(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
5 March 2009 (05.03.2009)

PCT

(10) International Publication Number
WO 2009/029814 A1

(51) International Patent Classification:
B65D 71/00 (2006.01)

(21) International Application Number:
PCT/US2008/074824

(22) International Filing Date: 29 August 2008 (29.08.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/967,217 31 August 2007 (31.08.2007) US

(71) Applicant *(for all designated States except US)*: **ILLINOIS TOOL WORKS INC.** [US/US]; 3600 West Lake Avenue, Glenview, IL 60026-1215 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **MARCO, Leslie, S.** [US/US]; 5831 Raintreet Lane, Westmont, IL 60559 (US). **SALTZMAN, Jay, A.** [US/US]; 643 North Washington Street, Hinsdale, IL 60521 (US).

(74) Agents: **ERICKSON, Kevin, D.** et al.; Pauley Petersen & Erickson, 2800 West Higgins Road, Suite 365, Hoffman Estates, IL 60169 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(54) Title: FLEXIBLE CARRIER

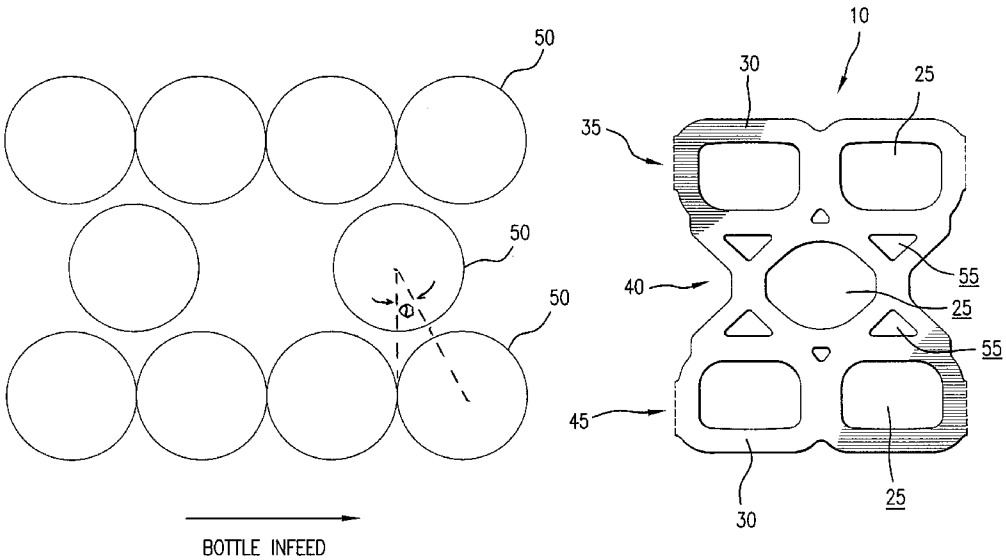


FIG. 1

(57) Abstract: A flexible carrier for carrying a plurality of containers includes a flexible sheet and a plurality of container receiving apertures formed in the flexible sheet wherein the plurality of container receiving apertures are formed in a staggered array wherein each row within the array includes a different number, offset and/or geometry of container receiving apertures from each adjacent row.

WO 2009/029814 A1

FLEXIBLE CARRIER

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

This invention relates to a flexible carrier for carrying a plurality of containers such as bottles or cans.

DESCRIPTION OF PRIOR ART

Conventional container carriers are often used to unitize a plurality of similarly sized containers, such as cans, bottles and/or similar containers that require unitization. Plastic ring carriers having a plurality of container apertures are one such conventional container carrier.

Conventional carriers include multi-packaging devices that engage the chime, rim or rib around the upper portion of the container, called "rim-applied carriers" or "RAC carriers". Another conventional carrier is the sidewall-applied carrier, called "SAC carriers," wherein the multi-packaging device engages the sidewall of the containers.

Conventional carriers are arranged in aligned arrays of longitudinal rows and transverse ranks of container receiving apertures. A common arrangement is two rows of three ranks of longitudinally and transversely aligned container receiving apertures forming six total container receiving apertures and a "six-pack." Other common configurations include two rows of four ranks forming an eight container multipackage and three rows of four ranks forming a twelve container multipackage.

SUMMARY OF THE INVENTION

The present invention is directed to a flexible carrier for containers which includes a flexible sheet and a plurality of container receiving apertures formed in the flexible sheet. A staggered array of the container receiving apertures extend across the flexible sheet wherein each row of container receiving apertures preferably includes a distinct number, offset and/or geometry from each adjacent row.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and objects of this invention will be better understood from the following detailed description taken in conjunction with the drawings wherein:

Fig. 1 is a top elevational view of a container carrier and a plurality of containers prior to application according to one preferred embodiment of this invention;

Fig. 2 is a top elevational view of a container carrier and a plurality of containers prior to application according to one preferred embodiment of this invention;

Fig. 3 is a side perspective view of a package of containers according to one preferred embodiment of this invention;

Fig. 4 is a side perspective view of a package of containers according to one preferred embodiment of this invention;

Fig. 5 is a side perspective view of a package of containers according to one preferred embodiment of this invention;

Fig. 6 is a side perspective view of a package of containers according to one preferred embodiment of this invention;

Fig. 7 is a top elevational view of a flexible carrier for unitizing five containers according to one preferred embodiment of this invention;

Fig. 8 is a front perspective view of the flexible carrier for unitizing five containers shown in Fig. 7 including a handle in an extended state;

Fig. 9 is a top elevational view of a container carrier according to one preferred embodiment of this invention;

Fig. 10 is a top elevational view of a container carrier and a plurality of containers following application according to one preferred embodiment of this invention; and

Fig. 11 is a top elevational view of a container carrier according to one preferred embodiment of this invention;

DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1-11 show various preferred embodiments of flexible carrier 10 according to this invention. For example, Figs. 1, 2, 4-8 and 11 show various embodiments of flexible carrier 10 and/or package 15 of five containers 50. Fig. 3 shows one preferred embodiment of flexible carrier 10 and package 15 of three containers 50. Figs. 9 and 10 show a preferred embodiment of flexible carrier 10 and package 15 having seven containers 50. Flexible carriers 10 generally include a plurality of container receiving apertures 25 that are each stretched around container 50 to form a unitized package 15 of containers 50.

Figs. 1 and 2 illustrate flexible carrier 10 according to two preferred embodiments of this invention. As described in more detail below, portions of flexible carrier

10 are stretched a sufficient amount to permit a tight, gripping engagement with containers 50. This tight, gripping engagement also maximizes the amount of material of the flexible carrier 10 positioned in the vertical plane, i.e., in contact with the sidewalls of containers 50.

The figures illustrate various structures for flexible carrier 10 of the invention. The illustrations are exemplary, and the invention is not limited to the flexible carriers 10 or packages shown. Each flexible carrier 10 preferably includes flexible sheet 20 defining a plurality of container receiving apertures 25, each for receiving a container 50. Flexible sheet 20 includes bands or rings of material, termed container receiving portions 30 herein, that surround each container receiving aperture 25. Such container receiving portions 30 stretchingly engage or grip the respective containers to form a unitized package of containers 50.

As shown in the figures, each flexible carrier 10 according to this invention features a staggered array of container receiving apertures 25. As used herein, the term "staggered array" is defined as an arrangement of container receiving apertures 25 wherein adjacent rows of container receiving apertures include different numbers and/or offsets relative to each other. Further, unlike traditional packages that include containers aligned in both lateral and longitudinal directions, package 15 according to this invention preferably includes adjacent containers that are staggered at an angle θ, preferably 30 degrees, such as shown in Figs. 1 and 10.

Specifically, an array of container receiving apertures 25 that includes first and second adjacent longitudinal 35, 40 rows of aligned apertures wherein there exists one aperture in said first row 35 that spans two adjacent apertures in said second row 40 such that a transverse axis extending from one longitudinal extent of said one aperture intersects a first aperture in said second row 40 and a transverse axis extending from the opposite longitudinal extent of said one aperture intersects a second aperture in said second row 40.

For example, as shown in Figs. 3-5, the staggered array of container receiving apertures 25 in flexible carrier 10 includes a first row 35 having an even number of container receiving apertures 25 and a second row 40 having an odd number of container receiving apertures 25. In addition, the offset of each adjacent row of container receiving apertures 25 is different in that a central portion of each container receiving aperture 25 in the first row 35 is generally aligned with an edge portion of each adjacent container receiving aperture 25 in the second row 40.

Specifically, as shown in Fig. 3, the first row 35 may comprise one container receiving aperture 25 and the second row 40 may comprise two container receiving apertures 25, for a total package size of three containers 50. Alternatively, as shown in Fig. 3, the first row 35 may comprise two container receiving apertures 25 and the second row may comprise three container receiving apertures 25, for a total package size of five containers 50.

As shown in Figs 3-5, following application of flexible carrier 10 to a plurality of containers 50, at least one container 50 in the second row 40 of the staggered array contacts at least two containers 50 in the first row 35. This arrangement contrasts with a typical package in the prior art that includes an aligned array of container receiving apertures whereby each container receiving aperture is aligned longitudinally and transversely with each adjacent container receiving aperture. As a result, in the prior art, a container will generally contact a longitudinally adjacent container (within the same row) and a transversely adjacent container (within the same rank).

According to one preferred embodiment of this invention, such as shown in Figs. 1, 2 and 6, flexible carrier 10 may further include a third row 45 of container receiving apertures 25. Like the variations shown in Figs. 3-5, the third row 45 may include any suitable number of containers 50. Generally, the first row 35 and the third row 45 will include an equal number of container receiving apertures 25, although alternative embodiments may exist wherein this is not the case.

As best shown in Figs. 1 and 2, according to a preferred embodiment of this invention, container receiving apertures 25 in the first row 35 may include a different geometry than container receiving apertures 25 in the second row 35. As such, in addition to numbers and offsets, adjacent rows of container receiving apertures 25 may include distinct geometries.

The containers, such as those shown in packages in Figs. 4 and 5, are preferably cans. Although cans are shown in Figs. 4 and 5, bottles or any other commonly unitized container may be used with flexible carrier 10 according to this invention. The containers are preferably like-sized within a single flexible carrier 10.

As shown in Figs. 3, 4 and 6, flexible carrier 10 may further include an integral handle 60 extending generally upwardly from package 15. According to this embodiment of the invention, one or more handle apertures 70 are positioned between handle 60 and the remainder of flexible sheet 20. Handle aperture 70 preferably includes a notch or indentation extending between each container receiving aperture 25 positioned within flexible sheet 20.

Handle aperture 70 both provides a void within which to grasp resulting package and permits a flexible interface between handle 60 and remainder of flexible sheet 20.

Specifically, as shown in Figs. 3 and 4, handle 60 may extend between each row of container receiving apertures 25. Alternatively, as shown in Fig. 2, flexible carrier 10 may include a pair of handles 60, each handle 60 extending between a row of container receiving apertures 25. Alternatively, as shown in Fig. 6, flexible carrier 10 may include a pair of handles 60, each handle 60 extending from an outside of the first row 35 and an outside of the third row 45.

According to an embodiment of the invention shown in Figs. 7 and 8, handle 60 may overlay the first row 35 or the second row 40 prior to application of flexible carrier 10 to the plurality of containers 50, such as shown in Fig. 7. Fig. 8 shows flexible carrier 10 having handle 60 extending upwardly as it would following application of flexible carrier 10 to a plurality of containers 50.

As shown in Figs. 9 and 10, flexible carrier 10 according to this invention features a staggered array of container receiving apertures 25 including 3 rows of container receiving apertures 25. In addition, or alternatively, as shown in Fig. 10, package 15 may include a hexagonal shaped array, whereby a central container includes a plurality of radially spaced containers. Such array may be arranged radially, as shown in Fig. 10, and/or arranged in three staggered rows as more clearly shown in Fig. 9. As shown in the figures, the resulting package 15 is a truly staggered array, that is, the number of containers in both the x and y directions are different in each adjacent row or rank.

As shown in Figs. 9 and 10, the staggered array of container receiving apertures 25 in flexible carrier 10 includes a first row 35 having an even number of container receiving apertures 25; a second or middle row 40 having an odd number of container receiving apertures 25; and a third row 45 having an even number of container receiving apertures 25, typically equal to the number in the first row 35. In addition, the offset of each adjacent row of container receiving apertures 25 is different in that a central portion of each container receiving aperture 25 in the first row 35 is generally aligned with an edge portion of each adjacent container receiving aperture 25 in the second row 40. Such an arrangement may additionally facilitate the radial arrangement of containers shown in Fig. 10.

As shown in Fig. 10, each container 50 in outer rows of containers is preferably offset at an angle θ, for instance 30 degrees. This staggered arrangement is contrary to

traditional packaging that includes containers positioned in an aligned manner and/or at 90 degree angles relative to each other.

According to one preferred embodiment of the arrangement shown in Figs. 9 and 10, a center container receiving aperture 26 may be left vacant following application of containers to facilitate a sturdier package 15, to permit insertion of another object, such as a promotional item, in the center container receiving aperture 26; to permit carrying of the resulting package 15; and/or for any other suitable reason. Alternatively, package 15 may include seven containers 50 resulting in additional benefits.

According to one preferred embodiment of this invention, such as shown in Fig. 10, package 15 may occupy approximately 5% less shelf space per container than a standard two by three array (or "six pack") package. As a result, bottlers and/or consumers may receive the benefit of more containers per package than a traditional package. Retailers may thus display and/or stock more product due to increased density of containers in 30 degree configurations rather than 90 degree (rectangular) configurations. In addition, a hexagonal package 10 such as shown in Fig. 10 is particularly stable because each container generally contacts at least 3 other containers at a span of at least about 120 degrees.

Flexible sheet 20 of material is preferably cut, using means known to those skilled in the art, such as a stamping die, to form a plurality of container receiving apertures 25 in flexible sheet 20, such as shown in Figs. 1 and 2. Container receiving apertures 25 are preferably formed in a rectangular shape having rounded or radiused corners and extending longitudinally across flexible carrier 10 to sufficiently engage and retain a respective container. As shown in Figs. 1 and 2, second row having a single container receiving aperture 25, may include a different geometry, such as the more rounded geometry shown.

Container receiving apertures 25 preferably extend lengthwise or longitudinally along flexible sheet 20 so that a length of each rectangular container receiving aperture 25 is aligned longitudinally along flexible sheet 20 and a width of each rectangular container receiving aperture 25 is aligned transversely along flexible sheet 20. Flexible sheet 20 may include other configurations of container receiving apertures 25 depending on the size of package and/or the number of containers desired.

Flexible carrier 10 is preferably manufactured so that raw carrier stock includes a generally continuous roll of flexible sheet 20 having a plurality of adjacent flexible carriers 10 that are punched and then wound onto a reel or spool (not shown) having several thousand

flexible carriers 10, each flexible carrier 10 attached to each adjacent flexible carrier 10. Flexible carriers 10 are later applied to containers to form packages and, during such process, are preferably unwound from the reels, stretched over the containers, cut at selected points to separate and then separated from each other to form individual packages.

Secondary apertures 55 may also be provided between and among container receiving apertures 25. As shown in Figs. 1, 2 and 7 secondary apertures 55 may be generally triangular-shaped. Secondary apertures 55 may be used to reduce material cost, and to control or modify the size and stretching properties of container receiving portions 30.

The containers to be inserted in container receiving apertures 25 may be bottles or cans having varying shapes and diameters. Carrier receiving portions 30 are installed around the respective containers while stretched, and are allowed to retract or recover to provide a snug fit around the rib, chime or outside sidewall surface of the respective containers.

As shown in Fig. 5, flexible carrier 10 may further or alternatively include an integral display panel 80 extending longitudinally along one side of flexible sheet 20. Display panel 80 may include printed advertising or billboard space, either directly applied to flexible sheet 20 or applied with an adhesive label, such as shown in Fig. 5. According to this embodiment of the invention, one or more panel apertures 90 are preferably positioned between display panel 80 and remainder of flexible sheet 20. Panel aperture 90 preferably includes a notch or indentation extending between each container receiving aperture 25 positioned within flexible sheet 20. Panel apertures 90 preferably urge display panel 80 into a generally vertical alignment with the vertical sidewalls of the containers within package.

The flexible sheet 20 used to form the flexible carrier 10 is desirably a polymeric or plastic sheet, which can be formed by an extrusion process and then cut to form flexible carrier 10. The flexible sheet 20 has a thickness which provides sufficient structural integrity to carry a desired number of containers. For instance, each flexible carrier 10 may be designed to carry three, five, seven, nine, eleven or thirteen or more containers of a desired product having a specific weight, volume, shape and size. For most applications, the flexible sheet 20 may have a thickness of about 3-50 mils, suitably about 5-30 mils, commonly about 10-20 mils.

While in the foregoing specification this invention has been described in relation to certain preferred embodiments thereof, and many details have been set forth for

purpose of illustration, it will be apparent to those skilled in the art that carrier 10 and the related method of manufacture are susceptible to additional embodiments and that certain of the details described herein can be varied considerably without departing from the basic principles of the invention.

CLAIMS

1. A flexible carrier for carrying a plurality of containers, said carrier comprising a flexible sheet of material and a plurality of container-receiving apertures formed therein, each container-receiving aperture for receiving a container therein, said carrier having a longitudinal direction and a transverse direction, said carrier comprising:

an array of container-receiving apertures including first and second adjacent longitudinal rows of aligned apertures wherein there exists one aperture in said first row that spans two adjacent apertures in said second row such that a transverse axis extending from one longitudinal extent of said one aperture intersects a first aperture in said second row and a transverse axis extending from the opposite longitudinal extent of said one aperture intersects a second aperture in said second row.

2. The flexible carrier of Claim 1 further comprising a third row of aligned container receiving apertures.

3. The flexible carrier of Claim 2 further comprising a handle extending between each row of container receiving apertures.

4. The flexible carrier of Claim 2 further comprising a pair of handles, a handle extending from each of an outside of the first row and an outside of the third row.

5. The flexible carrier of Claim 1 wherein the first row comprises two container receiving apertures and the second row comprises three container receiving apertures.

6. The flexible carrier of Claim 1 wherein the first row comprises one container receiving aperture and the second row comprises two container receiving apertures and a handle extends between the first row and the second row.

7. The flexible carrier of Claim 1 wherein the container receiving apertures in the first row include a different geometry than the container receiving apertures in the second row.

8. The flexible carrier of Claim 1 further comprising a handle extending between the first row and the second row.

9. The flexible carrier of Claim 8 wherein the handle overlays one of the first row and the second row prior to application to the plurality of containers.

10. The flexible carrier of Claim 1 further comprising a third row of container receiving apertures positioned on a side of the second row of container receiving apertures opposite the first row, wherein the first row and the third row have a corresponding number of container receiving apertures.

11. A flexible carrier for carrying a plurality of containers, comprising a flexible sheet and a plurality of container receiving apertures formed in the flexible sheet, each container receiving aperture for receiving a container, the flexible carrier comprising:

a staggered array of the container receiving apertures extending longitudinally in two rows, a first row having an even number of container receiving apertures and a second row having an odd number of container receiving apertures wherein at least one container of the plurality of containers in the second row contacts at least two containers of the plurality of containers in the first row following application of the flexible carrier to the plurality of containers.

12. The flexible carrier of Claim 11 further comprising a third row of container receiving apertures.

13. The flexible carrier of Claim 12 wherein the first row and the third row comprise the same number of container receiving apertures.

14. The flexible carrier of Claim 11 further comprising a handle extending between each row of container receiving apertures.

15. The flexible carrier of Claim 11 wherein the first row comprises two container receiving apertures and the second row comprises three container receiving apertures.

16. The flexible carrier of Claim 11 wherein the container receiving apertures in the first row comprise a different geometry than the container receiving apertures in the second row.

17. The flexible carrier of Claim 11 further comprising a third row of container receiving apertures forming a hexagonal array of containers including six container receiving apertures extending radially around a center container receiving aperture.

18. A flexible carrier for carrying a plurality of containers, comprising a flexible sheet of polymer material and a plurality of container receiving apertures formed in the flexible sheet, each container receiving aperture for receiving a container, the flexible carrier comprising:

a staggered array of container receiving apertures including a first row having three container receiving apertures;

a central, second row having two container receiving apertures;

a third row having three container receiving apertures, a central portion of each container receiving aperture in the first row and the third row generally aligned with an edge portion of each adjacent container receiving aperture in the second row, whereby following application of the flexible carrier to a plurality of containers, at least one container in the second row of the staggered array contacts at least two containers in the first row to form a generally hexagonal configuration.

19. A package of substantially circular containers unitized with a flexible carrier, said package comprising:

a flexible sheet having a plurality of container-receiving apertures formed therein; and

a plurality of containers each positioned within one of the container receiving apertures and each container substantially contacting at least two other containers in the plurality such that the points of contact are approximately 60 degrees apart relative to the center of the container.

20. The package of Claim 19 wherein each container substantially contacts at least three other containers wherein at least two of such containers are 120 degrees apart.

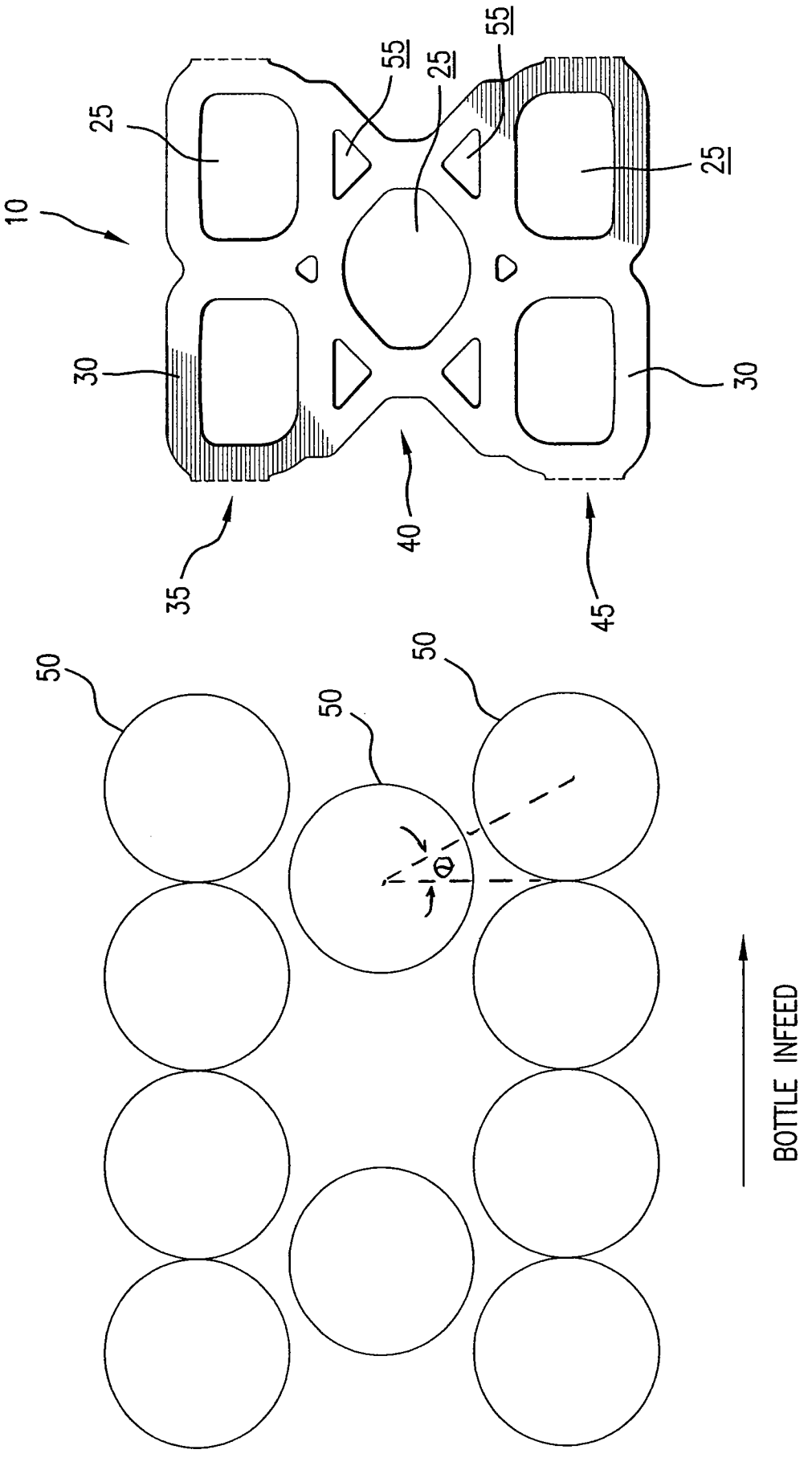
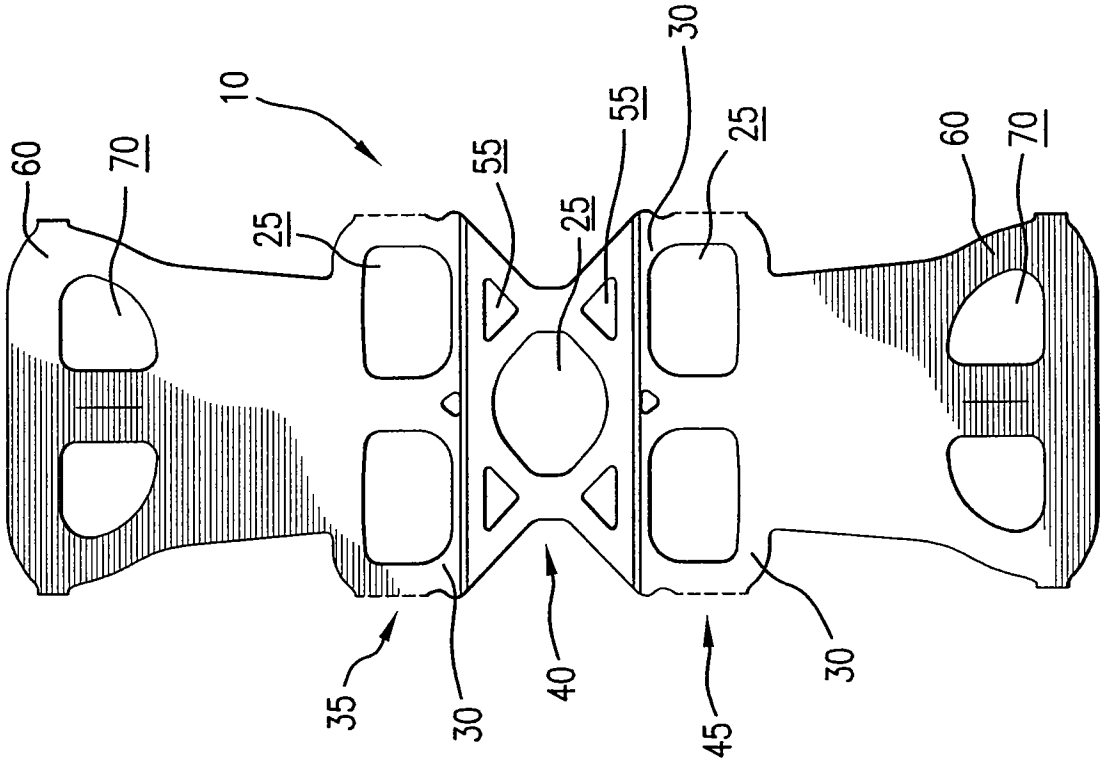


FIG. 1



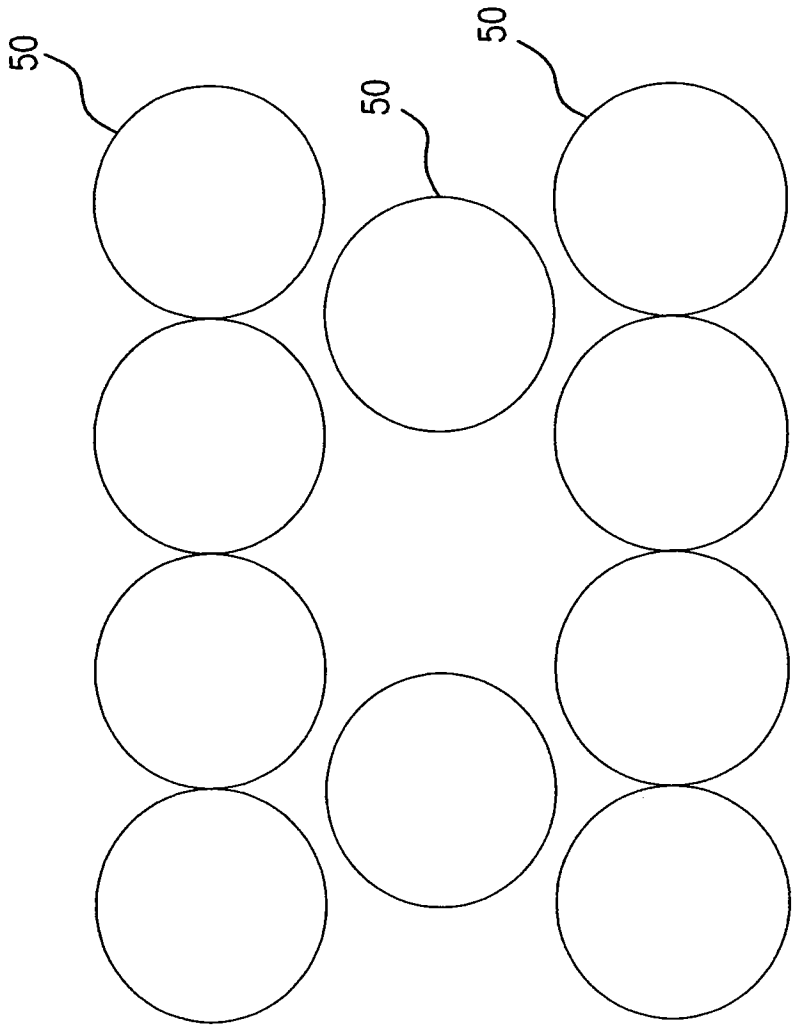


FIG.2

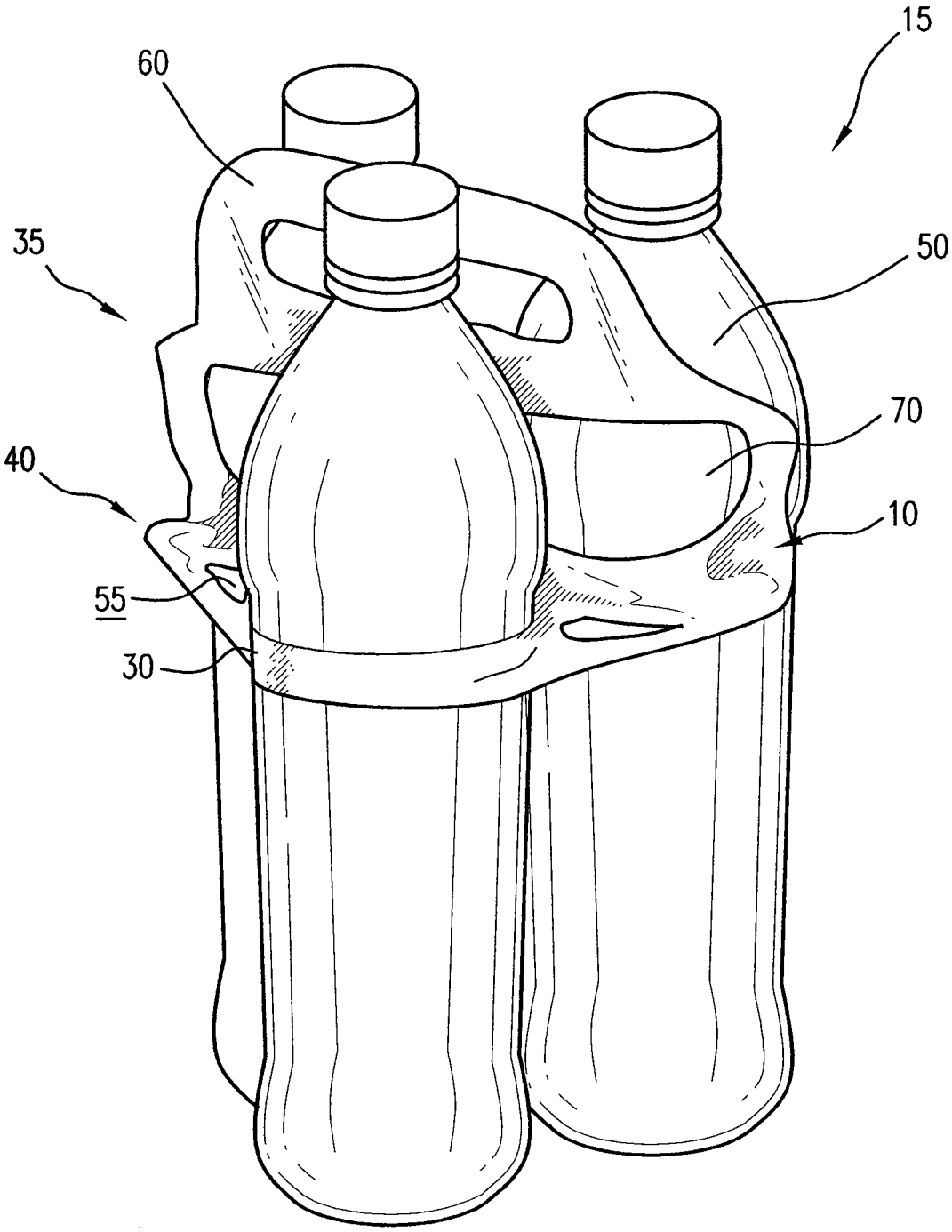


FIG.3

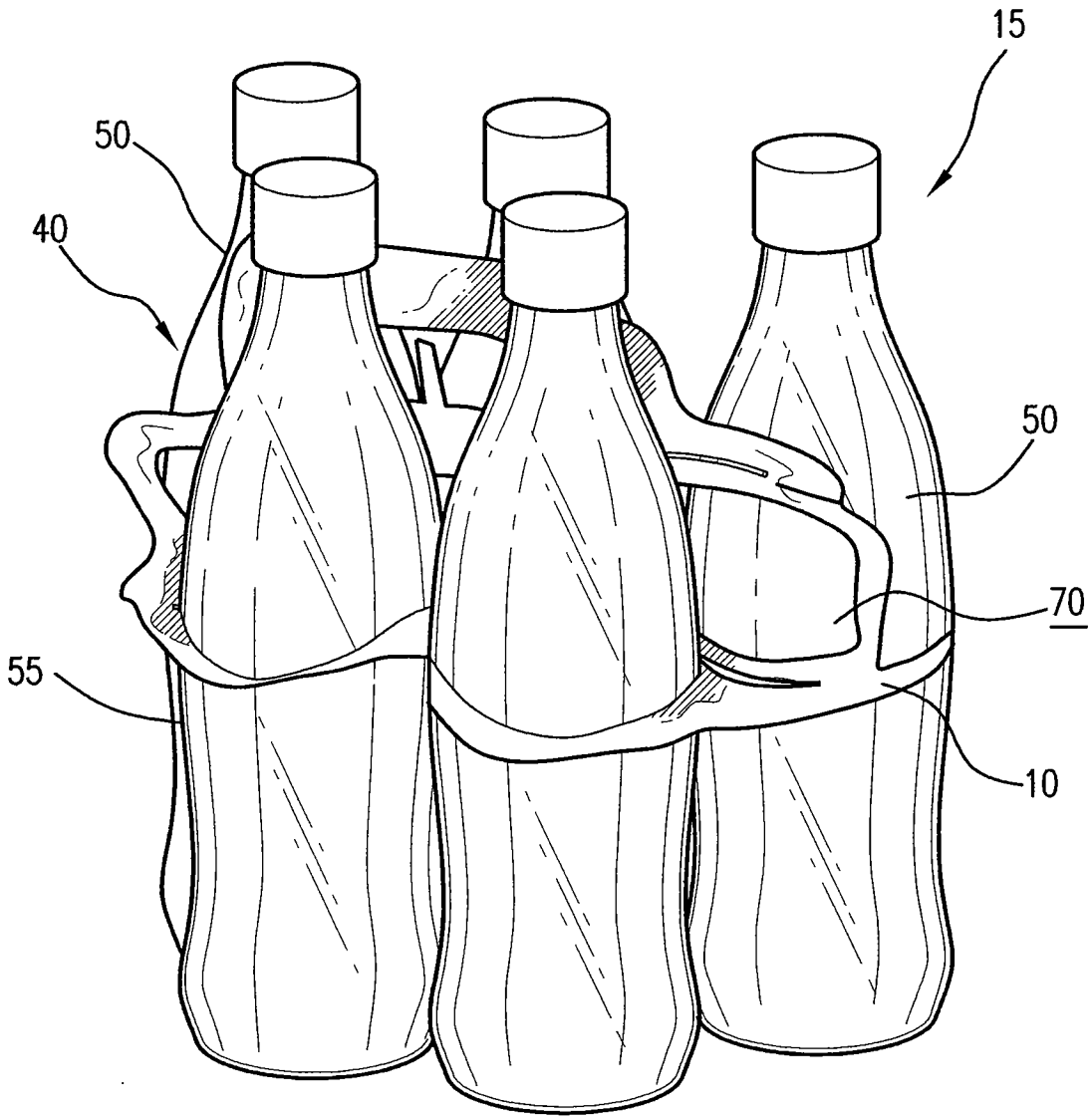


FIG.4

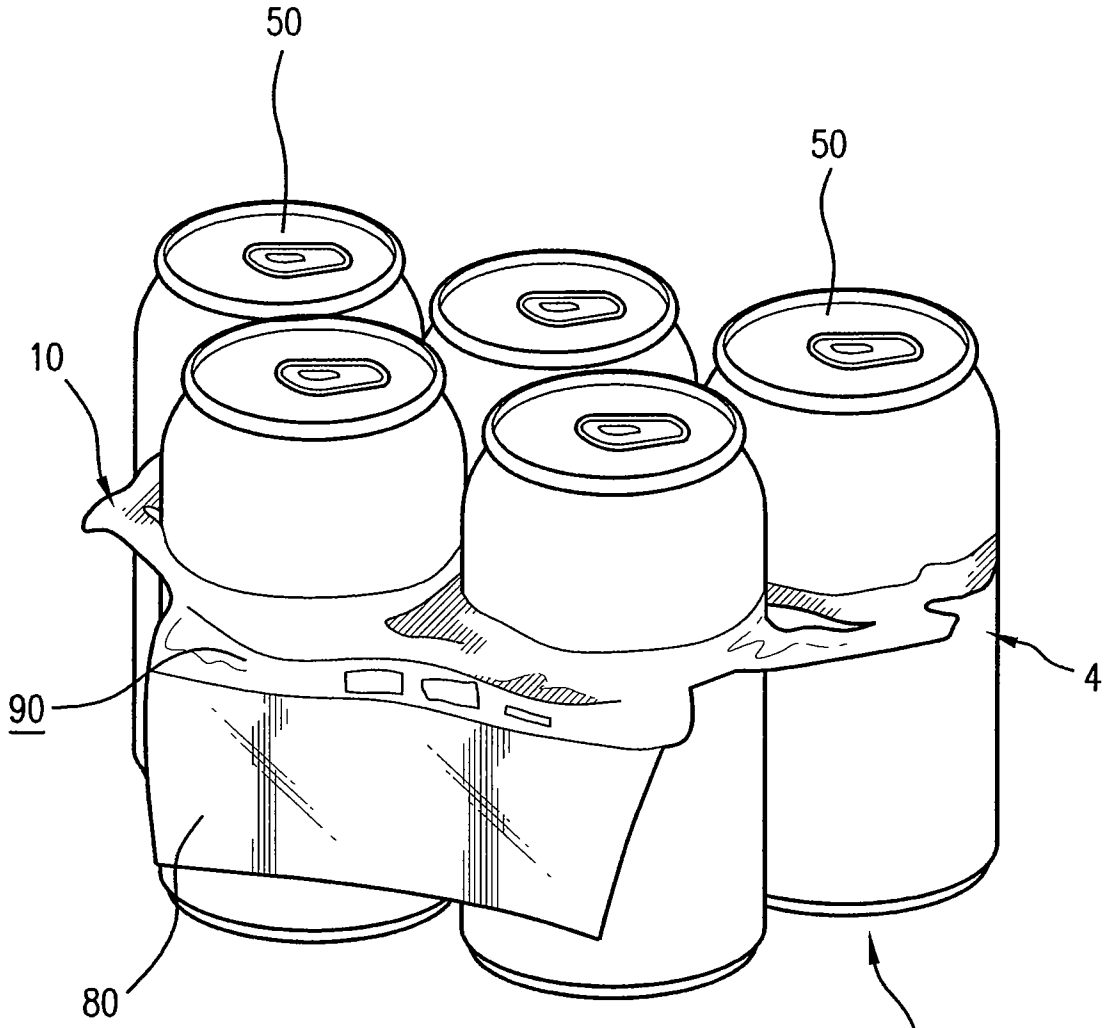


FIG.5

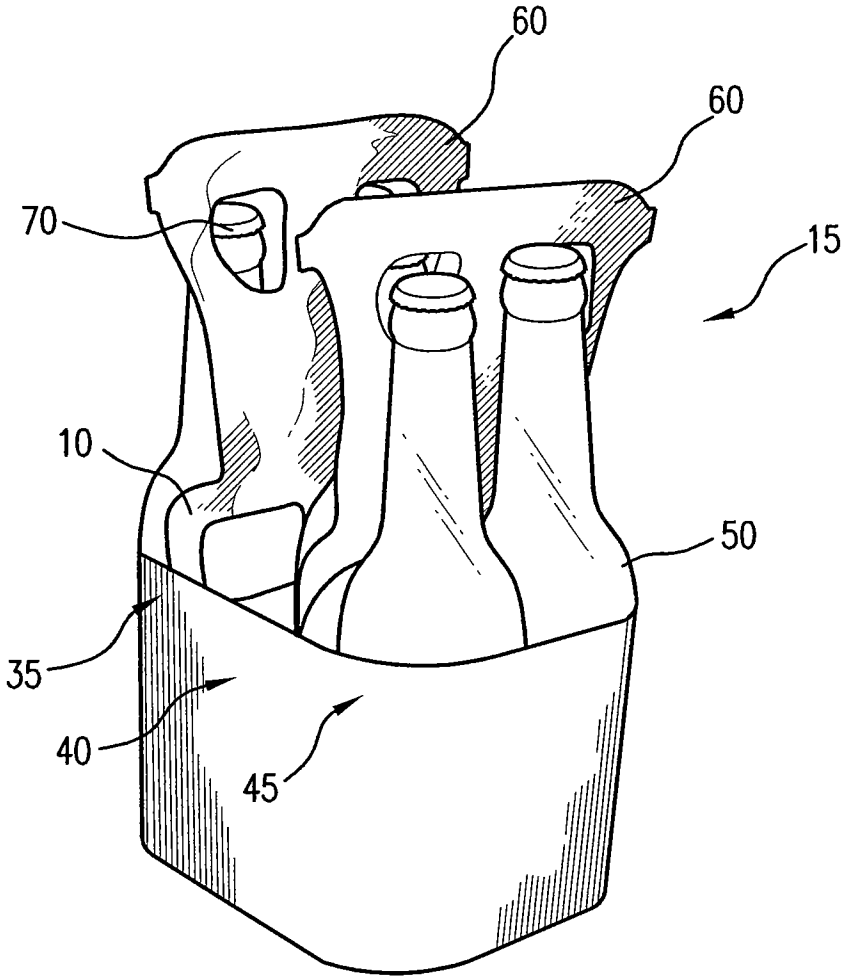


FIG.6

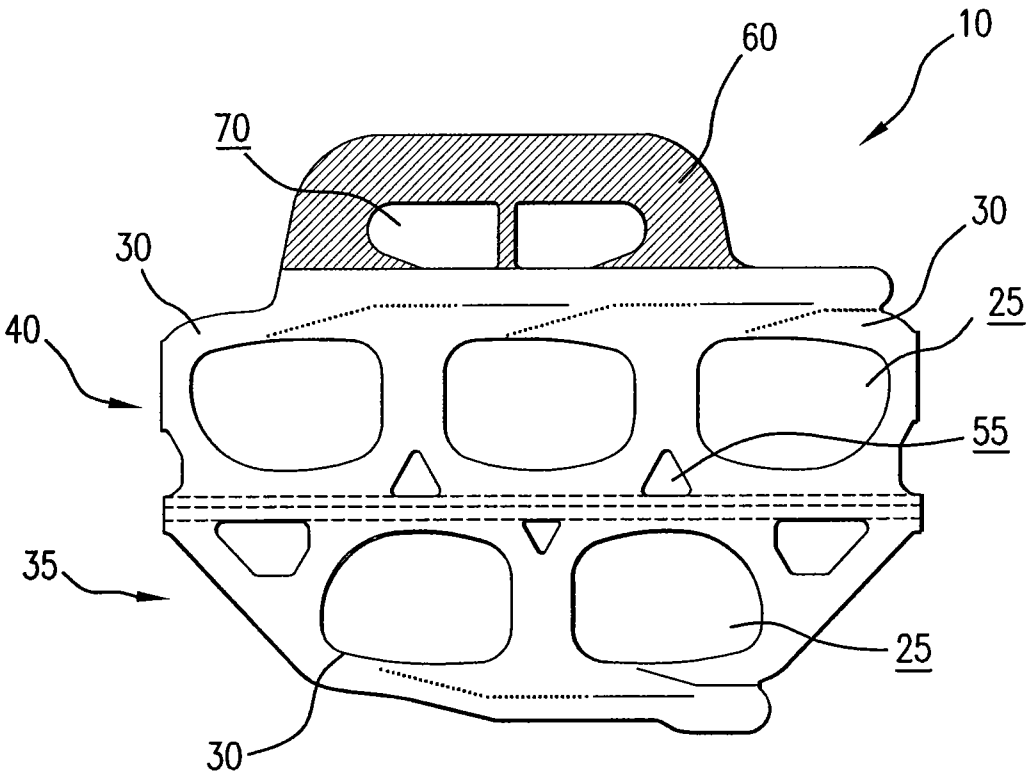


FIG.7

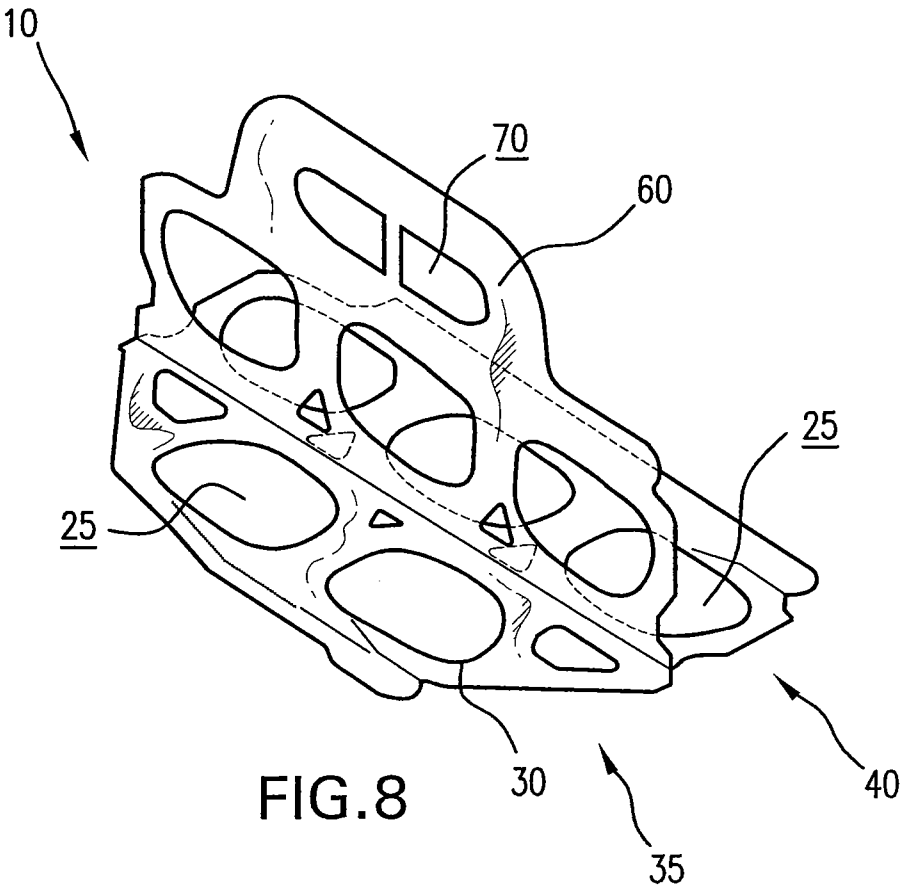


FIG.8

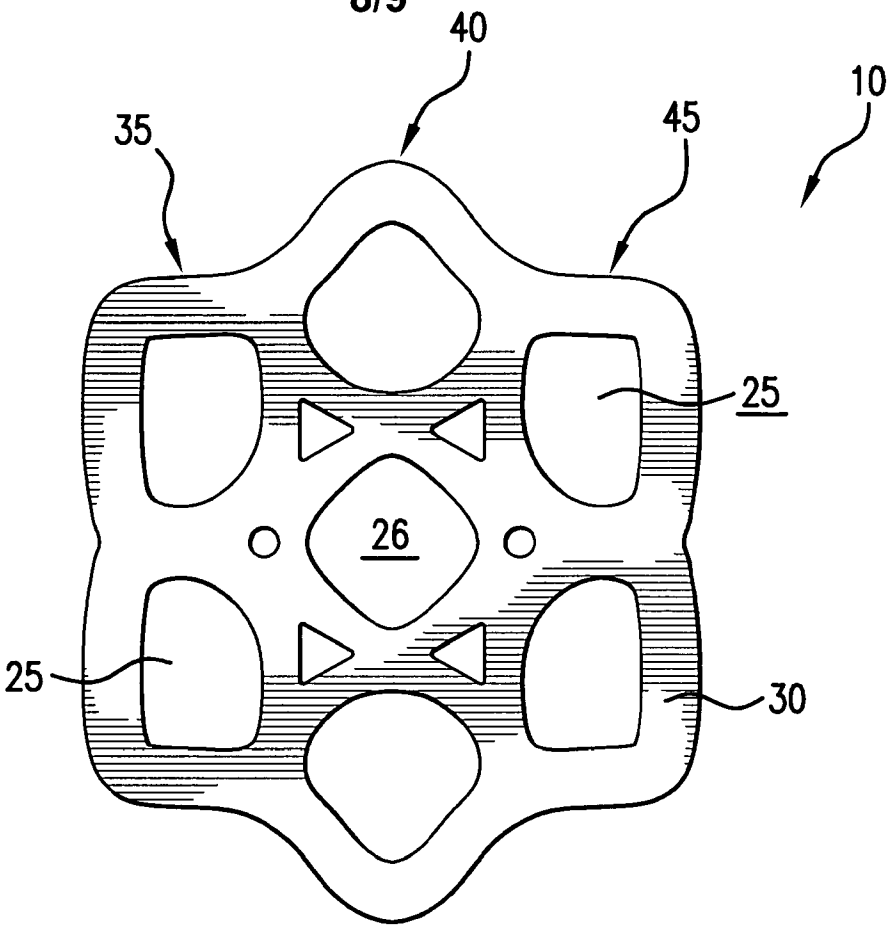


FIG.9

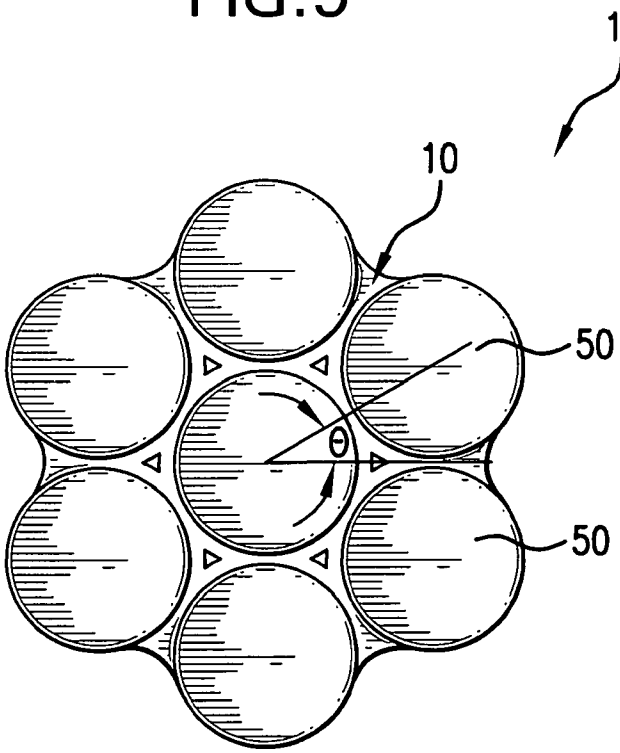


FIG.10

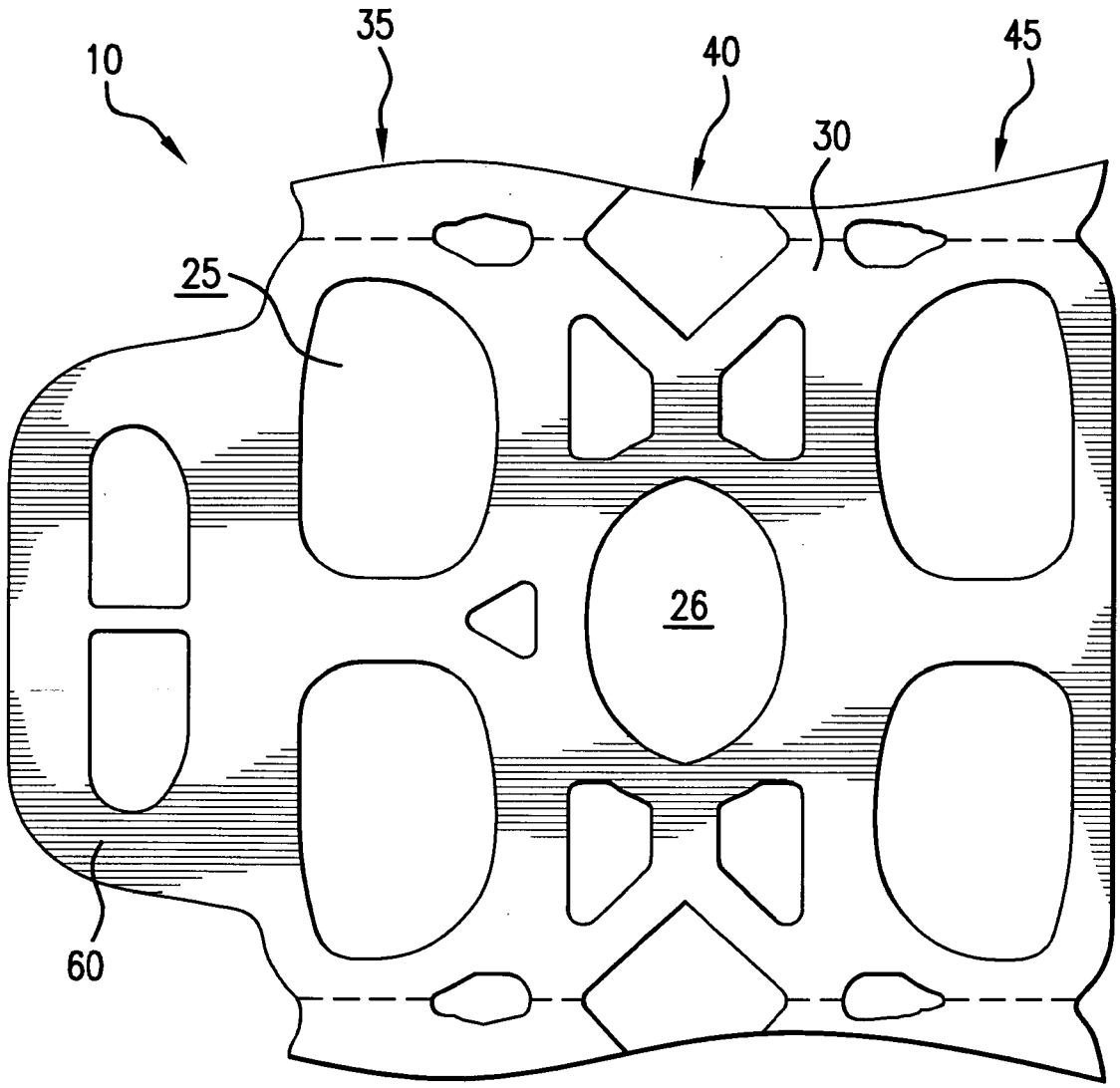


FIG.11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/74824

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - B65D 71/00 (2008.04)
USPC - 53/398; 206/151, 427
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)
USPC: 53/398; 206/151, 427

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
D07/619.1; 53/48.1; 206/141, 150, 158, 161, 199, 428 -- text limited -- see search terms below --

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (DB= PGPB,USPT,EPAB,JPAB); GOOGLE SCHOLAR -- Search Terms Used: leslie marco, jay saltzman, illinois tool works, robert olsen, flexible container carrier, plastic, bottle, can, drink, beverage, handles, hexagon, pentagon, heptagon, octagon, polygon, staggered, offset, asymmetrical, odd, misaligned, etc.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2005/0279650 A1 (Marco) 22 December 2005 (22.12.2005), abstract; para [0018]-[0020]; Fig. 7, Fig. 8.	1, 11 ---------- 2-10, 12-20
Y	US 2004/0055905 A1 (Marco et al.) 25 March 2004 (25.03.2004), abstract; Fig. 1 to Fig. 4.	2-4, 6-10, 12-14 and 16
Y	US 2006/0086063 A1 (Magomedov) 27 April 2006 (27.04.2006), abstract; Fig. 1 to Fig. 7.	5, 15 and 17-20
Y	US 5,267,644 A (Tsao) 7 December 1993 (07.12.1993), abstract; col 2, ln 20-28; Fig. 1 to Fig. 4, Fig. 6B, Fig. 11, Fig. 14.	4 and 9
A	US 5,853,088 A (Saulas et al.) 29 December 1998 (29.12.1998), entire document, especially the abstract; Fig. 8, Fig. 12.	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 October 2008 (30.10.2008)	13 NOV 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)