

(19) World Intellectual Property
Organization
International Bureau



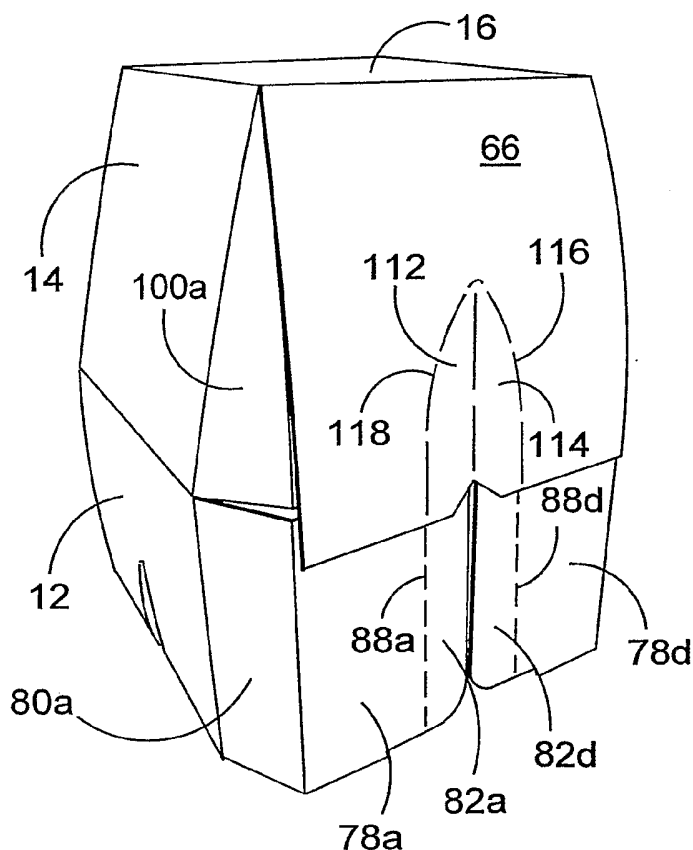
(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/113182 A1

- (51) International Patent Classification⁷: **B65D 1/00**
- (21) International Application Number: PCT/US2004/019665
- (22) International Filing Date: 19 June 2004 (19.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0314443.3 20 June 2003 (20.06.2003) GB
- (71) Applicant (for all designated States except US): **MEAD-WESTVACO PACKAGING SYSTEMS LLC** [US/US];
One High Ridge Park, Stamford, CT 06905 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **AUCLAIR, Jean-Michel** [FR/FR]; 230, Route de Chatellerault, F-36000 Chateauroux (FR).
- (54) Title: **CARTON AND CARTON BLANK THEREFOR**
- (74) Agent: **SUZUKI, Tsugihiko**; The Mead Corporation, 4850D North Church Lane, Smyrna, GA 30080 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]



(57) Abstract: A package comprising a group of similarly dimensioned, cylindrical articles (A) arranged side by side on their bottom ends and a carton disposed along the exterior of the group. The carton includes a side or end wall (66, 78a, 78d) disposed alongside at least two articles of the group and having a hinged yielding flap (112, 82a) formed therefrom for pivotal movement inwardly of the carton to form a recess in the side or end wall. The yielding tab is positioned in alignment with the space between two adjacent articles along which the side or end wall is disposed.



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

CARTON AND CARTON BLANK THEREFOR

Background of the Invention

5 This invention is concerned with a carton or pack and a blank for forming same. More particularly, the invention is directed to a pack or carton adapted to receive an array of containers, typically bottles or bottled beverages, intended for use in star post crates. Star post crates are containers, typically of box-like configuration, in which packs of containers located therein become locked in a final configuration by means of a star-shaped post
10 engaging inter-engageable panel formations in the panels of such packs or cartons. Star post crates are particularly useful in high speed and/or high volume packaging.

However, the use of crates to transport packs can lead to instability problems in the handling procedures of transportation from the packaging machine to the crate packer as the packs will
15 tend to move within the crate.

Summary of the Invention

The present invention seeks to overcome or at least mitigate the problems of the prior art.
20

A first aspect of the present invention provides a carton including a first wall having a first yielding flap formed from the first wall and hingedly connected to the first wall for pivotal movement inwardly of the carton to form a recess for receiving a spacer post in a crate when the carton is placed next to a spacer post.

25

It has been found that such instability problems can be lessened by providing a structure formed from the carton to engage the star post. Such arrangement provides a more stable pack able to reduce stability or integrity problems in transportation between the packaging machine and the crate packer.

30

Preferably, the first yielding flap is hingedly connected to the first wall along a generally vertical fold line. More preferably, the fold line extends from the bottom wall of the carton.

- 2 -

In some embodiments, the bottom wall has a notch along an edge thereof, wherein the notch is vertically aligned with the yielding flap.

- 5 According to an optional feature of this aspect of the invention, the first wall has a second yielding tab disposed adjacent the first tab to co-operate with the first tab to form the recess. Preferably, the first and second yielding flaps are formed from opposed side end flaps for forming the side or end wall.
- 10 According to another optional feature of this aspect of the invention, the free end edge of the first and second yielding flaps are adapted to clasp a protruding portion of the star post.

According to yet another optional feature of this aspect of the invention, the first wall comprises lower and upper parts, the lower part having the first and second yielding flaps and
15 the upper part has third and fourth yielding flaps disposed above the first and second yielding flaps respectively to co-operate with the first and second flaps to form the recess. Optionally, the third and fourth yielding flaps are formed from an upper end wall panel that is separate from the lower end wall panels from which the first and second yielding flaps are formed.

- 20 A second aspect of the present invention provides a package comprising a group of similarly dimensioned, cylindrical articles arranged side by side on their bottom ends and a carton disposed along the exterior of the group, wherein the carton includes a side or end wall disposed alongside at least two articles of the group and having a hinged yielding flap formed therefrom for pivotal movement inwardly of the carton to form a recess in the side or end
25 wall, and wherein the yielding tab is positioned in alignment with the space between two adjacent articles along which the side or end wall is disposed.

According to optional features of the second aspect of the invention the free end edge of the first and second yielding flaps are adapted to clasp a protruding portion of the star post.

30

A third aspect of the invention provides a blank for forming the carton of the invention.

- 3 -

Brief Description of the Drawings

In order that the invention may be illustrated, more easily appreciated and readily carried into effect by those skilled in the art, exemplary embodiments of the invention according to the first, second and third aspects thereof will now be described, by way of example only with reference to the accompanying drawings, in which:-

FIGURE 1 is a plan view of a blank according to one embodiment of to the invention;

FIGURE 2 is side elevation view of a pack during construction of the end wall according to one embodiment of the invention;

FIGURE 3 is an isometric view of an assembled pack, formed from the blank shown in Figure 1;

FIGURE 4 schematically depicts application of a pack, such as a pack illustrated in FIGURE 3, to a star post; and

FIGURES 5 and 6 are side and top plan views respectively of the carton shown in Figure 3 held within the crate.

Detailed Description of the Preferred Embodiments

Referring first to Figure 1 of the drawings, there is shown a blank 10 suitable for forming a carton, which blank is formed from paperboard or like foldable sheet material. The blank 10 comprises a plurality of panels forming, top, base, opposed sides and end of a fully enclosed carton.

In this embodiment, there comprises a lower side wall panel 12, an upper side wall panel 14, top panel 16, a second upper side wall panel 18 and a second lower side wall panel 20 hingedly connected one to the next in series along fold lines 22, 24, 26, 28 respectively.

- 4 -

The base is constructed in a two part form comprising inner and outer base walls 30A, 30B. Inner base wall 30A is hingedly connected to first lower side wall panel 12 along fold line 32 and comprises two panels 36A, 38A hingedly connected together along fold lines 40 and 42. Optionally, inner base wall panel 30A is hinged to the end wall panel by a web structure
5 described in more detail below.

Outer base wall 30B is hinged to lower side wall panel 20 along fold line 34 and comprises four panels 36b, 38b, 48 and 50; panels 36b, 38b are adapted to overlap with panel 36a and 38a in a set up condition. Panels 48, 36b are hingedly connected to panels 50 and 38b along
10 interrupted fold lines 52, 54 and to each other along fold lines 56, 58 respectively. Similarly, panels 36b and 38b are hingedly connected together along fold lines, an extension of interrupted fold lines 52 and 54. Again, outer base wall 30B is optionally connected to end wall panel by means of a web structure, described in more detail below.

15 The inner and outer base walls 30A, 30B are provided with means for engaging with a star post P2 (Figure 6) in a crate. A star post is used to separate individual articles or article arrays to provide additional lateral support during transport. Thus, in this embodiment there comprises an aperture 60 defined by edges of the panels 36b, 48, 50 and 38b. There further comprises one or more apertures 62a, 62b struck in part from the respective inner and/or
20 outer base wall panels 30A, 30B and extending into the lower side wall panels 12, 20 to receive part of an adjacent star post.

In one class of embodiments flaps 44, 46 are struck from base panel 36a, 38a and adapted to be folded inwardly by the star post so as to provide additional support for the carton, by
25 abutment against the post. An aperture 64 is provided adjacent flaps 44, 46 for ease of folding.

Turning to the construction of the end wall structures, there is provided along each end, an end wall comprising a lower end wall structure and, preferably, an upper end wall panel. In
30 Figure 1, the upper end wall panel 66, 72 are hingedly connected to opposing longitudinal edges of top panel 16 along fold lines 70 and 74 respectively.

- 5 -

Figure 1 illustrates four lower end wall structures 76A, 76B; 76C, 76D. Each lower end wall structure is identical and therefore only end wall structure 76a will be described in any further detail. This structure 76a comprises a lower end wall panel 78a hingedly connected to lower side wall panel 12. In this embodiment a bevelled corner panel 80a is provided intermediate
5 lower end wall panel 78a and lower side wall panel 12 hingedly connected one to the next in series along fold lines 84a and 86a.

In one class of embodiments, lower end wall panel 78a is connected to base wall 30A via a first web structure and to upper side wall panel 14 along a second web structure. The first
10 web structure comprises panel portions 90a, 92a hingedly connected together along fold line 96a. These panel portions interconnect base wall panel 36a to lower end wall panel 78a and hingedly connected thereto along fold lines 94a and 98a.

In those embodiments with a second web structure for connecting the lower end wall panel 78a to upper side wall panel 14, there comprises panel portions 100a, 102a hingedly
15 connected together along fold line 108a and connected to longitudinal edge of upper side wall panel 14 along fold line 106a. A connecting portion connects first side wall panel 78a to panel portion 102a. An interconnecting panel 104a hingedly connects panel portion 102a and upper end wall panel 66 along fold lines 110a and 112a.

20 There further comprises a first yielding flap 82a formed in the end wall, which flap is hingedly connected to the end wall for pivotal movement inwardly of the set up carton to form a recess for receiving a spacer post positioned adjacent the end wall. First yielding flap is, in this embodiment, provided by flap 82a hingedly connected to lower side wall panel 78a
25 along fold line 88a. Preferably, a second yielding flap 82d is hingedly connected to the lower end wall panel 78d along fold line 88d.

In those embodiments with an upper end wall panel, there may further comprise one or more upper yielding flaps 112, 114 hingedly connected to upper end wall panel 66 along fold lines
30 118 and 116 respectively. Likewise upper yielding flaps 120, 122 are hingedly connected to upper end wall panel 72 along fold lines 126 and 124 respectively

- 6 -

A handle H is provided in the top panel 16 of the blank.

In order to form the completed carrier in flat collapsed condition from the blank, a series of sequential folding and gluing operations are required and will be described further with reference to Figures 2 to 4 of the drawings. The folding and gluing operations can be performed in one or more straight line machines, so that the tray is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

To construct the carton shown in Figures 2 and 3, from the blank in Figure 1, the base, opposed sides and top are formed by folding inner base wall panel 30A, lower side wall panel 12, upper side wall panel 14, top panel 16, second upper side wall panel 18, second lower side wall panel 20 and outer base wall panel 30B out of alignment along fold lines 32, 22, 24, 26, 28, 34 into a tubular form, whereby inner and outer base walls 30A, 30B overlap. Inner base wall panel 30A is secured to outer base wall panel by glue or other suitable means known in the art, such that panels 36a and 38a are aligned with 36b, 38b. Thus, the tubular structure is formed which can be placed in a flat collapsed condition ready to be supplied to an end user.

In order to erect the carton, opposed sides, the top and base are separated to form a tubular structure and articles are inserted from either or both ends of the carton. Thereafter the end walls are formed; each end wall is formed in like manner so reference will be made to the end wall constructed from lower end wall structure 76a and 76b and upper end wall panel 66 only.

The lower end wall structure is formed first, by folding end wall panel 78a out of alignment with side wall panel 12 and inwardly along fold lines 84a and 86a such that bevelled corner panel 80a is also folded out of alignment with side wall panel 12. At the same time, the web structures are folded inwardly such that panel portions 90a and 92a are folded along fold lines 98a, 94a and 96a into substantially face contacting arrangement. In those embodiments with upper web structures, the folding action of the end wall panel 78a causes web panels 100a, 102a and 104a to be folded inwardly so that panels 100a and 102a are placed in face

- 7 -

contacting arrangement with each other by folding along fold lines 106a, 108a and 110a. Thereafter, panel 104a is folded towards the opposing surface of 102a which causes upper end wall panel 66 to be folded downwardly along fold line 70.

5 The second lower end wall panel 78d is constructed in the same manner as lower end wall 76a and therefore shall not be described in any greater detail. Thus, the carton is in a part constructed form shown in Figure 2.

10 In order to complete construction of the end wall of the carton, the upper side wall panel 66 is folded down into face contacting arrangement with upper parts of lower side wall panel 78a and 78d and secured by glue shown in cross hatch by the reference G, or other suitable securing means known in the art. Thus, the end wall is shown in its completed form in Figure 3, with the yield flaps 112, 82a; 114, 82d in "alignment".

15 The opposing end wall is constructed in like manner and the carton is then placed into a crate for transportation to the end destination. As the carton is inserted into the crate, the carton is brought into engagement with one or more star posts by relative vertical movement between the carton and the crate.

20 In the illustrated embodiments, the star post P2 is inserted into aperture 60 to support the four articles immediately surrounding the star post, shown in Figures 5 and 6. There further comprises opposing star post P1 and P3 which are positioned adjacent the end walls. As the star posts P1, P3 come into contact with the end walls, the first and second yielding flaps are folded inwardly along fold lines 88a, 88d so as to receive a protruding portion of the star
25 posts.

In those embodiments with an upper end wall panel 66, 72 the upper yield flaps 112, 114 and 120, 122 are folded inwardly along fold line 118, 116; 126, 124 respectively. Thus the carton is in a loaded position shown in Figures 4, 5 and 6.

30

One advantage of this arrangement is that the star posts force the yield flaps inwardly to juxtapose the articles thereby restricting the internal movement of the articles. Furthermore,

- 8 -

the yield flaps also provide a degree of engagement with the star posts whereby the star post is engaged with the carton. In some embodiments, the outer edges of the yield flaps 82a, 82d and, preferably, upper yield flaps 112, 114 abut the protruding portion of the star post, shown most clearly in Figure 6.

5

Thus, the packs containing the array of containers are even more stable so that the packs can easily be removed from their corresponding star crates (not shown) as and when required.

As will be appreciated from the arrangements particularly in Figures 5 and 6, the amount of material forming the base panels 36 and 38 can be reduced in that these need not comprise a full or complete rectangle.

10

It will be recognised that as used herein, directional references such as “top”, “base”, “side”, “upper” and “lower” do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

15

It should be understood that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, alternative top and base closure structures may be used. The carton may accommodate more than one article in different arrays. Furthermore, the yield flaps can be applied to a variety of carton types, for example clip; fully enclosed or basket carriers, without departing from the scope of invention.

20

25

- 9 -

CLAIMS

1. A carton comprising a first wall having a first yielding flap, the first yielding flap being formed from the first wall and hingedly connected to the first wall for pivotal movement inwardly of the carton to form a recess for receiving a spacer post in a crate when the carton is placed next to a spacer post.
2. The carton as claimed in claim 1 wherein the first yielding flap is hingedly connected to the first wall along a generally vertical fold line.
3. The carton as claimed in claim 2 wherein the fold line extends from the bottom wall of the carton.
4. The carton as claimed in claim 3 wherein the bottom wall has a notch along an edge thereof, wherein the notch is vertically aligned with the yielding flap.
5. The carton as claimed in any of claims 2 to 4 wherein the first wall has a second yielding tab disposed adjacent the first tab to co-operate with the first tab to form the recess.
6. The carton as claimed in claim 5 wherein the first and second yielding flaps are formed from opposed side end flaps for forming the side or end wall.
7. The carton as claimed in any preceding claim wherein the free end edge of said first and second yielding flaps are adapted to clasp a protruding portion of said spacer post.
8. The carton as claimed in any of claims 5 to 7 wherein the first wall comprises lower and upper parts, the lower part having the first and second yielding flaps and the upper part has third and fourth yielding flaps disposed above the first and second yielding flaps respectively to co-operate with the first and second flaps to form the recess.

- 10 -

9. The carton as claimed in claim 8 wherein the third and fourth yielding flaps are formed from an upper end wall panel that is separate from the lower end wall panels from which the first and second yielding flaps are formed.

5 10. A package comprising a group of similarly dimensioned, cylindrical articles arranged side by side on their bottom ends and a carton disposed along the exterior of the group, wherein the carton includes a side or end wall disposed alongside at least two articles of the group and having a hinged yielding flap formed therefrom for pivotal movement inwardly of the carton to form a recess in the side or end wall, and wherein the yielding tab is positioned
10 in alignment with the space between two adjacent articles along which the side or end wall is disposed.

11. The package as claimed in claim 10 wherein the free end edge of said first and second yielding flaps are adapted to clasp a protruding portion of said spacer post.

15

12. A carton as claimed in any of claims 1 to 9 or a package as claimed in claim 10 or claim 11 constructed for use within star post crates.

13. A blank for forming a carton as claimed in any of claims 1 to 9 or 12.

20

14. A star crate including a plurality of packs, cartons or wraparounds as claimed in any of claims 1 to 9 or 12.

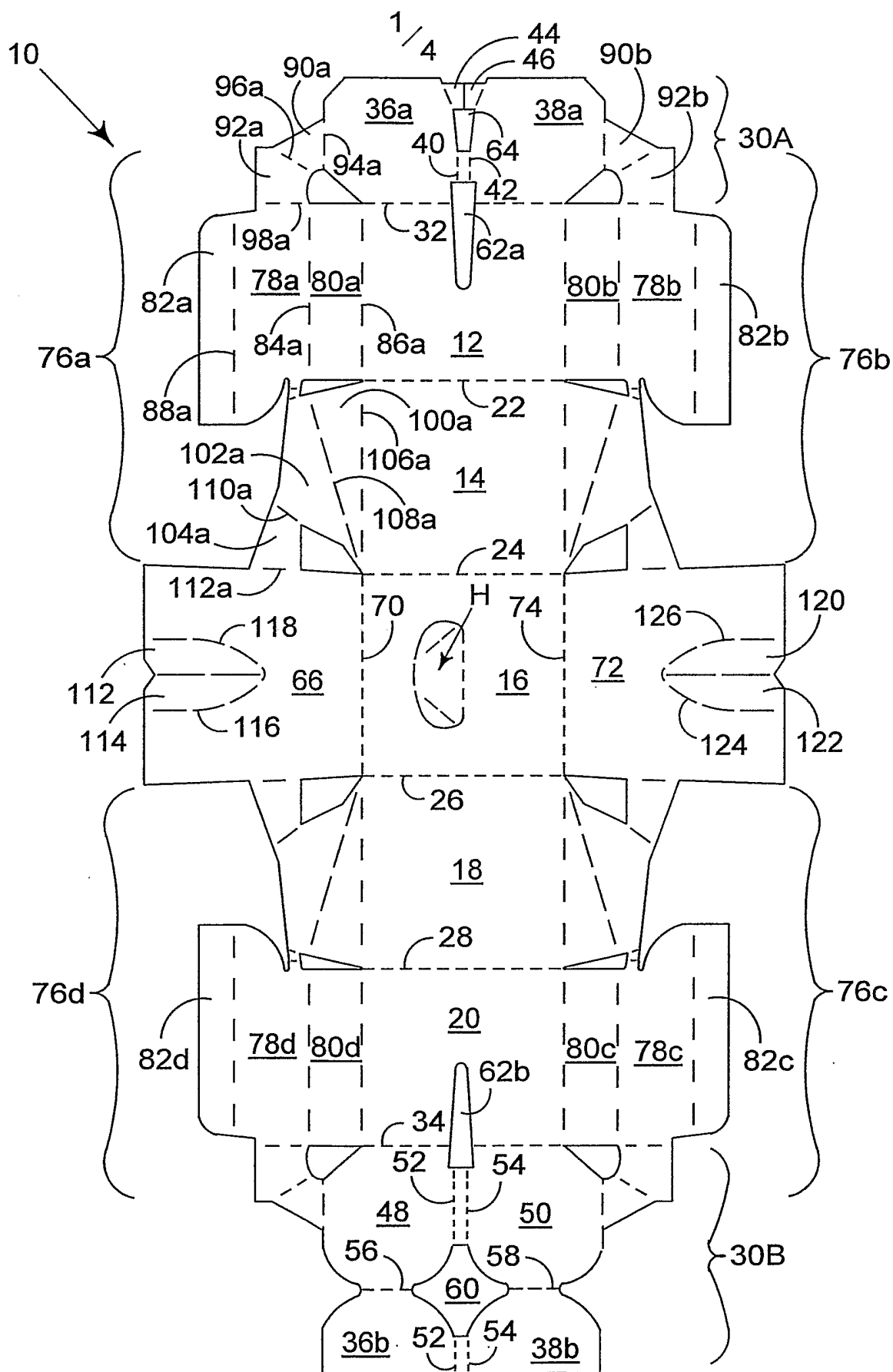
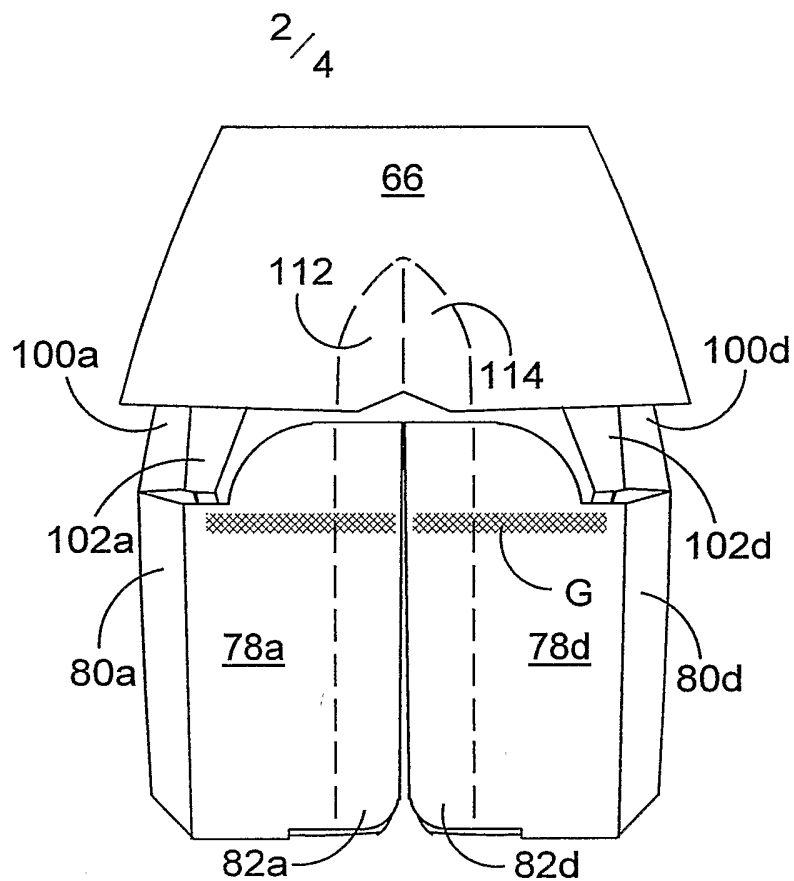
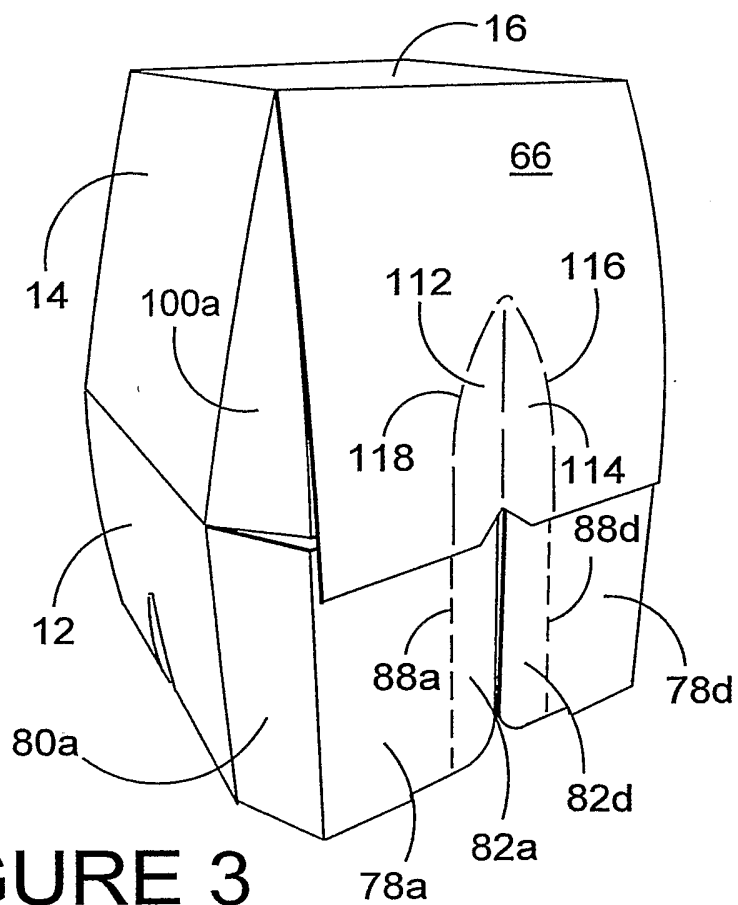
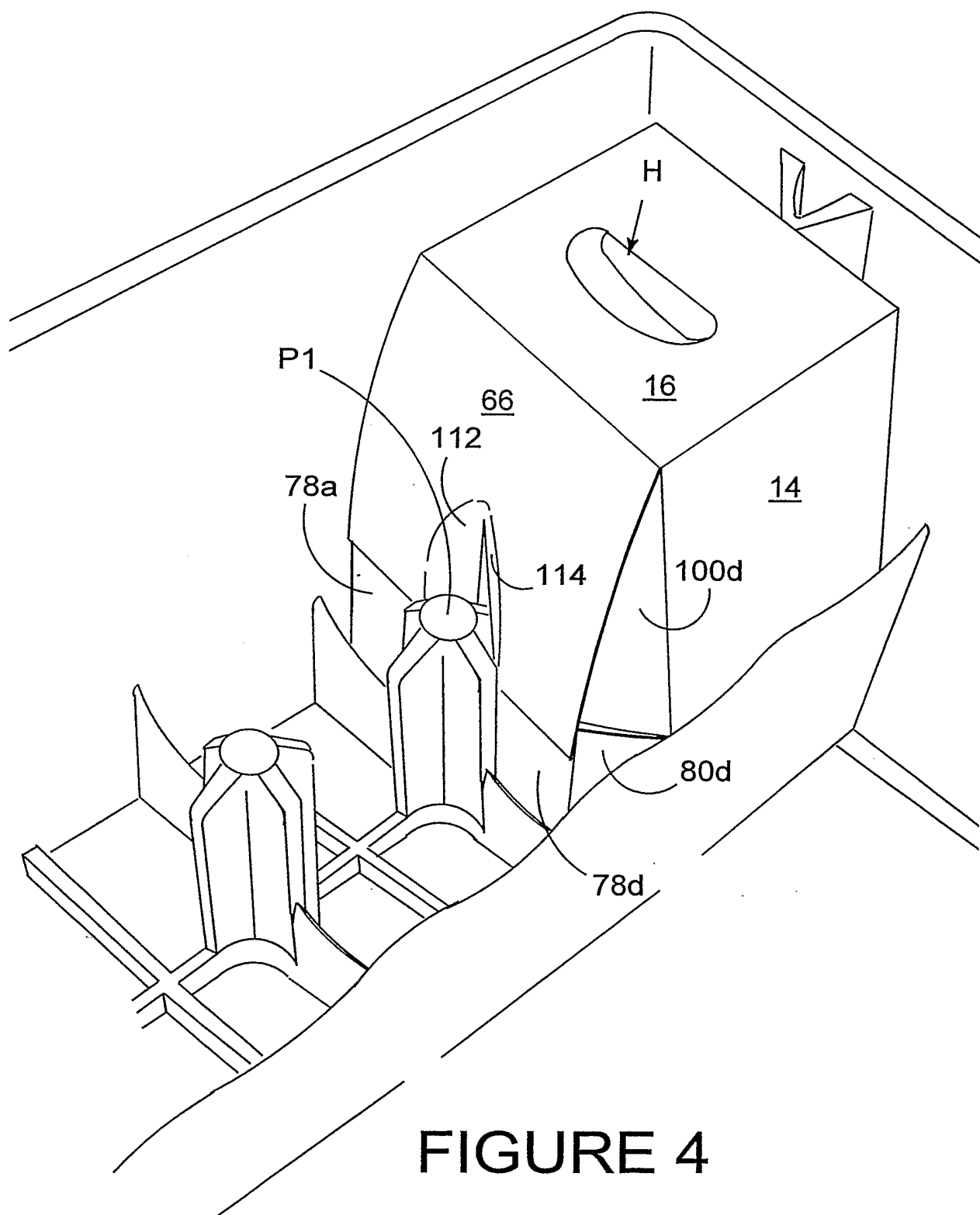


FIGURE 1

**FIGURE 2****FIGURE 3**

$\frac{3}{4}$ 

4/4

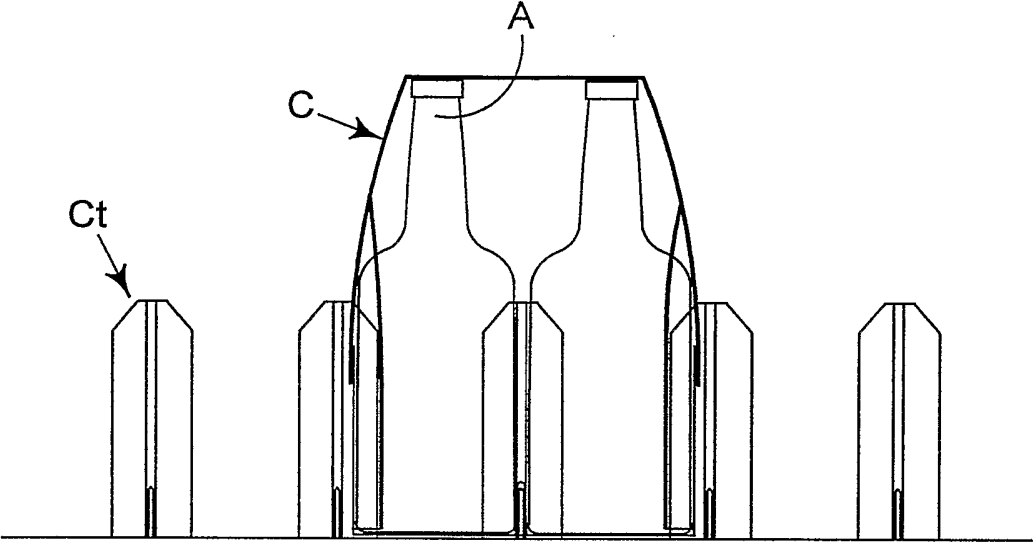


FIGURE 5

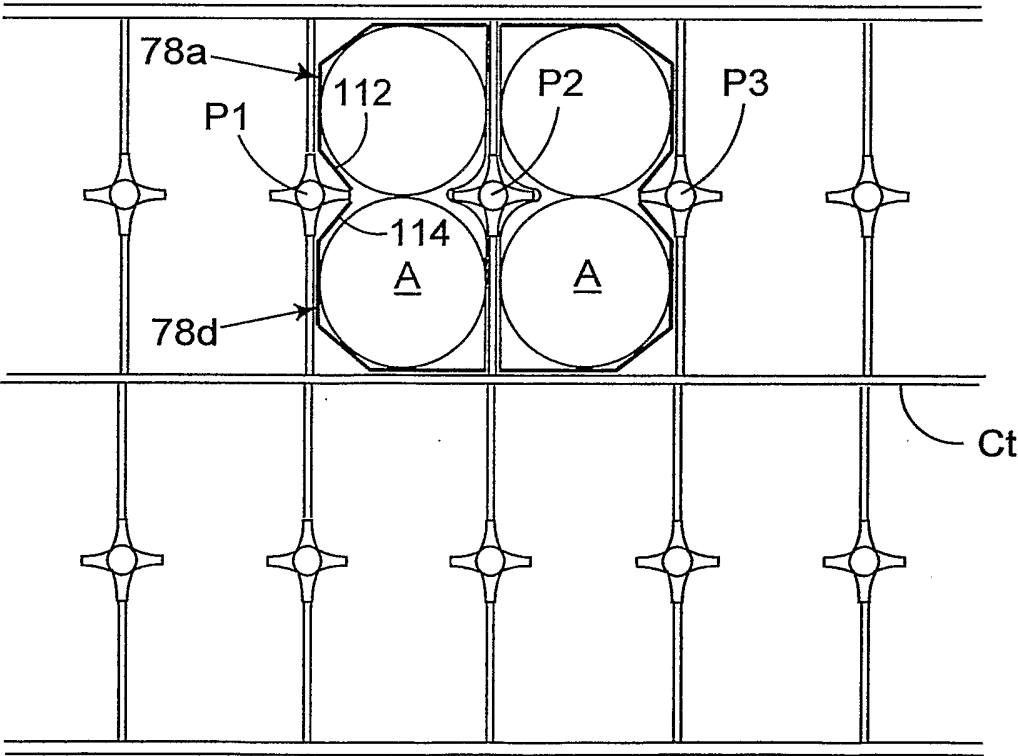


FIGURE 6

INTERNATIONAL SEARCH REPORT

US2004/019665

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D71/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 23 56 748 A (MEAD VERPACKUNG GMBH) 15 May 1975 (1975-05-15) page 4; claim 1; figures 5,6 -----	1-14
A	US 1 968 877 A (CUBBERLEY AMARIAH H) 7 August 1934 (1934-08-07) page 2, lines 49-59; figure 1 -----	1-14
A	NL 7 512 881 A (SPUMALIT ANSTALT) 5 May 1977 (1977-05-05) page 3, lines 10-15; figure 3 -----	1-14
A	US 2003/111362 A1 (SUTHERLAND ROBERT L ET AL) 19 June 2003 (2003-06-19) paragraph '0031!; figure 2 -----	1-14



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

18 October 2004

Date of mailing of the international search report

26/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Cazacu, C

INTERNATIONAL SEARCH REPORT

'US2004/019665

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 2356748	A	15-05-1975	DE 7340637 U	17-03-1977
			DE 2356748 A1	15-05-1975
			ES 431893 A1	16-10-1976
			FR 2250688 A1	06-06-1975
			GB 1492587 A	23-11-1977
			IT 1025649 B	30-08-1978
			JP 50090490 A	19-07-1975
			NL 7414764 A	16-05-1975
US 1968877	A	07-08-1934	NONE	
NL 7512881	A	05-05-1977	NONE	
US 2003111362	A1	19-06-2003	NONE	