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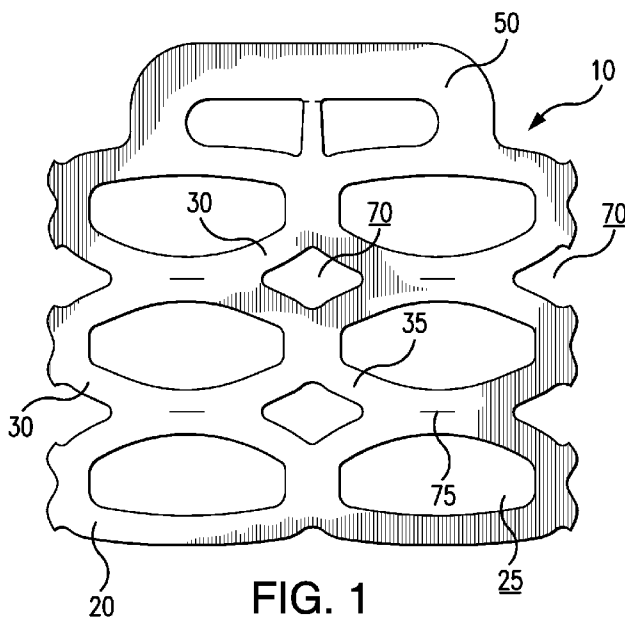
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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: CONTAINER CARRIER



(57) Abstract: A flexible carrier (10) for carrying a plurality of containers within a plurality of corresponding container receiving apertures (25) formed in longitudinal rows and transverse ranks that includes three rows of container receiving apertures (25) and a handle (50) extending parallel to the three rows of container receiving apertures (25).

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Published:

— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

CONTAINER CARRIER

BACKGROUND OF THE INVENTION

CROSS REFERENCE TO RELATED APPLICATION

5 This application claims priority to U.S. Provisional Application, Serial No. 61/893,707, filed on 21 October 2013 and U.S. Provisional Application, Serial No. 61/947,232, filed on 03 March 2014. These U.S. Provisional Applications are hereby incorporated by reference herein in its entirety and are made a part hereof, including but not limited to those portions which specifically appear hereinafter.

10 FIELD OF THE INVENTION

 This invention relates to a container carrier having at least three rows of container receiving apertures for unitizing a plurality of containers.

DESCRIPTION OF PRIOR ART

15 Conventional container carriers are often used to unitize a plurality of similarly sized containers, such as cans, bottles, jars and boxes and/or similar containers that require unitization. Flexible plastic ring carriers are one such conventional container carrier.

 Flexible plastic ring carriers having a plurality of container receiving apertures that each engage a corresponding container may be used to unitize groups
20 of four, six, eight, twelve or other suitable groups of containers into a convenient multipackage. Flexible ring carriers may include a handle that extend upwardly from the carrier to enable a consumer to carry the package from the top (called a “top lift carrier”) or outwardly from a side of the carrier to enable a consumer to carry the package from the side (called a “side lift carrier”).

25 Typically, larger-capacity carriers result in challenges in application to containers in that carriers having more than two rows tend to open in an undesirable sequence and thus cannot be applied at high speeds. In addition, the resulting package tends to sag at the ends when lifted resulting in a sloppy appearance. As such, a need arises for a carrier capable of carrying a large number of containers that

permits high speed application and results in an aesthetically pleasing package for the consumer to handle.

SUMMARY OF THE INVENTION

The present invention is directed to a flexible carrier for packaging
5 containers that includes an arrangement of container receiving apertures that are configured to permit placement over containers in three distinct rows.

The carrier is suitably configured with a combination of webs and
container receiving apertures that permit opening up and generally even, distributed
stretching for application to the containers. In the described configuration, a flexible
10 sheet forms webs defining container receiving apertures wherein tapered oblique bands at least partially define the respective container receiving apertures and a handle is positioned parallel with the three rows of container receiving apertures. The resulting carrier is configured to enable placement over at least three rows of containers to result in a tight, unitized bricklike package.

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 side elevational view of a container carrier according to one
20 preferred embodiment of this invention;

Fig. 2 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

Fig. 3 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

25 Fig. 4 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

Fig. 5 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

30 Fig. 6 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

Fig. 7 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

Fig. 8 is a side elevational view of a container carrier according to one preferred embodiment of this invention.

5 Fig. 9 is a top view of a package of unitized containers according to one preferred embodiment of this invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1-8 show flexible carrier 10 for unitizing six or more containers and a resulting unitized package, shown in one embodiment in Fig. 9. Although Figs. 10 1-9 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 for six, twelve or fifteen containers. For example, flexible carrier 10 may be alternatively configured and used to unitize three, nine, eighteen, or any other desired number of containers.

15 Containers are preferably cans, however, bottles or any other commonly unitized container may be used with flexible carrier 10 according to this invention. The containers are preferably, though not necessarily, like-sized within a single flexible carrier 10.

Each flexible carrier 10 preferably includes a single layer of flexible 20 sheet 20 having a width and length defining therein a plurality of container receiving apertures 25, each for receiving a container. The plurality of container receiving apertures 25 are preferably arranged in at least three longitudinal rows and multiple longitudinal ranks so as to form an array of container receiving apertures 25, such as three rows by two ranks for a six container multipackage as shown in Figs. 1 and 2 25 or three rows by four ranks for a twelve container multipackage as shown in Figs. 3 and 4 or three rows by five ranks for a fifteen container multipackage as shown in Figs. 5 and 6. Figs. 7 and 8 show three rows by four dividable ranks for a dividable twelve container multipackage. Container receiving apertures 25 are preferably elongated in a longitudinal direction of flexible carrier 10.

30 Fig. 9 shows a representative package 100 resulting from flexible

carrier 10 that includes a plurality of unitized containers. Flexible carriers 10 are generally applied to containers by stretching flexible sheet 20 surrounding container receiving apertures 25 around container, and requiring the stretched carrier 10 to recover, thereby providing a tight engagement.

5 A preferred carrier configuration includes three distinct parallel rows of container receiving apertures 25 including a middle row and two outer rows of container receiving apertures 25. Each rank includes three container receiving apertures 25 (one for each row in the carrier 10). Of these three container receiving apertures 25 per rank, there are two outer apertures and one center aperture formed
10 therebetween.

As shown in Figs. 1-8, three parallel rows of container receiving apertures 25 are preferably formed within flexible sheet 20. As such, one row of container receiving apertures 25 is preferably formed along each side of the carrier 10 and one intermediate row is formed therebetween. As shown, it is
15 preferable that each container receiving aperture 25 in a single row is configured identically from the other. As shown, this means that each container receiving aperture 25 in the center row is identical, each container receiving aperture in one outer row is identical and each container receiving aperture 25 in the other outer row is likewise identical. Preferably, the container receiving apertures 25 in one outer
20 row are mirror images of the other outer row.

Container receiving apertures 25 are preferably formed in a geometry that results in a uniform application of the carrier 10 to containers to produce a tight unitization of containers within flexible carrier 10. Such a result is difficult when carrier 10 is engaged with three rows of container receiving apertures 25 over three
25 rows of containers as described herein.

In particular, one or more jaws engage with an edge of the container receiving apertures 25 in outer rows and stretch the carrier open so as to apply the carrier to individual containers. When an intermediate row is formed between the outer rows, the jaws cannot directly engage container receiving apertures in that row
30 which results in inadequate stretching of the container receiving apertures in that row

and/or misapplication of the carrier to the plurality of containers. The subject invention is configured to enable that the container receiving apertures 25 in that intermediate row to adequately stretch and engage the associated containers resulting in a desired package shown in Fig. 9.

5 In particular, the subject carrier 10 preferably stretches between approximately 31% and 51% thereby permitting application to a range of container diameters from 2.25" to 2.6".

As described above, container carrier 10 according to a preferred embodiment of the invention includes a series of interconnecting webs 30 that define
10 the plurality of container receiving apertures 25. Webs 30 are stretchable around container during application and recoverable around container following application. Specifically, in the described configuration, the flexible sheet 20 forms webs 30 defining container receiving apertures 25 wherein the webs 30 are tapered oblique bands 35 at least partially defining the respective container receiving apertures 25.
15 In particular the oblique bands 35 taper toward the web between the rows of container receiving apertures 25.

In addition, according to one embodiment container receiving apertures 25 in the outer rows are longitudinally asymmetric while the container receiving apertures 25 in the middle rows are longitudinally symmetric. The
20 particular arrangement of apertures described enables the carrier 10 uniformly open up and stretch for application to containers despite having three rows of container receiving apertures 25.

As shown in Figs. 1-8, a handle 50 extends from a longitudinal edge of carrier 10. Handle 50 may comprise one or more elongated apertures positioned
25 along the outer periphery of handle 50 or may comprise a similar configuration that provides an ample area for a consumer to grasp by inserting his hand through and still maintain the purpose and integrity of package. As shown in Figs. 7 and 8, a pair of secondary handles 55 may be positioned along a longitudinal edge of the carrier 10 opposite the edge of the handle 50. As shown in Figs. 7 and 8, one or both of the
30 handle 50 and/or the secondary handles 55 may be divisible along a line of weakness

80. In this manner, the package may be configured as a twelve pack or a six pack or any similar combination depending on the number of container receiving openings 25 and the configuration of the handles 50, 55 employed.

According to an embodiment of the invention shown in Figs. 2, 4, 6 and 8, a plurality of tabs 60 are positioned within each carrier 10. Preferably, each such tab 60 extends into a container receiving aperture 25 in outer rows of the three longitudinal rows. As shown, each container receiving aperture 25 in outer rows includes only one tab 60. Further each tab 60 preferably extends from an inner portion of each container receiving aperture 25 in the outer rows. These tabs 60 form a desirable configuration in a center web of the carrier following application to containers and preferably prevent inversions in that web which would jeopardize a sturdy package and the aesthetics of the package.

As shown in the figures, the container carrier 10 may further include asymmetric dividing apertures 70 positioned between adjacent ranks of container receiving apertures 25. Further, dividing apertures 70 are preferably positioned between adjacent carriers 10 when formed in a generally continuous string of carriers prior to application.

In addition, a slit 75 is preferably positioned between each container receiving aperture 25 in a center row and an outer row. The slit 75 also assists in a desired v-shape in the center web of the carrier following application to containers.

The configuration of the carrier 10 described above includes a combination of webs and container receiving apertures that permit opening up and even stretching for application to the containers. In the described configuration, the shape and design of the center row of container receiving apertures 25 is different from that of the outer rows of container receiving apertures 25. Such a design overcomes the natural tendency of the central apertures to foreshorten during stretching.

As described, the subject carrier 10 preferably accommodates at least four different standard container sizes including 202/211; 202/209; 202/207.5 and 202/206.5 (2.6"; 2.48"; 2.36"; and 2.25" diameters, respectively). Standard

container heights between approximately 250 ml to 568 ml can also utilize the subject carrier 10. In an applied condition, adjacent containers touch in a transverse direction (TD) and are spaced at various intervals depending on container size in the longitudinal or machine direction (MD). The flexibility of the carrier 10 thereby permits a single applying machine and carrier to accommodate a whole range of containers without changeover to a new carrier. This enables a more compact footprint for equipment, minimizes required inventories for carrier stock and simplifies changeover to different multipackages.

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 flexible carrier 10 and package 100 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.

15

CLAIMS:

1. A container carrier for unitizing a plurality of containers comprising:

a flexible web forming a plurality of container receiving apertures arranged in transverse ranks and three longitudinal rows;

a handle extending along one edge of the flexible web and parallel to the three longitudinal rows;

wherein the flexible web forms a plurality of tapered oblique bands defining a center row of container receiving apertures.

2. The container carrier of Claim 1 wherein the three longitudinal rows are arranged in the center row and two outer rows, wherein container receiving apertures in the outer rows are shaped differently from container receiving apertures in the center row.

3. The container carrier of Claim 2 wherein each container receiving aperture is shaped identical to each other container receiving aperture within a respective row.

4. The container carrier of Claim 1 further comprising plurality of tabs, each tab extending into a container receiving aperture in outer rows of the three longitudinal rows.

5. The container carrier of Claim 4 wherein each container receiving aperture in outer rows includes only one tab.

6. The container carrier of Claim 1 wherein container receiving apertures in a center row are symmetric and container receiving apertures in outer rows are asymmetric.

7. The container carrier of Claim 1 comprising four ranks of container receiving apertures.

8. The container carrier of Claim 1 comprising five ranks of container carriers.

9. The container carrier of Claim 1 further comprising a slit positioned between each container receiving aperture in a center row and an outer row.

10. The container carrier of Claim 1 further comprising a dividing aperture positioned between container receiving apertures in the three longitudinal rows.

11. The container carrier of Claim 10 wherein the dividing apertures are positioned between adjacent ranks of adjacent container carriers.

12. A container carrier for unitizing a plurality of containers comprising:

a flexible web forming a plurality of container receiving apertures arranged in three longitudinal rows and four transverse ranks wherein the container receiving apertures in a center row are symmetric and the container receiving apertures in outer rows are asymmetric; and

a handle positioned along one longitudinal edge of the flexible web.

13. The container carrier of Claim 12 further comprising a pair of secondary handles extending along an opposite longitudinal edge as the handle.

14. The container carrier of Claim 13 wherein the secondary handles are divisible along a line of weakness.

15. The container carrier of Claim 12 further comprising a slit positioned between each container receiving aperture in a center row and an outer row.

16. The container carrier of Claim 12 further comprising plurality of tabs, each tab extending into a container receiving aperture in outer rows of the three longitudinal rows.

17. The container carrier of Claim 16 wherein each container receiving aperture in outer rows includes only one tab.

18. The container carrier of Claim 12 wherein the flexible web forms a plurality of tapered oblique bands defining a center row of container receiving apertures.

19. The container carrier of Claim 12 wherein each container receiving aperture is shaped identical to each other container receiving aperture within a respective row.

20. A package formed by applying a carrier in accordance with Claim 1 to a plurality of containers.

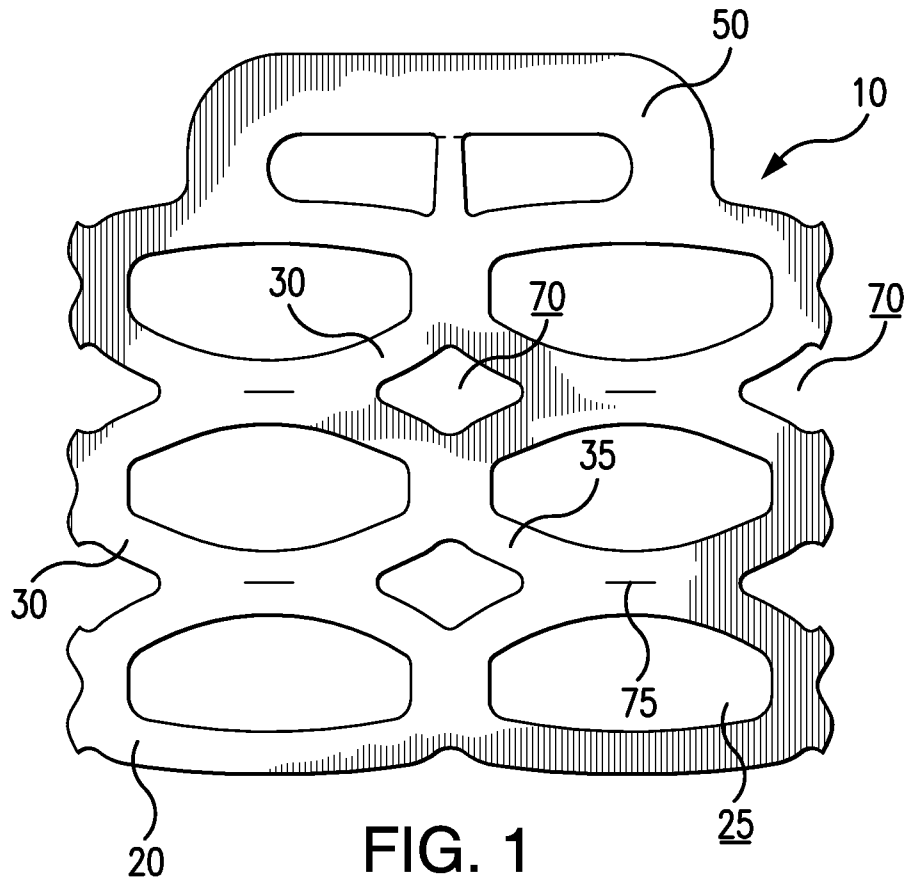


FIG. 1

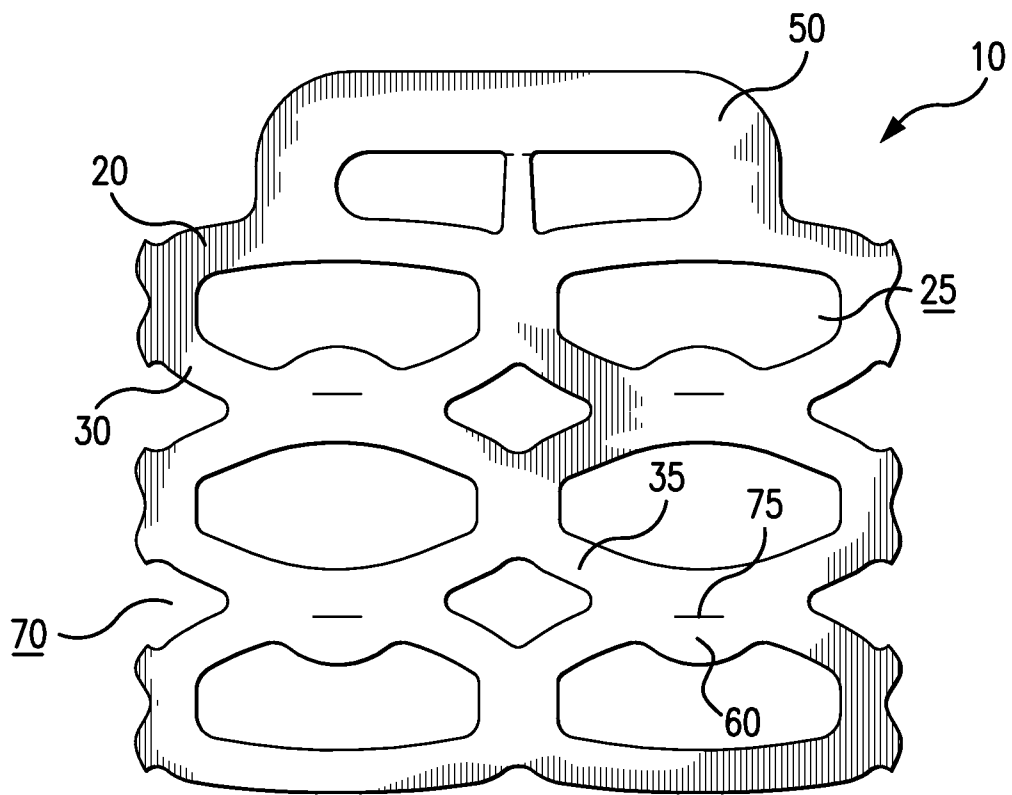
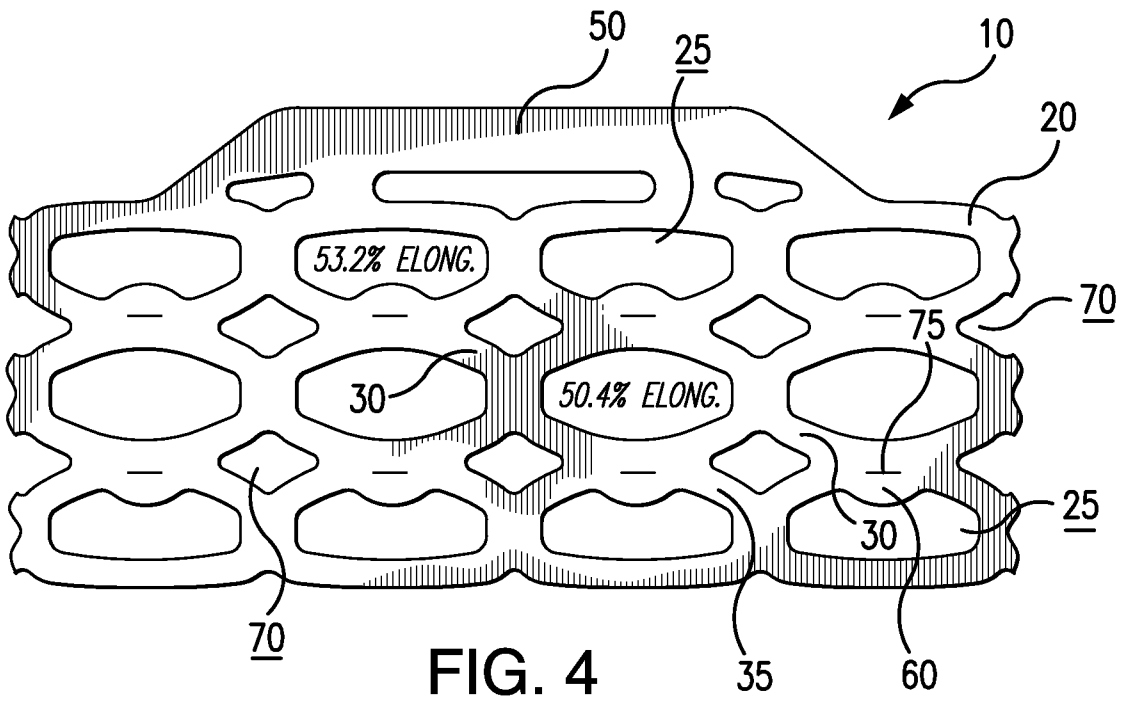
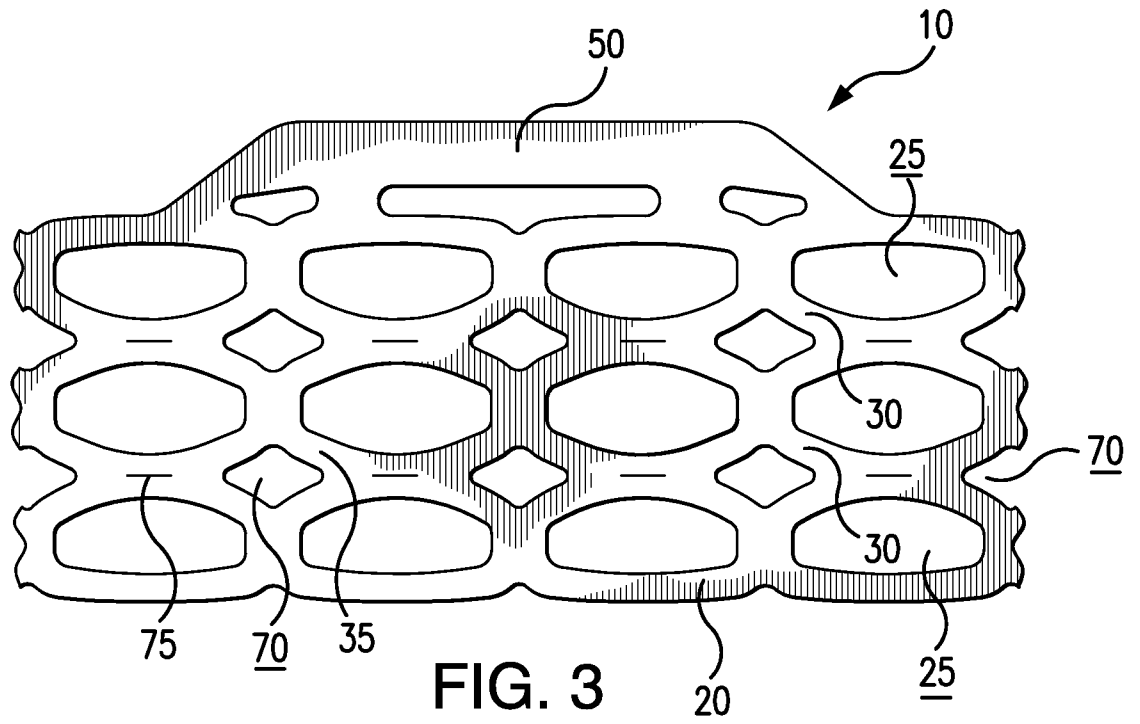
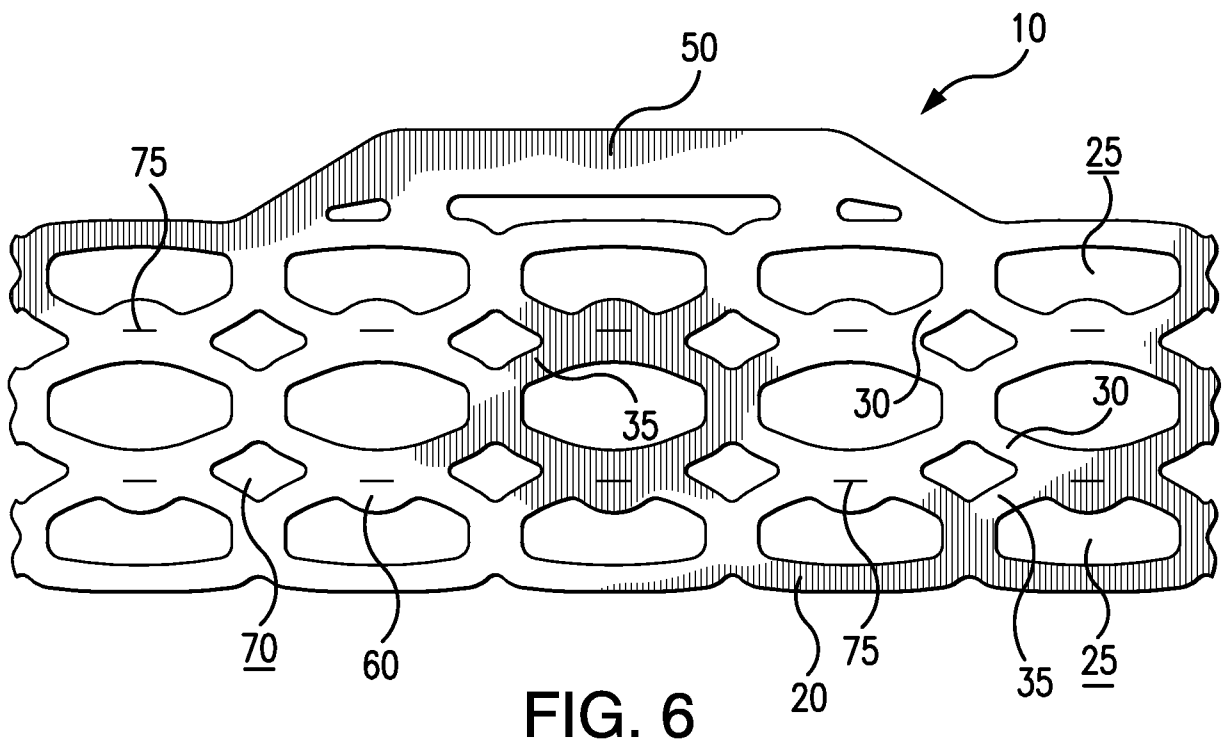
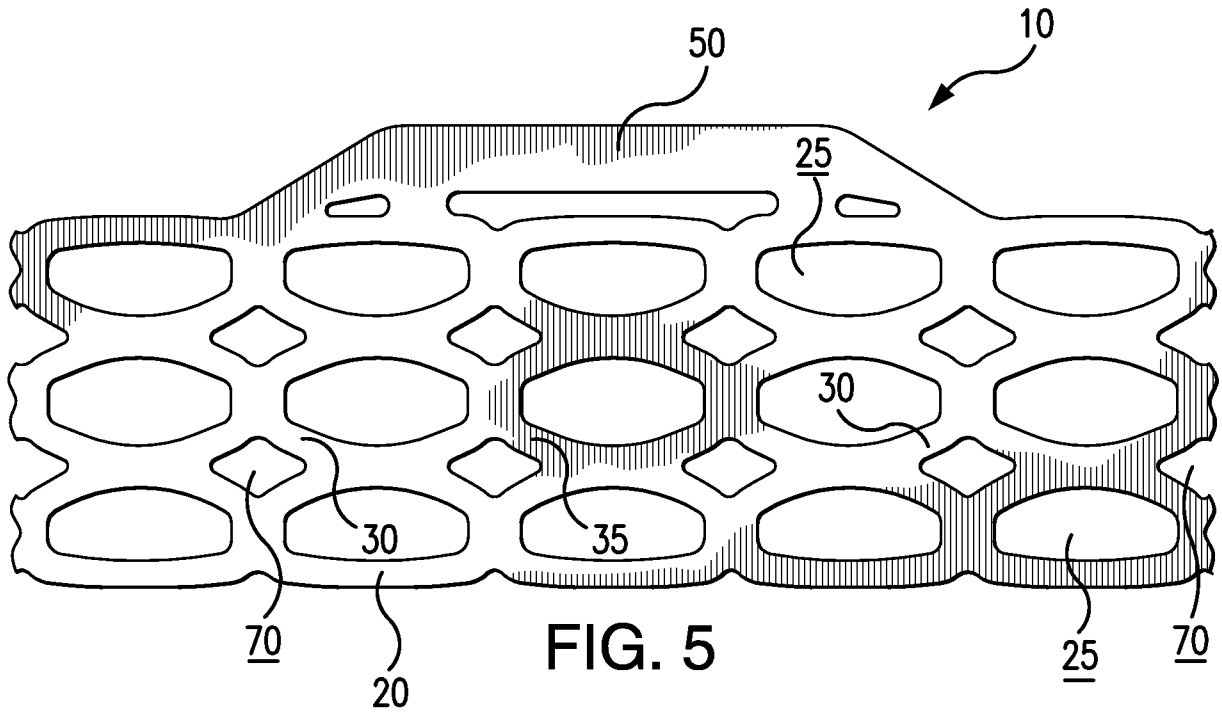


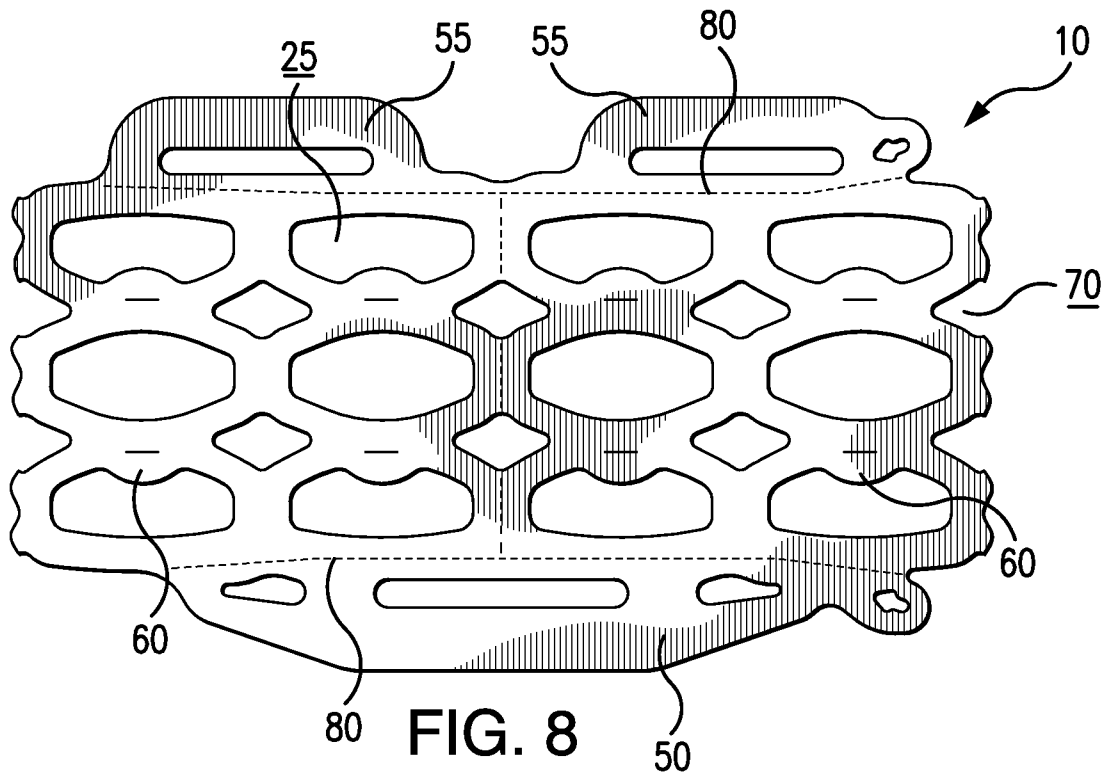
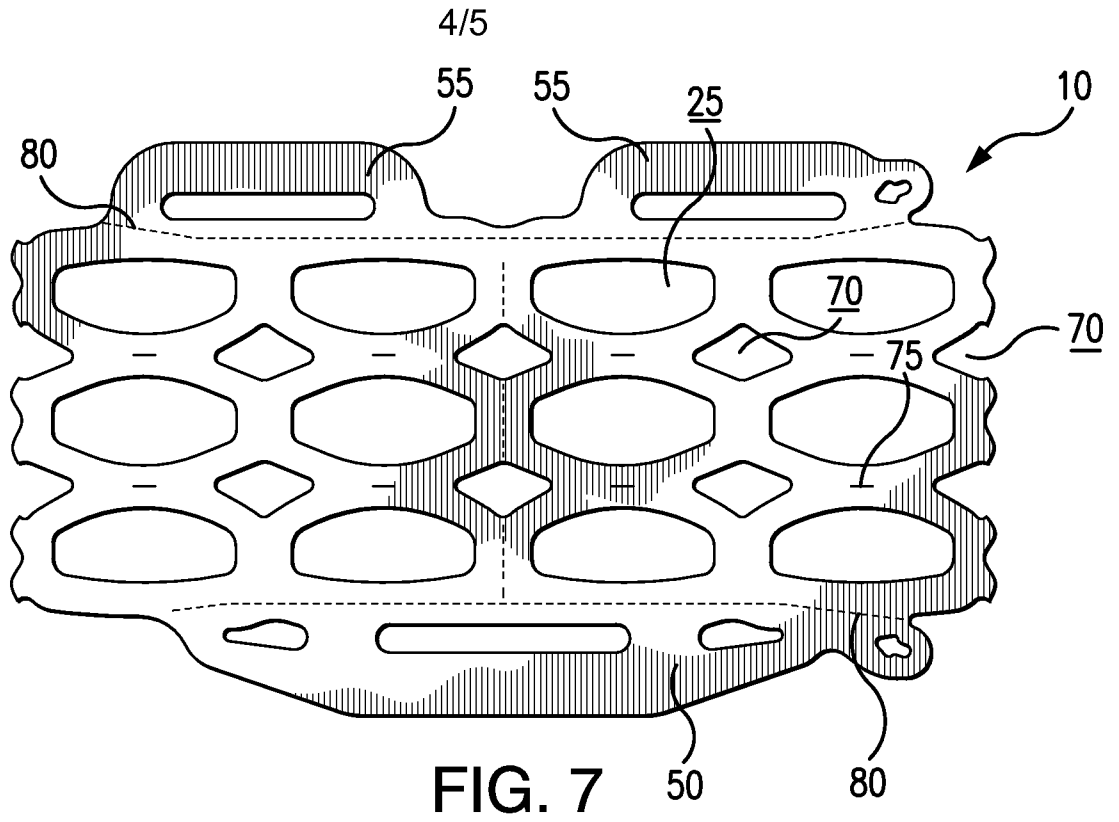
FIG. 2

2/5



3/5





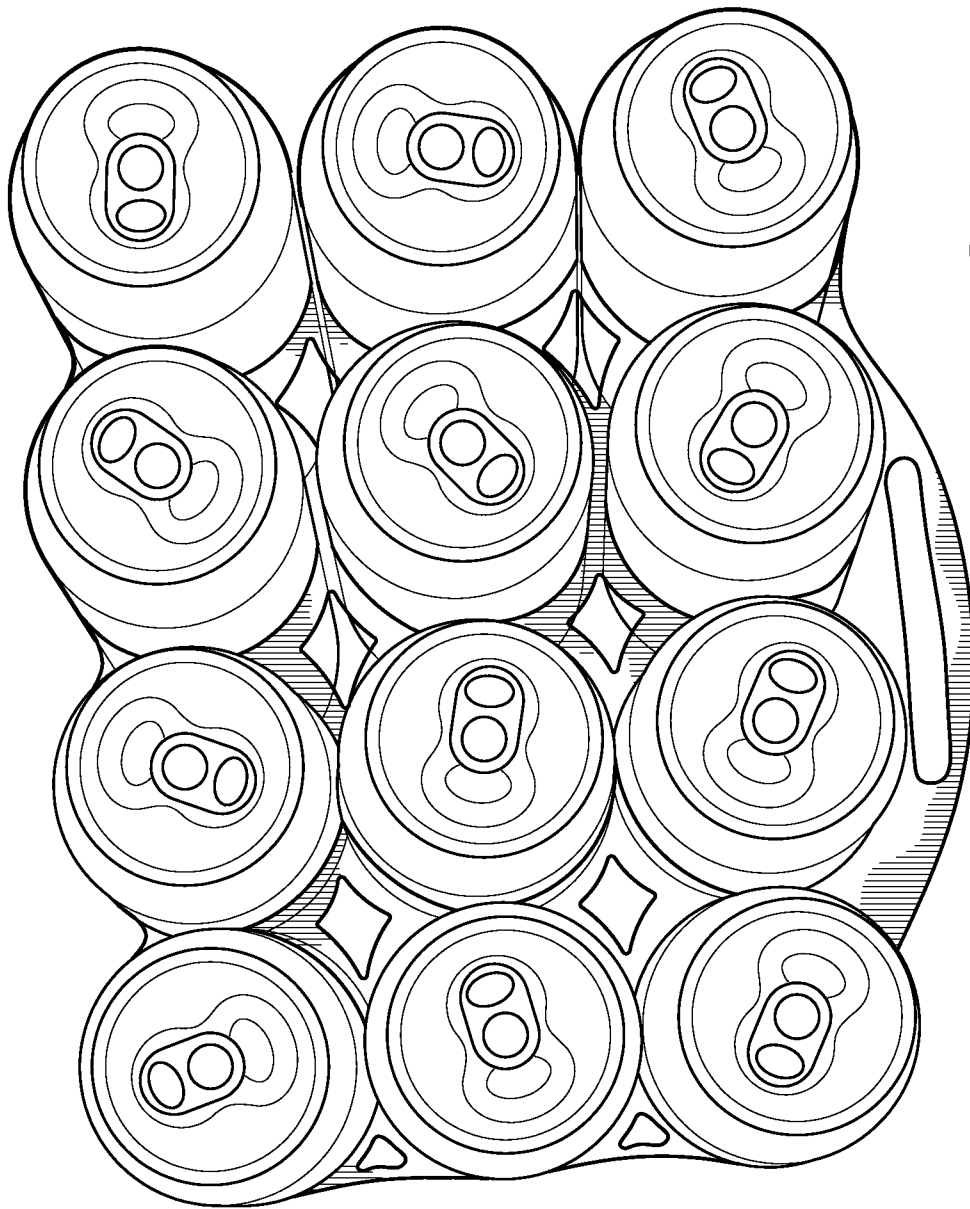


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2015/012406

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D71/50
ADD.

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)
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 practicable, 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.
X	EP 0 318 619 A1 (ILLINOIS TOOL WORKS [US]) 7 June 1989 (1989-06-07) page 3, line 17 - line 31 page 5, line 9 - line 39; figure 3 -----	1-3,7,8, 10,11,20
X	EP 0 507 479 A1 (ILLINOIS TOOL WORKS [US]) 7 October 1992 (1992-10-07) column 3, line 44 - column 4, line 43; figures 1,3 -----	1-3,7,8, 10,11,20
X	EP 0 456 359 A2 (ILLINOIS TOOL WORKS [US]) 13 November 1991 (1991-11-13) column 3, line 33 - line 40 column 5, line 11 - line 22 column 7, line 34 - line 48; figure 2 -----	1-3,7,8, 10,11,20

Further documents are listed in the continuation of Box C.

See patent family 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 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 15 April 2015	Date of mailing of the international search report 30/06/2015
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Vesterholm, Mika
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/012406

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-3, 7, 8, 10, 11, 20

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3, 7, 8, 10, 11, 20

How to provide a tight unitization of containers

2. claims: 4, 5

How to prevent inversion of the web

3. claims: 6, 12-19

How to enable the carrier to open up

4. claim: 9

How to assist forming of a v-shape

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2015/012406

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