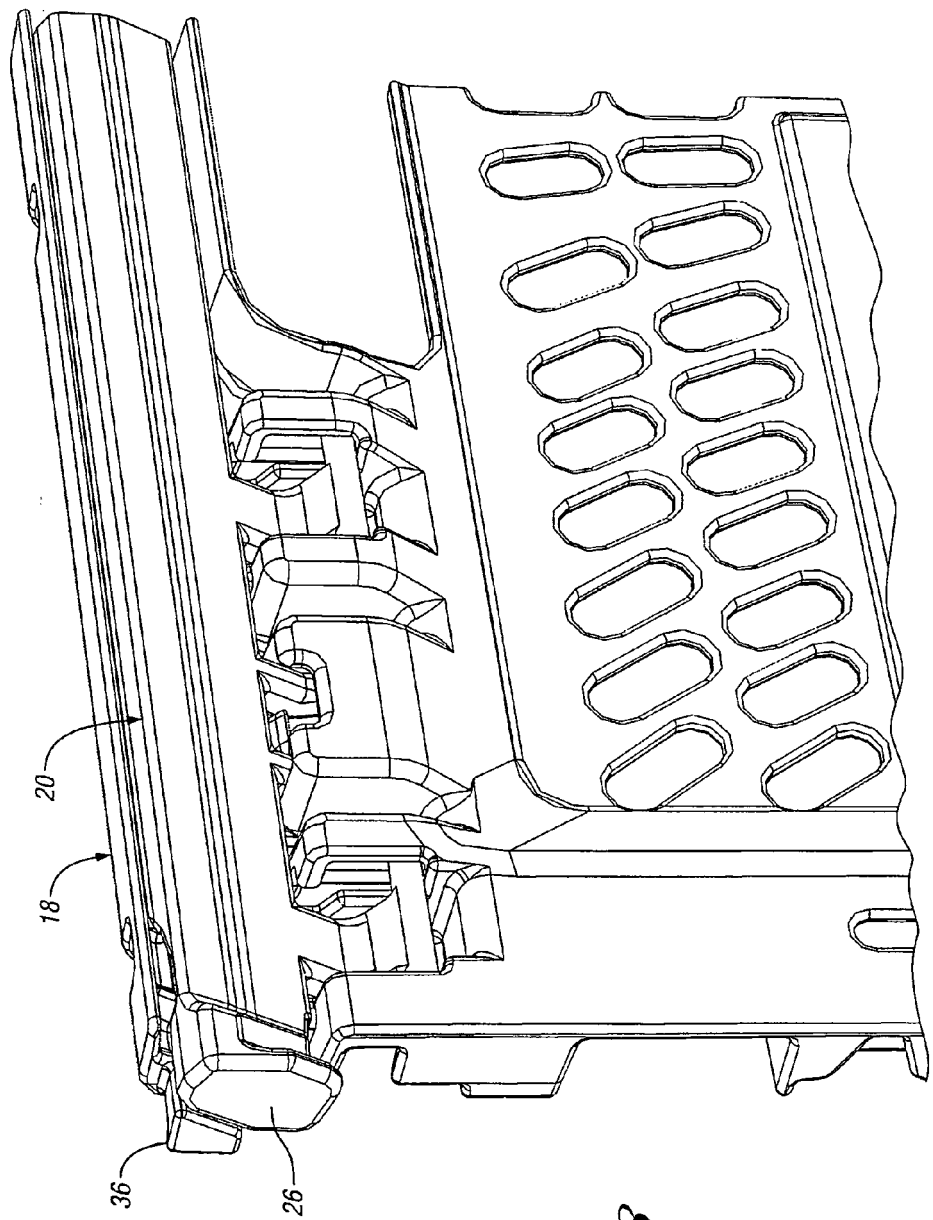


Fig. 8

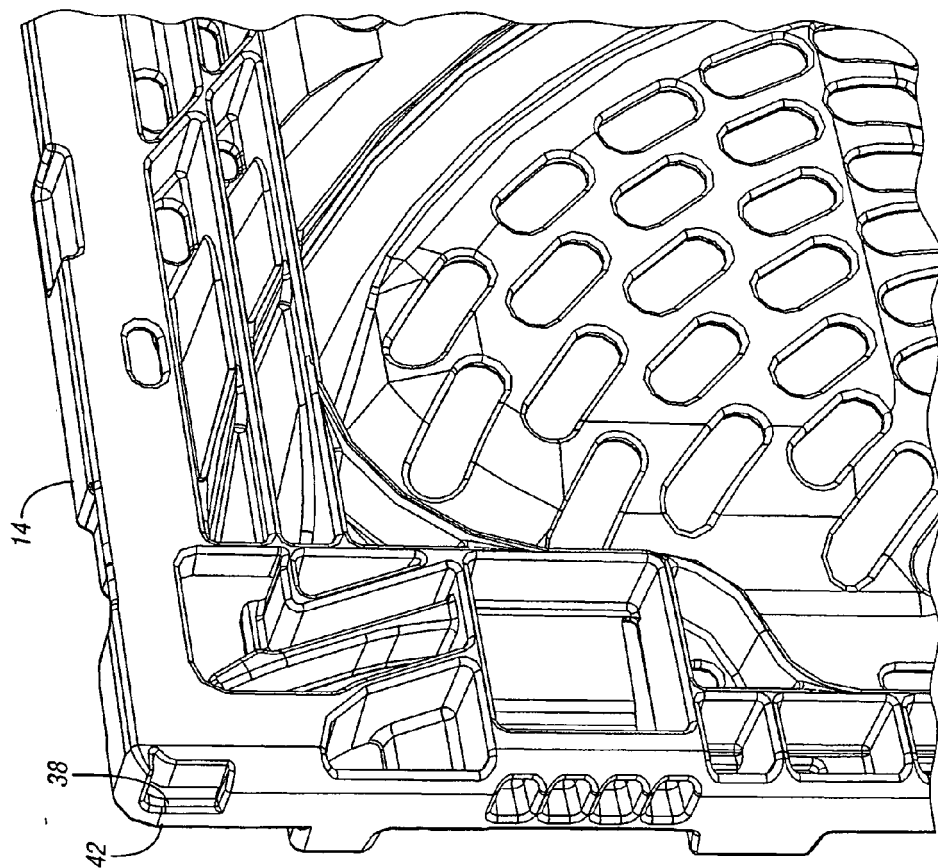


Fig. 9

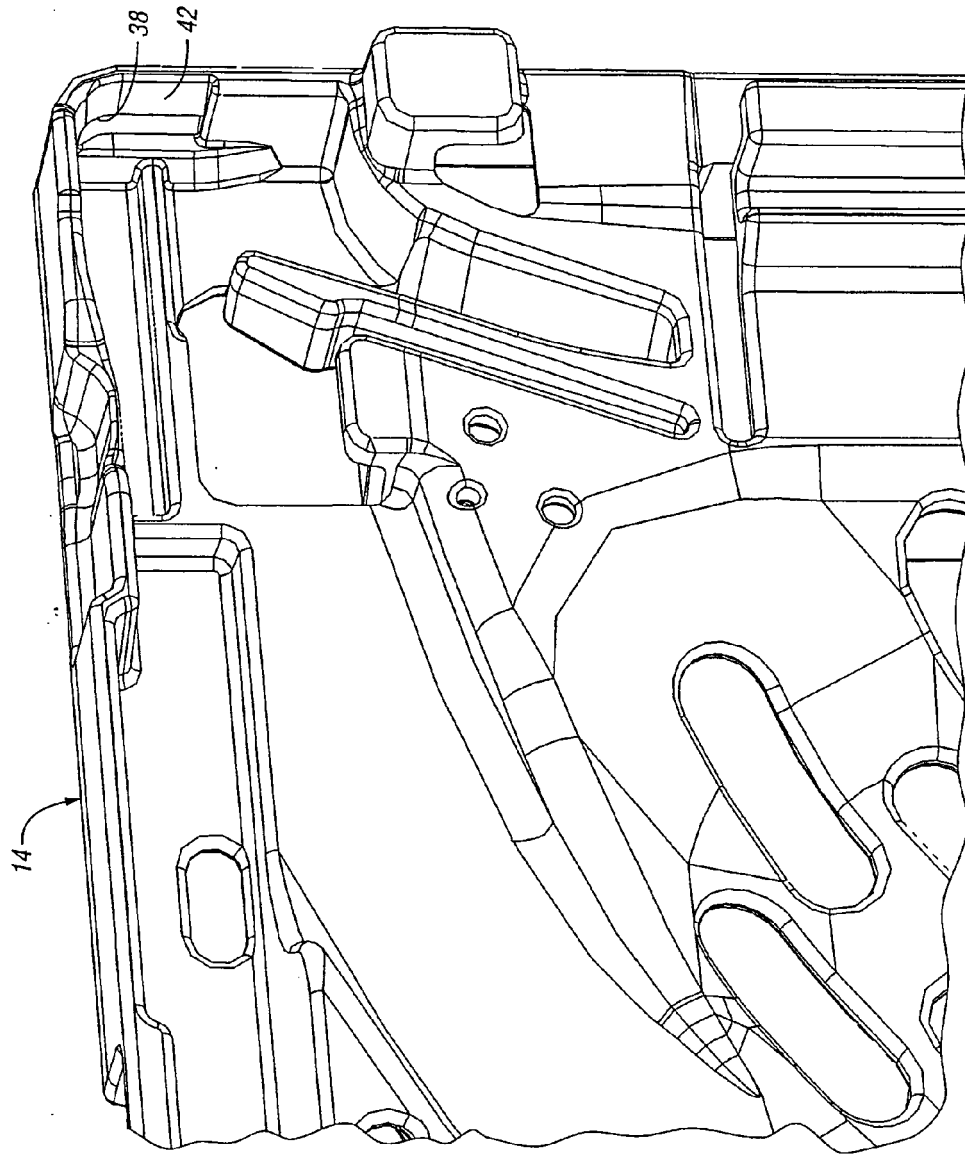
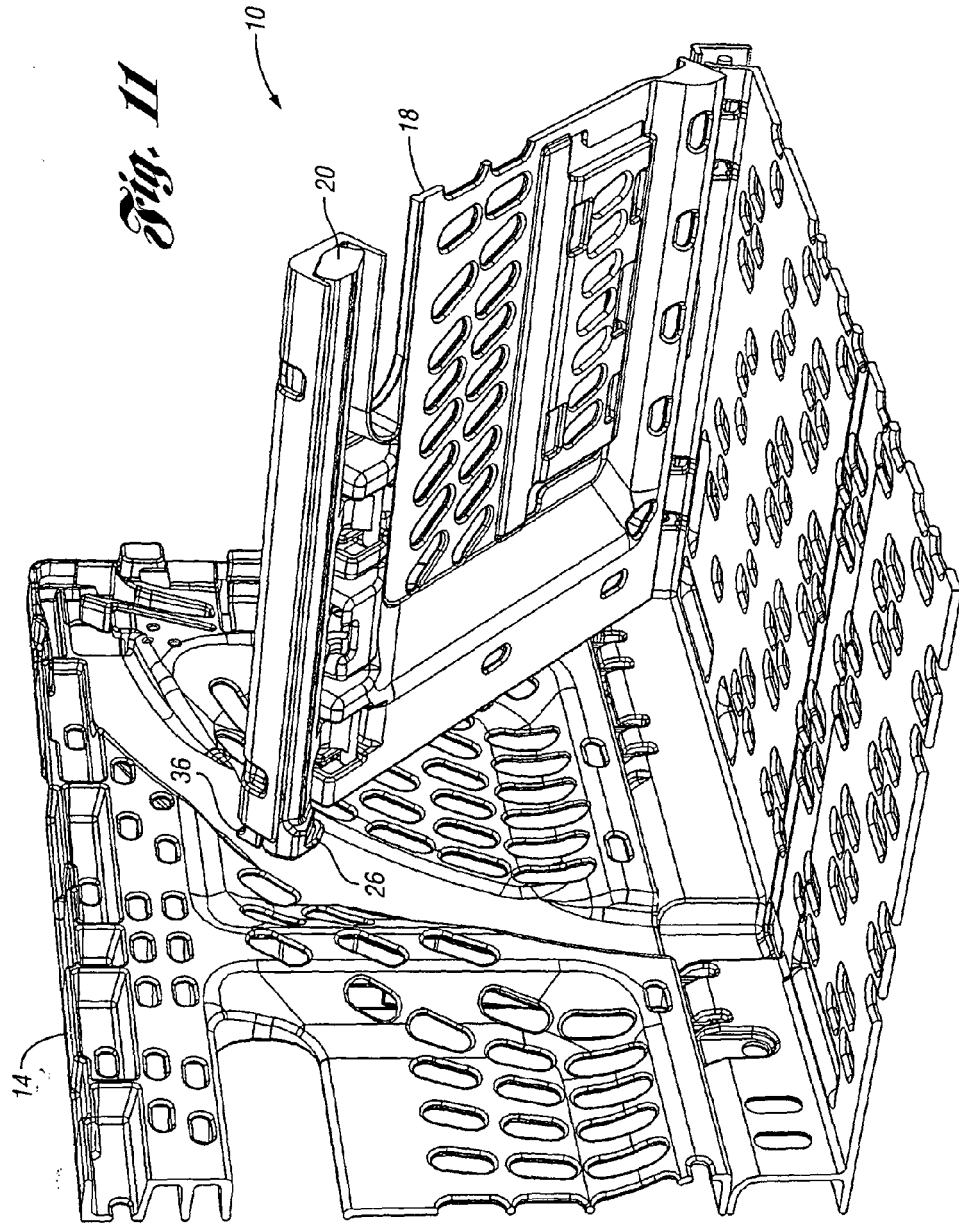


Fig. 10





EUROPEAN SEARCH REPORT

Application Number
EP 10 16 9254

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 1 785 360 A1 (LINPAC MATERIALS HANDLING LTD [GB] LINPAC ALLIBERT LTD [GB]) 16 May 2007 (2007-05-16)	1,2,6	INV. B65D21/06
Y	* figures 1-4 *	3-5,7-15	
Y	----- EP 0 962 396 A1 (TONTARELLI SERGIO [IT]) 8 December 1999 (1999-12-08) * paragraph [0014] - paragraph [0019]; figures 1,2 *	3-5,7-15	
Y	----- EP 2 072 413 A2 (REHRIG PACIFIC CO [US]) 24 June 2009 (2009-06-24) * figure 1 *	14,15	

			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 October 2010	Examiner Jervelund, Niels
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			

1
EPO FORM 1503 03/82 (P04C01)

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

EP 10 16 9254

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.

20-10-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1785360	A1	16-05-2007	US 2007125779 A1	07-06-2007

EP 0962396	A1	08-12-1999	AT 260815 T	15-03-2004
			BR 7901234 U	14-03-2000
			CZ 9901914 A3	16-05-2001
			DE 69915168 D1	08-04-2004
			DE 69915168 T2	17-02-2005
			DK 962396 T3	12-07-2004
			ES 2217725 T3	01-11-2004
			IT AN980033 U1	06-12-1999
			PL 333526 A1	06-12-1999
			PT 962396 E	30-07-2004

EP 2072413	A2	24-06-2009	US 2009159593 A1	25-06-2009
