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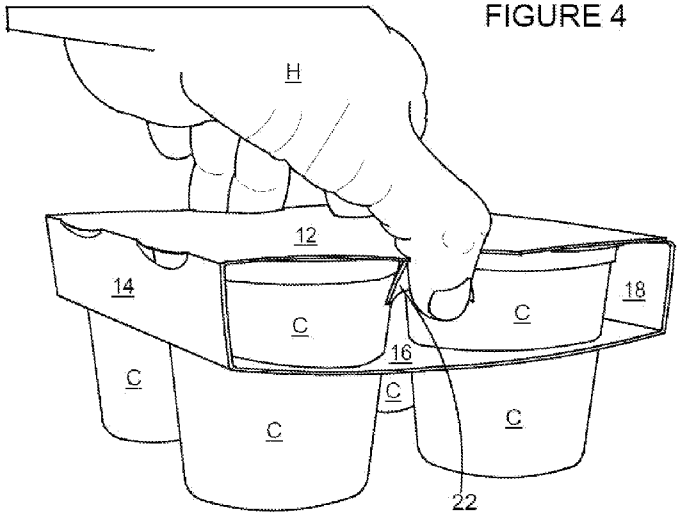
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(54) Title: CARTON WITH TOP RETENTION FOR CUPS

FIGURE 4



(57) Abstract: A carton (160) retains at least one flanged article (C). The carton (160) includes a gripping mechanism having at least one tab (122) foldably connected to the carton (160). The carton (160) is configured relative to the gripping mechanism such that the at least one tab (122) is foldable to contact a flange (F) of an article (C) when folded and held in the carton (160) as well as to create a recessed handle area proximate an edge of the carton (160).

CARTON WITH TOP RETENTION FOR CUPS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of US Provisional Patent Application No. 61/650151 filed May 22, 2012, which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to handles for items that are to be gripped by a user, which handles support the user's hand and are therefore comfortable to use.

BACKGROUND OF THE INVENTION

[0003] In the field of packaging it is often required to provide consumers with a package comprising multiple primary product containers, such multi-packs are desirable for shipping and distribution and for display of promotional information. For cost and environmental considerations, such cartons or carriers need to be formed from as little material as possible and cause as little wastage in the materials from which they are formed as possible. Another consideration is the strength of the packaging and its suitability for holding and transporting large weights of articles.

[0004] Where handles are provided for carrying the cartons, it is important that that the articles feel well packaged and secure when the handle is deployed. Strong handle structures can often require additional material for the carton structure or where the material used is minimised, the handle can feel insecure and may make it harder for a user to carry the carton.

[0005] U.S. Patent 7,900,815 to Shmagin, entitled "Article Carrier", discloses foldable tabs along an edge of a carton top panel, the foldable tabs used to provide a gripping recess. The foldable tabs are configured to abut the under surface of the carton top panel, but the tabs do not directly support the contents of the carton.

SUMMARY OF INVENTION

[0006] According to a first aspect of the present invention there is provided a carton having a structure for retaining at least one article having a top flange and the carton including a gripping mechanism including at least one tab foldably connected to the carton, the structure for retaining the at least one article being configured relative to the gripping mechanism such that the at least one tab is foldable to contact a portion of an article when held in the carton and to create a recessed handle area proximate an edge of the carton.

[0007] Preferably, the at least one tab is connected to the carton by a hinge connection so that the at least one tab is foldable to contact a portion of an article when held in the carton and wherein the at least one tab is otherwise free of connection with the carton. The tab is thereby freely moveable and this may serve to assist the tab contacting the articles when held in the carton for providing a recessed handle area that can be grasped by a user and which can be grasped with the articles to provide additional support to the carton and its contents when the carton is lifted. Furthermore, by having a tab only connected to the carton by means of its hinged connection, outward bowing of the top wall is reduced or prevented so that the carton's structure for retaining articles is maintained in an intact form and is not compromised by lifting the carton. In some prior art structures finger panels are provided which are coupled to other end closing panels and the arrangement causes upward bowing of the top wall as the carton is lifted. This bowing can create slack

within the carton retention structure and one or more articles may inadvertently fall free from the carton.

[0008] Preferably, the structure for retaining the at least one article includes a top wall and the at least one tab is foldably connected to the top wall along a fold line inset from a free or folded edge of the top wall.

[0009] Preferably, the carton is suitable for retaining at least one article having a laterally-projecting flange and the at least one tab is configured to abut and/or at least partially engage a portion of the laterally-projecting flange.

[00010] Preferably, the at least one tab includes two tabs disposed adjacent to opposite edges of the top wall.

[00011] Preferably, the carton is suitable for retaining two articles each having a laterally-projecting flange and wherein the at least one tab is positioned and shaped so that the tab is foldable to contact an underside of the laterally-projecting flange of each article simultaneously.

[00012] Preferably, the at least one tab is trapezoidal in shape. Preferably, the structure for retaining at least one article includes a bottom wall and two side walls interconnecting the top wall and the bottom wall. Preferably, the bottom wall includes at least one article receiving aperture through which a lower portion of the at least one article having a laterally-projecting flange is receivable.

[00013] According to a second aspect of the present invention blank for forming a carton having a top panel for forming a top wall of the carton and a series of hinged panels for forming a structure for retaining at least one article, at least one tab foldably connected to the blank, the at least one tab being foldable to contact a

portion of an article when the blank is set-up into a carton and an article held in the carton and to create a recessed handle area proximate an edge of the carton.

[00014] According to a third aspect of the present invention there is provided a package comprising a carton and at least one article retained by the carton. The at least one article has a laterally-projecting portion. The carton includes a gripping mechanism including at least one tab foldably connected to the carton. The carton is configured relative to the gripping mechanism such that the at least one tab is foldable to contact the laterally-projecting portion of the at least one article when folded and held in the carton and to create a recessed handle area proximate an edge of the carton.

[00015] Preferably also for the third aspect, the at least one tab is connected to the carton by a hinge connection so that the at least one tab is foldable to contact the laterally-projecting portion of the at least one article when folded and held in the carton and wherein the at least one tab is otherwise free of connection with the carton. The tab is thereby freely moveable and this may serve to assist the carton in retaining the at least one article when held in the carton and provides a recessed handle area that can be grasped by a user and which can be grasped along with the at least one articles to provide additional support to the carton and its contents when the carton is lifted. Furthermore, by having the at least one tab that is only connected to the carton by means of its hinged connection, outward bowing of the top wall is reduced or prevented so that the carton's structure for retaining articles is maintained in an intact form and is not compromised by lifting the carton. In some prior art structures finger panels are provided which are coupled to other end closing panels and the arrangement causes upward bowing of the top wall as the carton is lifted. This bowing can create slack within the carton retention structure and one or more articles may inadvertently fall free from the carton.

[00016] Preferably also for the third aspect, the structure for retaining the at least one article includes a top wall and the at least one tab is foldably connected to the top wall along a fold line in-set from a free or folded edge of the top wall.

[00017] Preferably also for the third aspect, the carton is suitable for retaining at least one article having a laterally-projecting flange and the at least one tab is configured to abut and/or at least partially engage a portion of the projecting flange.

[00018] Preferably also for the third aspect, the at least one tab includes two tabs disposed adjacent to opposite edges of the top wall.

[00019] Preferably also for the third aspect, the carton is suitable for retaining two articles each having a laterally-projecting flange and wherein the at least one tab is positioned and shaped so that the tab is foldable to contact an underside of the flange of each article simultaneously.

[00020] Preferably, also for the third aspect, the structure for retaining at least one article includes a bottom wall and two side walls interconnecting the top wall and the bottom wall. The bottom wall may include at least one article receiving aperture through which a lower portion of the at least one article having a flange is receivable.

[00021] According to a fourth aspect of the present invention blank for forming a carton having a top panel for forming a top wall of the carton and a series of hinged panels for forming a structure for retaining at least one article having a top-flange, at least one tab foldably connected to the blank, the at least one tab being foldable to contact a portion of an article when the blank is set-up into a carton and an article held in the carton and to create a recessed handle area proximate an edge of the carton.

BRIEF DESCRIPTION OF THE DRAWINGS

[00022] Exemplary embodiments of the invention will now be described with reference to the accompanying drawings, in which:

[00023] FIGURE 1 is a plan view of a blank for forming a carton according to a first embodiment of the invention;

[00024] FIGURE 2 is a perspective view from above and from a side of a carton formed from the blank of Figure 1 having a gripping mechanism;

[00025] FIGURE 3 is a perspective view from above of and from an end of the carton of Figure 2 showing part of a gripping mechanism;

[00026] FIGURE 4 is a perspective view from above, side and end of the carton of Figures 2 and 3 wherein the gripping mechanism is being used;

[00027] FIGURE 5 is a plan view of a blank for forming a carton according to a second embodiment of the invention;

[00028] FIGURE 6 is a perspective view from above and from a side of a carton formed from the blank of Figure 5 having a gripping mechanism;

[00029] FIGURE 7 is a perspective view from above of and from an end of the carton of Figure 6 showing part of a gripping mechanism;

[00030] FIGURE 8 is a perspective view from above, side and end of the carton of Figures 6 and 7 wherein the gripping mechanism is being used.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS OF THE INVENTION

[00031] Detailed descriptions of specific embodiments of packages, blanks and cartons are disclosed herein. It will be understood that the disclosed embodiments

are merely examples of the way in which certain aspects of the invention can be implemented and do not represent an exhaustive list of all of the ways the invention may be embodied. Indeed, it will be understood that the packages, blanks and cartons described herein may be embodied in various and alternative forms. The figures are not necessarily to scale and some features may be exaggerated or minimised to show details of particular components. Well-known components, materials or methods are not necessarily described in great detail in order to avoid obscuring the present disclosure. Any specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the invention.

[00032] Referring to Figure 1 there is shown a blank 10 for forming a carton 60 (see Figures 2 to 3) of the top gripping type. The blank 10 may be structured and dimensioned to group and securely hold four articles C, in this example, yogurt pots having a flanged upper rim. The blank 10 may include a series of hinged main panels including a top panel 12, first side panel 14, bottom panel 16, second side panel 18 and glue flap 20. The top panel 12, first side panel 14, bottom panel 16, second side panel 18 and glue flap 20 may be hinged one to the next in series along fold lines 42, 44, 46 and 48 respectively. The top panel 12 may include two oppositely positioned tabs 22 which each may form part of a gripping mechanism. Each tab 22 may be formed at an edge of the top panel 12 and may be defined by divergent cut lines 24a, 24b extending from a fold line 26. Fold line 26 may be inset from the edge of the top panel 12. Each tab 22 may trapezoidal in shape having three free edges not connected to the top panel 12 and may be pivotable or foldable about the top panel 12 by virtue of the remaining connection to the top panel 12 by fold line 26. The tabs 22 are foldable downwardly toward the bottom panel 16 and may be shaped and sized to engage or to abut at least one article C and/or to engage or abut an edge portion or underside edge of part of a flange of a flanged article C. The tabs 22 may be positioned, configured and arranged to be foldable in between two adjacent

articles, and sized and shaped accordingly. For example, divergent cut lines 24a, 24b may be made at an angle a1 of approximately 45 degrees with respect to a line perpendicular to the fold line 26. However, angle a1 may be greater or smaller than 45 degrees. Fold line 26 may have a length x1 and may be located a distance y1 inboard from the edge of the blank, with the values of x1 and y1, along with angle a1, chosen so that the tabs 22 may engage or abut an edge portion or underside edge of part of a flange of flanged article C.

[00033] Optionally, top panel 12 may be provided with a tear access opening mechanism 50 defined by a series of perforations. Preferably, the bottom panel 16 may be provided with article receiving apertures 30 through which the articles C to be retained by a carton 60 formed from the blank 10 can partially pass. Further optionally, the hinged connections 42 and 48 between the top panel 12 and first side panel 14 and between the glue flap 20 and second side panel 18 may be provided with article retention features. In this illustrated example the article retention features may include an arcuate cut line and substantially vertical slits depending therefrom. Together the cut line and vertical slits may operate to provide a foldable tab that sits beneath and engages the underside of the flange or laterally-projecting rim of an article C.

[00034] The carton 60 having four articles C in a two-article-row by two-article-row configuration is shown in Figures 2, 3 and 4. The four articles C are tapered and have a top flange. The articles C are not connected together, however, in other embodiments it is envisaged that the carton may contain a grouped set of adjoined articles that may be connected by their flanged portions. The carton 60 may be formed from the blank 10 by affixing glue flap 20 to the underside of top panel 12 using adhesive or mechanical fixing means. The flat part-formed blank thereby formed may be opened into a tubular structure for retaining the articles, having in this exemplary arrangement, open ends and four main walls. It is envisaged that the carton 60 may be formed by a series of sequential folding operations in a straight line

machine so that the carton 60 is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described and may be altered according to particular manufacturing requirements. Preferably, the carton 60 may be formed about a group of four articles C assembled in a two-article-row by two-article-row configuration, the articles C being top loaded into the apertures 50 and the carton being formed thereabout by folding the side walls 14, 18 upwardly and folding the glue flap 20 and then the top panel 12 onto the tops of the articles. In this way, the flanges or projecting rims of the articles C are optionally engaged in an adjacent article retention feature. It is envisaged that for other carton constructions or for other methods of construction of the present carton 60 that the carton 60 may be loaded with articles during or after its construction.

[00035] The articles C are optionally tapered, in other words a lower portion of the article C is narrower or of lesser diameter than an upper portion. The presence of a flange or laterally- or radially-projecting upper rim (that may or may not extend completely about the circumference of each article C) is optional. However in the illustrated example, the articles are shown as being both gradually tapered (narrowing from top to bottom) and having a top flange. Preferably, the articles C are either tapered or gradually tapered and/or have a top flange (straight sided articles having a top flange are considered as tapered since their lower portion is narrower or of lesser diameter than an upper portion, though such articles do not have gradually tapered side edges). By being tapered or gradually tapered, the bottom of the articles C can fit through an optional aperture 30, but an upper (wider) portion of the article C is too wide to pass through the aperture 30 and thereby the article C is retained within the structure of the carton 60. Furthermore, the top flange (when present) prevents the article C from slipping through the aperture.

[00036] Once the carton 60 is assembled and loaded (or loaded and assembled) the tabs 22 of the gripping mechanism may be deployed. Each tab 22 is foldable downwardly about hinge connection 26 towards the bottom panel 16 (as is illustrated

in Figures 2 and 3) so that the tabs 22 and the recesses in the top panel 12 formed by the tabs' 22 displacement can provide a gripping mechanism. The gripping mechanism is shown in use in Figure 4 where it can be seen that the recesses created by displacement of the tabs 22 may provide rooms which can accommodate user's fingers while the displaced tabs 22 provide recessed handle areas that can be gripped by the fingers of the user using only one hand H. The recesses serve to shorten the distance between one side or end edge of the top panel 12 and the other opposite side or end edge, thus making it easier for a user to grasp the carton using only one hand (because the distance the user's hand has to span is shortened).

[00037] Furthermore, the downwardly positioned tabs 22 may provide a cushion or surface which a thumb or finger(s) of a user's hand H can rest and press against to make deployment of the gripping mechanism easier and more comfortable and more secure. When the gripping mechanism is used, the tabs 22 may abut against the side of one or more adjacent articles C and/or against a flange of one or more adjacent articles C. Further inward folding of the tabs 22 is thereby restricted and the tabs 22 may be positioned at approximately 45° relative to the top panel 12. However, the positioning angle of the tabs may be greater or less than 45°.The user therefore has a surface against which his thumb and finger can press to assist in the secure grasping of the carton 60.

[00038] The tabs 22 may be sized and shaped relative to the size, shape and position of the articles so that the tabs 22 do not push completely past the articles into face contacting relationship with the underside of the top panel 12. To do so would mean that the tabs no longer provided a surface against which the user could rest or press his fingers and thumb. The taper of the articles, flange and trapezoidal shape of the tabs and their hinge position may also contribute to ensuring that a gripping surface is provided by the folded tabs 22.

[00039] Tabs 22 provide a downwardly facing engaging surface arranged at an angle to the top panel for a user to grasp and lift the carton by; the angle of the tab 22 may be determined in part by the shape and configuration of the articles and in part by the position of fold line 26 relative to the end edge of the top panel 12 and/or by the position of the fold line 26 relative to the position of the articles.

[00040] Furthermore, the tabs 22 may catch beneath or around a flange or laterally-projecting rim of the articles C after they have been folded out of the plane of the top panel 12 (this may be facilitated by a user) and the user's fingers and/or thumb may also catch on the flange itself which thereby provides a lip or edge which the user can latch onto for getting a good grasp of the carton 60 and for supporting the articles C as the carton 60 is lifted.

[00041] The operation of the gripping mechanism that enables a user to securely and comfortably grasp the carton at its ends means that the top panel 12 does not bow upwardly and away from the bottom panel 16 when the carton is lifted by the gripping mechanism. In some known carton structures where a carrying handle is provided in the top wall of a carton an upward force applied to the handle causes the top wall to bow out upwardly and away from the bottom wall. This can be disadvantageous for a number of reasons, which reasons include (but not exclusively): weakening of the carton because its structure is distorted; a perceived weakness in the handle by a user because the top wall appears to "give-out" during deployment of the handle; loosening of the grip the carton has on the contained articles which may result in one or more articles falling free of the carton or giving the user the impression that articles C could fall out causing the user to lose confidence in the handle; the opening created by the top wall moving may allow articles to be displaced from the carton or for dirt or dust to enter the carton. Other known mechanisms where the top panel edges only are grasped for lifting the carton can suffer from the disadvantage that as the carton is lifted, it bows and the bottoms of the articles can splay outwardly away from one another. This can cause either complete

displacement of the articles from the carton or alternatively may result in a wobbly and insecure carton which a user cannot confidently carry using the mechanism provided.

[00042] The present invention addresses these issues by providing a gripping mechanism that does not impart an upward force or any substantial upward force on the top panel 12 of the carton. Instead the carton 60 is grasped by a user applying opposite and likely equally forces substantially in the plane of the top panel 12. In this way the carton 60 is gripped easily and comfortably without fear of failure of the carton or handle. Furthermore, the recesses enable a user to contact part of the articles (the flanged part) during lifting to provide additional support to the articles as they are lifted with the carton.

[00043] Referring to Figure 5 there is shown a blank 110 for forming another carton 160 (see Figures 6 to 7) of the top gripping type. The blank 110 and carton 160 are in many respects similar to the blank 10 and carton 60 already described. Carton 160 as shown in Figures 5-8 does not include article receiving apertures in its bottom panel. Rather the bottom of the articles may rest directly upon the bottom panel. However, it should be understood that the carton 160 could by provided with article receiving apertures in its bottom panel, similar to the article receiving apertures 30 in the bottom panel 16 of the carton 60 shown in Figures 1-4.

[00044] The blank 110 may be structured and dimensioned to group and securely hold four articles C, in this example, yogurt pots having a top flange or laterally projecting rim F. The blank 110 may include a series of hinged main panels including a top panel 112, first side panel 114, bottom panel 116A, 116B and glue flap 120, and second side panel 118. The top panel 112, first side panel 114, bottom panel 116A, 116B, second side panel 118 and glue flap 120 may be hinged one to the next in series along fold lines 142, 144, 148, and 146 respectively. The top panel 112 may include two oppositely positioned tabs 122 which each form part of a gripping

mechanism. Each tab 122 may be formed at an edge of the top panel 112 and may be defined by cut lines 125a, 125b. Each tab 122 may have a pair of side wings 123 attached through fold lines 124a. Each tab 122 may be approximately rectangular or trapezoidal in shape having one hinged edge (defined by a fold lien 126) hingedly connected to top panel 112, a pair of side edges (defined by fold lines 124a respectively), and a free outward edge opposite the hinged edge. Tab 122 may be foldable about the top panel 112 by virtue of the remaining connection to the top panel 12 by fold line 126 which may or may not be creased, scored, or otherwise formed to encourage folding.

[00045] The tabs 122 are foldable downwardly toward the bottom panel 116A, 116B and may be shaped and sized to engage or to abut at least one article C and/or to engage or abut an edge portion or underside edge of part of a flange F of a flanged article C. The tabs 122 may be positioned, configured and arranged to be foldable in between two adjacent articles, and sized and shaped accordingly. For example, fold lines 124a may be at an angle a2 of about 15 degrees with respect to a line perpendicular to the fold line 126. However, angle a2 may be greater than or less than 15 degrees. Cut lines 125a, 125b which define the inboard edge of side wings 123 may have an angle a3 of about 20 degrees relative to fold line 126. However, angle a3 may be greater than or less than 20 degrees. Fold line 126 may have length x2 and may be located a distance y2 inboard from the edge of the blank with the values of x2 and y2, along with angles a2 and a3, chosen so that the tabs 122 may engage or abut an edge portion or underside of part of a flange of article C.

[00046] Optionally, top panel 112 may be provided with a tear access opening mechanism (not shown) defined by a series of perforations. Preferably, the bottom edges of side panels 114, 118 near fold lines 144, 148 may be provided with article receiving apertures 130 (for example, relief cuts or cutouts) through which the articles C to be retained by a carton 160 formed from the blank 110 can partially pass. Further optionally, the hinged connections 142 and 146 between the top panel 112

and first side panel 114 and second side panel 118 may be provided with article retention features 135. In this illustrated example the article retention features may include an arcuate cut line and substantially vertical slits depending therefrom. Together the cut line and vertical slits may operate to provide a foldable tab that sits beneath and engages the underside of the flange F or projecting edge of an article C.

[00047] The carton 160 having four articles C in a two-article-row by two-article-row configuration is shown in Figures 6, 7, and 8. The four articles C are tapered and have a top flange F. The articles C are not connected together, however, in other embodiments it is envisaged that the carton will contain a grouped set of adjoined articles that may be connected by their flanges. The carton 160 may be formed from the blank 110 by affixing glue flap 120 to the bottom panel 116B using adhesive or mechanical fixing means. The flat part-formed blank thereby formed may be opened into a tubular structure for retaining the articles, having in this exemplary arrangement, open ends and four main walls. It is envisaged that the carton 160 may be formed by a series of sequential folding operations in a straight line machine so that the carton 160 is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described and may be altered according to particular manufacturing requirements. Preferably, the carton 160 may be formed about a group of four articles C assembled in a two-article-row by two-article-row configuration, the articles C being loaded into with their upper surfaces facing top wall 12 and their flanges F engaging article retention features 135, the carton then being formed thereabout by folding the side walls 114, 118 upwardly and folding bottom panels 116A, 116B across the carton and securing them together by the glue flap 120. In this way, the flanges or laterally-projecting rims F of the articles C are optionally engaged in an adjacent article retention feature 135. It is envisaged that for other carton constructions or for other methods of construction of the present carton 160 that the carton 160 may be loaded with articles during or after its construction.

[00048] The articles C are optionally tapered, in other words a lower portion of the article C is narrower or of lesser diameter than an upper portion. The presence of a flange or laterally- or radially-projecting upper rim (that may or may not extend completely about the circumference of each article C) is optional. However in the illustrated example, the articles are shown as being both gradually tapered (narrowing from top to bottom) and having a flange or laterally- or radially-projecting rim F. Preferably, the articles C are either tapered or gradually tapered and/or have a top flange F (straight sided articles having an upper projecting flange F are considered as tapered since their lower portion is narrower or of lesser diameter than an upper portion, though such articles do not have gradually tapered side edges).

[00049] Once the carton 160 is assembled and loaded (or loaded and assembled) the tabs 122 of the gripping mechanism may be deployed. The tabs 122 may be foldable downwardly about hinge connection 126 towards the bottom panels 116A, 116B (as is illustrated in Figures 6 and 7) so that the tabs 122 and the recesses formed in the top panel 112 by the tabs' 122 displacement can provide a gripping mechanism. The gripping mechanism is shown in use in Figure 8 where it can be seen that the recesses created by displacement of the tabs 122 may provide finger rooms defined by shaped edges which can accommodate user's fingers while the displaced tabs 122 may provide recessed handle areas that may be gripped by the fingers of the user using only one hand H. The recesses serve to shorten the distance between one side or end edge of the top panel 112 and the other opposite side or end edge, thus making it easier for a user to grasp the carton using only one hand (because the distance the user's hand has to span is shortened).

[00050] Furthermore, the downwardly positioned tabs 122 may provide a cushion or surface which a thumb or finger(s) of a user's hand H can rest and press against to make deployment of the gripping mechanism easier and more comfortable and more secure. When the gripping mechanism is used, the tabs 122 may abut against the side of one or more adjacent articles C and/or against a flange or laterally- or radially

projecting rim F of one or more adjacent articles C. The tabs 122, in particular their wing sections 123, may rest against the underside of flange F, thereby helping to support the articles C and keep them from sagging downward in the carton 160. Further inward folding of the tabs 122 is thereby restricted and the tabs 122 may be positioned at approximately 45° relative to the top panel 112. However, the positioning angle of the tabs may be greater or less than 45°. The user therefore has a surface against which his thumb and finger can press to assist in the secure grasping of the carton 160.

[00051] The tabs 122 may be sized and shaped relative to the size, shape and position of the articles so that the tabs 122 do not push completely past the articles into face contacting relationship with the underside of the top panel 112. To do so would mean that the tabs no longer provided a surface against which the user could rest or press his fingers and thumb. The taper of the articles, flange and shape of the tabs and wings and their hinge position may also contribute to ensuring that a gripping surface is provided by the folded tabs 122.

[00052] Tabs 122 provide a downwardly facing engaging surface arranged at an angle to the top panel for a user to grasp and lift the carton by; the angle of the tab 122 may be determined in part by the shape and configuration of the articles and in part by the position of fold line 126 relative to the end edge of the top panel 112 and/or by the position of the fold line 126 relative to the position of the articles. The angle of the tab 122 may also be determined in part by the size and shape of wing sections 123.

[00053] Furthermore, the tabs 122 may catch beneath or around a flange F or projecting rim of the articles C after they have been folded out of the plane of the top panel 112 (this may be facilitated by a user) and the user's fingers and/or thumb may also catch on the flange itself which thereby provides a lip or edge which the user can

latch onto for getting a good grasp of the carton 160 and for supporting the articles C as the carton 160 is lifted.

[00054] The operation of the gripping mechanism that enables a user to securely and comfortably grasp the carton at its ends means that the top panel 112 does not bow upwardly and away from the bottom panel 116A, 116B when the carton is lifted by the gripping mechanism. In some known carton structures where a carrying handle is provided in the top wall of a carton an upward force applied to the handle causes the top wall to bow out upwardly and away from the bottom wall. This can be disadvantageous for a number of reasons, which reasons include (but not exclusively): weakening of the carton because its structure is distorted; a perceived weakness in the handle by a user because the top wall appears to "give-out" during deployment of the handle; loosening of the grip the carton has on the contained articles which may result in one or more articles falling free of the carton or giving the user the impression that articles C could fall-out causing the user to lose confidence in the handle; the opening created by the top wall moving may allow articles to be displaced from the carton or for dirt or dust to enter the carton. Other known mechanisms where the top panel edges only are grasped for lifting the carton can suffer from the disadvantage that as the carton is lifted, it bows and the bottoms of the articles can splay outwardly away from one another. This can cause either complete displacement of the articles from the carton or alternatively may result in a wobbly and insecure carton which a user cannot confidently carry using the mechanism provided.

[00055] The present invention addresses these issues by providing a gripping mechanism that does not impart an upward force or any substantial upward force on the top panel 12, 112 of the carton. Instead the carton 60, 160 is grasped by a user applying opposite and likely equally forces substantially in the plane of the top panel 12, 112. In this way the carton 60,160 is gripped easily and comfortably without fear of failure of the carton or handle. Furthermore, the recesses enable a user to contact

part of the articles (the flanged part) during lifting to provide additional support to the articles as they are lifted with the carton.

[00056] It can be appreciated that various changes may be made within the scope of the present invention, for example, other arrangements can be used to provide a gripping mechanism that enables a user to comfortable and easily grasp substantially opposite sides or opposite edges of a carton for lifting and carrying that carton without distorting the top wall of the carton because the gripping or lifting force is applied substantially in the plane of the top wall. To that end, it will be understood that the size, shape, position, configuration and number of tabs may take many different formats. In other envisaged, non-illustrated examples, the provided tabs are not each identical or similar in their construction. In other envisaged, non-illustrated examples only one tab is provided and the other, opposite edge of the carton is grippable by means of a recessed cut-out or shaped recess, rather than also having a second tab.

[00057] Where a tab and recess or pair of tabs are provided in opposite edges of the top panel, the tab and recess or two tabs may not be directly aligned with one another and may be provided diagonally opposite one another. In other envisaged, non-illustrated examples, the gripping mechanism comprises one or more tabs and may comprise one or more corresponding recesses disposed on adjacent side edges of the carton (consider for example a tab 22,122 provided along one end edge and a further tab provided along fold line 44 or 46, or fold line 142, 146). In such an embodiment, the tabs or tab and recess, may be spaced apart in an off-center configuration.

[00058] Furthermore, where provided each tab may be formed from a wide variety of cuts, fold lines and perforations. Indeed it is envisaged that a split tab could be used, wherein the tab comprises a slit, cut or other frangible connection to split the tab into one or more sections. This arrangement may be advantageous since a cushioning effect can still be provided by the split tab; the sections of the split tab can

still catch or engage an underneath of a flanged portion of an article and the gripping mechanism may be formable in confined space for example in a small carton or in a carton where the spacing between adjacent flanged articles is restricted, because the split tab could be hinged to the top wall or to another part of the carton by separate hinged connections that may be disposed at an angle relative to one another.

[00059] It will be understood that the size, shape and configuration of the panels and where present, the apertures may be adjusted to accommodate articles of differing size or shape and adjusted to accommodate different numbers or configurations of articles. In other embodiments of the invention it is envisaged that the carton may be capable of accommodating more or less than four articles disposed in many and various configurations other than a two-article row by a two-article row (for example arrays of 1 x 2, 1 x 3, 1 x 4, 2 x 3, 2 x 4, 3 x 2, 3 x 3 and so on are all possible, this list represents some examples only and not an exhaustive recitation of all possible article configurations).

[00060] It is also envisaged that the general carton construction of the carton may be other than the top-gripping type of carton and the invention has applicability in wrap-around style cartons as well. In such examples the bottom panel 16, 116A, 116B may or may not comprise article receiving apertures 50 and the aforedescribed optional article retention features may or may not be provided. When provided, the apertures 50 operate with the bottom panel to prevent or at least limit outward splaying of the bottom parts of the articles during lifting of the carton.

[00061] Preferably, the gripping mechanism comprises tabs formed along a free, non joined edge of an upper wall of a carton, but in other embodiments, the tab may be formed as an interruption to a hinged or joined edge of the carton that is foldable inwardly of the carton to provide a recess and angled, recessed handle area which the user's thumb or finger can be placed into and press against. For example, each

tab of the gripping mechanism is, in other embodiments, formed at least in part in the first and/or second side wall 14, 18 or 114, 118.

[00062] It should also be understood that whereas the tabs 22 illustrated have been described as either being defined by three linear cut lines and one linear fold line and having a trapezoidal shape, or (as with tabs 122) being defined by several cuts and fold lines) that other shapes of tab are envisaged for example, square shaped, rectangular or irregular shaped and that the tabs may be defined by a different number or combination of cut lines and fold lines and that the cut lines and/or fold lines may be curved, arcuate and/or curvilinear for example. Beneficially, the tabs 22 are trapezoidal in shape (or at least increasing in size from top to bottom where in a regular manner or not) because oppositely gradually tapered shape fits well against the gradually tapered and flanged articles C so that the tabs 22 can provide a cushioned surface between adjacent articles (the gap between these articles increasing from top to bottom). The angled or oblique edges of the tabs 22 (or the tabs 122 or wing sections 123) may additionally catch underneath the flange or laterally- or radially-projecting rim of two articles simultaneously so that the tabs 22, 122 fit within the gap between articles, but do not push past them. The tabs 22, 122 may however only engage underneath the flange or laterally-projecting rim of one article or not at all.

[00063] Furthermore, the tabs may be defined by one or more perforate lines or frangible lines that may be broken by a user when the tabs 22,122 are first deployed.

[00064] As described, the articles preferably have a flange or laterally-projecting rim F which each tab of the gripping mechanism may engage or abut on. Reference to flange or projecting rim should be taken to mean any laterally-projecting portion that may or may not extend completely circumferentially around the circumference of an article and which may have any thickness. Preferably the tabs 22,122 are sized to

extend beyond the flange or projecting rim F such that they can be folded to the underside of the flange F to wrap around at least part of the flange.

[00065] It will be recognized that as used herein, directional references such as "top", "bottom", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that hinged connection can be formed from one or more of the following, a short slit, a frangible line or a fold line without departing from the scope of the invention.

CLAIMS

1. A carton for retaining at least one article having a laterally-projecting portion, the carton comprising a gripping mechanism including at least one tab foldably connected to the carton, the carton being configured relative to the gripping mechanism such that the at least one tab is foldable to contact a laterally-projecting portion of at least one article when folded and held in the carton and to create a recessed handle area proximate an edge of the carton.

2. A carton according to claim 1 wherein the at least one tab is connected to the carton by a hinge connection so that the at least one tab is foldable to contact a laterally projecting portion of an article when held in the carton and wherein the at least one tab is otherwise free of connection with the carton.

3. A carton according to claim 1 further comprising a top wall, and the at least one tab is foldably connected only to the top wall along a fold line that is inset from a free edge of the top wall.

4. A carton according to claim 1, further comprising at least one article having a laterally-projecting flange and wherein the at least one tab is configured to at least partially engage the flange.

5. A carton according to claim 3 wherein the at least one tab comprises two tabs disposed adjacent to opposite edges of the top wall.

6. A carton according to claim 1 further comprising at least two articles each having a laterally-projecting flange, wherein the at least one tab is positioned and shaped so that the at least one tab is foldable to engage an underside of the flange of each of the at least two articles simultaneously.

7. A carton according to claim 1 wherein the at least one tab is trapezoidal in shape.

8. A carton according to claim 3 further comprising a bottom wall and a pair of side walls interconnecting the top wall and the bottom wall.

9. A carton according to claim 8 wherein the bottom wall comprises at least one article receiving aperture through which a lower portion of at least one article is receivable.

10. A carton according to claim 1 wherein the at least one tab comprises a primary portion and a pair of side wings attached to the primary portion by fold lines.

11. A carton according to claim 10 wherein the primary portion comprises one hinged edge hingedly connected to the carton, a pair of opposed side edges along which the side wings are hingedly connected, and a free outward edge disposed opposite the hinged edge.

12. A blank for forming a carton for retaining at least one article, the blank comprising a series of panels for forming a carton and at least one tab foldably connected to one of said panels, the at least one tab being foldable to engage a portion of an article in the carton when the blank is set-up into the carton and to create a recessed handle area proximate an edge of the carton.

13. A package comprising a carton and at least one article retained by the carton, the at least one article having a laterally-projecting portion, the carton comprising a gripping mechanism including at least one tab foldably connected to the carton, the carton being configured relative to the gripping mechanism such that the at least one tab is foldable to contact the laterally-projecting portion of the at least one article when folded and held in the carton and to create a recessed handle area proximate an edge of the carton.

14. A package according to claim 13 wherein the at least one tab is connected to the carton by a hinge connection so that the at least one tab is foldable to engage the laterally-projecting portion of the at least one article when folded and held in the carton, and wherein the at least one tab is otherwise free of connection with the carton.

15. A package according to claim 13 wherein the carton further comprises a top wall, and the at least one tab is foldably connected only to the top wall along a fold line that is inset from a free edge of the top wall.

16. A package according to claim 13 wherein the at least one tab is configured to engage at least a portion of the laterally-projecting portion of the at least one article.

17. A package according to claim 15 wherein the at least one tab comprises at least two tabs disposed adjacent to opposite edges of the top wall.

18. A package according to claim 13 wherein the at least one article comprises at least two articles each having the laterally-projecting portion, and the at least one tab is foldable to contact an underside of the laterally-projecting portion of each of the at least two articles simultaneously.

19. A package according to claims 15 wherein the carton further comprises a bottom wall and a pair of side walls interconnecting the top wall and the bottom wall.

20. A package according to claim 19 wherein the bottom wall comprises at least one article receiving aperture through which a lower portion of the at least one article is receivable.

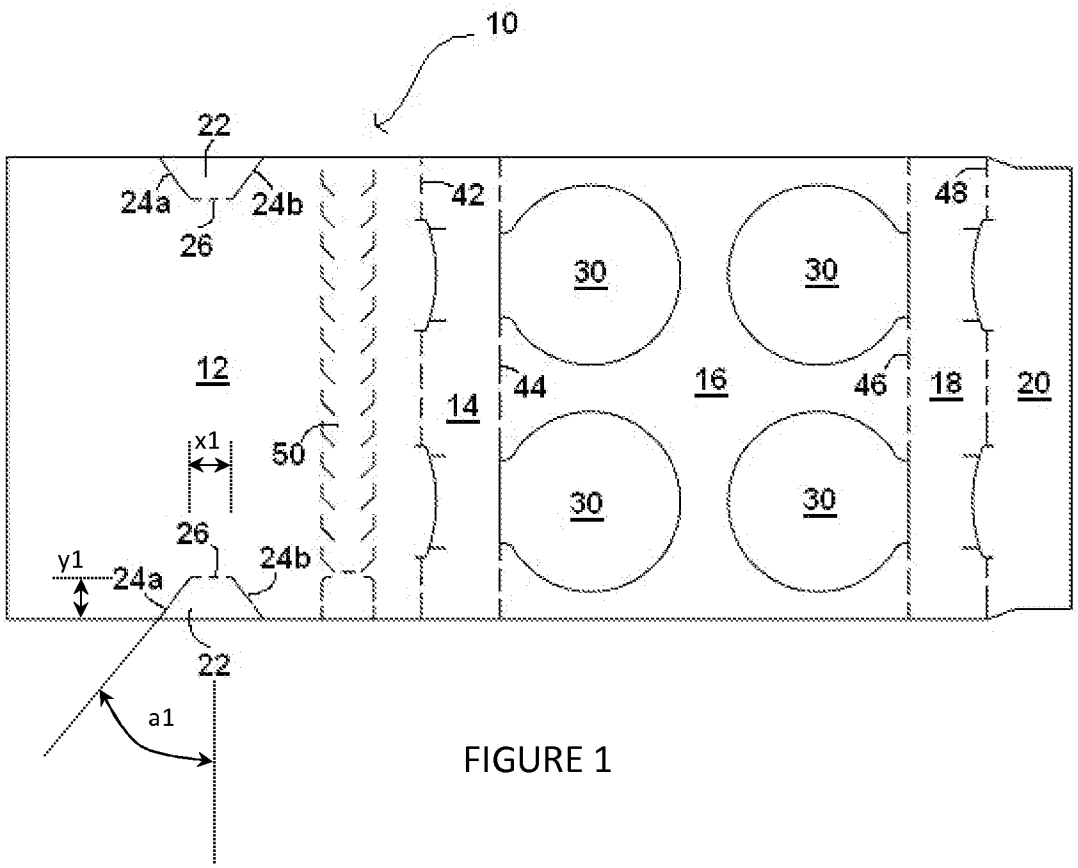


FIGURE 1

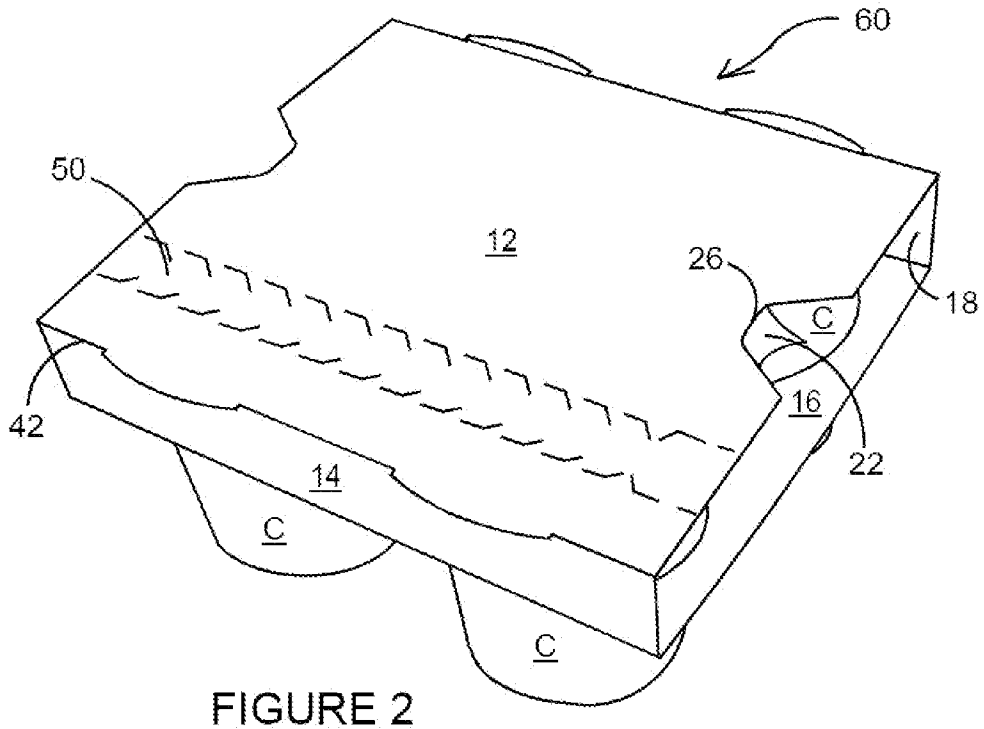


FIGURE 2

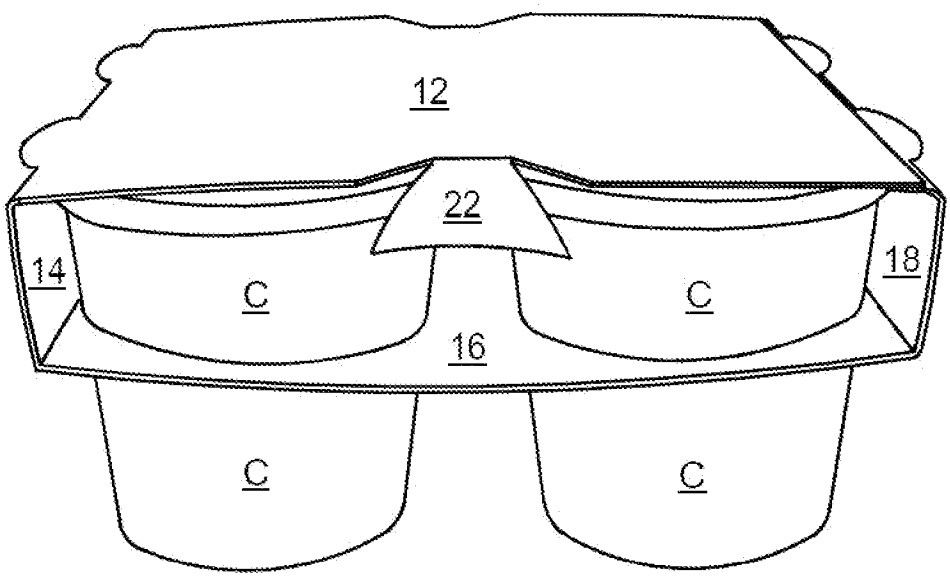


FIGURE 3

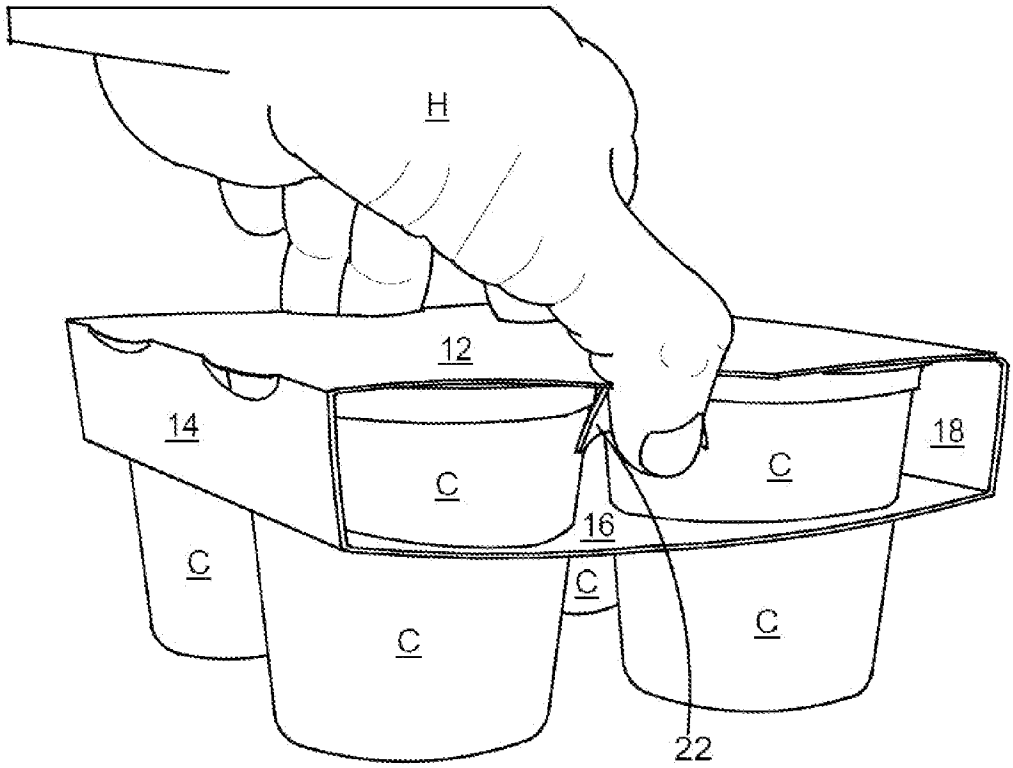


FIGURE 4

FIGURE 5

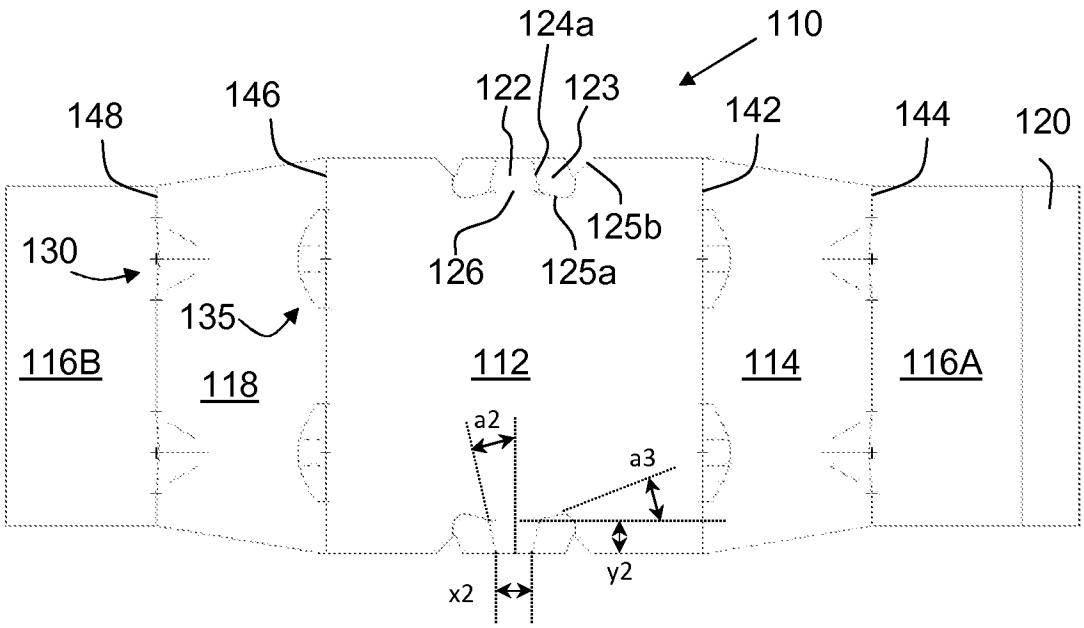


FIGURE 6

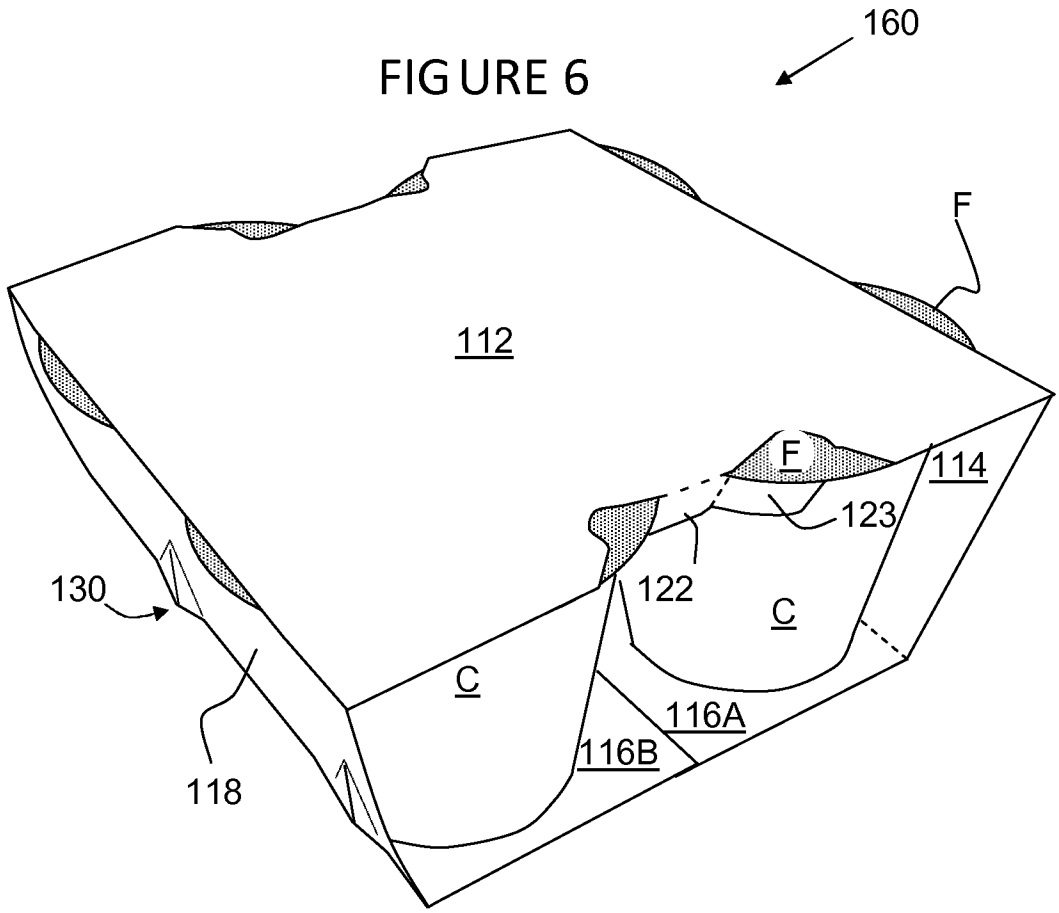


FIGURE 7

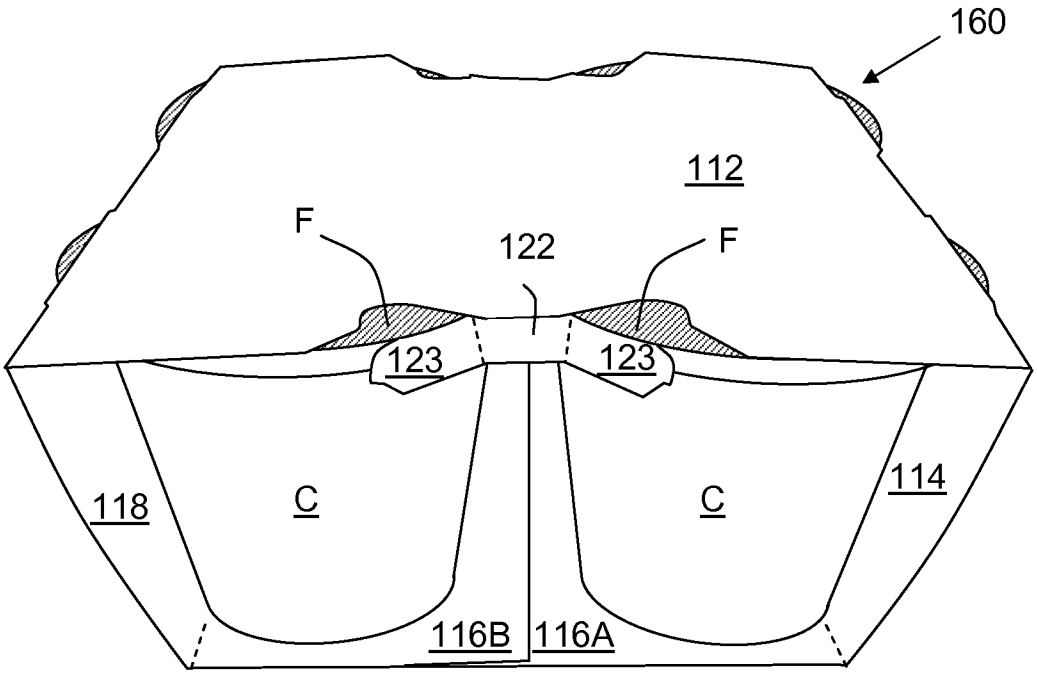
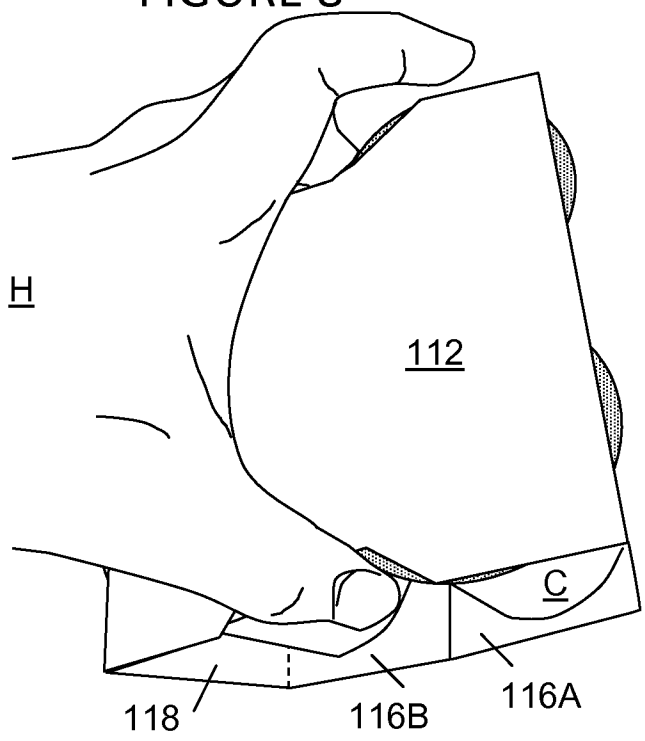


FIGURE 8



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/042145

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D71/48
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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 341 309 A (OLIFF JAMES R) 27 July 1982 (1982-07-27) column 2, line 34 - line 42; figure 1	1-8, 10-20
X A	US 1 968 877 A (CUBBERLEY AMARIAH H) 7 August 1934 (1934-08-07) page 2, line 20 - line 23; figures 1,3	1,2,5, 7-9,12 13
X	EP 1 721 839 A1 (STOKELY VAN CAMP INC [US]) 15 November 2006 (2006-11-15) cited in the application paragraphs [0027], [0029]; figures 4,6	1-3,5,7, 8

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

☒ See patent family annex.

* Special categories of cited documents :

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"E" earlier application or patent but published on or after the international filing date

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"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
15 July 2013	23/07/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Sundell, Olli

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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