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Carton with vent openings, blank and folding method

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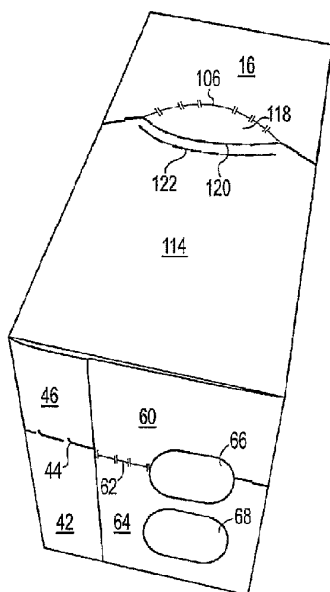
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(54) Title: CARTON WITH VENT OPENINGS, BLANK AND FOLDING METHOD



(57) Abstract: A blank (10) and/or carton that provide (s) at least one aperture (66, 68, 70, 72) in at least one end flap (64, 74) to allow exchange of air between an inside of a carton formed from the blank and the outside of the formed carton is provided. The blank and/or carton can include more than one aperture in an end flap, in adjacent end flaps, in end flaps at both ends of the blank or carton, in end flaps at either the exiting end of the carton, the non-exiting end, or both. A method of exchanging air is also described.

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CARTON WITH VENT OPENINGS, BLANK AND FOLDING METHOD

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RELATED APPLICATION

This application claims the benefit of U.S. Provisional Application No. 60/797,508, filed May 4, 2006, entitled "Carton With Vent Openings," the entire disclosure of which is incorporated herein by reference.

FIELD OF THE INVENTION

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The present invention generally relates to a carrier or carton with features, such as ventilation apertures or openings.

BACKGROUND

The discussion of documents, acts, materials, devices, articles and the like is included in this specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all of these matters formed part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed before the priority date of each claim of this application.

Cartons, such as paperboard cartons used to hold, carry or dispense articles are well known. These cartons usually are formed or assembled by folding a paperboard carton blank that has been cut, perforated, and creased in selective areas to achieve desired features and characteristics. These features include tear lines, handles, opening features, dispensers and other attributes. Such opening features can be formed, for example, in the top panel, side panel(s), or other panel, or, alternatively, in an end or ends of the carton.

When fabricating a carrier or carton from the paperboard carton blank, opposite ends of the blank typically are attached to each other by glue or other adhesive, e.g. to form the bottom panel of the carrier. End flaps are included on sides of some or all panels and are

folded inwardly to close the ends of the carton and enclose articles, such as beverage containers, therewithin. These end flaps can contain opening or dispensing features or can include handles for carrying the carton.

SUMMARY

- 5 The present invention generally relates to a carton with ventilation features formed in a panel or end wall. These ventilation openings can be an opening or openings formed in, for example, one end of an enclosed carton, in both ends of an enclosed carton, overlapping from the end into a panel, overlapping through two or more adjacent panels, or be in only one panel. The vent openings can include a single opening formed in any end panel or
- 10 panels, or multiple openings formed in any end or panels, or a combination of these. The vent openings, in general, provide apertures or openings that allow exchange of air between the interior and exterior of the carton to allow for the products within the carton to be "chilled," "quick chilled," "heated," or, in general, to maintain and encourage a temperature exchange as opposed to a fully enclosed carton without the inclusion of such apertures.
- 15 Such apertures can provide temperature exchange of an accelerated nature.

- Accordingly, in a first aspect the present invention provides a carton formed from a blank, the carton comprising: a top panel, a bottom panel, a first side panel, and a second side panel; a first transverse fold line at a first peripheral edge at a first end of the top panel, the first side panel, the second side panel, and the bottom panel; a first panel end flap
- 20 attached to the first peripheral edge of the first side panel; a second panel end flap attached to the first peripheral edge of the second side panel; a tear line extending across said first panel end flap, the first panel, the top panel, the second panel, and the second panel end flap; the tear line separating the first panel end flap into a first portion and a second portion; a first aperture formed in said first panel end flap; wherein the first aperture separates said
- 25 tear line into two segments in said first panel end flap and the first aperture extends away from the tear line into the first portion and away from the tear line into the second portion; a

second transverse fold line at a second peripheral edge of the first panel, the second side panel, the top panel, and the bottom panel, the second peripheral edge disposed at a second end of the blank opposite the first peripheral edge; a third panel end flap at the second peripheral edge of the first panel; a second aperture formed in the third panel end flap; the
5 tear line does not extend into the third panel end flap; and wherein the first aperture exposes the containers in the carton to ventilation to allow exchange of air between outside the carton and inside the carton.

These vent apertures or openings can be any shape, such as oval, elliptical, circular, square, triangular, rectangular, quadrilateral, having arced portions, in star formation(s), or
10 any design, trademarked or otherwise, any writing, trademarked or otherwise, or any other shape or design. For example, the carton according to one embodiment of the invention, could enclose circular containers that house a yogurt product with the name of the manufacturer, for example, Dannon®, embossed or cut through the end flap that forms a part of an exiting end. The openings forming all or parts of the word Dannon® could be
15 formed in either end, any end flap, or any panel. As another example, if the carton according to one embodiment of the invention was shaped in size to hold circular cans with a beverage contained therewithin, Coca Cola® could be embossed or cut through one of the end panel flaps. When the aperture of any size, or the design or lettering, such as for identifying the product manufacturer is included as an aperture in a panel or end flap,
20 generally the opening can be formed along, between, and/or substantially adjacent the tear line that is used to form an opening in the container. The opening or aperture or letters opening can be in a side panel end flap to separate the tear line into a discontinuous or non-continuous tear line that is spaced apart by the aperture, hole, or opening. Oval or elliptical apertures according to one embodiment of the invention are shown in the figures in first
25 side panel end flaps at the exiting end, with one aperture shown along the tear line. The tear line extends from the first side panel end flap into and across the first side panel, into and

across the top panel, into and across a second side panel, and continues into the second side panel's end flap. The tear line is shown as continuing on the other side of the aperture to a peripheral area of the first side panel end flap.

In a second aspect the present invention provides a blank comprising: a first panel
5 connected to a second panel along a first fold line; the second panel connected to a third panel along a second fold line; the third panel connected to a fourth panel along a third fold line; a first transverse fold line at a first peripheral edge of the first panel, the second panel, the third panel, and the fourth panel; a first panel end flap at the first peripheral edge of the first panel; a second panel end flap at the first peripheral edge of the second panel; a third
10 panel end flap at the first peripheral edge of the third panel; a tear line extending across the first panel end flap, the first panel, the first fold line, the second panel, the second fold line, the third panel, and the third panel end flap; the tear line separating the first panel end flap into a first portion and a second portion; a first aperture formed in the first panel end flap; wherein said tear line into two segments in said first panel end flap and the first aperture
15 extends away from the tear line into the first portion and away from the tear line into the second portion; a second transverse fold line at a second peripheral edge of the first panel, the second panel, the third panel, and the fourth panel, the second peripheral edge disposed at a second end of the blank opposite the first peripheral edge; a fourth panel end flap at the second peripheral edge of the first panel; a second aperture formed in the fourth panel end
20 flap; and the tear line does not extend into the fourth panel end flap.

In a third aspect the present invention provides a method of forming a blank into a carton, wherein the blank comprises a first panel connected to a top panel by a first fold line; the top panel connected to a second panel by a second fold line; the second panel connected to a bottom panel by a third fold line; a first transverse fold line at a first
25 peripheral edge of the first panel, the top panel, the second panel, and the bottom panel; a first panel end flap at the first peripheral edge of the first panel; a second panel end flap at

the first peripheral edge of the second panel; a tear line extending across said first panel end flap, the first panel, the top panel, the second panel, and the second panel end flap; the tear line separating the first panel end flap into a first portion and a second portion; and a first aperture formed in the first panel end flap, wherein the first aperture separates said tear line

5 into two segments in said first panel end flap and the first aperture extends away from the tear line into the first portion and away from the tear line into the second portion; a second transverse fold line at a second peripheral edge of the first panel, the second panel, the top panel, and the bottom panel, the second peripheral edge disposed at a second end of the blank opposite the first peripheral edge; a third panel end flap at the second peripheral edge

10 of the first panel; a second aperture formed in the third panel end flap; the tear line does not extend into the third panel end flap; and wherein the first aperture exposes the containers in the carton to ventilation to allow exchange of air between outside the carton and inside the carton, the method comprising folding the blank to form the carton; filling the carton with containers; and closing the first panel end flap and the second panel end flap to at least

15 partially enclose the containers in the carton, wherein the first aperture exposes the containers in the carton to ventilation to allow exchange of air between outside the carton and inside the carton.

The invention according to the first, second or third aspect can be combined with other carton features, such as opening features formed to dispense articles from the carton.

20 The opening according to one embodiment of the invention as shown in the figures generally is formed in a top portion of the carton and can include a section of each side panel and a portion of an exiting end. The opening generally is formed by separating the tear line to form a remainder carton portion and detachable or hinged dispensing flap portion. The side panel end flap portions that remain after the opening is created can

25 provide a retention feature for the enclosed carton to retain articles therein prior to dispensing.

To dispense from the formed carton, the dispensing flap is separated along a tear line to form an opening, typically through the initial use of a finger flap, shown here in the figures in the top panel. The opening is created along the tear line in the top panel, the side panels, and in portions of the side panel end flaps. The top panel end flap generally is removed in its entirety when the opening is created by separation at the tear line. The bottom panel end flaps and the remainder portions of the side panel end flaps, which were not removed by creating of the opening, can remain to form parts or entireties of retention features that retain articles in the carton prior to intended dispensing.

The present invention can be used, for example, in dispensing articles, which contain products such as food and beverages. These articles can include beverage containers such as cans, bottles, and PET containers, as well as other containers being cylindrical, rectangular, parallelepiped, or of any other shape, such as those used in packaging food stuffs.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a blank from which a carton can be formed in accordance with one embodiment.

FIG. 2 shows the blank of FIG. 1 formed into a sleeve.

FIG. 3 shows the opposite view of the sleeve of FIG. 2 and the apertures in the end flaps.

FIG. 4 shows an exiting end with the gusset flaps being closed.

FIG. 5 shows a perspective view of the closed exiting end of the carton.

FIG. 6 shows a front view of the carton of FIG. 5 with vent apertures in the exiting end and in the non-exiting end.

FIG. 7 shows the finger flap being activated in the top panel.

FIG. 8 shows the removable portion being detached along the tear line.

FIG. 9 shows the removable portion remaining hingedly attached to the carton.

FIG. 10 shows the removable portion entirely removed from the carton.

FIG. 11 shows an alternate embodiment of a blank that can be formed into a carton.

DETATLED DESCRIPTION

5 Throughout the description and claims of this specification, the word "comprise" and variations of the word, such as "comprising" and "comprises", is not intended to exclude other additives, components, integers or steps.

For a more complete understanding, reference should be made to the following detailed description and accompanying drawings, wherein like reference numerals designate
10 corresponding parts throughout the figures.

Among other things, a carton blank, such as a paperboard blank, which is cut to a specific shape, and creased, scored, cut, or perforated in specific areas is shown. The carton blank defines elongate panels between the creases or fold lines, and includes flaps at the respective ends of the panels. The carton blank is folded to form a sleeve when fully
15 assembled, so that when the end flaps are closed, the assembled carton has a front or forward end, a rearward end, and a top wall, a bottom wall, front and rear walls, and first and second side walls.

For purposes of illustration, a paperboard carton sized and dimensioned to contain foodstuffs in cylindrical containers is disclosed. The carton of the embodiment illustrated in
20 FIGS. 1-10 is sized to hold 15 articles in either a staggered or a nonstaggered configuration, although the blanks and cartons shown should not be limited to any specific size or dimension. For example, blanks and cartons sized and shaped to hold articles of other configurations, such as that shown in FIG. 11 which is sized to hold 24 articles, or other sizes such as those that could hold other numbers of articles, such as 6, 8, 10, 21, 30, or
25 more, would work satisfactorily. Blanks and

cartons that include various unique features, including opening features that provide easy access to the articles, tilt features that position the articles at the front end of the carton, handle features, etc. are also within the present scope

Also for purposes of illustration, the blanks and cartons are shown with an opening(s) that can be formed by non-oblique lines, i.e. lines that are shown as perpendicular to some panels and parallel to other panels, and oblique lines. However, the blanks and cartons should not be limited to any specific size, dimension, orientation of the opening features, or opening formed by the opening feature. For example, blanks and cartons with an opening feature(s) formed with non-oblique and/or oblique lines that extend through opposing panels, such as from a top panel, through side panels, and that extend to the end panel would work satisfactorily. In addition, for purposes of illustration, the blanks and cartons shown herein include an end wall configuration that provides an effective barrier to keep the bottles, cans, or articles from rolling out of the formed carton.

As shown in FIGS. 2-10, the carton formed from the blank of FIG. 1 includes an opening feature at an exiting end and shows four elliptical apertures, two formed in each of two opposite side panel end flaps. However, one of ordinary skill in the art will understand that the blanks and cartons should not be limited in any manner to the use of only one opening feature or the number of apertures shown in the side panel end flaps. Additionally, the blanks and cartons should not be limited in any manner to the orientation or placement of the aperture or apertures in the side panel end flaps, as such could be in any side panel, top panel, bottom panel, end flap, or in any combination of these. One of ordinary skill in the art will also understand that the

carton can be of various sizes depending upon the number, configuration, and size of containers or product to be stored, enclosed, or dispensed therewithin.

FIG. 1 illustrates a blank that can be formed into a carton. The blank generally is formed into a carton by folding along crease or fold lines to form a carton sleeve with a bottom flap overlapping and adhering to another bottom flap, with a top flap overlapping and adhering to another top flap, or with an adhesive flap overlapping and adhering to a bottom panel, top panel, or side panel. The carton blank shown in FIG. 1 can be folded in this manner to form the carton shown in FIGS. 2-10. A securing means, such as an adhesive or compound generally is applied to secure the flaps together to form a sleeve. Once the carton is formed into the sleeve, articles, such as bottles, cans, or the like can be placed into the sleeve and the end flaps on both ends can be closed. The end flaps typically are also held together by glue or other means at the non-exiting end and the end flaps at the exiting end are secured to the top panel end flap with the side panel end flaps only at portions above the tear line. The side panel end flaps at the dispensing end also can be attached to the bottom panel end flap.

FIG. 1 shows a blank 10 that includes a first side panel 12 connected to a top panel 16 by a fold line 14. Top panel 16 is connected to a second side panel 20 by a fold line 18. Second side panel 20 is connected to a bottom panel 24 by a fold line 22. Bottom panel 24 is connected to a securing flap 28 by a fold line 26. In one possible scenario, generally, the securing flap 28 will receive glue and be folded upwardly to be connected to the first side panel 12 or will receive glue on an underside portion and overlap onto first side panel 12. In this manner, either the securing flap 28 or the first

side panel 12 can receive the initial glue for securing the securing flap to the first side panel 12.

Along peripheral portions of the panels 12, 16, 20, 24 and separated along transverse fold lines 21 and 71, end flaps are generally disposed. Specifically, bottom panel 24 is connected to bottom panel end flaps 30 and 34 along fold line 21, second side panel 20 is connected to second side panel end flaps 42 and 46 along fold line 21, top panel end flap 54 is connected to top panel 16 along fold line 21, and first side panel end flaps 60 and 64 are connected to first side panel 12 along fold line 21. On the opposite side of the blank 10, first side panel end flap 74 is connected to first side panel 12 along fold line 71, top panel end flaps 76 and 80 are connected to top panel 16 along fold line 71, second side panel end flap 88 is connected to second side panel 20 along fold line 71, and bottom panel end flaps 96 and 98 are connected to bottom panel 24 along fold line 71.

Bottom panel end flaps 30 and 34 are connected along a fold line 32. Bottom panel end flap 34 is connected to gusset panel 38 by fold line 36 and gusset panel 38 is connected to second side panel end flap 42 along fold line 40. Second side panel end flap 46 is connected to gusset panel 50 along fold line 48. Gusset panel 50 is connected to top panel end flap 54 along a fold line 52. Top panel end flap 54 is connected to top panel end flap 58 along a fold line 56. First side panel end flap 60 is connected to first side panel end flap 64 along a tear line 62. Top panel end flap 76 is connected to top panel end flap 80 along a fold line 78. Top panel end flap 80 is connected to gusset panel 84 along a fold line 82. Gusset panel 84 is connected to second side panel end flap 88 along a fold line 86. Second side panel end flap 88 is

connected to gusset panel 92 along a fold line 90. Gusset panel 92 is connected to bottom panel 96 along a fold line 94. Bottom panel end flap 96 is connected to bottom panel end flap 98 along a fold line 97.

Gusset panels 38, 50, 84, and 92 are generally engaged during the construction process and, along with the respective fold lines, enable inward folding of the respective end flaps to create closed ends, which generally occurs once product has been inserted into the sleeve formed from the blank 10. To this end, apertures 35, 55, 85, and 95 are formed in the gusset panels between respective fold lines to enable folding of the gusset panels to be easier. Specifically, aperture 35 is created between bottom panel 24, bottom panel end flap 34, gusset panel 38, second side panel end flap 42, and second side panel 20. Aperture 55 is created between top panel 16, top panel end flap 54, gusset panel 50, second side panel end flap 46, and second side panel 20. Aperture 85 is created between top panel 16, top panel end flap 80, gusset panel 84, second side panel end flap 88, and second side panel 20. Aperture 95 is created between second side panel 20, second side panel end flap 88, gusset panel 92, bottom panel end flap 96, and bottom panel 24. Alternatively, the gusset panels 38, 50, 84, 92, and/or associated apertures 35, 55, 85, 95 may be omitted.

A dispensing flap 100 can be created in portions of the blank and is shown being generally comprised of a continuous, or a series of substantially continuous, or a series of substantially aligned tear lines, perforations, cut lines, score lines, cut score lines, or any other type of tear line that will enable formation of an aperture in a fully constructed sleeve or carton. Generally, the dispenser flap 100 can be detached at or along such tear lines to create an opening, can act as a reclosable flap to be detached

partially from and remain hingedly attached to the enclosed carton, or can be removed entirely from a remainder portion of the carton. As shown in FIG. 1, dispensing flap 100 includes a tear line 44 between second side panel end flap 42 and second side panel end flap 46. The tear line at least partially defining dispensing flap 100

5 continues from tear line 44 across fold line 21 into second side panel 20 as tear line 102 and proceeds to a turn in second side panel 20 to continue as tear line 104 to and across fold line 18. As shown in FIG. 1, the turn from tear line 102 to tear line 104 is shown in a general 90-degree orientation, but such tear lines and orientations should not be limited to such configuration. The tear line defining the dispensing flap 100

10 continues as tear line 106 in top panel 16, which is shown with an arcuate configuration that bulges in a convex manner in a direction or manner toward fold line 71 in top panel 16. Tear line 106 continues across top panel 16 to and across fold line 14 to continue along as tear line 108. The tear line defining the dispensing flap 100 then turns, in a like manner and shown in a like configuration, though not limited

15 thereto, as tear line 110 in first side panel 12 to and across fold line 21 and into first side panel end flaps to "separate" first side panel end flap 60 from first side panel end flap 64 as tear line 62 that extends to a peripheral portion of the first side panel end flaps. Generally, the tear line 62 is separated by or at aperture 66 formed in portions of first side panel end flaps 60 and 64.

20 Dispensing flap 100 can include portions or panels or subpanels within or along the blank as defined by tear lines 44, 102, 104, 106, 108, 110, and 62. Specifically, subpanel 112 is formed as part of second side panel 20, subpanel 114 is formed as part of top panel 16, and second subpanel 116 is formed as part of first side

panel 12, second side panel end flap 46 is formed adjacent second side panel end flap 42 and first side panel end flap 60 is formed adjacent first side end panel 64.

The dispensing flap 100 can be separated along the tear lines in any known manner, but detachment typically initially starts at finger flap 118, which is shown
5 being formed adjacent, and with a peripheral portion thereof by, tear line 106, and being bounded at an opposite portion by fold lines 120 and 122. Generally, fold lines 120 and 122 are shown as substantially concentric arcs formed in blank 10 and ease initiation of the finger flap 118 once tear line 106 is separated in top panel 16 to initiate removal or separation of dispensing flap 100 from the carton.

10 The blank 10 also includes apertures 66, 68, 70, 72, in first side panel end flaps 60, 64, and 74. These apertures, 66, 68, 70, and 72 are shown in elliptical configurations, but should not be limited in any manner to the size, number, orientation, or position of such apertures. Generally, aperture 66 is shown as separating portions of the tear line 62 from one another, portions of first side panel
15 end flap 60, and portions of the first side panel end flap 64. Apertures 66 and 68 are shown in a generally parallel orientation. Apertures 70 and 72 are also shown in a generally parallel orientation and are formed in portions of first side panel end flap 74. In addition, blank 10 is shown with apertures 66 and 72 parallel to apertures 68 and 70 in reference to fold line 14.

20 In order to create the opening with the dispensing flap 100, generally, a user will insert a finger or other object into the finger flap 118 or other opening starting feature. Alternative configurations of access opening and access opening starting features are contemplated and included herein.

FIG. 2 shows blank 10 of FIG. 1 being formed into a carton or sleeve. Second side panel 20 with corresponding side panel end flaps 42 and 88 are shown in FIG. 2. FIG. 3 shows the other side of the formed carton or sleeve of FIG. 2 with the apertures 66 and 68 in side panel end flaps 60 and 64 and with apertures 70 and 72 in side panel end flap 74.

FIG. 4 shows the exiting end being formed by closing the side panel end flaps. As shown in FIG. 4, side panel end flaps 42 and 46 are closed inwardly with gusset panel 50 and top panel end flap 54 folding about fold line 52 with the cooperation of aperture 55, and gusset panel 38 and bottom panel end flap 34 folding about fold line 36 with the cooperation of aperture 35. These flaps and panels are folded inwardly until gusset panel 50 and top panel end flap 54, and gusset panel 38 bottom panel end flap 34 are adjacent. Generally, during manufacture or prior to folding blank 10, glue or another adhesive will be placed onto gusset panel 50 or top panel end flap 54 and onto gusset panel 38 or bottom panel end flap 34 to secure such together at closing of the exiting end. Top panel end flap 58 and bottom panel end flap 30 are folded toward one another before closing the exiting end. Sections of the end flaps can be adhered to respective other sections of the other end flaps to create retention features to retain the containers within an enclosed carton until dispensing is desired.

FIG. 5 shows the enclosed carton with all flaps and panels on the exiting end closed. Following the progression of end flap closing from FIG. 4, first side panel end flaps 60 and 64 are closed over second side panel end flaps 42 and 46, top panel end flaps 54 and 58, and bottom panel end flaps 30 and 34 to enclose fully the exiting end of the carton. The end flaps of the non-exiting end are closed in substantially the

same manner as the end flaps of the exiting end, with gusset panels 84 and 92 and top end flaps 76 and 80 and bottom panel end flaps 96 and 98 being closable through interaction with the gussets. The non-exiting end can also include vent apertures 70 and 72 in end flap 74 to provide openings to exchange air from the interior of the carton to the exterior of the carton in a manner that is substantially similar to that provided by apertures 66 and 68 at the exiting end. Optionally, the non-exiting end could be modified to be a second exiting end with a second opening area formed by a second dispensing flap, similar or dissimilar to the one formed in the non-exiting end. Such second exiting end could function in a manner similar to the exiting end as detailed hereinabove.

FIG. 6 shows a front view of the carton of FIG. 5 at the exiting end looking through apertures 66 and 68 through the carton and through apertures 70 and 72 of the non-exiting end. FIG. 7 shows the finger flap 118 being activated in the top panel 16. The finger flap 118 is shown bounded by tear line 106 and fold lines 120 and 122. FIG. 8 shows the removable portion being detached along the tear lines in the top panel 16 and first and second side panels 12 and 20.

FIG. 9 shows the dispensing flap 100 remaining hingedly attached to the carton at the exiting end. The dispensing flap could be hinged to reclose the dispensing flap to cover or reclose the carton. Alternatively, the dispensing flap 100 can be entirely removed from the remainder portion of the carton as shown in FIG. 10 by detachment along tear line 62 in first side panel end flaps 60 and 64 and along tear line 44 in second side panel end flaps 42 and 46.

FIG. 11 shows an alternate blank embodiment that can be formed into a carton.

The blank generally is formed into a carton by folding along crease or fold lines to form a carton sleeve with a bottom flap overlapping and adhering to another bottom flap, with a top flap overlapping and adhering to another top flap, or with an adhesive
5 flap overlapping and adhering to a bottom panel, top panel, or side panel. A securing means, such as an adhesive or compound generally is applied to secure the flaps together to form a sleeve. Once the carton is formed into the sleeve, articles, such as bottles, cans, or the like can be placed into the sleeve and the end flaps on both ends can be closed. The end flaps typically are also held together by glue or other means at
10 the non-exiting end and the end flaps at the exiting end are secured to the top panel end flap with the side panel end flaps only at portions above the tear line. The side panel end flaps at the dispensing end also can be attached to the bottom panel end flap.

FIG. 11 shows a blank 210 that includes a first side panel 212 connected to a
15 top panel 216 by a fold line 214. Top panel 216 is connected to a second side panel 220 by a fold line 218. Second side panel 220 is connected to a bottom panel 224 by a fold line 222. Bottom panel 224 is connected to a securing flap 228 by a fold line 226. In one possible scenario, generally, the securing flap 228 will receive glue and be folded upwardly to be connected to the first side panel 212 or will receive glue on
20 an underside portion and overlap onto first side panel 212. In this manner, either the securing flap 228 or the first side panel 212 can receive the initial glue for securing the securing flap to the first side panel 212.

Along peripheral portions of the panels 212, 216, 220, 224 and separated along transverse fold lines 221 and 271, end flaps are generally disposed. Specifically, bottom panel 224 is connected to bottom panel end flaps 230 and 234 along fold line 221, second side panel 220 is connected to second side panel end flaps 242 and 246 along fold line 221, top panel end flap 254 is connected to top panel 216 along fold line 221, and first side panel end flaps 260 and 264 are connected to first side panel 212 along fold line 221. On the opposite side of the blank 210, first side panel end flap 274 is connected to first side panel 212 along fold line 271, top panel end flaps 276 and 280 are connected to top panel 216 along fold line 271, second side panel end flap 288 is connected to second side panel 220 along fold line 271, and bottom panel end flaps 296 and 298 are connected to bottom panel 224 along fold line 271.

Bottom panel end flaps 230 and 234 are connected along a fold line 232. Bottom panel end flap 234 is connected to gusset panel 238 by fold line 236 and gusset panel 238 is connected to second side panel end flap 242 along fold line 240. Second side panel end flap 246 is connected to gusset panel 250 along fold line 248. Gusset panel 250 is connected to top panel end flap 254 along a fold line 252. Top panel end flap 254 is connected to top panel end flap 258 along a fold line 256. First side panel end flap 260 is connected to first side panel end flap 264 along a tear line 262. Top panel end flap 276 is connected to top panel end flap 280 along a fold line 278. Top panel end flap 280 is connected to gusset panel 284 along a fold line 282. Gusset panel 284 is connected to second side panel end flap 288 along a fold line 286. Second side panel end flap 288 is connected to gusset panel 292 along a fold line 290.

Gusset panel 292 is connected to bottom panel 296 along a fold line 294. Bottom panel end flap 296 is connected to bottom panel end flap 298 along a fold line 297.

Gusset panels 238, 250, 284, and 292 are generally engaged during the construction process and, along with the respective fold lines, enable inward folding of the respective end flaps to create closed ends, which generally occurs once product has been inserted into the sleeve formed from the blank 210. To this end, apertures 235, 255, 285, and 295 are formed in the gusset panels between respective fold lines to enable folding of the gusset panels to be easier. Specifically, aperture 235 is created between bottom panel 224, bottom panel end flap 234, gusset panel 238, second side panel end flap 242, and second side panel 220. Aperture 255 is created between top panel 216, top panel end flap 254, gusset panel 250, second side panel end flap 246, and second side panel 220. Aperture 285 is created between top panel 216, top panel end flap 280, gusset panel 284, second side panel end flap 288, and second side panel 220. Aperture 295 is created between second side panel 220, second side panel end flap 288, gusset panel 292, bottom panel end flap 296, and bottom panel 224. Alternatively, the gusset panels 238, 250, 284, 292 and/or associated apertures 235, 255, 285, 295 may be omitted.

A dispensing flap 300 can be created in portions of the blank and is shown being generally comprised of a continuous, or a series of substantially continuous, or a series of substantially aligned tear lines, perforations, cut lines, score lines, cut score lines, or any other type of tear line that will enable formation of an aperture in a fully constructed sleeve or carton. Generally, the dispenser flap 300 can be detached at or along such tear lines to create an opening, can act as a reclosable flap to be detached

partially from and remain hingedly attached to the enclosed carton, or can be removed entirely from a remainder portion of the carton. Dispensing flap 300 includes a tear line 244 between second side panel end flap 242 and second side panel end flap 246. The tear line at least partially defining dispensing flap 300 continues from tear line 5 244 across fold line 221 into second side panel 220 as tear line 302 and proceeds to a turn in second side panel 220 to continue as tear line 304 to and across fold line 218. The turn from tear line 302 to tear line 304 is shown in a general 90-degree orientation, but such tear lines and orientations should not be limited to such configuration. The tear line defining the dispensing flap 300 continues as tear line 10 306 in top panel 216, which is shown with an arcuate configuration that bulges in a convex manner in a direction or manner toward fold line 271 in top panel 216. Tear line 306 continues across top panel 216 to and across fold line 214 to continue along as tear line 308. The tear line defining the dispensing flap 300 then turns, in a like manner and shown in a like configuration, though not limited thereto, as tear line 310 15 in first side panel 212 to and across fold line 221 and into first side panel end flaps to "separate" first side panel end flap 260 from first side panel end flap 264 as tear line 262 that extends to a peripheral portion of the first side panel end flaps. Generally, the tear line 262 is separated by or at aperture 266 formed in portions of first side panel end flaps 260 and 264.

20 Dispensing flap 300 can include portions or panels or subpanels within or along the blank as defined by tear lines 244, 302, 304, 306, 308, 310, and 262. Specifically, subpanel 312 is formed as part of second side panel 220, subpanel 314 is formed as part of top panel 216, and second subpanel 316 is formed as part of first

side panel 212, second side panel end flap 246 is formed adjacent second side panel end flap 242 and first side panel end flap 260 is formed adjacent first side end panel 264.

The dispensing flap 300 can be separated along the tear lines in any known manner, but detachment typically initially starts at finger flap 318, which is shown being formed adjacent, and with a peripheral portion thereof by, tear line 306, and being bounded at an opposite portion by fold lines 320 and 322. Generally, fold lines 320 and 322 are shown as substantially concentric arcs formed in blank 210 and ease initiation of the finger flap 318 once tear line 306 is separated in top panel 216 to initiate removal or separation of dispensing flap 300 from the carton.

The blank 210 also includes apertures 266, 268, 270, and 272 in first side panel end flaps 260, 264, and 274. These apertures 266, 268, 270, and 272 are shown in elliptical configurations, but should not be limited in any manner to the size, number, orientation, or position of such apertures. Generally, aperture 266 is shown as separating portions of tear line 262, portions of first side panel end flap 260, and portions of the first side panel end flap 264. Apertures 266 and 268 are shown in a generally parallel orientation. Apertures 270 and 272 are also shown in a generally parallel orientation and are formed in portions of first side panel end flap 274. In addition, blank 210 is shown with apertures 266 and 272 parallel to apertures 268 and 270 in reference to fold line 214.

In order to create the opening with the dispensing flap 300, generally, a user will insert a finger or other object into the finger flap 118 or other opening starting

feature. Alternative configurations of access opening and access opening starting features are contemplated and included herein.

According to common practice, the various features of the drawings discussed herein are not necessarily drawn to scale. Dimensions of various features and
5 elements in the drawings may be expanded or reduced. The dimensions provided on FIGS. 1 and 11 are exemplary dimensions that may be altered, for example, to accommodate various container forms or types, diverse container types or sizes, diverse container types or sizes enclosed within a single carton (e.g. large and small, short and tall, containers in a single enclosed carton).

10 The present blanks or cartons can be formed, for example, from coated paperboard and similar materials. For example, the interior and/or exterior sides of the blanks or cartons can be coated with a clay coating. The clay coating may then be printed over with product, advertising, price coding, and other information or images. The blanks or cartons may then be coated with a varnish to protect any information
15 printed on the blanks or cartons. The blanks or cartons may also be coated with, for example, a moisture barrier layer, on either or both sides of the blanks or cartons.

Further, the blanks or cartons may be constructed of paperboard of a caliper such that it is heavier and more rigid than ordinary paper. The blanks or cartons can also be constructed of other materials, such as cardboard, hard paper, or any other
20 material having properties suitable for enabling the carrier package to function at least generally as described above. The blanks or cartons can also be laminated to, or coated with, one or more sheet-like materials at selected panels or panel sections.

The fold or tear lines detailed herein can be any substantially linear, although not necessarily straight, form of weakening, such as those that facilitate folding therealong. More specifically, but not for the purpose of narrowing scope thereof, fold and tear lines include: a score line, such as lines formed with a blunt scoring knife, or the like, which creates a crushed portion in the material along the desired line of weakness; a cut that extends partially into a material along the desired line of weakness, and/or a series of cuts that extend partially into and/or completely through the material along the desired line of weakness; and various combinations of these features. In situations where cutting is used to create a fold line, typically the cutting will not be overly extensive in a manner that might cause a reasonable user to consider incorrectly the fold line to be a tear line.

The present blanks or cartons may be described as having one or panels adhered together by glue. The term "glue" is intended to encompass all manner of adhesives commonly used to secure carton panels in place.

The blanks and cartons have been described in terms of configurations and methodologies considered by the inventors to be the best mode. The embodiments shown are presented as examples only and should not be construed as limiting the scope of the blanks or cartons. A wide variety of additions, deletions, and modifications to the illustrated and described embodiments might be made by those of skill in the art without departing from the spirit and scope herein, which is circumscribed only by the claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A carton formed from a blank, the carton comprising:
a top panel, a bottom panel, a first side panel, and a second side panel;
a first transverse fold line at a first peripheral edge at a first end of the top panel, the
5 first side panel, the second side panel, and the bottom panel;
a first panel end flap attached to the first peripheral edge of the first side panel;
a second panel end flap attached to the first peripheral edge of the second side
panel;
a tear line extending across said first panel end flap, the first panel, the top panel,
10 the second panel, and the second panel end flap; the tear line separating the first panel end
flap into a first portion and a second portion;
a first aperture formed in said first panel end flap;
wherein the first aperture separates said tear line into two segments in said first
panel end flap and the first aperture extends away from the tear line into the first portion
15 and away from the tear line into the second portion;
a second transverse fold line at a second peripheral edge of the first panel, the
second side panel, the top panel, and the bottom panel, the second peripheral edge disposed
at a second end of the blank opposite the first peripheral edge;
a third panel end flap at the second peripheral edge of the first panel;
20 a second aperture formed in the third panel end flap;
the tear line does not extend into the third panel end flap; and
wherein the first aperture exposes the containers in the carton to ventilation to allow
exchange of air between outside the carton and inside the carton.
- 25 2. The carton of claim 1 including a finger flap defined in the top panel.

3. The carton of claim 2 wherein the finger flap is disposed along the tear line in the top panel.
4. The carton of claim 1 wherein one of the two segments extends across the first panel end flap to a peripheral portion opposite the first peripheral edge.
5. The carton of claim 1 further comprising a third aperture formed in the first panel end flap; the third aperture being spaced from the tear line.
- 10 6. A blank comprising:
a first panel connected to a second panel along a first fold line;
the second panel connected to a third panel along a second fold line;
the third panel connected to a fourth panel along a third fold line;
a first transverse fold line at a first peripheral edge of the first panel, the second
15 panel, the third panel, and the fourth panel;
a first panel end flap at the first peripheral edge of the first panel;
a second panel end flap at the first peripheral edge of the second panel;
a third panel end flap at the first peripheral edge of the third panel;
a tear line extending across the first panel end flap, the first panel, the first fold line,
20 the second panel, the second fold line, the third panel, and the third panel end flap; the tear
line separating the first panel end flap into a first portion and a second portion;
a first aperture formed in the first panel end flap; wherein said tear line into two
segments in said first panel end flap and the first aperture extends away from the tear line
into the first portion and away from the tear line into the second portion;

- a second transverse fold line at a second peripheral edge of the first panel, the second panel, the third panel, and the fourth panel, the second peripheral edge disposed at a second end of the blank opposite the first peripheral edge;
- a fourth panel end flap at the second peripheral edge of the first panel;
- 5 a second aperture formed in the fourth panel end flap; and
- the tear line does not extend into the fourth panel end flap.
7. The blank of claim 6 further comprising:
- an adhesive panel connected to the fourth panel by a fourth fold line.
- 10
8. The blank of claim 6 further comprising:
- an adhesive panel connected to the first panel by a fourth fold line.
9. The blank of claim 6 further comprising:
- 15 a dispensing flap defined at least partially by said tear line.
10. The blank of claim 6 including a finger flap in the second panel.
11. The blank of claim 10 wherein the finger flap is disposed along the tear line.
- 20
12. The blank of claim 6 wherein one of the two segments extends across the first panel end flap to a peripheral portion opposite the first peripheral edge.
13. The blank of claim 6 wherein one of the two segments extends across the second
- 25 panel end flap to a peripheral portion opposite the first peripheral edge.

14. The blank of claim 6 including a third aperture in the first panel end flap; the third aperture being spaced from the tear line.
15. A method of forming a blank into a carton, wherein the blank comprises a first
5 panel connected to a top panel by a first fold line; the top panel connected to a second panel by a second fold line; the second panel connected to a bottom panel by a third fold line; a first transverse fold line at a first peripheral edge of the first panel, the top panel, the second panel, and the bottom panel; a first panel end flap at the first peripheral edge of the first
10 panel; a second panel end flap at the first peripheral edge of the second panel; a tear line extending across said first panel end flap, the first panel, the top panel, the second panel, and the second panel end flap; the tear line separating the first panel end flap into a first portion and a second portion; and a first aperture formed in the first panel end flap, wherein the first aperture separates said tear line into two segments in said first panel end flap and the first aperture extends away from the tear line into the first portion and away from the
15 tear line into the second portion; a second transverse fold line at a second peripheral edge of the first panel, the second panel, the top panel, and the bottom panel, the second peripheral edge disposed at a second end of the blank opposite the first peripheral edge; a third panel end flap at the second peripheral edge of the first panel; a second aperture formed in the third panel end flap; the tear line does not extend into the third panel end flap; and wherein
20 the first aperture exposes the containers in the carton to ventilation to allow exchange of air between outside the carton and inside the carton, the method comprising
folding the blank to form the carton;
filling the carton with containers; and
closing the first panel end flap and the second panel end flap to at least partially
25 enclose the containers in the carton, wherein the first aperture exposes the containers in the

carton to ventilation to allow exchange of air between outside the carton and inside the carton.

16. The method of claim 15 wherein the blank further comprises a dispensing flap
5 defined at least partially by the tear line, the method further comprising:
separating the dispensing flap along the tear line to form an opening in the carton.

17. The method of claim 22 wherein the blank further comprises a finger flap disposed
along the tear line in the top panel.

10

18. A carton, substantially as herein described with reference to the accompanying
drawings.

19. A blank, substantially as herein described with reference to the accompanying
15 drawings.

20. A method of forming a blank into a carton, substantially as herein described with
reference to the accompanying drawings.

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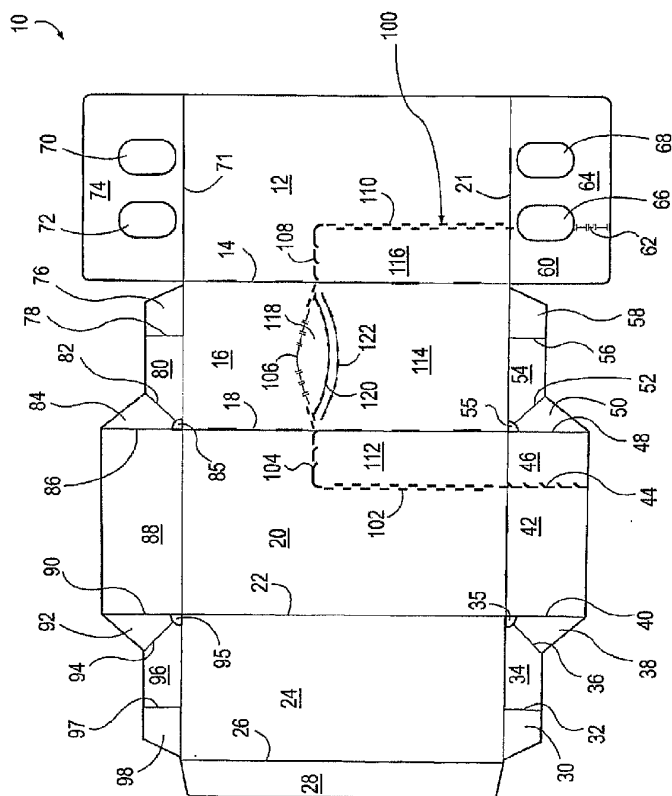


FIG. 1

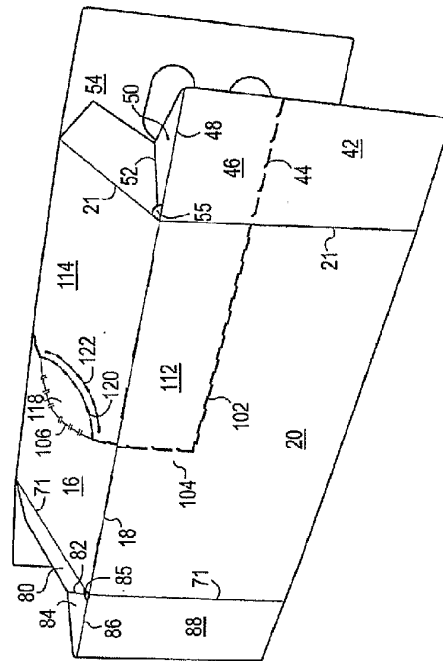


FIG. 2

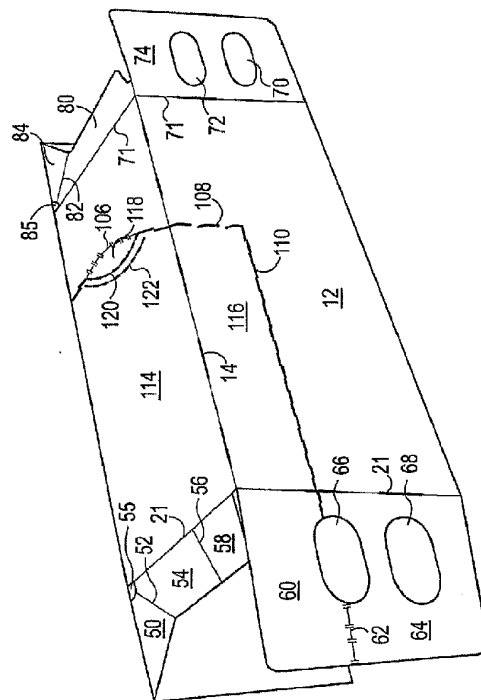


FIG. 3

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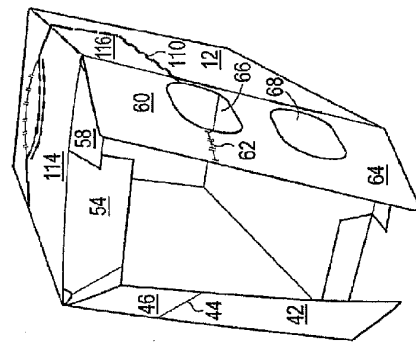
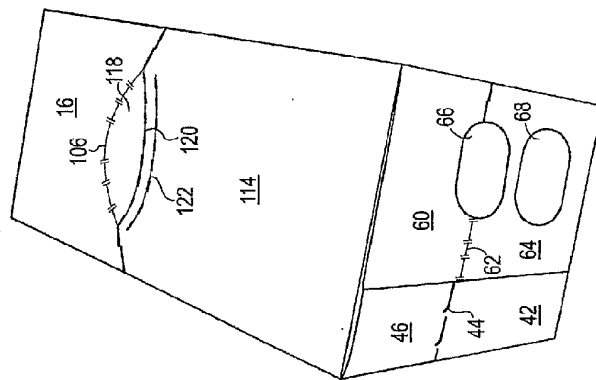


FIG. 4

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FIG. 5



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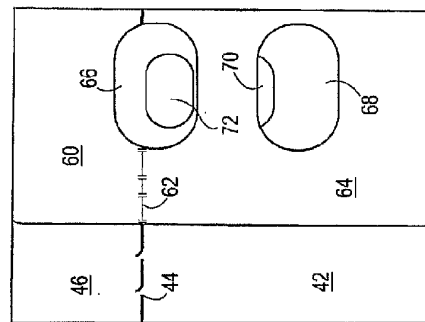


FIG. 6

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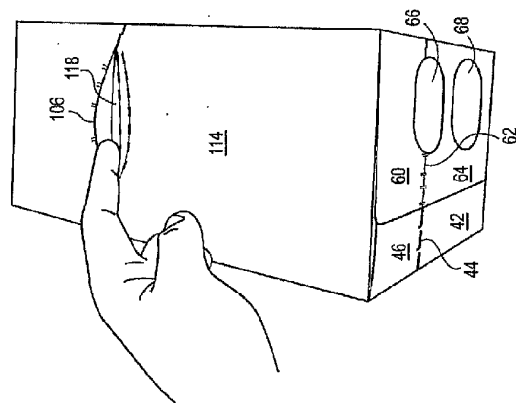


FIG. 7

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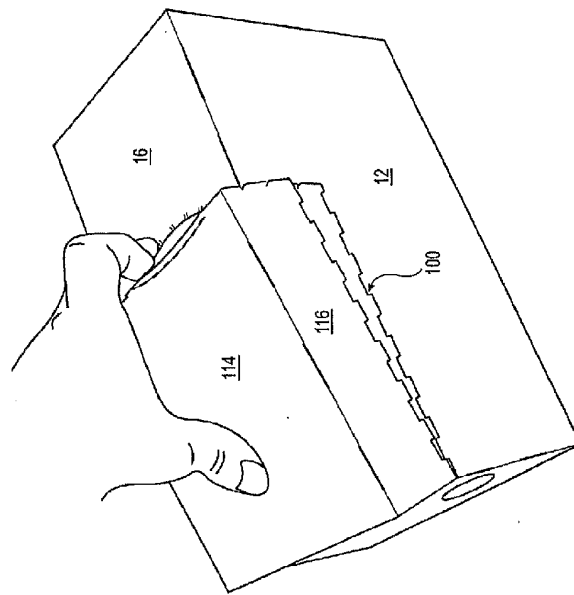
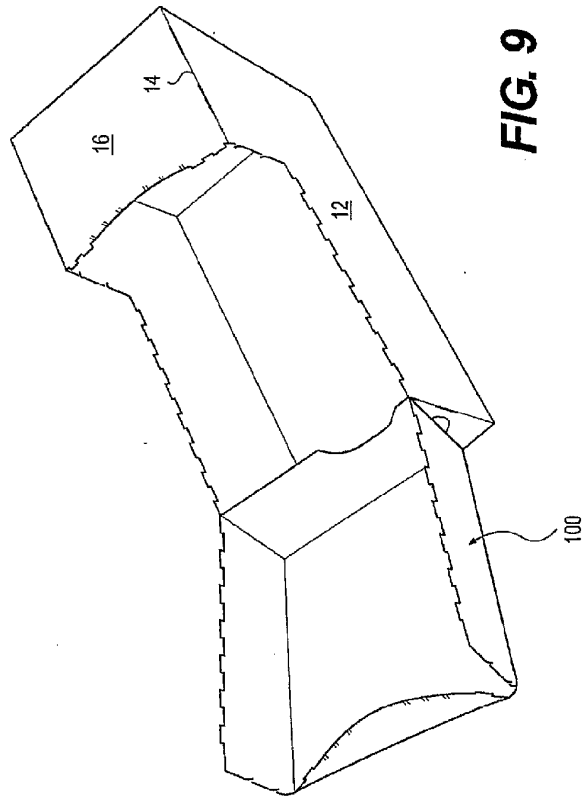


FIG. 8

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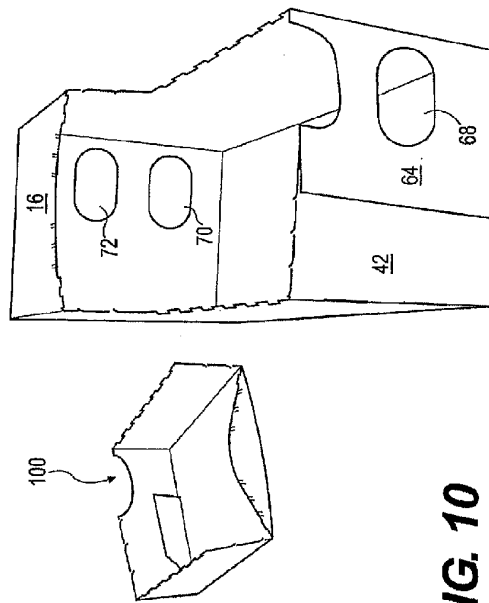


FIG. 10

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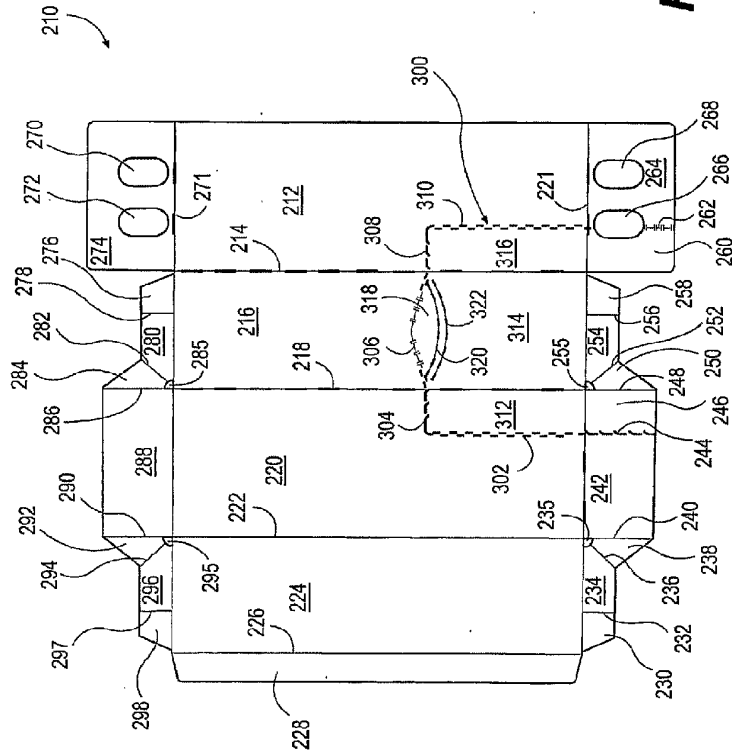


FIG. 11