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(71) Applicant (*for all designated States except US*):  
**GRAPHIC PACKAGING INTERNATIONAL, INC.**  
[US/US]; 814 Livingston Court, Marietta, GA 30067 (US).

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **MILLS, Karen, L.**  
[US/US]; 1708 Hunsberger Drive, Limerick, PA 19468 (US).

(74) Agents: **ISAF, Louis, T.** et al.; Womble Carlyle Sandridge & Rice, PLLC, P.O. Box 7037, Atlanta, GA 30357-0037 (US).

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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(54) Title: CARTON WITH HEAT SHRINK PATCH

(57) Abstract: Blanks, cartons, packaging assemblies, and methods for applying a heat-shrink patch to a carton for forming a shape of contents in, or to be placed in, a carton are provided. The carton includes at least one side and at least one void. At least one heat-shrink patch is applied by an adhesive is applied in a registered pattern to cover the at least one void. The carton is formed from the blank, with contents being inserted into the carton either at the time of forming or subsequent to forming, and the at least one heat-shrink patch is heated to conform to a shape of contents in, or to be placed in, the carton.



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**CARTON WITH HEAT SHRINK PATCH****CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims the benefit of U.S. Provisional Application No. 61/274,991, filed August 24, 2009, and U.S. Provisional Patent Application No. 61/279,374, filed October 19, 2009.

**INCORPORATION BY REFERENCE**

[0002] U.S. Provisional Application No. 61/274,991, filed August 24, 2009, and U.S. Provisional Patent Application No. 61/279,374, filed October 19, 2009, are hereby incorporated by reference for all purposes as if presented herein in their entirety.

**BACKGROUND**

[0003] This invention relates generally to packaging and, more particularly, to a packaging carton and a method for making a packaging assembly.

[0004] At least some known cartons used for packaging contents, such as product(s), article(s), or other item(s), utilize inserts to hold contents in place in the carton, to size the carton to fit irregular shaped contents, to provide a larger carton than necessary for the contents, such as for augmenting worth of a small sized contents, such as products, or for other reasons. These inserts or holders generally are formed of plastic, paperboard, or the like, but their use presents several drawbacks. For example, an insert can add substantial weight to packaged contents, which can increase distribution cost, an insert can be difficult to load and/or install around contents which can increase labor costs, an insert itself can be expensive to produce, an insert can increase the overall blank dimensions resulting in increased material costs, an insert can be difficult to remove contents therefrom, etc.

SUMMARY

[0005] In one aspect, the present invention provides a blank, carton, and/or method for applying a heat-shrink patch to a carton, which patch is capable of at least partially conforming to a shape of contents in, or to be placed within, the carton. The carton generally is formed from a blank of sheet material (generally paperboard) and includes panels and/or end flaps that include openings or voids in, or in between, the panels and/or end flaps. The method generally includes providing a heat-shrink patch in a pre-shrunk or initial configuration, that is, in an unshrunk (or “unshrunk”) configuration prior to heat-shrinking. The heat-shrink patch is coupled in its pre-shrunk configuration to at least a portion of an interior surface (though such patch could be applied to an exterior surface as desired) of a blank of sheet material. The patch is heat-shrinkable to a shrunk or wrapping configuration that conforms at least partially to or about the contents enclosed or to be enclosed within the carton. While the patch is heat-shrinkable so as to move or contract from an unshrunk configuration to its shrunk configuration, to conform the patch at least partially to a shape of a section of the article, the paperboard does not necessarily move or shift along the sheet material in response to the shrinking of the patch. However, in some embodiments, the carton can be provided with flexing or expansion features to enable limited movement of the carton panels with the contraction or movement of the patch. Further, in another aspect, the patch generally is secured to the blank by an adhesive, such as glue, that can be placed on the blank or patch in various glue patterns in selected locations such as surrounding the openings or voids, which will allow the patch to conform at least partially to or about objects in, or to be placed in, the carton. In another aspect, the blank can include integrated panel(s) or additional panel(s) that, when the blank is formed into a carton or package, the integrated panel(s) or additional panel(s) are folded to be internal to the carton or package.

[0006] In another aspect, the invention includes a product package that includes a product carton having a plurality of sides defining a sleeve in which a product is received, and at least one void formed in at least one of said sides and forming a window through which the product can be viewed. The product carton further includes a film patch applied to said at least one side in which said at least one void is formed, wherein said patch comprises a shrink-wrap material and is of a configuration and size to cover said void with an excess amount of said shrink-wrap material provided sufficient to enable said film patch to contract substantially about the product upon activation of said shrink-wrap material without disturbing or altering an assembled shape of said product carton. The product package can also include an adhesive applied in a registered pattern about said at least one void for attaching said film patch to said at least one side. Alternatively, at least one of the sides of the product package can be adapted to flex with contraction of said film patch about the product.

[0007] In yet another aspect, the invention includes a method of forming a product package that includes providing a blank comprising a series of side panels connected along longitudinal fold lines, end flaps connected to at least one of the side panels along transverse fold lines, and at least one void in at least one of the side panels defining a window; providing a film patch of shrink-wrap material of a configuration and size sufficient to cover the at least one void and provide an excess amount of shrink-wrap material to enclose substantially a product; attaching the film patch to the blank in a position covering the at least one void; folding the side panels of the blank along the transverse fold lines to form a product carton for the product; and applying heat to the film patch for a desired time and at a desired temperature to cause contraction of the film patch about the product within the product carton. The product carton can optionally include multiple voids formed in multiple panels. Alternatively, the product carton can include at least one side panel that flexes in response to

the contraction of the film patch about the product. Alternatively still, the sides of the product carton retain their size and shape and not flex in response to the contraction of the film patch about the product. The film can be attached by any method including by adhesive, welding, or heat.

[0008] In still another aspect, the invention includes a carton formed from a blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end. The blank includes at least a first void in at least one of the panels. A shrink-wrap patch is provided that covers the first void and that is adhered to the blank along adhesion positions on the interior surface of the blank. The adhesion positions are spaced from the void a distance to enable the patch to contract substantially about a product upon activation of the shrink-wrap material without disturbing or altering an assembled shape of the carton.

[0009] In still yet another aspect, the invention provides aesthetic benefits that are inherently incorporated in the design of the carton (e.g. customized window shapes and cut-outs that increase and/or enhance billboarding and graphics) and that, for example, can increase the perception of package/product value.

[0010] In yet another aspect, the invention includes a product package that includes a product carton having a plurality of sides defining a sleeve in which a product is received and at least one void formed in at least one of the sides and forming a window through which the product can be viewed. A film patch is applied to at least one side in which said at least one void is formed. The patch comprises a shrink-wrap material and is of a configuration and size to cover the void with an excess amount of shrink-wrap material provided sufficient to enable the film patch to contract substantially about the product upon activation of the shrink-wrap material without disturbing or altering an assembled shape of the product carton. Generally, the package can include an adhesive applied in a registered pattern about the void

for attaching the film patch to the at least one side. Optionally, the sides of the carton can be adapted to flex with contraction of the film patch about the product. Further, multiple voids can be formed in multiple sides, and more than one patch can be attached to the carton, with each patch covering at least one of the multiple voids. Further still, the multiple voids can extend from the sides into the ends of the package, and the more than one patch can be attached to the carton with each patch covering at least one of the multiple voids into the end flaps. Generally, the sides of the carton remain substantially rigid in response to the contraction of the patch about the product. The patch can be attached to the side(s) by adhesive, welding, or heat. Further, the patch can be heated to contract the patch about the product. If more than one patch is included on the blank, the multiple patches can be attached to the carton and the application of heat can be different for different areas of the carton or for each patch. Optionally still, the patch can be pre-shrunk at least partially prior to insertion of the product in the carton. If pre-shrunk, the patch can be contracted from its pre-shrunk configuration to a contracted position to conform substantially to the product. Further, generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0011] In yet another aspect, the invention includes a method of forming a product package including: providing a blank comprising a series of side panels connected along longitudinal fold lines, end flaps connected to at least one of the side panels along transverse fold lines, and at least one void in at least one of the side panels; providing a film patch of shrink-wrap material of a configuration and size sufficient to cover the at least one void and provide an excess amount of shrink-wrap material to enclose substantially a product; attaching the film patch to the blank in a position covering the at least one void; folding the side panels of the blank along the transverse fold lines to form a product carton for the product; and applying heat to the film patch for a desired time and at a desired temperature to

cause contraction of the film patch about the product within the product carton. Further, the patch can be attached to the blank by an adhesive applied in a registered pattern about the at least one void. Optionally, the side panels of the formed product carton can be adapted to flex with contraction of the patch about the product. Alternatively, the side panels can remain substantially rigid in response to the contraction of the patch about the product. Generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0012] In yet another aspect, the invention includes a carton including a blank having an interior surface and an exterior surface, a series of panels, and end flaps along a first end and a second end. At least a first void is formed in at least one of the panels. A shrink-wrap patch covers the first void and is adhered to the blank along adhesion positions on the interior surface of the blank. The adhesion positions are spaced from the void a distance to enable the patch to contract substantially about a product within the carton upon activation of the shrink-wrap material without disturbing or altering an assembled shape of the carton. Optionally, the panels can be adapted to flex with contraction of the patch about the product. Alternatively, the panels remain substantially rigid in response to the contraction of the patch about the product. Generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0013] In yet another aspect, the invention includes a method of forming a carton blank that includes: providing a carton blank, the blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end, the blank including at least a one void in at least one of the panels; applying an adhesive to the interior surface of the blank spaced a specified distance from the at least one void; and, overlaying a shrink-wrap patch in registration with the blank to adhere to the adhesive and to cover the at least one void. The patch can be attached to the blank by an adhesive applied in

a registered pattern about the at least one void. Optionally, the panels can be adapted to flex with contraction of the patch about the product. Alternatively, the panels remain substantially rigid in response to the contraction of the patch about the product. Generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0014] In yet another aspect, the invention includes a sealed package with a viewing window through which a product can be viewed, with the package including a blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end. At least a first void is provided in at least one of the panels to define the viewing window. A shrink-wrap patch covers the first void and is adhered to the blank along adhesion positions on the interior surface of the blank. The patch is adapted to contract and be substantially shaped about the product upon activation. Prior to shaping the patch about the product, the package has a shape, and the shape of the package is not substantially altered when the patch is shaped about the product. Optionally, the panels can be adapted to flex with contraction of the patch about the product. Alternatively, the panels remain substantially rigid in response to the contraction of the patch about the product. Generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0015] In yet another aspect, the invention includes, in combination, a carton and a moisture sealed insert. The carton is formed from a blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end. The blank includes at least a first void in at least one of the panels. The insert covers the first void and is adhered to the blank along adhesion positions on the interior surface of the blank, with the adhesion positions spaced from the first void a distance to enable the insert to contract substantially about a product upon activation of the insert. The combination is not

substantially altered in shape when the insert contracts. Optionally, the panels can be adapted to flex with contraction of the patch about the product. Alternatively, the panels remain substantially rigid in response to the contraction of the patch about the product. Generally, the product is restrained from movement with respect to the package when the patch is in its contracted position.

[0016] Those skilled in the art will appreciate the above stated advantages and other advantages and benefits of various additional embodiments reading the following detailed description of the embodiments with reference to the below listed drawing figures.

[0017] According to common practice, the various features of the drawings discussed below are not necessarily drawn to scale. Dimensions of various features and elements in the drawings may be expanded or reduced to more clearly illustrate embodiments of the disclosure.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. 1 shows a blank for forming a carton according to a first embodiment.

[0019] FIG. 2 shows the exterior surface of the blank of FIG. 1.

[0020] FIG. 3 shows the interior surface of the blank of FIG. 1 with shrink-film patch attached.

[0021] FIG. 4 shows a perspective view of an interior cavity formed from the blank of FIG. 1.

[0022] FIG. 5 shows a perspective view of a carton formed from the blank of FIG. 1.

[0023] FIG. 6 shows a blank for forming a carton according to a second embodiment.

[0024] FIG. 7 shows the exterior surface of the blank of FIG. 6.

- [0025] FIG. 8 shows a perspective view of a carton formed from the blank of FIG. 6.
- [0026] FIG. 9 shows a blank for forming a carton according to a third embodiment.
- [0027] FIG. 10 shows the exterior surface of the blank of FIG. 9.
- [0028] FIG. 11 shows a perspective view of a carton formed from the blank of FIG. 9.
- [0029] FIG. 12 shows a blank for forming a carton according to a fourth embodiment.
- [0030] FIG. 13 shows the exterior surface of the blank of FIG. 12.
- [0031] FIG. 14 shows a perspective view of a carton formed from the blank of FIG. 12.
- [0032] FIG. 15 shows a blank for forming a carton according to a fifth embodiment.
- [0033] FIG. 16 shows the exterior surface of the blank of FIG. 15.
- [0034] FIG. 17 shows a perspective view of a carton formed from the blank of FIG. 15.
- [0035] FIG. 18 shows a blank for forming a carton according to a sixth embodiment.
- [0036] FIG. 19 shows the exterior surface of the blank of FIG. 18.
- [0037] FIG. 20 shows a perspective view of a carton formed from the blank of FIG. 18.
- [0038] FIG. 21 shows a blank for forming a carton according to a seventh embodiment.
- [0039] FIG. 22 shows the exterior surface of the blank of FIG. 21.
- [0040] FIG. 23 shows a perspective view of a carton formed from the blank of FIG. 21.

[0041] FIG. 24 shows a blank for forming a carton according to an eighth embodiment.

[0042] FIG. 25 shows the exterior surface of the blank of FIG. 24.

[0043] FIG. 26 shows a perspective view of a carton formed from the blank of FIG. 24.

[0044] FIG. 27 shows a blank for forming a carton according to a ninth embodiment.

[0045] FIG. 28 shows a carton formed from the blank of FIG. 27.

[0046] FIG. 29A shows a prior art carton similar in shape to the carton of FIG. 28, but not including a heat-shrink patch.

[0047] FIG. 29B shows a prior art plastic insert conventionally used in the carton of FIG. 29A.

[0048] FIG. 30 shows a blank for forming a carton according to a tenth embodiment.

[0049] FIG. 31A shows a perspective view of a carton formed from the blank of FIG. 30 with contents inserted and heat-shrink patch activated.

[0050] FIG. 31B shows a prior art carton similar in shape to the carton of FIG. 31A, but including a plastic insert conventionally used in place of the heat-shrink patch used in the carton of FIG. 31A.

[0051] FIG. 32 shows a flowchart illustrating a method for applying a heat-shrink patch to a carton for forming a shape of contents in, or to be placed in, a carton.

[0052] As often as possible, corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0053] Generally, packaging assemblies as described herein may be formed from a carton having a heat-shrink layer (sometimes referred to as, for example, “shrink-wrap”) coupled to a portion thereof or from a carton having a heat-shrink layer in the form of a heat-shrink patch overlapping a portion of the carton. The heat-shrink patch may be attached to the carton on the inside of the carton or on the outside of the carton. In one exemplary embodiment, the carton can be formed from a paperboard material. The carton, however, could be made from other materials, and therefore is not limited to a specific type of material. The heat-shrink patch further can be movable from a first position to a second position to conform to the shape of contents in, or to be disposed in, the carton. The heat-shrink patch may be moved from the first position to the second position by, for example, heating the heat-shrink patch into contact with at least a portion of the contents as the patch shrinks under the heat.

[0054] Referring to the drawings, FIGS. 1-32 show various embodiments of blanks with heat-shrink patches applied thereto and corresponding cartons formed from the blanks. The dimensions provided on the blank figures are exemplary only, and should not be interpreted as limiting in any manner.

[0055] FIG. 1 shows blank 5 having an exterior surface 3, a first end 4, a second end 6, a periphery or perimeter edge 8 thereabout, and a series of side panels 10, 20, 30, 40, and 50. Panel 10 is connected along fold line 11 to panel 20, panel 20 is connected along fold line 21 to panel 30, panel 30 is connected along fold line 31 to panel 40, and panel 40 is connected along fold line 41 to panel 50. For further demarcation, the panel 20 can be referred to as the front or face panel, panel 40 can be referred to as the back panel, and panels 10 and 30 can be referred to as side panels. In order to eliminate replication throughout this disclosure, similar panels in each of the other embodiments can be referenced as front/face

panels, back panels, or side panels, without such references being repeated throughout. The blank 5 also includes end flaps 12 and 14 connected to panel 10 along respective transverse fold lines 13 and 15; end flaps 22 and 24 connected along respective arcuate fold lines 23 and 25 to intermediate panels 26 and 28, which, in turn, are connected to panel 20 along respective arcuate fold lines 27 and 29; end flaps 32 and 34 connected to panel 30 along respective transverse fold lines 33 and 35; and end flaps 42 and 44 connected to panel 40 along respective transverse fold lines 43 and 45. End flaps 12, 14, 32, 34 (and corresponding flaps throughout the various embodiments) are generally referred to as minor flaps. End flaps 22, 24, 42, 44 (and corresponding flaps throughout the various embodiments) are generally referred to as major flaps. The peripheral edges of end flaps 42 and 44 are shown with an arcuate configuration to match substantially the curvature of arcuate fold lines 23 and 25, respectively. Generally, transverse fold lines 13, 15, 33, 35, 43, 45 are transverse to fold lines 11, 21, 31, 41 between the panel sides. Alternatively, some or all of fold lines 13, 15, 23, 25, 33, 35, 43, 45 could be replaced with a single fold line (indicated at 61 at the first end 4 of blank 5 and at 63 at a second end of blank 5).

[0056] As shown in FIG. 1, panel 10 has a central portion defined between arcuate fold lines 17 and 19, which are spaced from fold lines 13 and 15, and panel 30 has a central portion defined between arcuate fold lines 37 and 39, which are spaced from fold lines 33 and 35. Panel 40 has a central portion defined between fold lines 47 and 49, which are spaced from fold lines 43 and 45, and when fold lines 47 and 49 also can have a slightly arcuate configuration to allow flexure when the heat-shrink patch is activated. Panel 50 further has a central portion defined between arcuate fold lines 57 and 59, which are spaced from the periphery 8 of the blank 5. As shown in FIG. 2, arcuate fold line 23 and arcuate fold line 27 define an intermediate panel 26 therebetween and adjacent panel 20, and arcuate fold line 25 and arcuate fold line 29 define an intermediate panel 28 therebetween and adjacent panel 20.

Arcuate fold lines 23, 25, 27, 29 allow for flexure of at least portions of the panels or intermediate panels to conform at least partially to form the carton and/or to retain the contents in place in the formed carton once the heat-shrink patch is activated.

[0057] As shown in FIG. 1, a cutout, kick-out, or foot-stand portion 60 can be formed in intermediate panel 28, which can allow the formed carton or package to be disposed in a vertical orientation. In addition, a series of voids 70, 72, and 74 generally will be formed in selected ones of the side panels and/or end flaps. Among other functions, for example, these voids can provide display and viewing of the products in the carton or package, or can facilitate functions such as ventilation of product in the carton or package, or can facilitate shrink activation/conformity around the product. A first void 70 is provided at a central portion of panel 20 spaced from arcuate fold lines 27 and 29. The first void extends across fold line 11 and into panel 10 between arcuate fold lines 17 and 19, and extends across fold line 21 and into panel 30 between arcuate fold lines 37 and 39. A second void 72 and a third void 74 extend on either side of the central portion of panel 40. Voids 72 and 74 extend along arcuate lines and between fold lines 47 and 49. Void 72 extends from panel 40 across fold line 31 into panel 30 in an arcuate line. Void 74 extends from panel 40 across fold line 41 into panel 50 in an arcuate line. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[0058] As shown in FIG. 2, interior surface 1 of blank 5 opposes exterior surface 3. As also shown in FIG. 2, a shrink film patch 80 is attached to the blank 5 to cover voids 70, 72, and 74 (FIG. 1) and at least portions of panels 10, 20, 30, 40, and 50. The shrink film patch 80 can extend beyond any of panels 10, 20, 30, 40, and 50. Generally, the shrink film patch 80 (FIG. 1) can be adhered to blank 5 by adhesive 85 at strategic locations along or

about the blank to allow the shrink film patch 80 to conform at least partially to contents C (shown in FIG. 5) to at least partially hold or secure the contents C in place in a carton 95 formed from the folded/assembled blank to form a resultant product packaging assembly 99 when the shrink film patch 80 is activated.

[0059] The locations for application of the adhesive material generally can vary based upon various factors, such as the size and configuration of the carton, the size and shape of the product contents to be contained in the carton, the number of cutouts or windows in the carton, the location of fold lines in the carton, and the extent of the contents to be sealed within the carton. The shrink film patch 80 further generally will be sized and/or configured such that it can be adhesively secured to the carton panels and against separation therefrom, while providing sufficient shrink-film material to enable consistent and substantially complete adherence or wrapping of the shrink-film about the contents of the carton.

[0060] To form blank 5 (FIG. 1) into a carton, the side panels 10, 20, 30, 40, and 50 are articulated about fold lines 11, 21, 31, 41 to form a sleeve or interim configuration defining an interior cavity 90 shown in FIG. 3. Panel 10 (FIG. 1) or panel 50 can receive an adhesive to secure the carton together, with panel 50 being attached, either above or below, to panel 10. Once interior cavity 90 is formed, generally its contents C are inserted into the cavity and the end flaps are folded about their respective fold lines to close each end, forming the resultant carton 95 (shown without contents inserted in FIG. 4).

[0061] Once the carton 95 has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 80 can be activated by applying heat to form packaging assembly 99 (FIG. 5) with patch 80 at least partially securing contents C in place in carton 95.

[0062] FIG. 6 shows another embodiment of a blank 105 with a first end 104, a second end 106, an exterior surface 103, periphery 108, and a series of side panels 110, 120, 130, 140, and 150. Panel 110 is connected along fold line 111 to panel 120, panel 120 is connected along fold line 121 to panel 130, panel 130 is connected along fold line 131 to panel 140, and panel 140 is connected along fold line 141 to panel 150. Blank 105 includes end flaps 112 and 114 connected to panel 110 along respective transverse fold lines 113 and 115, end flaps 122 and 124 connected along respective diagonal fold line 123 and transverse fold line 125 to panels 120, end flaps 132 and 134 connected to panel 130 along arcuate fold line 133 and transverse fold line 135, respectively, end flaps 142 and 144 connected to panel 140 along diagonal fold line 143 and transverse fold line 145, respectively, and end flaps 152 and 154 connected to panel 150 along respective transverse fold lines 153 and 155. The ends of end flaps 112 and 152 at the periphery 108 of blank 105 generally are arcuate to match the curvature of arcuate fold line 133. Generally, transverse fold lines 113, 115, 125, 135, 145, 153, and 155 are transverse to fold lines 111, 121, 131, and 141. Alternatively, some or all of fold lines 113, 115, 123, 125, 133, 135, 143, 145, 153, and 155 could be replaced with a single fold line (shown at 161 at a first end of blank 105 and at 163 at a second end of blank 105).

[0063] As shown in FIG. 6, panel 110 has a central portion defined between fold lines 107, 109, 117, and 119, each of which is spaced from each other and from fold lines 113 and 115 and which will allow the central portion of panel 110 to flex as the heat-shrink wrap is activated. Fold lines 107 and 109 are approximately equal in length, are spaced from fold lines 117 and 119 in panel 110, and, extend only partially across the width of panel 110, while fold lines 117 and 119 extend substantially across the entire width of panel 110. An intermediate panel 136 is provided in a central portion of panel 130 and is defined between arcuate fold lines 137 and 139, which are spaced from fold lines 133 and 135. Intermediate

panel 136 is formed in a generally oval or elliptical shape. Panel 150 has a central portion defined between fold lines 147, 149, 157, and 159, each of which is spaced from fold lines 153 and 155 and which will allow the central portion of panel 150 to flex as the heat-shrink wrap is activated. Fold lines 147 and 149 are approximately equal in length, are spaced from fold lines 157 and 159 in the central portion of panel 150, and generally extend only partially across the width of panel 150, while fold lines 157 and 159 extend substantially across the entire width of panel 150.

[0064] As shown in FIG. 6, a cutout, kick-out, or foot-stand portion 160 typically is formed in panel 130, which can allow the formed carton or package to be disposed in a substantially vertical orientation. A series of voids 170, 172, and 174 can be provided in selected ones of the panels 110, 120, 130, 140, and 150 and/or the end flaps. In the present embodiment, a first void 170 is provided in panel 110 extending between ends of fold lines 107 and 109 adjacent the intersection of fold lines 117 and 119 with fold line 111. Generally, void 170 extends along fold line 111, but does not extend into panel 120. A second void 172 and a third void 174 extend on either side of the central portion of panel 130, with void 172 extending from panel 130 across fold line 121 and into panel 120 and void 174 extending from panel 130 across fold line 131 into panel 140. A fourth void 176 is provided at an upper portion of panel 130 with an upper perimeter of void 176 being defined by arcuate fold line 133. Void 176 generally extends to and along fold line 133, but does not extend into end flap 132. A fifth void 178 is provided in panel 150 and generally extends between end points of fold lines 147 and 149 to the intersection of fold lines 157 and 159 with fold line 141. Void 178 is shown as generally extending to and along fold line 141, but does not extend into panel 140. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex or move with the heat-shrink patch as desired.

[0065] As shown in FIG. 7, interior surface 101 of blank 105 opposes exterior surface 103. As also shown in FIG. 7, a shrink film patch 180 is attached to the blank 105 to cover voids 170, 172, 174, 176, and 178 and at least portions of panels 110, 120, 130, 140, and 150. The patch 180 can extend beyond any of panels 110, 120, 130, 140, and 150. Generally, the shrink film patch 180 is of a selected size and is adhered to blank 105 by adhesive 185 at strategic locations that are designed to allow the shrink film patch 180 to conform at least partially to the contents (shown at C in FIG. 8) of the carton to at least partially hold or secure contents C in place within the carton to form a packaging assembly 199 when the shrink film patch 180 is activated.

[0066] To form blank 105 into a carton, the panels 110, 120, 130, 140, and 150 are articulated about fold lines 111, 121, 131, 141 to form a sleeve or other intermediate configuration defining an interior cavity. Panel 110 or panel 150 receives an adhesive to secure the carton together, with panel 150 being attached, either above or below, to panel 110. Once the interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[0067] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 180 can be activated by applying heat to form packaging assembly 199 (FIG. 8) with patch 180 at least partially securing contents C in place in carton.

[0068] FIG. 9 shows another embodiment of a blank 205 with a first end 204, a second end 206, an exterior surface 203, a periphery or perimeter edge 208, and a series of side panels 210, 220, 230, 240, and 250. Panel 210 is connected along fold line 211 to panel 220, panel 220 is connected along fold line 221 to panel 230, panel 230 is connected along fold line 231 to panel 240, and panel 240 is connected along fold line 241 to panel 250. Blank 205 includes end flaps 212 and 214 connected to panel 210 along respective transverse

fold lines 213 and 215, end flaps 222 and 224 connected along diagonal fold line 223 and transverse fold line 225, respectively, end flaps 232 and 234 connected to panel 230 along respective transverse fold lines 233 and 235, end flaps 242 and 244 connected to panel 240 along diagonal fold line 243 and transverse fold line 245, respectively, and end flaps 252 and 254 connected to panel 250 along respective transverse fold lines 253 and 255. The ends of end flaps 212 and 252 at the periphery 208 of blank 205 are arcuate to match the curvature of void 276 (detailed below). Generally, transverse fold lines 213, 215, 225, 233, 235, 245, 253, and 255 are transverse to fold lines 211, 221, 231, and 241. Alternatively, some or all of fold lines 213, 215, 223, 225, 233, 235, 243, 245, 253, and 255 could be replaced with a single fold line (shown at 261 at a first end and at 263 at a second end of blank 205).

[0069] As shown in FIG. 9, panel 210 has a central portion with four fold lines 207, 209, 217, and 219 spaced from fold lines 213 and 215. Fold lines 207 and 209 extend partially across the width of panel 210 and are substantially equal in length, and fold lines 217 and 219 extend substantially the entire width across panel 210. Panel 250 has a central portion defined by fold lines 247, 249, 257, 259 spaced from fold lines 253 and 255. Fold lines 247 and 249 extend partially across the width of panel 250 and are substantially equal in length, and fold lines 257 and 259 extend substantially the entire width across panel 250. Fold lines 207, 209, 217, 219, 247, 249, 257, and 259 allow flexure of at least portions of the panels or intermediate panels to conform at least partially to the contents in the formed carton with the heat-shrink patch once the heat-shrink patch is activated.

[0070] As shown in FIG. 9, a cutout, kick-out, or foot-stand portion 260 can be formed in panel 230, which can allow the formed carton or package to be disposed in a substantially vertical or other desired orientation. A series of voids 270, 272, 274, 276, and 278 can be provided at selected locations along the blank. In this embodiment, a first void 270 can be provided at a central portion of panel 210 between the end points of fold lines 207

and 209 and extending substantially to the intersection of fold lines 217 and 219 with fold line 211. Generally, void 270 extends to and along fold line 211, but does not extend into panel 220. A second void 272 and a third void 274 extend on either side of a central portion of panel 230. Void 272 extends from panel 230 across fold line 221 into panel 220 and void 274 extends from panel 230 across fold line 231 into panel 240. A fourth void 276 extends in an upper portion of panel 230 across fold line 233 into end flap 232. A fifth void 278 is provided in panel 250 and extends from the end point of fold lines 247 and 249 substantially to the intersection of fold lines 257 and 259 with fold line 241. Void 278 extends to fold line 241, but generally does not extend into panel 240. Optionally, although the carton does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex and/or move with the heat-shrink patch as desired.

[0071] As shown in FIG. 10, interior surface 201 of blank 205 opposes exterior surface 203. As also shown in FIG. 10, shrink film patch 280 generally is attached to the blank 205 in a position covering voids 270, 272, 274, 276, and 278 and portions of panels 210, 220, 230, 240, and 250. The shrink film patch 280 also can be sized so as to extend beyond any of panels 210, 220, 230, 240, and 250. Generally, the shrink film patch 280 is of a size and is adhered to blank 205 by an adhesive material 285 applied at strategic locations selected to allow the shrink film patch 280 to conform at least partially to contents C (shown in FIG. 11) of the carton so as to at least partially hold or secure contents C in place within the carton to form a packaging assembly 299 without substantially collapsing or reorienting the carton panels or walls when the shrink film patch 280 is activated.

[0072] To form blank 205 into a carton, the panels 210, 220, 230, 240, and 250 are articulated about fold lines 211, 221, 231, 241 to form a sleeve or other intermediate configuration defining an interior cavity. Panel 210 or panel 250 receives an adhesive to

secure the carton together, with panel 250 being attached, either above or below, to panel 210. Once interior cavity is formed, generally the contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[0073] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 280 can be activated by applying heat to form packaging assembly 299 (FIG. 11), with patch 280 at least partially encompassing and/or securing contents C in place in the carton.

[0074] FIG. 12 shows a further example embodiment of a blank 305 including a first end 304, a second end 306, exterior surface 303, a periphery or perimeter edge 308, and a series of side panels 310, 320, 330, 340, and 350. Panel 310 is connected along fold line 311 to panel 320, panel 320 is connected along fold line 321 to panel 330, panel 330 is connected along fold line 331 to panel 340, and panel 340 is connected along fold line 341 to panel 350. Blank 305 includes end flaps 312 and 314 connected to panel 310 along respective transverse fold lines 313 and 315, end flaps 322 and 324 connected along respective arcuate fold lines 323 and 325 to intermediate panels 326 and 328, which, in turn, are connected to panel 320 along respective arcuate fold lines 327 and 329, end flaps 332 and 334 connected to panel 330 along respective transverse fold lines 333 and 335, and end flaps 342 and 344 connected to panel 340 along respective transverse fold lines 343 and 345. Generally, transverse fold lines 313, 315, 333, 335, 343, and 345 are transverse to fold lines 311, 321, 331, 341. Alternatively, some or all of fold lines 313, 315, 323, 325, 333, 335, 343, 345 could be replaced with a single fold line (shown at 361 at a first end of blank 305 and at 363 at a second end of blank 305).

[0075] As shown in FIG. 12, in the present embodiment, panel 310 has a central portion defined between arcuate fold lines 317 and 319, which are spaced from fold lines 313 and 315. As also shown in FIG. 13, arcuate fold line 323 and arcuate fold line 327 define an

intermediate panel 326 therebetween and arcuate fold line 325 and arcuate fold line 329 define an intermediate panel 328 therebetween. Arcuate fold lines 323, 325, 327, 329 allow for flexure of at least portions of the panels or intermediate panels to conform at least partially to retain the contents in place in the formed carton once the heat-shrink patch is activated. Panel 330 has a central portion defined between arcuate fold lines 337 and 339, which are spaced from fold lines 333 and 335. Panel 340 has a central portion defined between fold lines 347 and 349, which are spaced from fold lines 343 and 345. Fold lines 347 and 349 are slightly arcuate to allow flexure when the heat-shrink patch is activated. Panel 350 has a central portion defined between arcuate fold lines 357 and 359, which are spaced from the periphery 308 of blank 305.

[0076] As shown in FIG. 12, a cutout, kick-out, foot-stand portion 360 is formed in intermediate panel 328, which can allow the formed carton or package to be disposed in a substantially vertical or other orientation. A series of voids are formed in or between the panels 310, 320, 330, 340, and 350. In this embodiment, a first void 370 is provided in a central portion of panel 320 spaced from arcuate fold lines 327 and 329. The first void 370 extends from panel 320 across fold line 311 into panel 310 between arcuate fold lines 317 and 319, and extends across fold line 321 into panel 330 between arcuate fold lines 337 and 339. A second void 372 and a third void 374 extend on either side of the central portion of panel 340. Voids 372 and 374 extend along arcuate lines and between fold lines 347 and 349. Void 372 extends from panel 340 across fold line 331 into panel 330. Void 374 extends from panel 340 across fold line 341 into panel 350. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panel or end flaps to allow sections of the carton to flex and/or move with the heat-shrink patch as desired.

[0077] As shown in FIG. 13, interior surface 301 of blank 305 opposes exterior surface 303. As also shown in FIG. 13, a shrink film patch 380 is attached to the blank 305 to cover voids 370, 372, and 374 and at least portions of panels 310, 320, 330, 340, and 350. The shrink film patch 380 generally is sized and/or configured to cover the voids with some desired amount of excess shrink film material provided to enable the shrink film to surround substantially and cover the carton contents without causing collapse or substantial shifting of the carton walls or panels when activated, and further can extend beyond any of panels 310, 320, 330, 340, and 350. Generally, the shrink film patch 380 is adhered to blank 305 by adhesive 385 at strategic locations selected to allow the shrink film patch 380 to conform at least partially to or about the contents C (shown in FIG. 14) to at least partially hold or secure contents C in place in the carton to form a packaging assembly 399 when the shrink film patch 380 is activated.

[0078] To form blank 305 into a carton, the panels 310, 320, 330, 340, and 350 are articulated about fold lines 311, 321, 331, and 341 to form a sleeve or other carton configuration defining an interior cavity. Panel 310 or panel 350 receives an adhesive to secure the carton together, with panel 350 being attached, either above or below, to panel 310. Once the interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[0079] Once the carton has been formed, and either before, substantially simultaneously with, or after its contents C are placed within the carton, the heat-shrink patch 380 can be activated by applying heat to form packaging assembly 399 (FIG. 14) with patch 380 at least partially securing contents C in place in the carton.

[0080] FIG. 15 shows another embodiment of a blank 405 with a first end 404, a second end 406, an exterior surface 403, a periphery or perimeter edge 408, and a series of side panels 410, 420, 430, 440, and 450. Panel 410 is connected along fold line 411 to panel

420, panel 420 is connected along fold line 421 to panel 430, panel 430 is connected along fold line 431 to panel 440, and panel 440 is connected along fold line 441 to panel 450.

Blank 405 includes end flaps 412 and 414 connected to panel 410 along respective transverse fold lines 413 and 415, end flaps 422 and 424 connected along diagonal fold line 423 and transverse fold line 425, respectively, end flaps 432 and 434 connected to panel 430 along respective transverse fold lines 433 and 435, end flaps 442 and 444 connected to panel 440 along diagonal fold line 443 and transverse fold line 445, respectively, and end flaps 452 and 454 connected to panel 450 along respective transverse fold lines 453 and 455. Generally, transverse fold lines 413, 415, 425, 433, 435, 445, 453, and 455 are transverse to fold lines 411, 421, 431, and 441. Alternatively, some or all of fold lines 413, 415, 423, 425, 433, 435, 443, 445, 453, and 455 could be replaced with a single fold line (shown at 461 at a first end of blank 405 and at 463 at a second end of blank 405).

[0081] As shown in FIG. 15, panel 410 has a central portion with four fold lines 407, 409, 417, and 419 spaced from each other and from fold lines 413 and 415. Fold lines 407 and 409 extend partially across the width of panel 410 and are substantially equal in length, while fold lines 417 and 419 extend substantially across the entire width of panel 410. Panel 450 has a central portion defined by fold lines 447, 449, 457, 459, which are spaced from fold lines 453 and 455. Fold lines 447 and 449 extends partially across the width of panel 450 and are spaced from each other and from fold lines 457 and 459, which extend substantially the entire width across panel 450. Fold lines 407, 409, 417, 419, 447, 449, 457, and 459 allow flexure of at least portions of the panels or intermediate panels to conform at least partially to the contents in the formed carton once the heat-shrink patch is activated.

[0082] As shown in FIG. 15, cutouts, kick-outs, or foot-stand portions 460 and 462 are formed in panel 430, which can allow the formed carton or package to be disposed in a vertical orientation. A first void 470 is provided at a central portion of panel 410 between the

end points of fold lines 407 and 409 to extend substantially to the intersection of fold lines 417 and 419 with fold line 411. Generally, void 470 extends to fold line 411, but does not extend into panel 420. A second void 472 and a third void 474 extend on either side of a central portion of panel 430, with void 472 extending from panel 430 across fold line 421 into panel 420 and void 474 extending from panel 430 across fold line 431 into panel 440. A fourth void 476 is provided in an upper portion of panel 430 and extends across fold line 433 into end flap 432. A fifth void 478 is provided in panel 450 and extends from the end point of fold lines 447 and 449 substantially to the intersection of fold lines 457 and 459 with fold line 441. Void 478 extends to fold line 441, but generally does not extend into panel 440. As shown in FIG. 15, cutout, kick-out, or foot portion 464 is formed in panel 450, which can allow the formed carton or package to be disposed in a vertical orientation. Optionally, although the carton does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[0083] As shown in FIG. 16, interior surface 401 of blank 405 opposes exterior surface 403. As also shown in FIG. 16, a shrink film patch 480 is attached to the blank 405 to cover voids 470, 472, 474, 476, and 478, and at least portions of panels 410, 420, 430, 440, and 450. The shrink film patch 480 generally is sized and/or configured to cover the voids with some desired amount of excess shrink film material provided to enable the shrink film to surround substantially and cover the carton contents without causing collapse or substantial shifting of the carton walls or panels when activated, and further can extend beyond any of panels 410, 420, 430, 440, and 450. Generally, the shrink film patch 480 is adhered to blank 405 by adhesive 485 at strategic locations to allow the shrink film patch 480 to conform at least partially to contents C (shown in FIG. 17) to at least partially hold or secure contents C

in place in the carton to form a packaging assembly 499 when the shrink film patch 480 is activated.

[0084] To form blank 405 into a carton, the panels 410, 420, 430, 440, and 450 are articulated about fold lines 411, 421, 431, 441 to form an interior cavity. Panel 410 or panel 450 receives an adhesive to secure the carton together, with panel 450 being attached, either above or below, to panel 410. Once interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[0085] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 480 can be activated by applying heat for form packaging assembly 499 (FIG. 17) with patch 480 at least partially securing contents C in place in a carton.

[0086] FIG. 18 shows another embodiment of a blank 505 with a first end 504, a second end 506, an exterior surface 503, a periphery or perimeter edge 508, and a series of side panels 510, 520, 530, 540, and 550. Panel 510 is connected along fold line 511 to panel 520, panel 520 is connected along fold line 521 to panel 530, panel 530 is connected along fold line 531 to panel 540, and panel 540 is connected along fold line 541 to panel 550. Blank 505 includes end flaps 512 and 514 connected to panel 510 along respective transverse fold lines 513 and 515, end flaps 522 and 524 connected along respective diagonal fold line 523 and transverse fold line 525 to panel 520, end flaps 532 and 534 connected to panel 530 along arcuate fold line 533 and transverse fold line 535, respectively, end flaps 542 and 544 connected to panel 540 along diagonal fold line 543 and transverse fold line 545, respectively, and end flaps 552 and 554 connected to panel 550 along respective transverse fold lines 553 and 555. The ends of end flaps 512 and 552 at the periphery 508 of blank 505 are shaped to match the curvature of fold line 533 and void 576 (detailed below). Generally,

transverse fold lines 513, 515, 525, 535, 545, 553, and 555 are transverse to fold lines 511, 521, 531, and 541. Alternatively, some or all of fold lines 513, 515, 523, 525, 533, 535, 543, 545, 553, and 555 could be replaced with a single fold line (shown at 561 at a first end of blank 505 and at 563 at a second end of blank 505).

[0087] As shown in FIG. 18, panel 510 has a central portion with fold lines 507, 509, 517, and 519, spaced from each other and from fold lines 513 and 515, all of which allow the central portion to flex as the heat-shrink wrap is activated. Fold lines 507 and 509 extend partially across the width of panel 510 and are substantially equal in length, and fold lines 517 and 519 extend substantially across the entire width of panel 510. An intermediate panel 536 is provided in a central portion of panel 530 between arcuate fold lines 537 and 539, which are spaced from fold lines 533 and 535. Intermediate panel 536 extends in a generally oval or elliptical shape. Panel 550 has a central portion defined between fold lines 547, 549, 557, and 559, each of which is spaced from fold lines 553 and 555. Fold lines 547 and 549 extend partially across panel 550 and are substantially equal in length, and fold lines 557 and 559 extend substantially the entire width across panel 550. Fold lines 547, 549, 557, and 559 allow for flexure of at least portions of the panels or intermediate panels to conform at least partially to the contents in the formed carton once the heat-shrink patch is activated.

[0088] As shown in FIG. 18, cutout, kick-out, or foot-stand portions 560 and 562 are formed in panel 530, which can allow the formed carton or package to be disposed in a vertical orientation. A first void 570 is provided in panel 510 and extends between the ends of fold lines 507 and 509 to an approximate intersection of fold lines 517 and 519 with fold line 511. Generally, void 570 extends along fold line 511, but does not extend into panel 520. A second void 572 and third void 574 extend on either side of the central portion of panel 530, with void 572 extending from panel 530 across fold line 521 and into panel 520, and void 574 extending from panel 530 across fold line 531 into panel 540. A fourth void

576 is provided at an upper portion of panel 530 with an upper perimeter of void 576 defined by arcuate fold line 533. Void 576 generally extends to and along fold line 533, but does not extend into end flap 532. A fifth void 578 is provided in panel 550 and generally extends between the end points of fold lines 547 and 549 to the intersection of fold lines 557 and 559 with fold line 541. Void 578 generally extends to fold line 541, but does not extend into panel 540. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[0089] As shown in FIG. 19, interior surface 501 of blank 505 opposes exterior surface 503. As also shown in FIG. 19, a shrink film patch 580 is attached to the blank 505 to cover voids 570, 572, 574, 576, and 578 and at least portions of panels 510, 520, 530, 540, and 550. The shrink film patch 580 can extend beyond any of panels 510, 520, 530, 540, and 550. Generally, the shrink film patch 580 is adhered to blank 505 by adhesive 585 at strategic locations to allow the shrink film patch 580 to conform at least partially to contents C to at least partially hold or secure contents C in place in a carton to form a packaging assembly 599 when the shrink film patch 580 is activated.

[0090] To form blank 505 into a carton, the panels 510, 520, 530, 540, and 550 are articulated about fold lines 511, 521, 531, 541 to form an interior cavity. Panel 510 or panel 550 receives an adhesive to secure the carton together, with panel 550 being attached, either above or below, to panel 510. Once interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[0091] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 580 can be activated by

applying heat to form packaging assembly 599 (FIG. 20) with patch 580 at least partially securing contents C in place in a carton.

[0092] FIG. 21 shows another embodiment of a blank 605 with a first end 604, a second end 606, an exterior surface 603, and side panels 607, 610, 620, 630, 640, and 650. Panel 607 is connected along fold line 609 to panel 610, panel 610 is connected along fold line 611 to panel 620, panel 620 is connected along fold line 621 to panel 630, panel 630 is connected along fold line 631 to panel 640, and panel 640 is connected along fold line 641 to panel 650. Blank 605 includes end flaps 622 and 624 connected to panel 620 along respective transverse fold lines 623 and 625, end flaps 632 and 634 connected to panel 630 along respective transverse fold lines 633 and 635, and end flaps 642 and 644 connected to panel 640 along respective transverse fold lines 643 and 645. Generally, transverse fold lines 623, 625, 633, 635, 643, and 645 are transverse to fold lines 609, 611, 621, 631, and 641. Alternatively, some or all of fold lines 623, 635, 633, 635, 643, 645 could be replaced with a single fold line (shown at 661 at a first end of blank 605 and at 663 at a second end of blank 605). Tuck in flaps 636 and 638 are connected to end flaps 632 and 634 along fold lines 637 and 639, respectively. The free end of panel 650, at the periphery 608 of blank 605, is formed in a shape corresponding to the shape of void 670 (detailed below) in panel 610. The carton style/flap design of FIG. 21 could alternatively be a Seal End style carton.

[0093] As shown in FIG. 21, a cutout, kick-out, or foot-stand portion 660 is formed in panel 630, which can allow the formed carton or package to be disposed in a vertical orientation. A first void 670 is provided at a central portion of panel 620 spaced from fold lines 623 and 625. The first void extends from panel 620 across fold line 611 into panel 610 and extends from panel 620 across fold line 621 into panel 630. A second void 672 extends into panel 630 and panel 640 and crosses fold line 631. Voids 670 and 672 have arcuate configuration lines that extend in panels 610, 620, 630, and 640. Void 672 having a

substantially bottle-like shape and being substantially symmetrical about fold line 631.

Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, fold lines or additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[0094] As shown in FIG. 22, interior surface 601 of blank 605 opposes exterior surface 603. As also shown in FIG. 22, a shrink film patch 680 is attached to the blank 605 to cover voids 670 and 672 and at least portions of some of panels 607, 610, 620, 630, 640, and 650. The shrink film patch 680 can extend beyond any of panels 607, 610, 620, 630, 640, and 650. Generally, the shrink film patch 680 is attached to blank 605 by adhesive 685 at strategic locations to allow the shrink film patch 680 to conform at least partially to contents C to at least partially hold or secure contents C in place in a carton to form a packaging assembly 699 when the shrink film patch is activated.

[0095] To form blank 605 into a carton, the panels 607, 610, 620, 630, 640, and 650 are articulated about fold lines 609, 611, 621, 631, 641 to form an interior cavity. Panel 607, 610, and/or 650 receives an adhesive to secure the carton together, with panel 650 being attached, either above or below, to panels 607 and 610. Once the interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming the carton.

[0096] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 680 can be activated by applying heat to form packaging assembly 699 (FIG. 23) with patch 680 at least partially securing contents C in place in a carton.

[0097] FIG. 24 shows another embodiment of a blank 705 with a first end 704, a second end 706, an exterior surface 703, and side panels 710, 720, 730, 740, and 750. Panel 710 is connected along fold line 711 to panel 720, panel 720 is connected along fold line 721

to panel 730, panel 730 is connected along fold line 731 to panel 740, and panel 740 is connected along fold line 741 to panel 750. Blank 705 includes end flaps 712 and 714 connected to panel 710 along respective transverse fold lines 713 and 715, end flaps 722 and 724 connected along respective transverse fold lines 723 and 725 to panel 720, end flaps 732 and 734 connected to panel 730 along respective transverse fold lines 733 and 735. Tuck-in flaps 726 and 728 are attached to end flaps 722 and 724 along respective transverse fold lines 727 and 729 and extend to a periphery 708 of blank 705. Generally, transverse fold lines 713, 715, 723, 725, 733, and 735 are transverse to fold lines 711, 721, 731, and 741. Alternatively, some or all of fold lines 713, 715, 723, 725, 733, 735 could be replaced with a single fold line (shown at 761 at a first end of blank 705 and at 763 at second end of blank 705).

[0098] As shown in FIG. 24, a cutout, kick-out, or a foot-stand portion 760 is formed in panel 720, which can allow the formed carton or package to be disposed in a vertical orientation. A first void 770 extends into panels 710 and 720 and extends across fold line 711. Void 770 is substantially symmetrical about fold line 711. A second void 772 extends from panel 730 across fold line 721 into panel 720, and extends from panel 730 across fold line 731 into panel 740. Voids 770 and 772 include arcuate portions that will allow the heat-shrink patch to conform to contents C disposed within the formed carton. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, additional fold lines can be included on the panels or end flaps to allow sections of carton to flex with the heat-shrink patch as desired. The carton style/flap design of FIG. 24 could alternatively be a Seal End style carton.

[0099] As shown in FIG. 25, interior surface 701 of blank 705 opposes exterior surface 703. As also shown in FIG. 44, a shrink-film patch 780 is attached to blank 705 to cover voids 770 and 772 and at least some of panels 710, 720, 730, 740, and 750. The

shrink-film patch 780 can extend beyond any of panels 710, 720, 730, 740, and 750.

Generally, the shrink-film patch 780 is attached to blank 705 by adhesive 785 at strategic locations to allow the shrink-film patch 780 to conform at least partially to contents C (shown in FIG. 26) to at least partially hold or secure contents C in place in the carton to form a packaging assembly 799 when the shrink-film patch 780 is activated.

[00100] To form blank 705 into a carton, the panels 710, 720, 730, 740, and 750 are articulated about fold lines 711, 721, 731, 741 to form an interior cavity. Panel 710 or panel 750 receives an adhesive to secure the carton together, with panel 750 being attached, either above or below, to panel 710. Once interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton.

[00101] Once the carton has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 780 can be activated by applying heat to form packaging assembly 799 (FIG. 26) with patch 780 at least partially securing contents C in place in a carton.

[00102] FIG. 27 shows another embodiment of a blank 805 with a first end 804, a second end 806, an interior surface 801, and panels 802, 807, 810, 820, 830, 840, and 850. Panel 802 is connected along fold line 804 to panel 807, panel 807 is connected along fold line 809 to panel 810, panel 810 is connected along fold line 811 to panel 820, panel 820 is connected along fold line 821 to panel 830, panel 830 is connected along fold line 831 to panel 840, and panel 840 is connected along fold line 841 to panel 850. Blank 805 includes end flap 812 connected to panel 810 along transverse fold line 813, top end flap 814 connected to end flap 812 along transverse fold line 815, and tuck-in flaps 816 and 818 are connected to top end flap 814 along respective fold lines 817 and 819. Blank 805 also includes end flaps 822 and 824 connected to panel 820 along respective transverse fold lines

823 and 825, end flaps 832 and 834 connected to panel 830 along respective transverse fold lines 833 and 835, end flaps 842 and 844 connected to panel 840 along respective transverse fold lines 843 and 845, and end flaps 852 and 854 connected to panel 850 along respective transverse fold lines 853 and 855. Upstanding header flaps 836 and 856 are respectively connected to end flaps 832 and 852 along respective fold lines 837 and 857. Generally, transverse fold lines 813, 823, 825, 833, 843, and 853 are transverse to fold lines 804, 809, 811, 821, 831, and 841. Alternatively, some or all of fold lines 813, 823, 825, 833, 843, 853 could be replaced with a single fold line (shown at 861 at a first end of blank 805 and at 863 at a second end of blank 805). Top end flap 814 generally will be disposed in a position perpendicular panels 810, 820, 830, 840, and 850, while upstanding end flaps 836 and 856 will be disposed generally parallel 810, 820, 830, 840, and 850, when blank 805 is formed into a carton. The end flaps generally extend away from panels 810, 820, 830, 840, and 850 to periphery 808 of blank 805.

[00103] As shown in FIG. 27, a cutout, punch-out, or opening portion 865 is formed in upstanding end flap 836 and a cutout, punch-out, or opening portion 867 is formed in upstanding end flap 856. Portions 865 and 867 can be used to dispose or orient the carton 895 onto or above a surface, such as hooking carton 895 on a hook on a retail display. A void 870 is provided at a central portion of panel 830 spaced from fold line 821 and from transverse fold lines 833 and 835. The void 870 extends from panel 830 across fold line 831 into panel 840 a distance, spaced from fold line 841 and from transverse fold lines 843 and 845. Void 870 has arcuate configuration lines in panels 830 and 840. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, fold lines or additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[00104] As shown in FIG. 27, a shrink film patch 880 is attached to the blank 805 to cover void 870 and at least portions of some of panels 802, 807, 810, 820, 830, 840, and 850. The shrink film patch 880 can extend beyond any of panels 802, 807, 810, 820, 830, 840, and 850. Generally, the shrink film patch 880 is attached to blank 805 by adhesive 885 at strategic locations to allow the shrink film patch 880 to conform at least partially to contents C to be placed in carton 895 when formed (FIG. 28), and to at least partially hold or secure the contents C in place in carton 895 to form a packaging assembly 899 when the shrink film patch is activated. As shown in FIG. 27, adhesive 885 is shown in one area offset from the edge of the shrink film patch 880; with the offset shown being  $\frac{1}{4}$ " from the edge of patch 880 (indicated at circle 1 in FIG. 27). The adhesive 885 is shown in another area offset from the edge of void 870, with the offset shown being  $\frac{3}{8}$ " from the edge of void 870 (indicated at circle 2 in FIG. 27).

[00105] To form blank 805 into a carton, the panels 802, 807, 810, 820, 830, 840, and 850 are articulated about fold lines 804, 809, 811, 821, 831, 841 to create an interior cavity. Generally either panel 810 or 850 receives an adhesive to secure the carton together, with panel 850 being attached, either above or below, panel 810. Panels 802 and 807 can be folded into the interior cavity to form a spacer compartment in the carton, e.g., for example, to make carton 895 larger for illusory purposes, such as to convey value by increased size on a retail shelf. Once the interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming carton 895 shown in FIG. 28.

[00106] Once the carton 895 has been formed, and either before, simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 880 can be activated by applying heat to form packaging assembly 899 (FIG. 28) with patch 880 at least partially securing contents C in place in carton 895. FIG. 29A shows a prior art carton

similar in shape to the carton of FIG. 28, but not including a heat-shrink patch. FIG. 29B shows a prior art plastic insert conventionally used in the carton of FIG. 29A. FIG. 29A shows a prior art carton 893, and FIG. 29B shows a prior art plastic insert 891. Carton 893 generally utilizes prior art insert 891 to secure the same contents that patch 880 secures in packaging assembly 899 as shown in FIG. 28.

[00107] FIG. 30 shows another embodiment of a blank 905 with an interior surface 901 and side panels 902, 907, 910, 920, 930, 940, and 950. Panel 902 is connected along fold line 904 to panel 907, panel 907 is connected along fold line 909 to panel 910, panel 910 is connected along fold line 911 to panel 920, panel 920 is connected along fold line 921 to panel 930, panel 930 is connected along fold line 931 to panel 940, and panel 940 is connected along fold line 941 to panel 950. Blank 905 includes end flaps 922 and 924 connected to panel 920 along respective transverse fold lines 923 and 925, end flaps 932 and 934 connected to panel 930 along respective transverse fold lines 933 and 935, end flaps 942 and 944 connected to panel 940 along respective transverse fold lines 943 and 945, and end flaps 952 and 954 connected to panel 950 along respective transverse fold lines 953 and 955. Tuck-in flaps 936 and 938 are connected respectively to end flaps 932 and 934 along respective fold lines 937 and 939. Intermediate end flaps 956 and 958 are connected respectively to end flaps 952 and 954 along respective fold lines 957 and 959. Tuck-in flaps 962 and 964 are connected respectively to intermediate end flaps 956 and 958 along respective fold lines 967 and 969. Generally, transverse fold lines 923, 925, 933, 935, 943, 945, 953, and 955 are transverse to fold lines 904, 909, 911, 921, 931, and 941. Alternatively, some or all of fold lines 923, 925, 933, 935, 943, 945, 953, 955 could be replaced with a single fold line (shown at 961 at a first end of blank 905 and at 963 at a second end of blank 905). The end flaps generally extend away from panels 910, 920, 930, 940, and 950 to periphery 908 of blank 905.

[00108] As shown in FIG. 30, a void 970 is provided at a central portion of panel 930 spaced from fold line 921 and from transverse fold lines 933 and 935. The void 970 extends from panel 930 across fold line 931 into and through panel 940 across fold line 941 and into panel 950. The void 970 is spaced from transverse fold lines 943, 945, 953, and 955. Void 970 has arcuate configuration lines, including corners shown in panels 930 and 950. Optionally, although the carton generally does not necessarily flex in conjunction with the heat-shrink patch, fold lines or additional fold lines can be included on the panels or end flaps to allow sections of the carton to flex with the heat-shrink patch as desired.

[00109] As shown in FIG. 30, a shrink film patch 980 is attached to blank 905 to cover void 970 and at least portions of some of panels 902, 907, 910, 920, 930, 940, and 950. The shrink film patch 980 can extend beyond any of panels 902, 907, 910, 920, 930, 940, and 950. Generally, the shrink film patch 980 is attached to blank 905 by adhesive 985 at strategic locations to allow the shrink film patch 980 to conform at least partially to contents C to be placed in carton 995 when formed (FIG. 31), and to at least partially hold or secure the contents C in place in carton 995 to form a packaging assembly 999 when the shrink film patch is activated. As shown in FIG. 30, adhesive 985 is shown in one area offset from the edge of void 970, with the offset shown being 1/16" (including squeeze) from the edge of void 870 (indicated at circle 1 in FIG. 30). The adhesive 985 is shown in another area offset from the edge of the shrink film patch 980; with the offset shown being 1/4" from the edge of patch 980 (indicated at circle 2 in FIG. 30). The adhesive 985 is shown in another area offset from the edge of void 970, with the offset shown being 3/8" from the edge of void 870 (indicated at circle 3 in FIG. 30).

[00110] To form blank 905 into a carton, the panels 902, 907, 910, 920, 930, 940, and 950 are articulated about fold lines 904, 909, 911, 921, 931, 941 to create an interior cavity. Generally either panel 910 or 950 receives an adhesive to secure the carton together,

with panel 950 being attached, either above or below, panel 910. Panels 902 and 907 can be folded into the interior cavity to form a spacer compartment in the carton, e.g., for example, to make carton 995 larger for illusory purposes, such as to convey value by increased size on a retail shelf. Once the interior cavity is formed, generally contents C are inserted and the end flaps are folded about their respective fold lines to close each end, forming a carton 995 (FIG. 31A).

[00111] FIG. 31A shows a perspective view of a carton formed from the blank of FIG. 30 with contents inserted and heat-shrink patch activated. FIG. 31B shows a prior art carton similar in shape to the carton of FIG. 31A, but including a plastic insert conventionally used in place of the heat-shrink patch used in the carton of FIG. 31A. Once the carton 995 has been formed, and either before, substantially simultaneously with, or after contents C is placed within the carton, the heat-shrink patch 980 can be activated by applying heat to form packaging assembly 999 (FIG. 31) with patch 980 at least partially securing contents C in place in carton 995. FIG. 31B shows a prior art carton 993 utilizing a prior art plastic insert 991. Carton 993 generally utilizes prior art insert 991 to secure the same contents that patch 980 secures in packaging assembly 999 as shown in FIG. 31A.

[00112] FIG. 32 illustrates one example embodiment of a method 1000 for applying a film patch of a heat-shrinkable or other shrink wrap material to a carton, including, without limitation, the cartons described above. Such a method 1000 is suitable for applying a heat-shrink patch to any suitable carton that includes at least one side, and at least one void, the at least one heat-shrink patch generally is applied in a location and manner so as to be movable between a first position and a second position for conforming to a shape of contents in, or to be placed in, a carton. Method 1000 includes the steps of providing a heat-shrink patch in a partial or substantially pre-shrunk configuration 1002, coupling the heat-shrink patch to at least a portion of an interior surface of a blank of sheet material covering at least a portion of

one or more selected voids in the blank 1004, forming or erecting the carton from the blank of sheet material and inserting contents in the carton 1006, and activating or moving the patch to conform at least partially to the shape of contents in, or to be placed in, the carton. In one embodiment, the method includes filling the carton with contents before moving the patch. In an alternative embodiment, the carton can be filled with contents after moving the movable section.

[00113] Generally, the temperature/dwell times required to activate the heat shrink patch or shrinkfilm to conform around the product will be dependent upon some or potentially all of the following factors: (1) The shrink film material specifications (e.g. the type of shrink film, the caliper or thickness of the film, the shrink force percentage); (2) The carton material specifications ( i.e. board substrate - SBS, CRB, SUS, and etc., caliper or thickness of the carton material); (3) Heat application – Activation of shrink film by placing carton/product through a shrink tunnel versus activation of shrink material by targeted heat gun(s); (4) The heating or dwell time the patch is exposed to heat—this typically will be affected by length of the shrink tunnel and/or conveyer belt speed moving therethrough; and/or (5) Carton orientation and/or placement, and number of cartons across the conveyor belt when placed into the shrink tunnel.

[00114] For example, in one embodiment, the method of activating the shrink film patch of a carton, such as shown in the embodiment of FIG. 21, could be accomplished using a 3-station shrink tunnel having 3 heat applicator stations for applying heat to the patch. The temperature of the tunnel could be set to 350-370 degrees F, or other temperature sufficient to activate the shrink film of the carton, with cartons being passed through the tunnel in a two across spaced arrangement with a 1-2 inch gap between each carton. Each carton in this example typically would rest or lay on its back panel. The dwell time or speed could be set so that the cartons are in the shrink tunnel for a time sufficient to create a desired

reduction/shrinkage of the shrink film patch, for example, approximately 4-5 seconds. Other dwell times also can be used depending on the size, thickness, and/or type of shrink film material used for the patch.

[00115] In an alternative embodiment, a preformed heat-shrink film tube is coupled to at least a portion of the interior surface of the blank of sheet material, in addition to or as an alternative to the heat-shrink patch. In this embodiment, the heat-shrink film tube is coupled to the interior surface using any suitable coupling mechanism, such as an adhesive, heat, and/or sonic welding. In a particular embodiment, moist or wet contents and/or contents requiring a high barrier protection are loadable into the heat-shrink film tube. The heat-shrink film tube and/or the carton then can be sealed to contain the contents within the heat-shrink film tube. The carton is subjected to a suitable heating process, for example by directing or focusing heat at a portion of the heat-shrink film tube covering the voids formed in the carton. In response, the heat-shrink tube moves to close at least partially the voids during the controlled heating process. In this embodiment, the heat-shrink film tube provides a substantially sealed, liquid-tight moisture barrier carton.

[00116] In one embodiment, the method includes filling the carton with contents before heating the heat-shrink film. In an alternative embodiment, the carton is filled with contents after heating the heat-shrink film. Depending upon the type and/or configuration of the contents, the carton is formed and shaped prior to filling the carton with contents, e.g., while the carton is empty. Alternatively, after the carton is formed, the contents are loaded into the carton and the carton is sealed, prior to shrinking the film. In this embodiment, the loaded packaging assembly is subjected to a controlled heating process in which the heat-shrink patch is shrunk to conform to the shape of the contents in, or to be placed in, the carton.

[00117] In one embodiment, the providing step 1002 can further include providing a film patch of a heat-shrink or other type of shrink-wrap material in a pre-shrunk configuration having a marking thereon including graphics for the carton. The marking may include graphics for the carton or graphics to coordinate with additional graphics printed on the carton. In one embodiment, the markings generally are applied using an opaque ink. Alternatively, the markings may be applied using a translucent ink such that the markings coordinate with the additional graphics printed on the carton. The heat-shrink patch generally can include polyethylene, polypropylene, polyvinyl chloride, polyester, polyester glycol, nylon and/or oriented polystyrene or other heat-shrinkable or shrink-wrap type material. The placement of the glue generally is proportional to the size of the product and the void. In alternative embodiments, the heat-shrink patch includes any suitable material or combination of materials known to those skilled in the art and guided by the teachings herein provided.

[00118] In one embodiment, coupling step 1004 further can include applying an adhesive in a registered pattern to at least a portion of the interior surface of the blank of sheet material including at least a portion of the section adjacent the void. The heat-shrink patch generally will be cut to correspond to the registered pattern and adhered to the interior surface of the blank within the registered pattern. In one embodiment, the adhesive is applied such that the adhesive extends about a void to substantially surround the void. With the adhesive substantially surrounding the void, the heat-shrink patch is adhered to the interior surface to cover the void and provide a seal preventing air and/or contaminants from entering the carton through the void. In alternative embodiments, coupling step 1004 includes employing any suitable coupling mechanism including, without limitation, a heating method and/or a sonic welding method, with or without the application of an adhesive.

[00119] In one embodiment, a first heat-shrink film and a second heat-shrink film are coupled together along a fold line and define the void along a portion of the fold line.

Adhesive is applied in a registered pattern to the interior surface of the blank of sheet material including at least a portion adjacent a void. For example, the adhesive is applied within a boundary area that substantially surrounds and/or defines the void. The heat-shrink patch is cut to correspond to the registered pattern. The heat-shrink patch is adhered to the interior surface of the blank including at least a portion of the first heat-shrink film and at least a portion of the second heat-shrink film within the registered pattern to cover the void. In this embodiment, during the heating step, the first heat-shrink film and the second heat-shrink film at least partially close the void defined along the fold line.

[00120] In an alternative embodiment, the first heat-shrink patch is adhered to the interior surface of the blank to cover a first void and the second heat-shrink patch adhered to the interior surface of the blank to cover a second void. In addition to the use of different shrink film materials and/or controlled temperature applications, a controlled and/or specifically directed heat, time and/or temperature application to at least one area of the carton, such as to at least one panel or heat-shrink patch, is utilized in particular embodiments to achieve a lesser or greater degree of shaping of the patch(es) in the selected area or areas, as desired.

[00121] In one embodiment, moving step 1008 includes heating the heat-shrink patch to shrink the heat-shrink patch to a shrunk configuration to conform at least partially to a shape of the contents of the carton. In an alternative embodiment the moving step 1008 includes heating the heat-shrink patch to shrink the heat-shrink patch to a shrunk configuration that includes forming at least partially a section of the carton to a shrunk configuration, such as to conform the shape of the carton to the shape of the contents, or part of the contents in, or to be placed in, the carton. In this embodiment, the cross-sectional area of the carton is changed when the moveable section is moved from the first position to the second position. After the heating process, the heat-shrink patch is cooled to remain in the

shrunk configuration to hold or retain the carton and patch in a substantially fixed second position. In one embodiment, with the heat-shrink patch in the shrunk position, heat-shrink patch retains the moved section of the carton in the second position.

[00122] In one embodiment, heat is focused at the heat-shrink patch to shrink the heat-shrink patch to a shrunk configuration and move the heat-shrink patch to the second position to form the shape of contents in, or to be placed in, the carton. In another embodiment, heat is applied to selected portions of the heat-shrink patch at different intensities to differentially shrink the heat-shrink patch. Additionally, or alternatively, intensity and/or temperature of the heat can be varied to create differential shrinkage of the heat-shrink patch. In one embodiment, a plurality of different heating temperatures can be applied to at least a portion of the heat-shrink patch for controlling a degree of shrinkage of the heat-shrink patch. For example, heat is applied to a first portion of the heat-shrink patch (or to a first heat-shrink patch) at a first temperature and heat is applied to a second portion of the heat-shrink patch (or to a second heat-shrink patch) at a second temperature different from the first temperature.

[00123] In an alternative embodiment, moving step 1008 includes providing a plurality of heat-shrink patches in a pre-shrunk configuration having different shrink orientations and percentages. The patch or patches are moved by heating the heat-shrink patches to shrink the heat-shrink patches. Upon heating the different heat-shrink patches, each heat-shrink patch shrinks to a different degree allowing the heat-shrink patches to form a shape of contents in, or to be placed in, the carton.

[00124] In another embodiment, the movable section of the carton is moved by applying at least one heat-shrink patch to the blank and heating the at least one heat-shrink patch at different temperatures to control the degree of shrinkage. As such, the heat-shrink patch forms the shape of contents in, or to be placed in, the carton. It is further possible to

control the degree of heat-shrink patch shrinkage by combining any of the hereinabove described methods. As such, the degree of heat-shrink patch shrinkage can be controlled by any combination of using a specific heat-shrink patch film type, controlling the temperature of heating and/or targeting or focusing the heat applied to the heat-shrink patch. Any or a combination of these methods will facilitate moving the heat-shrink patch from a first position to a second position to form a shape of contents in, or to be placed in, the carton. In one embodiment, at least a portion of the carton can be moved in conjunction with moving the patch to form a shape of a portion of the carton. This shape may further include a cut-out in the carton to allow visibility of the contents within the carton. In one embodiment, at least a portion of a cut-out is formed in the carton allows for the movement of a portion of the carton. By heating the different heat-shrink patches, the moving step allows the cut-out to be closed by the panels of the carton or the cut-out is only partially closed to allow the contents included within the carton to be visible to a consumer.

[00125] The methods described hereinabove can be performed by a system or machine configured to carry out the steps shown in FIG. 32. In one embodiment, the system includes a carton having at least one side and at least one void, and at least one heat-shrink patch that is configured to move from a first position to a second position. The system further includes a coupling device configured to couple the heat-shrink patch in the pre-shrunk configuration to an interior surface of a blank of sheet material. In one embodiment, the coupling device is configured to apply an adhesive in a registered pattern to at least a portion of the carton and to adhere the heat-shrink patch to the interior surface of the carton within the registered pattern. A forming device is configured to form the carton from the blank of sheet material.

[00126] A heating device is configured to heat at least a portion of the heat-shrink patch to shrink the heat-shrink patch to a shrunk configuration from the first position to the

second position to form the shape of contents in, or to be placed in, the carton. The heat-shrinkable film is movable from an initial, first, or pre-shrunk configuration to a second or shrunk configuration having a shorter width and/or shorter length than in the pre-shrunk configuration. In one embodiment, the heating device is configured to shrink the heat-shrink patch to the shrunk configuration to close at least partially a void. The heat-shrink film is shrinkable to move, shift, or contract from the pre-shrunk configuration and, optionally, can move or urge a section of the carton to the second position. In a particular embodiment, as the heat-shrinkable film shrinks, such as by applying suitable heat, at least one void defined at least partially by or within the carton section at least partially closes to move or urge adjacent carton sections together. After the heating process, the heat-shrink patch(es) cools and remains in the shrunk configuration, and can hold or retain the carton in a substantially fixed second position. In one embodiment, with the heat-shrink patch in the shrunk position, the heat-shrink patch retains at least a section of the panel of the carton in the second position.

[00127] The packaging assembly of the present invention including the heat-shrink patch at least partially seals the carton to protect contents contained within the carton from tampering and generally to seal the edges, corners and/or joints of the carton for containing the contents within the carton, as well as protecting the contents from contamination. The heat-shrink patch can be used, for example, to replace bags or liners sometimes used within a container for sealing contents or replace inserts in the carton. Further, since the heat-shrink patch generally does not alter the intended shape of the carton, the carton with contents secured in position by a heat-shrink patch will facilitate displaying, stacking and/or arranging the carton or a plurality of cartons, and/or will maintain a shape that facilitates other functionality, such as carrying the carton.

[00128] The heat-shrink patch facilitates in the completion of the formation of the carton, and more specifically moving the heat-shrink patch from an initially biased first position to a second position having an arcuate or curved surface to form the packaging assembly. As the heat-shrink patch is heated and shrinks, the heat-shrink patch moves, draws, or urges the heat-shrink patch to the second position to form a shape of contents in, or to be placed in, the packaging assembly. The heat-shrink patch holds in the second position. By moving and holding in second position, the heat-shrink patch forms a shape of contents in, or to be placed in, the packaging assembly, without significantly altering the intended shape of the carton. Further, the present packaging assembly(ies) can feature a high proportion of patch to carton, i.e. the voids can be relatively large. Specifically, since the patch(es) and are shrunk to conform at least partially to the shape of contents in, or to be placed in, a packaging assembly, large voids can be covered to allow maximization of the display of contents, e.g. product(s), in the carton. An increase in void area in the blank decreases the amount of paperboard required, which can further lower the cost of packaging.

[00129] In some embodiments, a carton and/or a heat-shrinkable/shrunk layer may include a marking thereon, such as, but not limited to, indicia that communicates the contents, a manufacturer of the contents, and/or a seller of the contents. For example, printed text that indicates the contents name and briefly describes the contents, logos and/or trademarks that indicate a manufacturer and/or seller of the contents, and/or designs and/or ornamentation that attract attention. Moreover, in some embodiments a packaging assembly may include a handle for carrying the assembly.

[00130] The cartons, heat-shrinkable/shrunk layers, and packaging assemblies generally may each have any suitable size, shape, and/or configuration (e.g., number of sides), whether such sizes, shapes, and/or configurations are described and/or illustrated herein. Similarly, the cartons, heat-shrinkable/shrunk layers, and packaging assemblies

generally may be formed from any suitable material, whether such materials are described herein. For example, in one embodiment a carton includes cardboard, corrugated board, and/or plastic.

[00131] For exemplary purposes only, the carton formed from the blank of FIG. 1 can have dimensions including an overall example length of panels 10, 20, 30, 40, and 50 of at least approximately about 8 to 12 inches, such as for example at least approximately 8.449 inches with panel 50 having a length from periphery 8 to the intersection of aperture 74 with panel 40 of at least approximately 0.25 to 1 inch, such as for example at least approximately 0.500-inch, panels 20 and 40 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 2.750 inches, panel 30 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.240-inch, and panel 10 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.209-inch. The blank 5 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 8.480-inches, with a width between longitudinal fold lines 61 and 63 at least approximately 5 to 10 inches, such as for example at least approximately 6 inches, and end flap widths of major flaps 22, 24, 42, 44 of at least approximately 1 to 3 inches, such as for example at least approximately 1.240-inch and widths of minor flaps 12, 14, 32, 34 of at least approximately 0.5 to 1.5 inches, such as for example at least approximately 0.990-inch. The patch 80 can have an example width of at least approximately 4 to 10 inches, such as for example at least approximately 5.750 inches and an example length of at least approximately 5 to 10 inches. The blank 5 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 5 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00132] For exemplary purposes only, the carton formed from the blank of FIG. 6 can have dimensions including an overall example length of panels 110, 120, 130, 140, and 150 of at least approximately about 8 to 12 inches, such as for example at least approximately 9.250 inches with panel 150 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 2 inches, panels 120 and 140 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.250 inches, panel 130 having a length of at least approximately 2 to 4 inches, such as for example at least approximately 2.750 inches, and panel 110 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 2 inches. The blank 105 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 8.624 inches, with a width between longitudinal fold lines 161 and 163 at least approximately 5 to 10 inches, such as for example at least approximately 6.074 inches. The patch 180 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.644 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 7.375 inches. The blank 105 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 105 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00133] For exemplary purposes only, the carton formed from the blank of FIG. 9 can have dimensions including an overall example length of panels 210, 220, 230, 240, and 250 of at least approximately about 8 to 12 inches, such as for example at least approximately 9 inches with panel 250 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.875 inches, panels 220 and 240 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.250 inches, panel

230 having a length of at least approximately 2 to 4 inches, such as for example at least approximately 2.750 inches, and panel 210 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.875 inches. The blank 205 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 8.577 inches, with a width between longitudinal fold lines 261 and 263 at least approximately 5 to 10 inches, such as for example at least approximately 6.074 inches. The patch 280 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.449 inches and an example length of at least approximately 5 to 10 inches. The blank 205 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 205 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00134] For exemplary purposes only, the carton formed from the blank of FIG. 12 can have dimensions including an overall example length of panels 310, 320, 330, 340, and 350 of at least approximately about 10 to 14 inches, such as for example at least approximately 11.294 inches with panel 350 having a length of at least approximately 0.25 to 2 inches, such as for example at least approximately 0.597-inch, panels 320 and 340 having lengths of at least approximately 2 to 6 inches, such as for example at least approximately 4.375 inches, panel 330 having a length of at least approximately 0.25 to 2 inches, such as for example at least approximately 0.986-inch, and panel 310 having a length of at least approximately 0.25 to 2 inches, such as for example at least approximately 0.962-inch. The blank 305 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.348 inches, with a width between longitudinal fold lines 361 and 363 at least approximately 2 to 6 inches, such as for example at least approximately

4.375 inches. The patch 380 can have an example width of at least approximately 2 to 6 inches, such as for example at least approximately 4.056 inches and an example length of at least approximately 10 to 14 inches, such as for example at least approximately 11.019 inches. The blank 305 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 305 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00135] For exemplary purposes only, the carton formed from the blank of FIG. 15 can have dimensions including an overall example length of panels 410, 420, 430, 440, and 450 of at least approximately about 10 to 14 inches, such as for example at least approximately 11.750 inches with panel 450 having a length of at least approximately 1 to 4 inches, such as for example at least approximately 2.688 inches, panels 420 and 440 having lengths of at least approximately 0.50 to 2 inches, such as for example at least approximately 1-inch, panel 430 having a length of at least approximately 3 to 6 inches, such as for example at least approximately 4.375 inches, and panel 410 having a length of at least approximately 1 to 4 inches, such as for example at least approximately 2.688 inches. The blank 405 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.528 inches, with a width between longitudinal fold lines 461 and 463 at least approximately 2 to 6 inches, such as for example at least approximately 4.429 inches. The patch 480 can have an example width of at least approximately 4 to 10 inches, such as for example at least approximately 5.019 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 8.331 inches. The blank 405 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting.

Further, the various features of blank 405 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00136] For exemplary purposes only, the carton formed from the blank of FIG. 18 can have dimensions including an overall example length of panels 510, 520, 530, 540, and 550 of at least approximately about 10 to 14 inches, such as for example at least approximately 11.750 inches with panel 550 having a length of at least approximately 1 to 4 inches, such as for example at least approximately 2.688 inches, panels 520 and 540 having lengths of at least approximately 0.50 to 3 inches, such as for example at least approximately 1-inch, panel 530 having a length of at least approximately 2 to 6 inches, such as for example at least approximately 4.375 inches, and panel 510 having a length of at least approximately 1 to 4 inches, such as for example at least approximately 2.688 inches. The blank 505 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.528 inches, with a width between longitudinal fold lines 561 and 563 at least approximately 2 to 6 inches, such as for example at least approximately 4.429 inches. The patch 580 can have an example width of at least approximately 4 to 8 inches, such as for example at least approximately 5.019 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 8.331 inches. The blank 505 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting.

Further, the various features of blank 505 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00137] For exemplary purposes only, the carton formed from the blank of FIG. 21 can have dimensions including an overall example length of panels 610, 620, 630, 640, and 650 of at least approximately about 8 to 12 inches, such as for example at least approximately 9.065 inches with panel 650 having a length of at least approximately 1 to 3 inches, such as

for example at least approximately 1.692 inches, panel 640 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.701 inches, panels 620 and 630 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.698 inches, panel 610 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.693 inches, and panel 607 having a length of at least approximately 0.25 to 2 inches, such as for example at least approximately 0.583 inches. The blank 605 can have an example width of at least approximately 8 to 12 inches, such as for example at least approximately 10.280 inches, with a width between longitudinal fold lines 661 and 663 at least approximately 5 to 10 inches, such as for example at least approximately 6.010 inches. The patch 180 can have an example width of at least approximately 4 to 8 inches, such as for example at least approximately 5.829 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 6.146 inches. The blank 605 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 605 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00138] For exemplary purposes only, the carton formed from the blank of FIG. 24 can have dimensions including an overall example length of panels 710, 720, 730, 740, and 750 of at least approximately about 4 to 8 inches, such as for example at least approximately 5.668 inches with panel 710 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.918 inches, panels 720 and 730 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 2.001 inches, panel 740 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.996 inches, and panel 750 having a length of at least approximately 0.25 to 2

inches, such as for example at least approximately 0.687-inch. The blank 705 can have an example width of at least approximately 8 to 14 inches, such as for example at least approximately 12.1 inches, with a width between longitudinal fold lines 761 and 763 at least approximately 5 to 10 inches, such as for example at least approximately 7 inches. The patch 780 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.601 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 6.318 inches. The blank 705 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 705 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00139] For exemplary purposes only, the carton formed from the blank of FIG. 27 can have dimensions including an overall example length of panels 810, 820, 830, 840, and 850 of at least approximately about 8 to 14 inches, such as for example at least approximately 13.406 inches with panel 850 having a length of at least approximately 1 to 4 inches, such as for example at least approximately 2.969 inches, panels 820 and 840 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.500 inches, panel 830 having a length of at least approximately 2 to 4 inches, such as for example at least approximately 3 inches, panel 810 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.484 inches, panel 807 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.500 inches, and panel 802 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.453 inches. The blank 805 can have an example width of at least approximately 8 to 12 inches, such as for example at least approximately 11.132 inches, with a width between longitudinal fold lines 861 and 863 at least approximately 5 to 10 inches,

such as for example at least approximately 6.875 inches. The patch 880 can have an example width of at least approximately 5 to 10 inches, such as for example at least approximately 6.625 inches and an example length of at least approximately 2 to 6 inches, such as for example at least approximately 4.051 inches. The blank 805 can be formed of any caliper. All dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 805 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00140] For exemplary purposes only, the carton formed from the blank of FIG. 30 can have dimensions including an overall example length of panels 910, 920, 930, 940, and 950 of at least approximately about 15 to 20 inches, such as for example at least approximately 18.344 inches with panel 950 having a length of at least approximately 2 to 6 inches, such as for example at least approximately 4.719 inches, panels 920 and 940 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.750 inches, panel 930 having a length of at least approximately 3 to 6 inches, such as for example at least approximately 4.750 inches, panel 910 having a length of at least approximately 1 to 3 inches, such as for example at least approximately 1.875 inches, and panels 902 and 907 having lengths of at least approximately 1 to 3 inches, such as for example at least approximately 1.750 inches. The blank 905 can have an example width of at least approximately 8 to 14 inches, such as for example at least approximately 12.200 inches, with a width between longitudinal fold lines 961 and 963 at least approximately 4 to 8 inches, such as for example at least approximately 5 inches. The patch 980 can have an example width of at least approximately 3 to 6 inches, such as for example at least approximately 4.750 inches and an example length of at least approximately 5 to 10 inches, such as for example at least approximately 7 inches. The blank 905 can be formed of any caliper. All

dimensional information presented herein is intended to be illustrative of typical embodiments of the disclosure and is not intended to be limiting. Further, the various features of blank 905 and the carton formed therefrom can have dimensions other than listed herein, without departing from the scope of this disclosure.

[00141] The blank 1 can be selectively reinforced at any specified locations by one or more reinforcing blanks. Cartons formed from the resulting multi-ply blanks can accordingly have enhanced strength and rigidity at selected sections of the carton. Selected reinforcement of specific areas of a blank can produce high strength cartons while using relatively small amounts of reinforcing blank.

[00142] In accordance with the exemplary embodiments, the cartons may be constructed of paperboard, for example. The blanks, and thus the cartons, can also be constructed of other materials, such as cardboard, solid unbleached sulfate (SUS) board, or any other material having properties suitable for enabling the carton to function at least generally as described above.

[00143] The blanks according to the present disclosure can be, for example, formed from coated paperboard and similar materials. For example, the interior and/or exterior sides of the blanks can be coated with a clay coating. The clay coating may then be printed over with contents, advertising, price coding, and other information or images. The blanks may then be coated with a varnish to protect any information printed on the blank. The blanks may also be coated with, for example, a moisture barrier layer, on either or both sides of the blank. In accordance with the above-described embodiments, the blanks may be constructed of paperboard, generally of a caliper heavier and more rigid than ordinary paper. The blanks can also be constructed of other materials, such as cardboard, hard paper, or any other material having properties suitable for enabling the carton to function at least generally as

described herein. The blanks can also be laminated or coated with one or more sheet-like materials at selected panels or panel sections.

[00144] For purposes of the description presented herein, the term “line of disruption” or “line of weakening” can be used to generally refer to cuts, tear lines, creases, scores, and fold lines (or overlapping and/or sequential combinations of at least one cut, crease, score, tear line, or fold line). A “breachable line of disruption” is a line of disruption that is intended to be breached during ordinary use of the carton, such as when placing the carton in a dispensing configuration. An example of a breachable line of disruption is a tear line.

[00145] In accordance with the exemplary embodiments of the present invention, a fold line can be any substantially linear, although not necessarily straight, form of disruption or weakening in a blank that facilitates folding, pivoting or bending therealong.

[00146] In the present specification, a “panel” or “flap” need not be flat or otherwise planar. A “panel” or “flap” can, for example, comprise a plurality of interconnected generally flat or planar sections.

[00147] The above embodiments may be described as having one or more panels adhered together by glue during erection of the carton embodiments. The term “glue” is intended to encompass all manner of adhesives commonly used to secure carton panels and/or film or heat-shrink patches in place.

[00148] The foregoing description of the disclosure illustrates and describes various embodiments. As various changes could be made in the above construction without departing from the scope of the disclosure, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. Furthermore, the scope of the present disclosure covers various modifications, combinations, alterations, etc., of the above-described embodiments that are

within the scope of the claims. Additionally, the disclosure shows and describes only selected embodiments of the disclosure, but the disclosure is capable of use in various other combinations, modifications, and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or within the skill or knowledge of the relevant art. Furthermore, certain features and characteristics of each embodiment may be selectively interchanged and applied to other illustrated and non-illustrated embodiments of the disclosure.

CLAIMS

What is claimed is:

1. A product package comprising:

a product carton having a plurality of sides defining a sleeve in which a product is received, and at least one void formed in at least one of said sides and forming a window through which the product can be viewed; and

a film patch applied to said at least one side in which said at least one void is formed, wherein said patch comprises a shrink-wrap material and is of a configuration and size to cover said void with an excess amount of said shrink-wrap material provided sufficient to enable said film patch to contract substantially about the product upon activation of said shrink-wrap material without disturbing or altering an assembled shape of said product carton.

2. The package of claim 1 further comprising an adhesive applied in a registered pattern about said at least one void for attaching said film patch to said at least one side.

3. The package of claim 1 wherein said sides of said carton are adapted to flex with contraction of said film patch about the product.

4. The package of claim 1 wherein multiple voids are formed in multiple sides.

5. The package of claim 4 wherein more than one patch is attached to the carton with each said patch of the more than one patch covering at least one of the multiple voids.

6. The package of claim 1 and further comprising multiple voids extending from the sides into the ends of the package.
7. The package of claim 6 wherein more than one patch is attached to the carton with each of said patches covering at least one of the multiple voids.
8. The package of claim 1 wherein said sides remain substantially rigid in response to the contraction of said patch about the product.
9. The package of claim 1 wherein said patch is attached to said at least one of said sides by adhesive, welding, or heat.
10. The package of claim 1 wherein said patch is heated to contract the patch about the product.
11. The package of claim 10 wherein more than one patch can be attached to said carton and wherein application of heat is different for different areas of said carton or for said more than one patch.
12. The package of claim 1 wherein said patch is pre-shrunk at least partially prior to insertion of the product in said carton.
13. The package of claim 12 wherein said patch is contracted from its pre-shrunk configuration to a contracted position to conform substantially to the product.

14. The package of claim 13 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.
15. A method of forming a product package, the method comprising:
- providing a blank comprising a series of side panels connected along longitudinal fold lines, end flaps connected to at least one of the side panels along transverse fold lines, and at least one void in at least one of the side panels;
  - providing a film patch of shrink-wrap material of a configuration and size sufficient to cover the at least one void and provide an excess amount of shrink-wrap material to enclose substantially a product;
  - attaching the film patch to the blank in a position covering the at least one void;
  - folding the side panels of the blank along the transverse fold lines to form a product carton for the product; and
  - applying heat to the film patch for a desired time and at a desired temperature to cause contraction of the film patch about the product within the product carton.
16. The method of claim 15 wherein the patch is attached to the blank by an adhesive applied in a registered pattern about said at least one void.
17. The method of claim 15 wherein the side panels of the formed product carton are adapted to flex with contraction of said patch about the product.
18. The method of claim 15 wherein the side panels remain substantially rigid in response to the contraction of the patch about the product.

19. The method of claim 15 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.
20. A carton comprising:  
a blank having an interior surface and an exterior surface, a series of panels, and end flaps along a first end and a second end;  
at least a first void in at least one of the panels;  
a shrink-wrap patch covering the first void and being adhered to the blank along adhesion positions on the interior surface of the blank;  
wherein the adhesion positions are spaced from the void a distance to enable the patch to contract substantially about a product within the carton upon activation of the shrink-wrap material without disturbing or altering an assembled shape of the carton.
21. The carton of claim 20 wherein said panels are adapted to flex with contraction of said patch about the product.
22. The carton of claim 20 wherein said panels remain substantially rigid in response to the contraction of said patch about the product.
23. The carton of claim 20 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.
24. A method of forming a carton blank comprising:

providing a carton blank, the blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end, the blank including at least a one void in at least one of the panels;

applying an adhesive to the interior surface of the blank spaced a specified distance from the at least one void; and,

overlaying a shrink-wrap patch in registration with the blank to adhere to the adhesive and to cover the at least one void.

25. The method of claim 24 wherein the patch is attached to the blank by an adhesive applied in a registered pattern about said at least one void.

26. The method of claim 24 wherein the panels are adapted to flex with contraction of said patch about the product.

27. The method of claim 24 wherein said sides remain substantially rigid in response to the contraction of said patch about the product.

28. The method of claim 24 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.

29. A sealed package with a viewing window through which a product can be viewed, the package comprising:

a blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end;

at least a first void in at least one of the panels so as to define the viewing window;

a shrink-wrap patch covering the first void and being adhered to the blank along adhesion positions on the interior surface of the blank; and,

wherein the patch is adapted to contract and be substantially shaped about the product upon activation;

wherein prior to shaping the patch about the product, the package has a shape and wherein the shape of the package is not substantially altered when the patch is shaped about the product.

30. The package of claim 29 wherein the panels are adapted to flex with contraction of said patch about the product.

31. The package of claim 29 wherein said sides remain substantially rigid in response to the contraction of said patch about the product.

32. The package of claim 29 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.

33. In combination, a carton and a moisture sealed insert:

the carton being formed from a blank, the blank having an interior surface and an exterior surface, and including panels and end flaps along a first end and a second end, the blank comprising at least a first void in at least one of the panels;

the insert covering the first void and being adhered to the blank along adhesion positions on the interior surface of the blank, with the adhesion positions spaced from the first void a distance to enable the insert to contract substantially about a product upon activation of the insert; and

wherein the combination is not substantially altered in shape when the insert contracts.

34. The combination of claim 33 wherein said panels are adapted to flex with contraction of said patch about the product.

35. The combination of claim 33 wherein said sides remain substantially rigid in response to the contraction of said patch about the product.

36. The combination of claim 33 wherein the product is restrained from movement with respect to the package when said patch is in its contracted position.

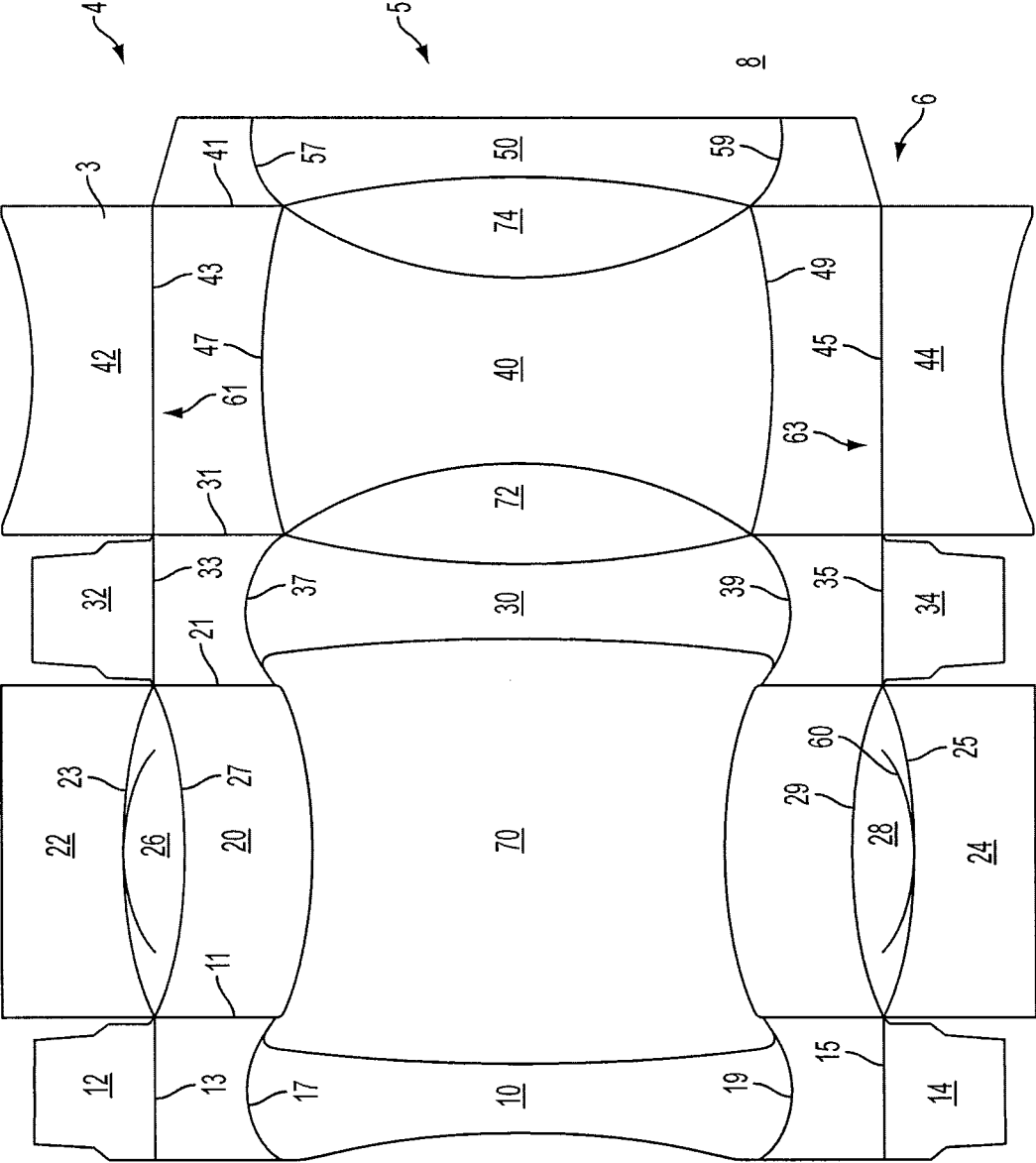


FIG. 1

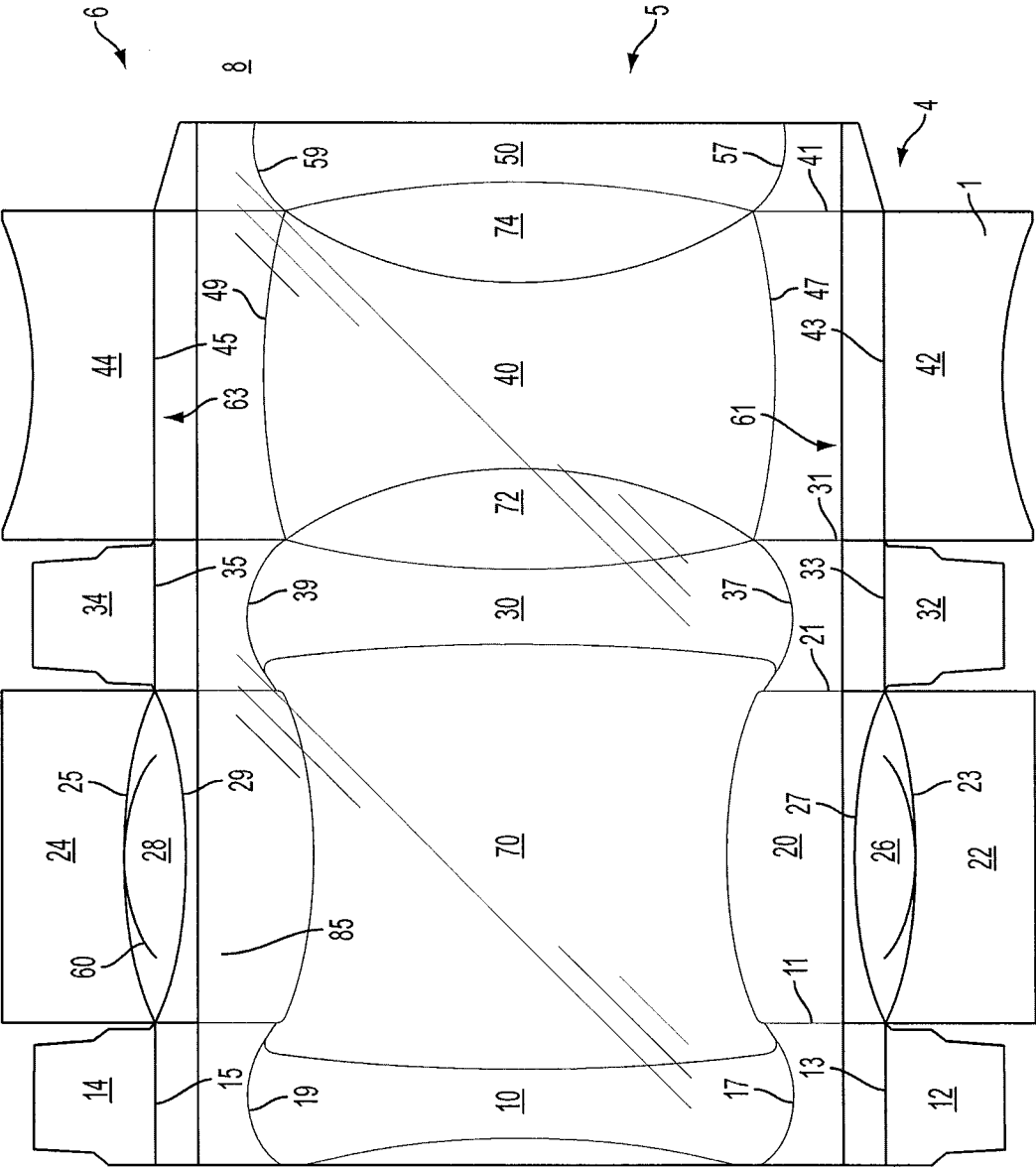


FIG. 2

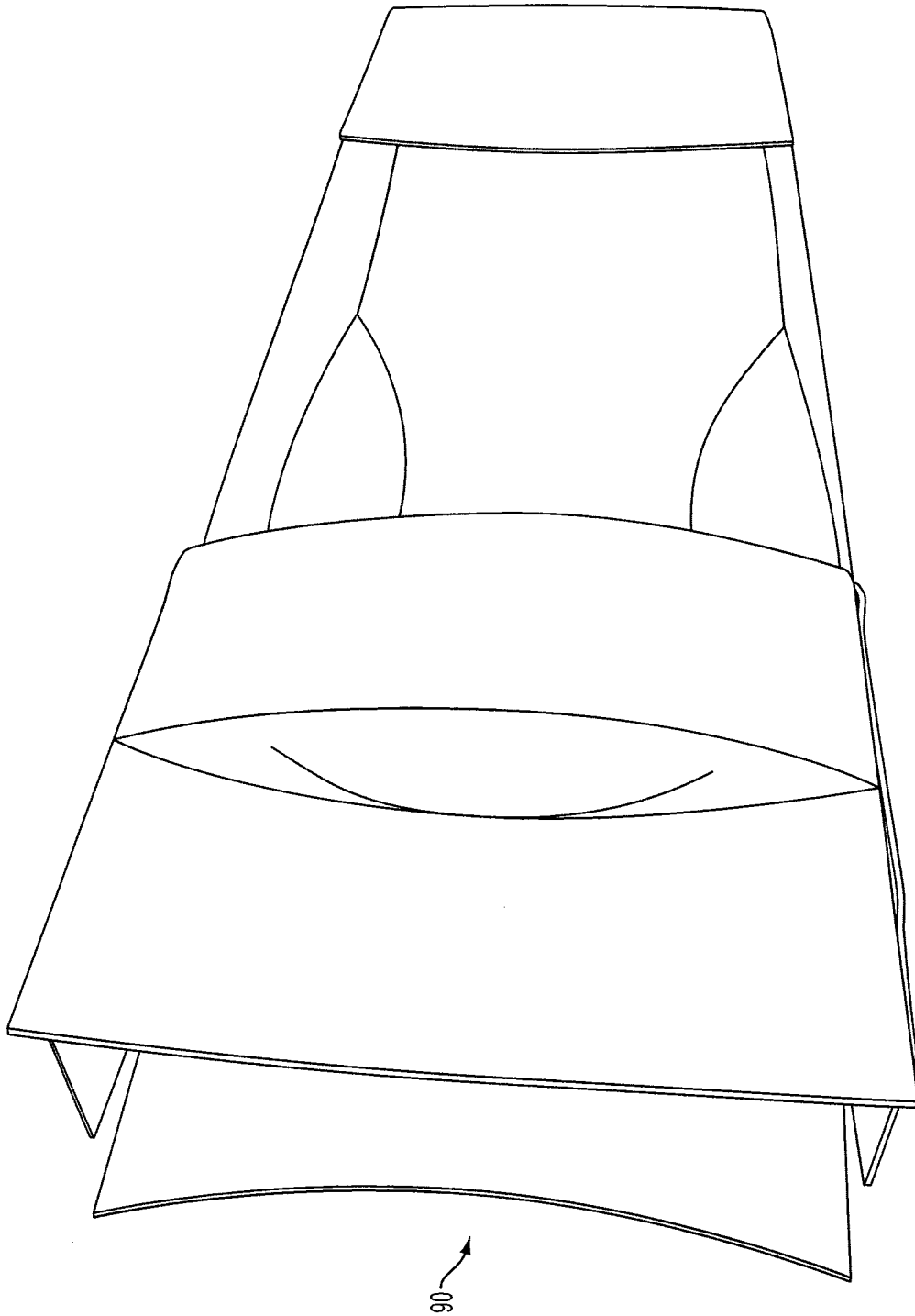


FIG. 3

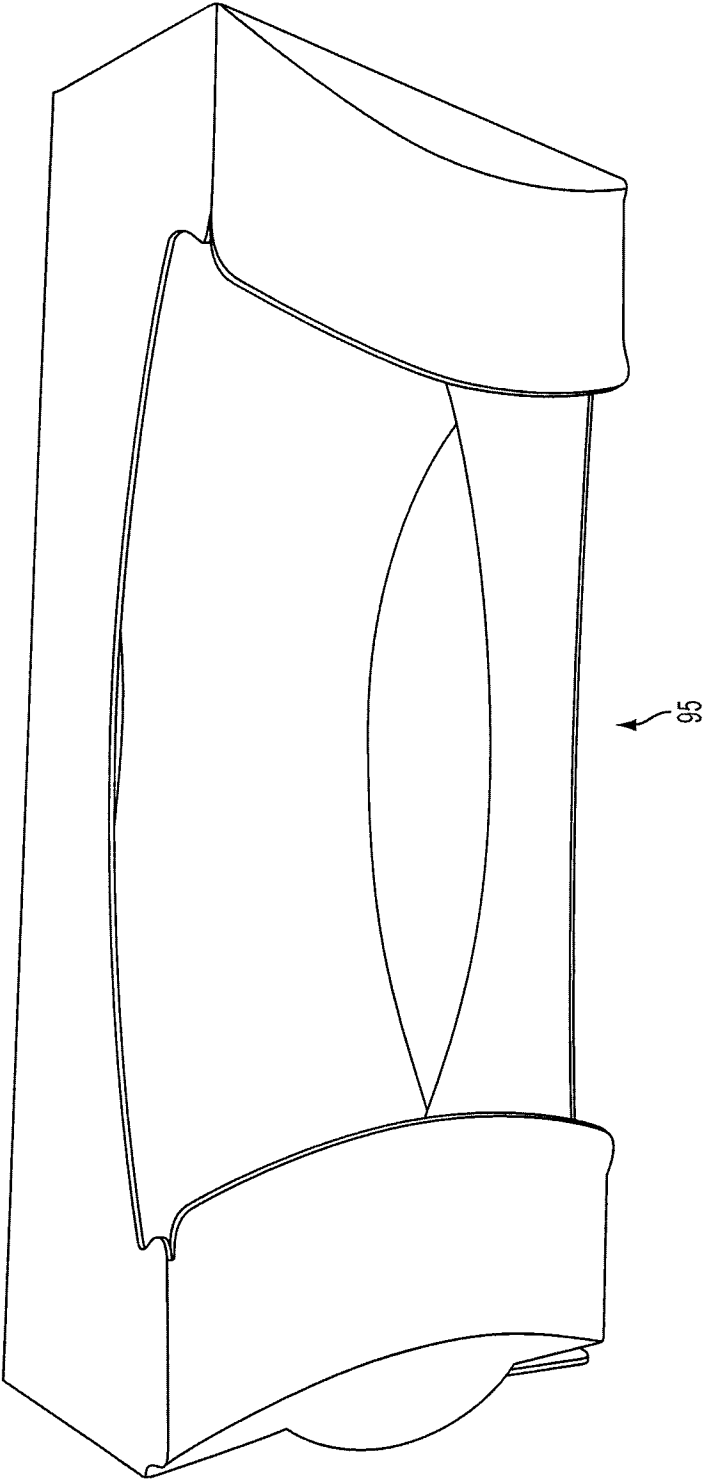


FIG. 4

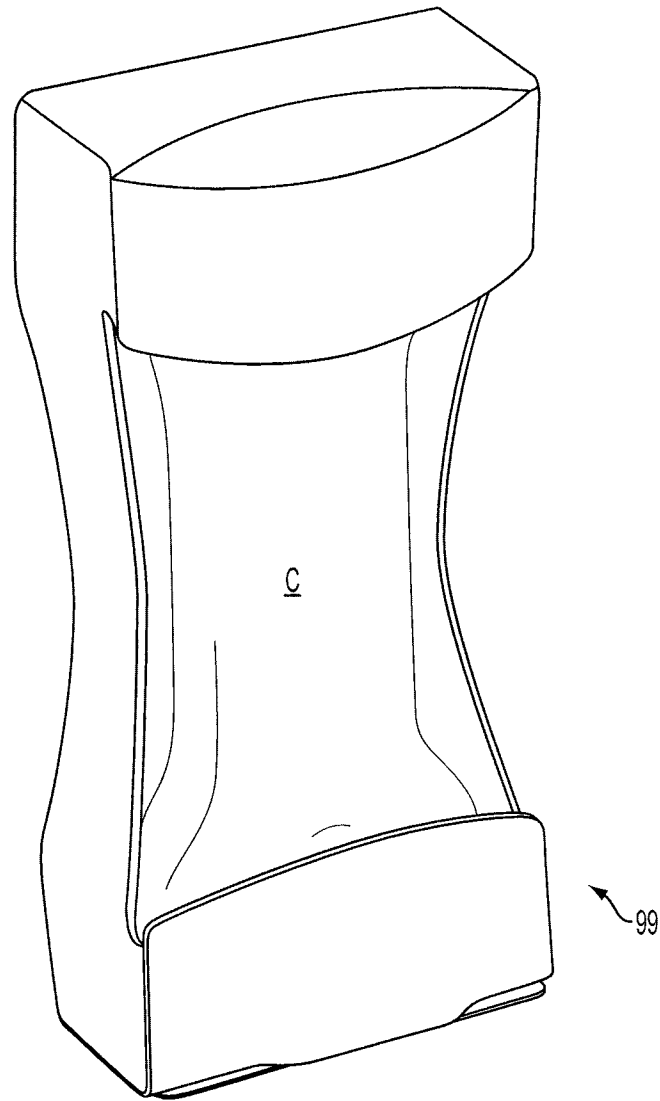


FIG. 5

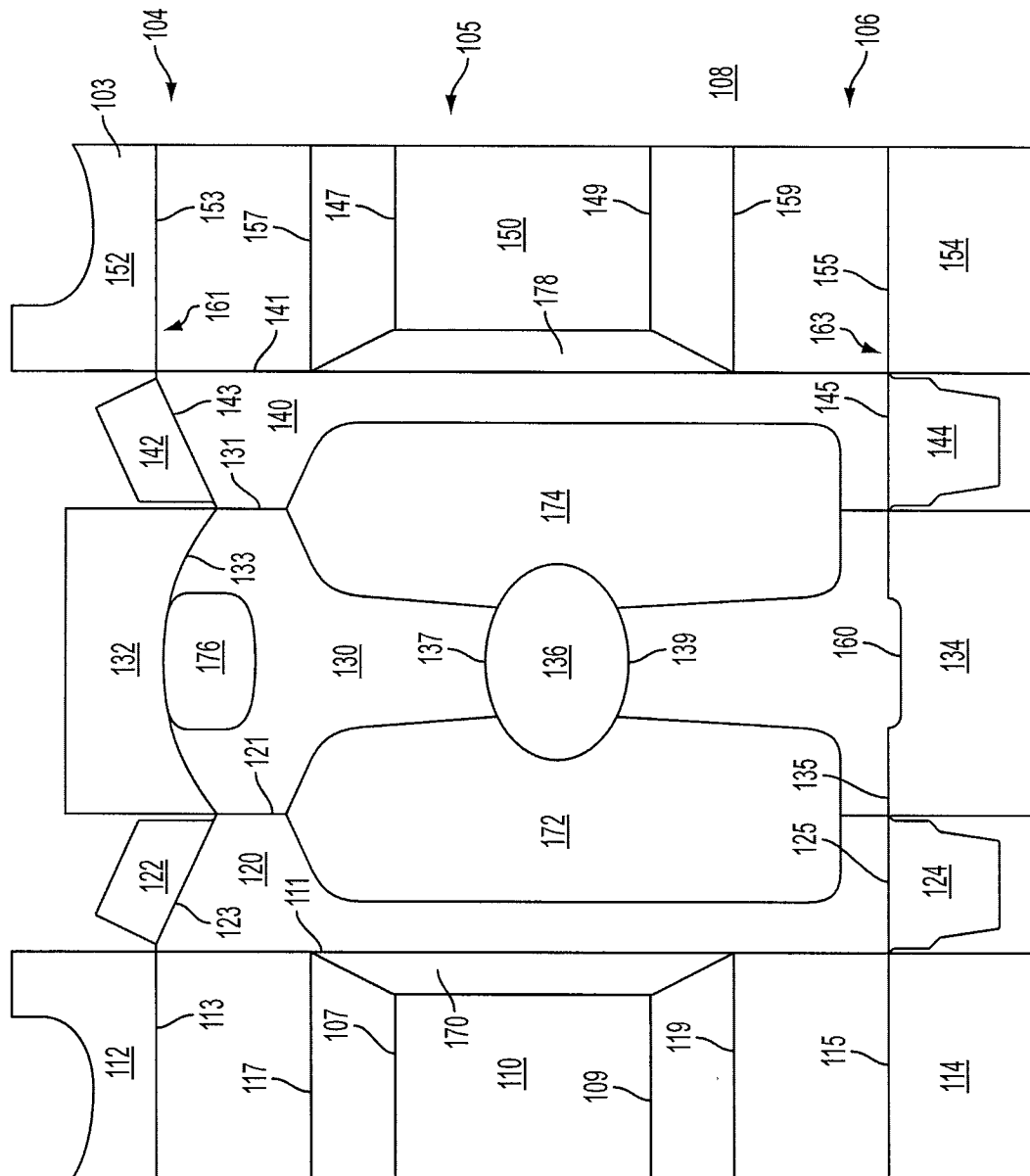


FIG. 6

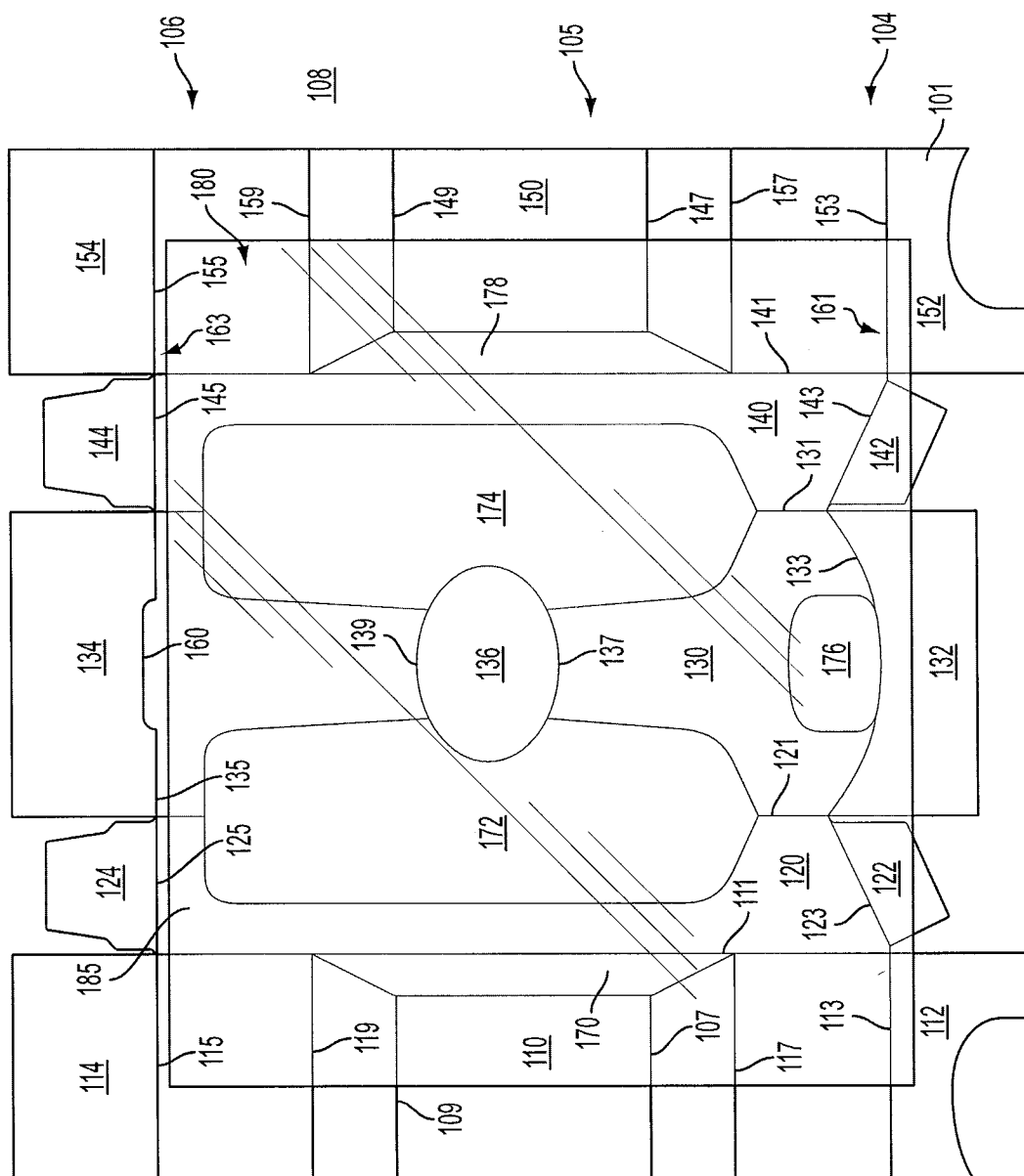


FIG. 7

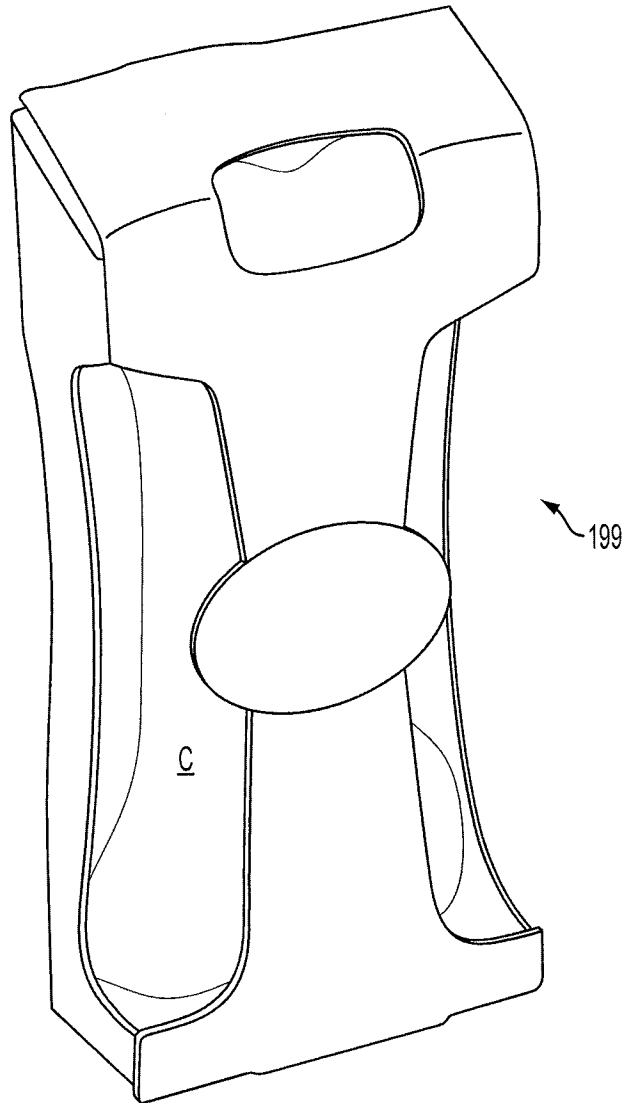


FIG. 8

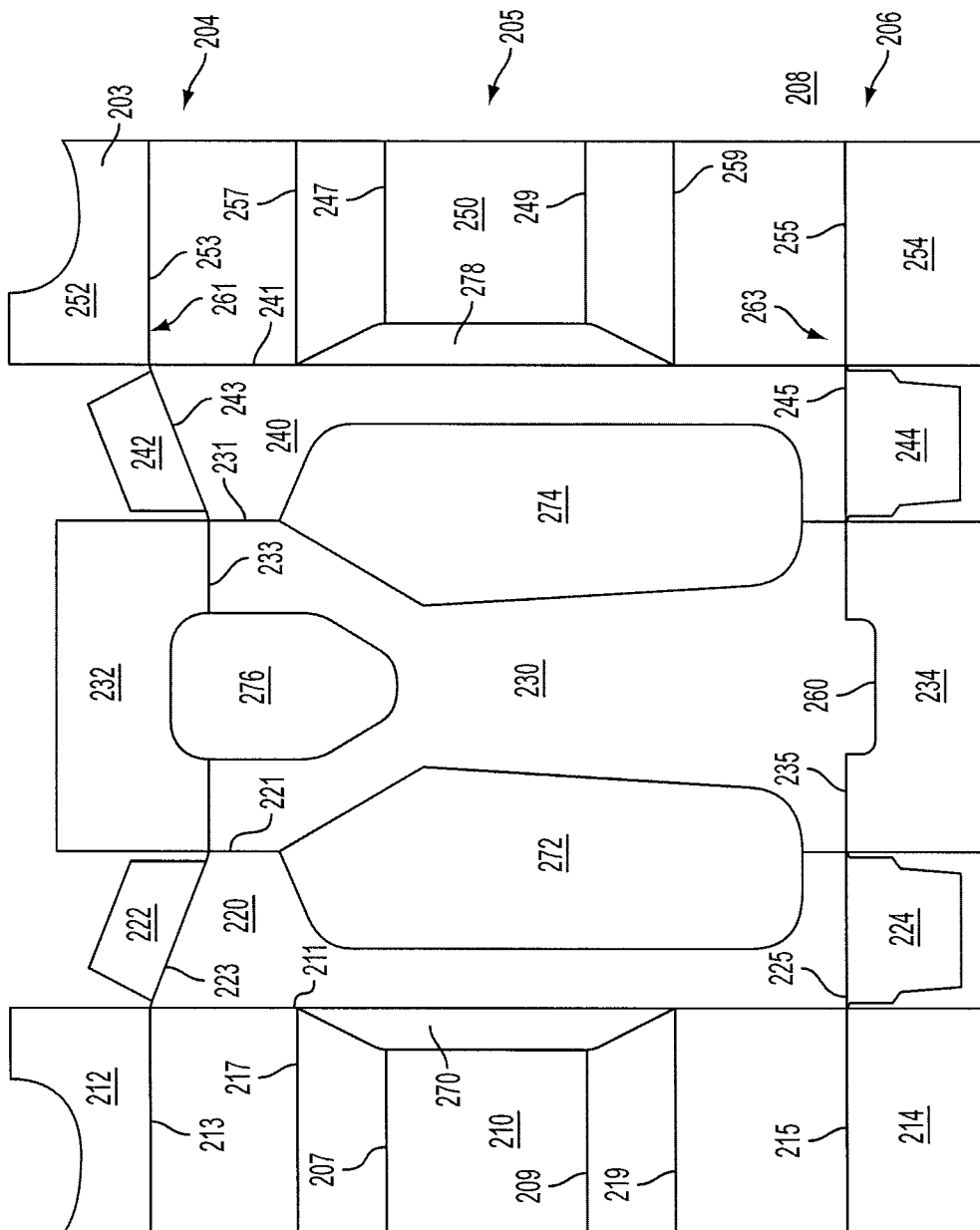


FIG. 9

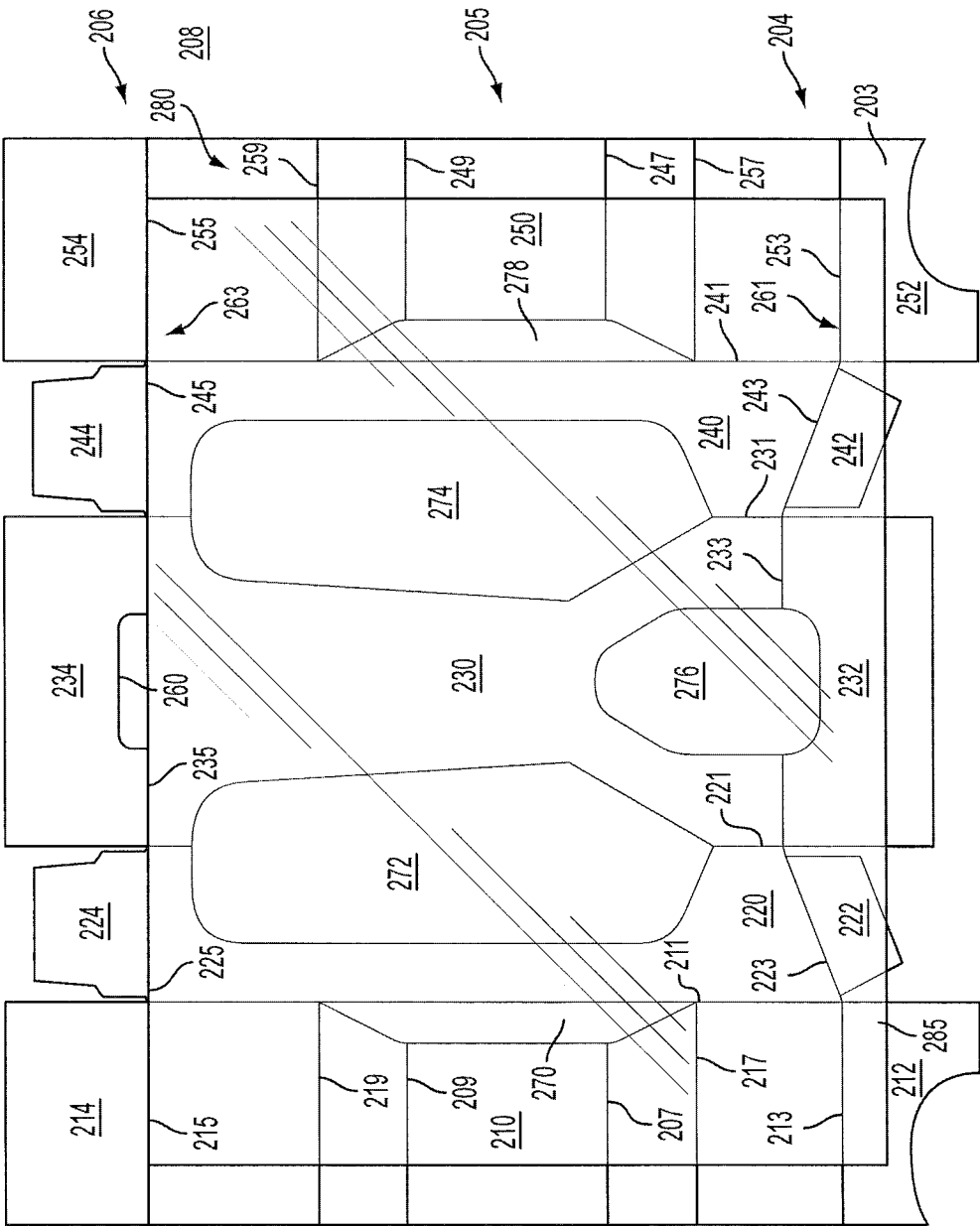


FIG. 10

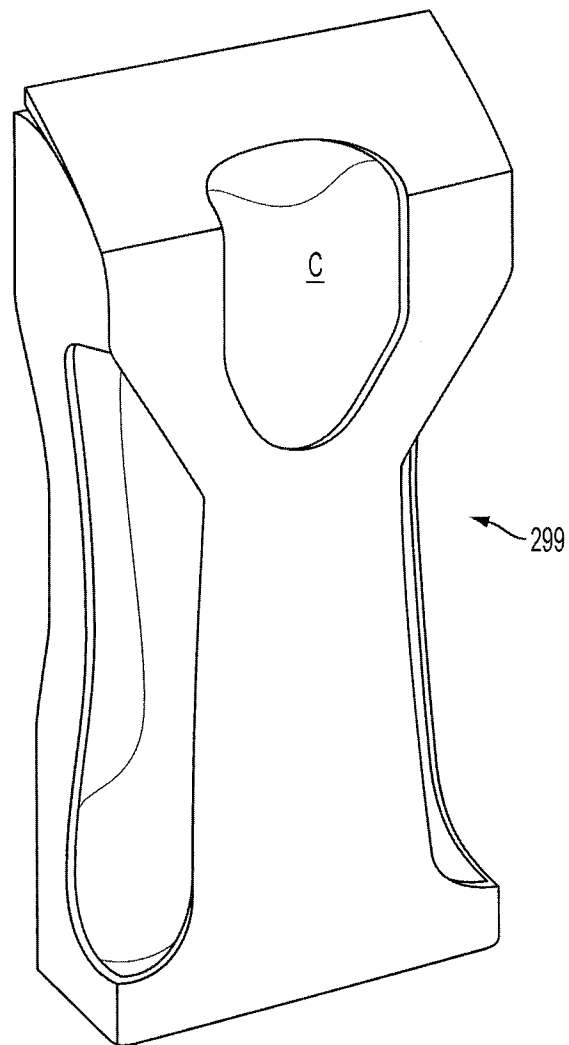


FIG. 11

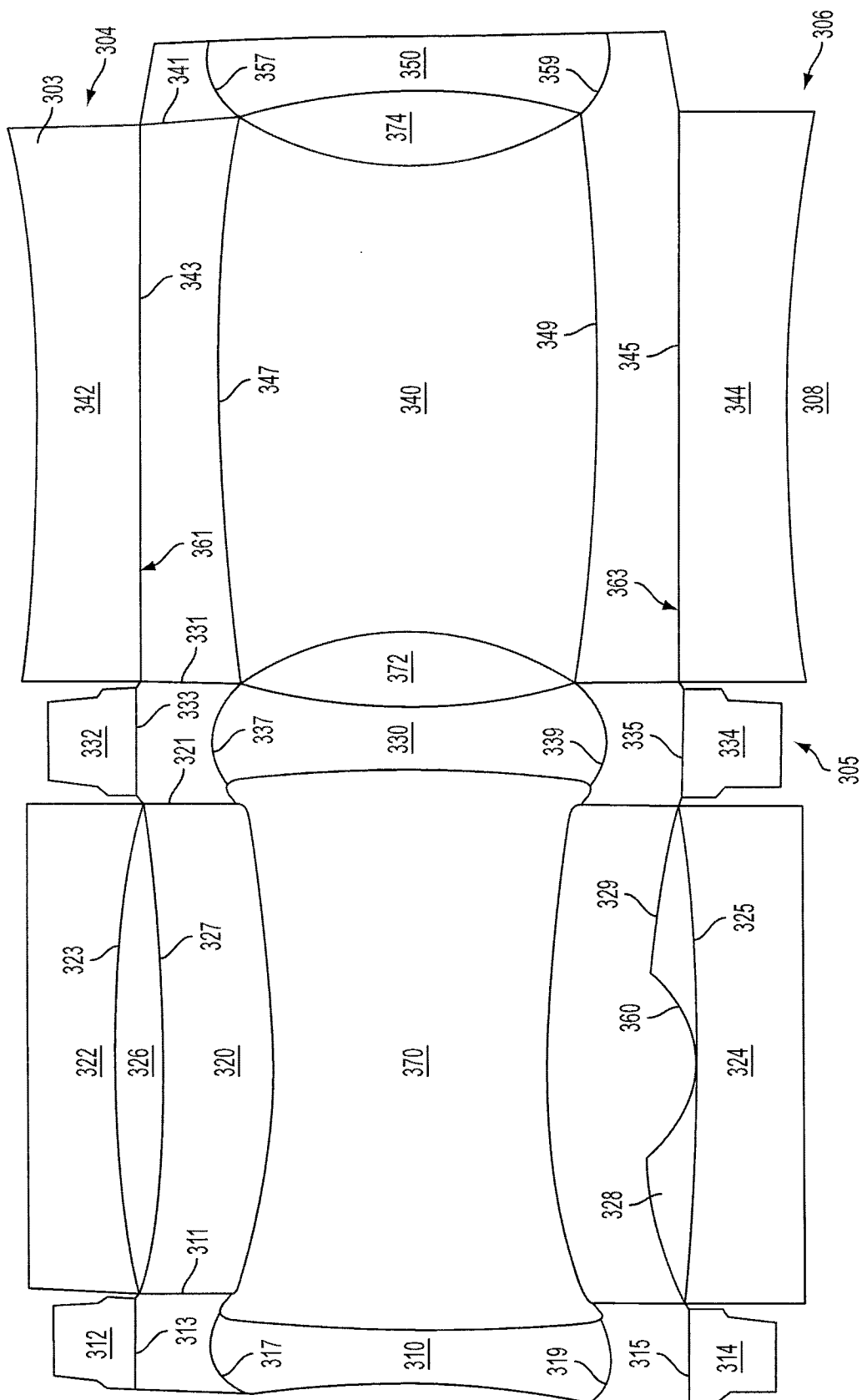


FIG. 12

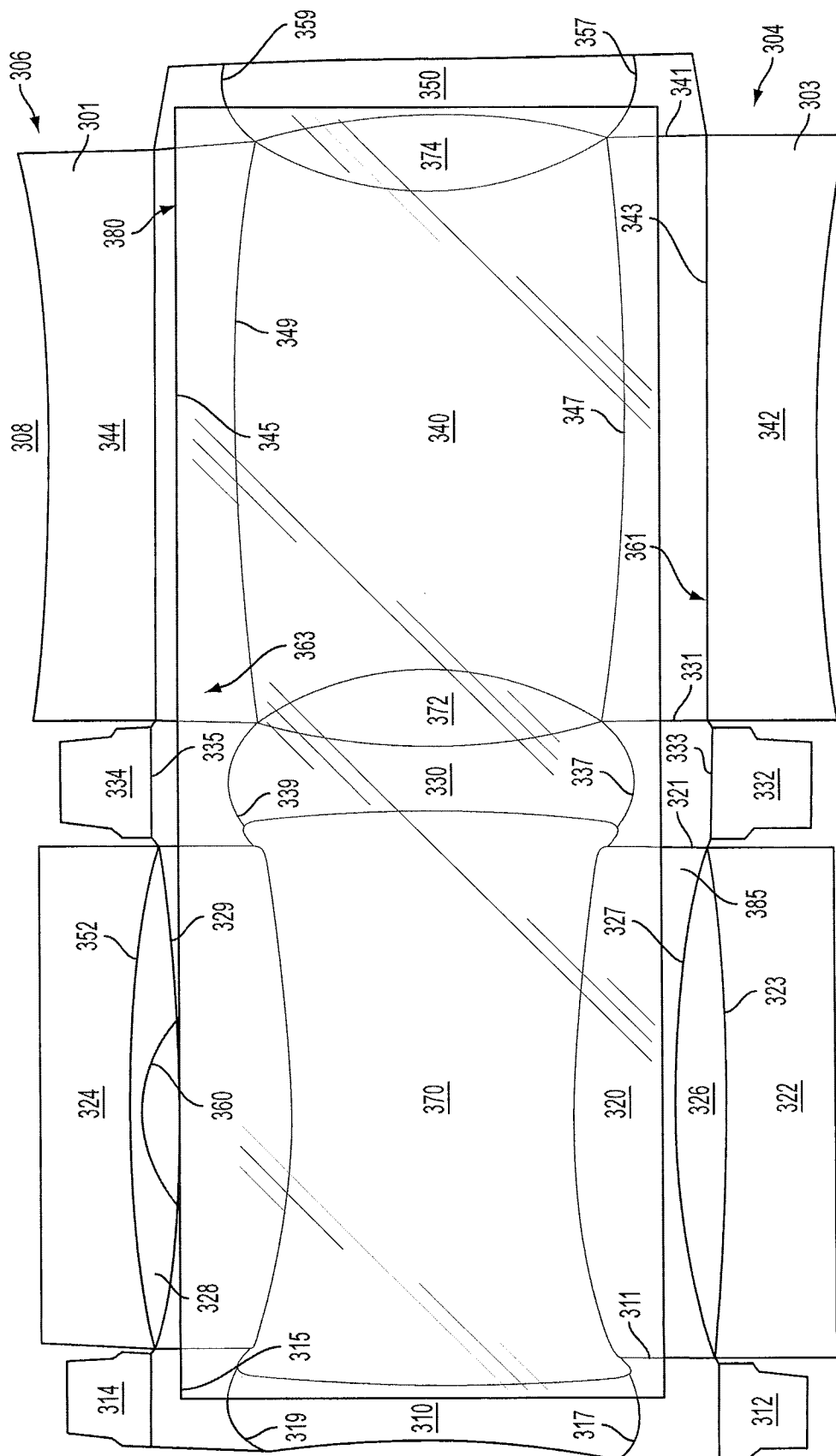


FIG. 13

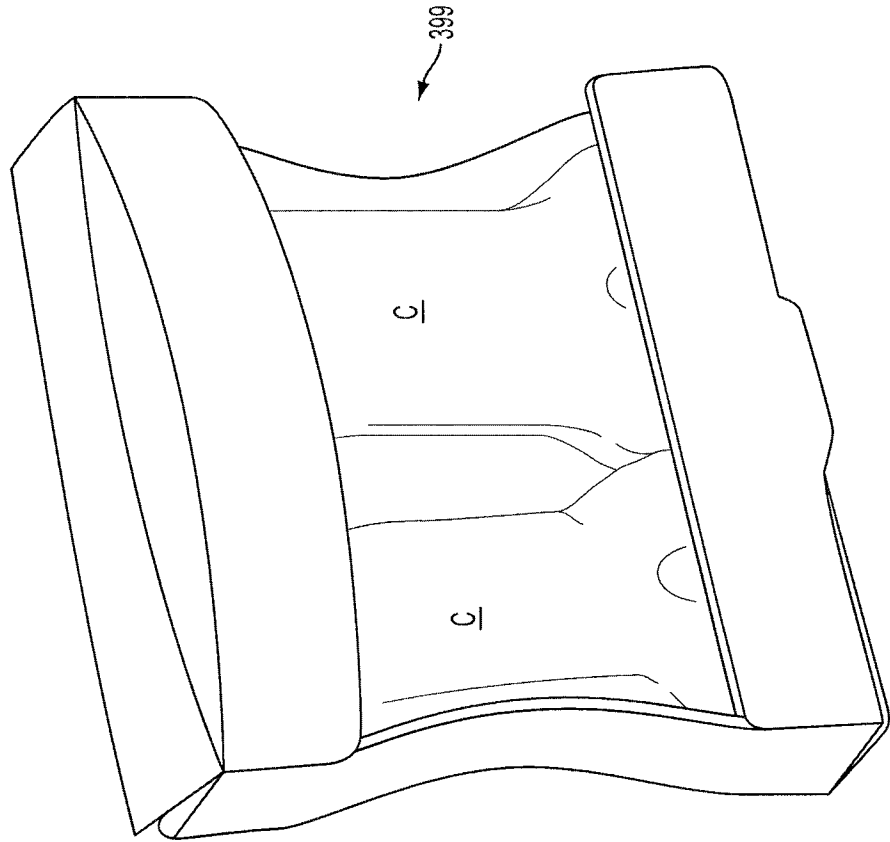
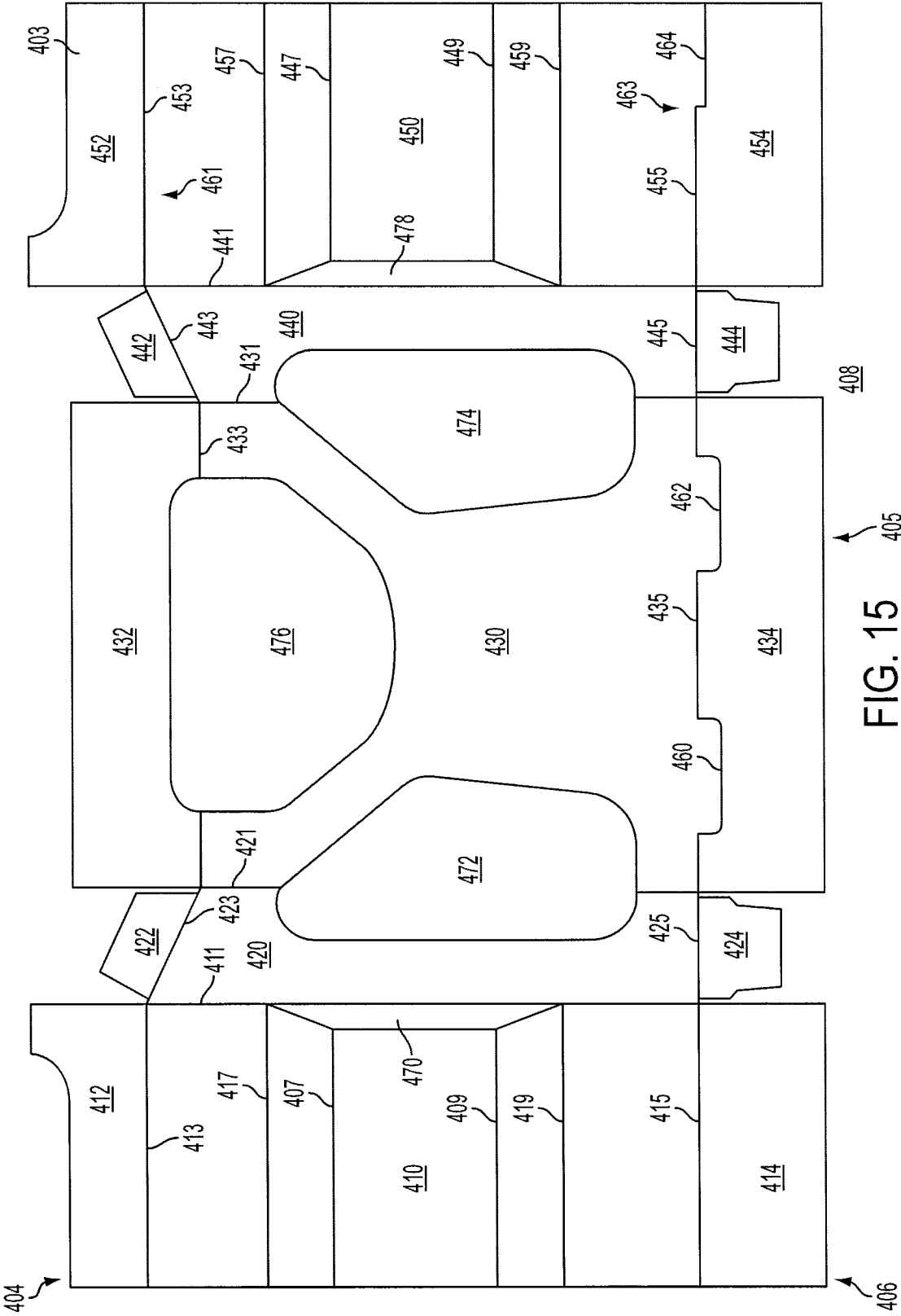
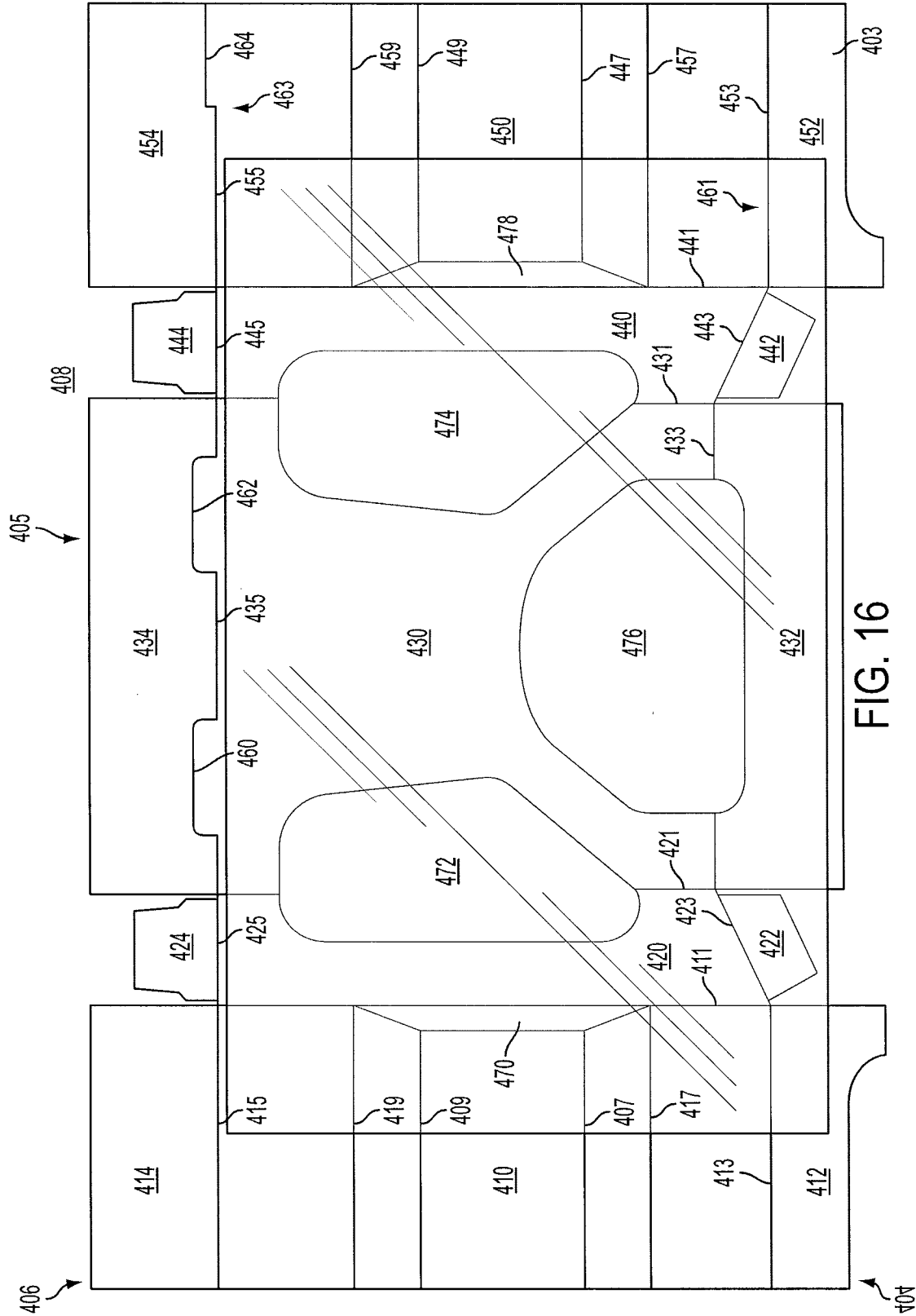


FIG. 14





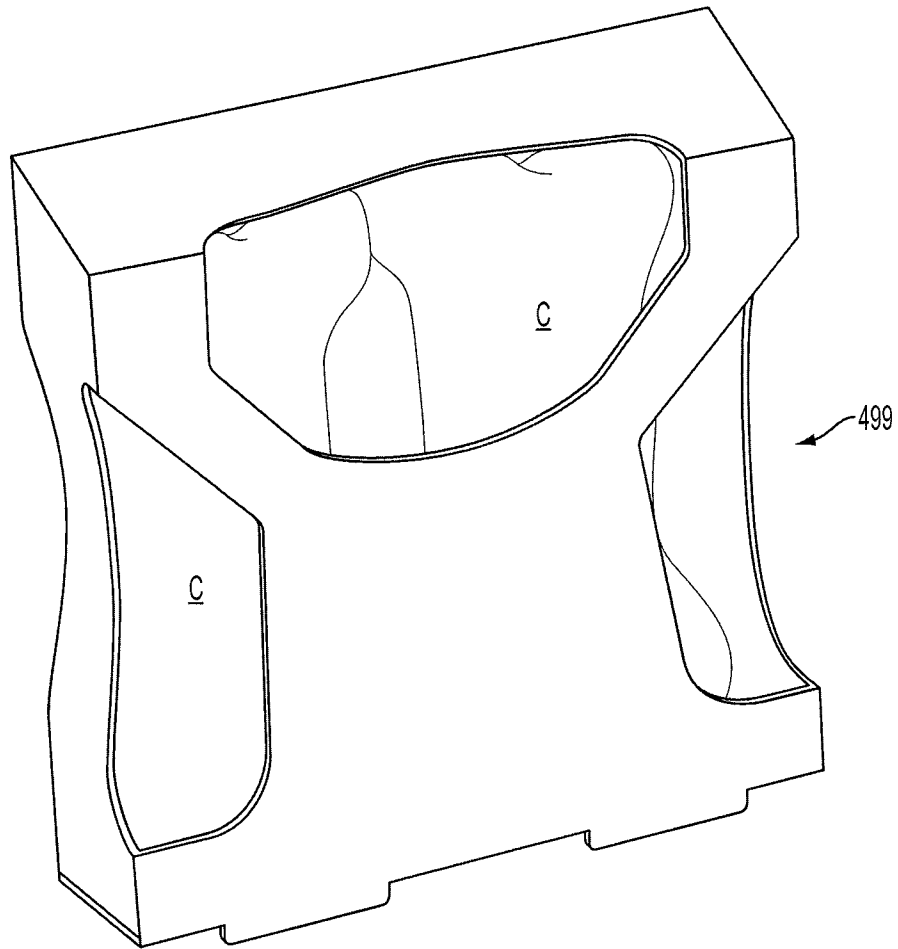
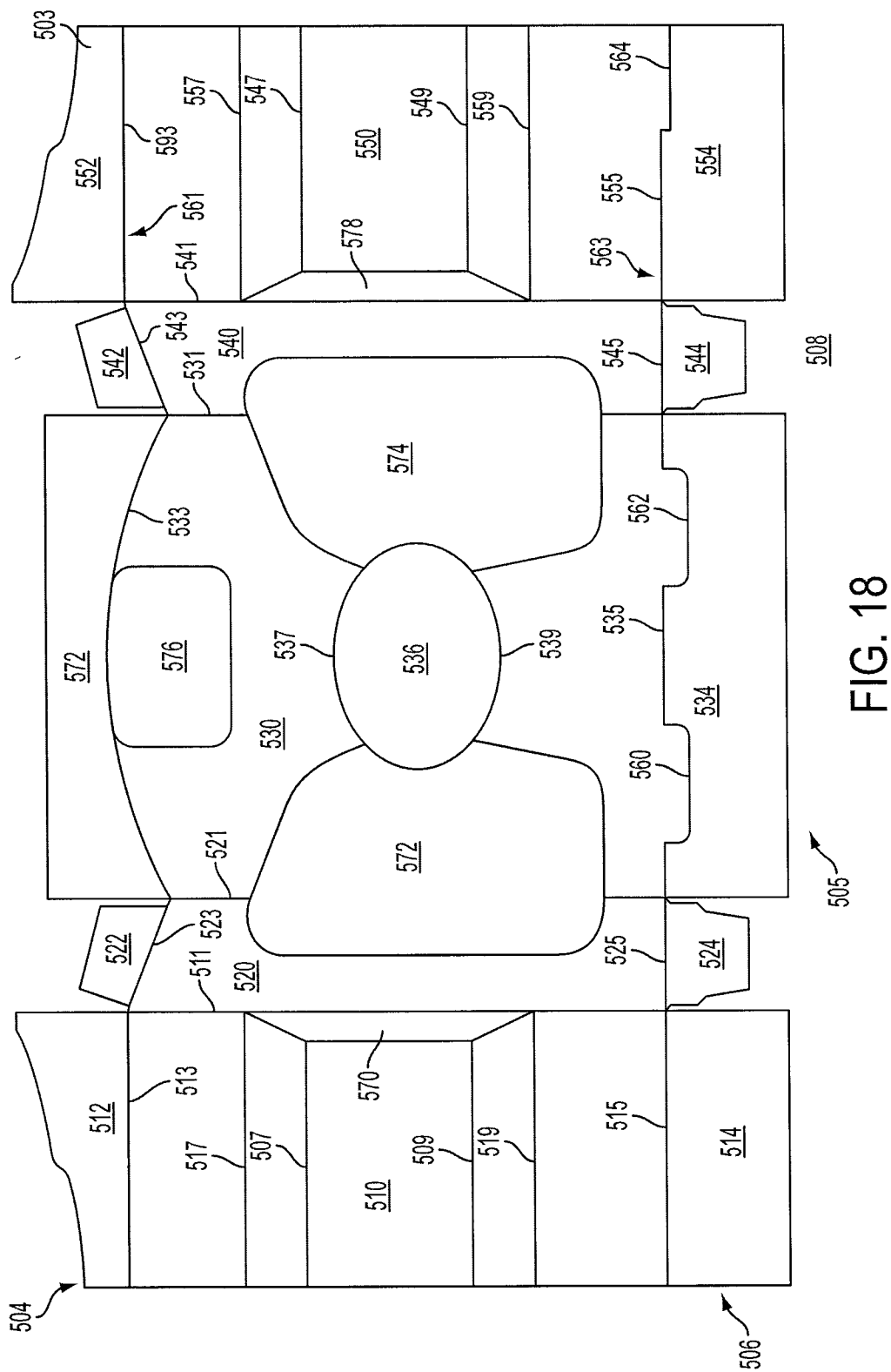
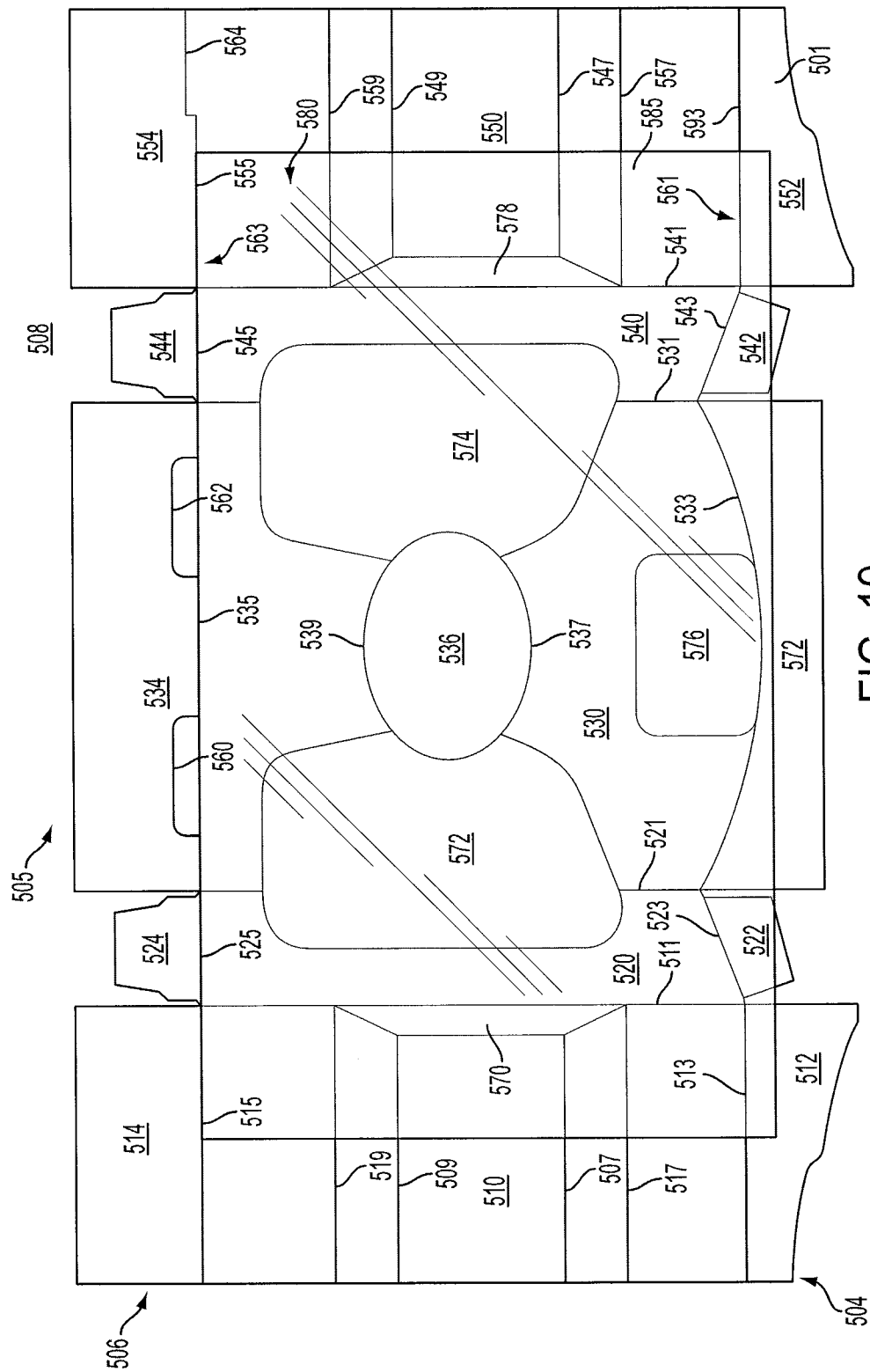


FIG. 17





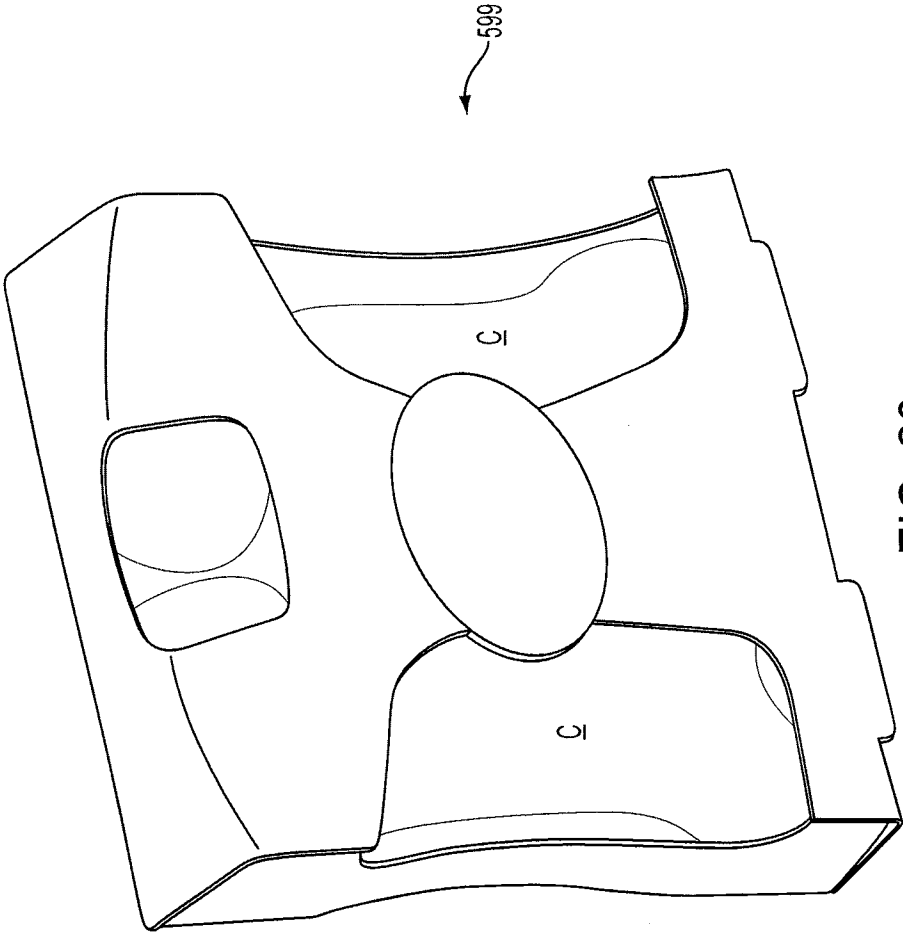


FIG. 20

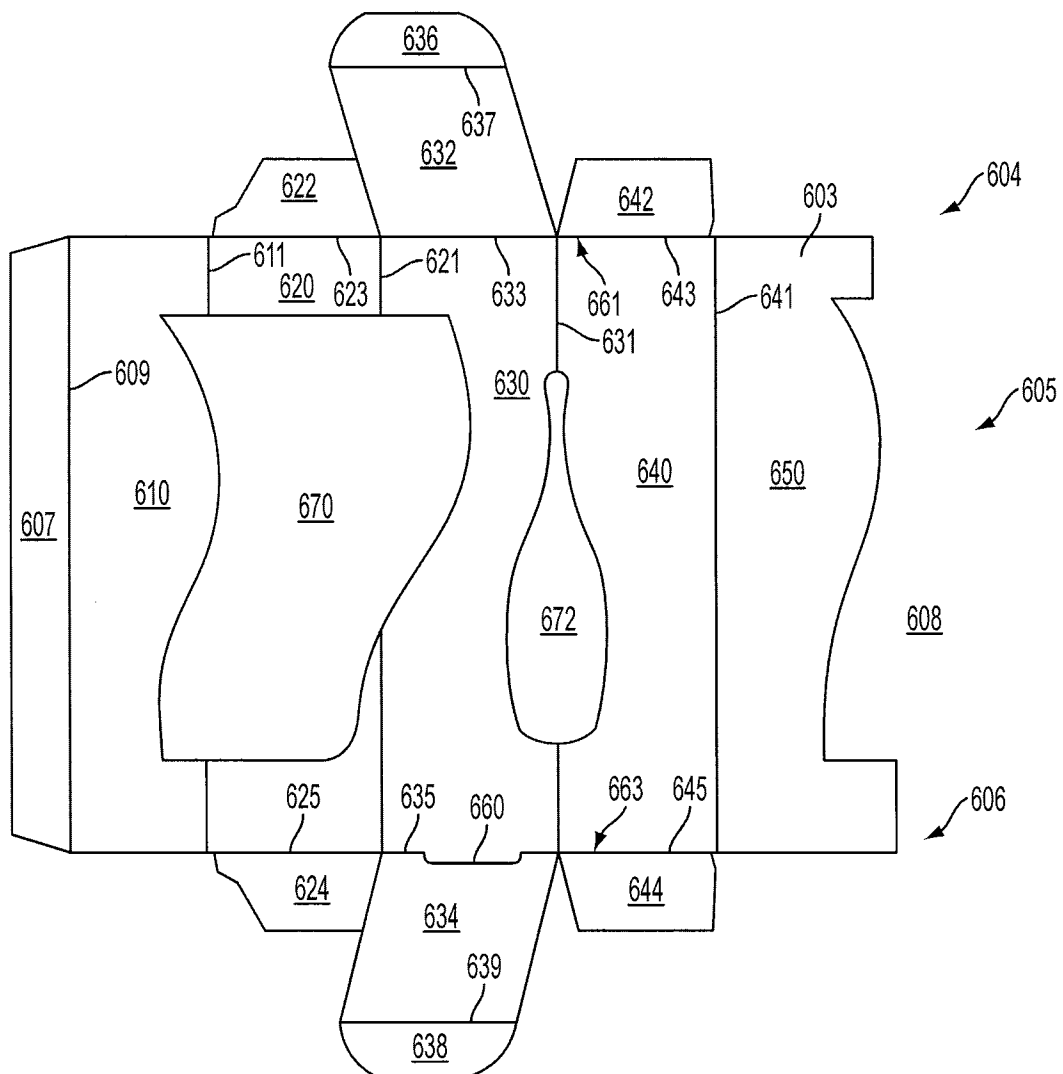


FIG. 21

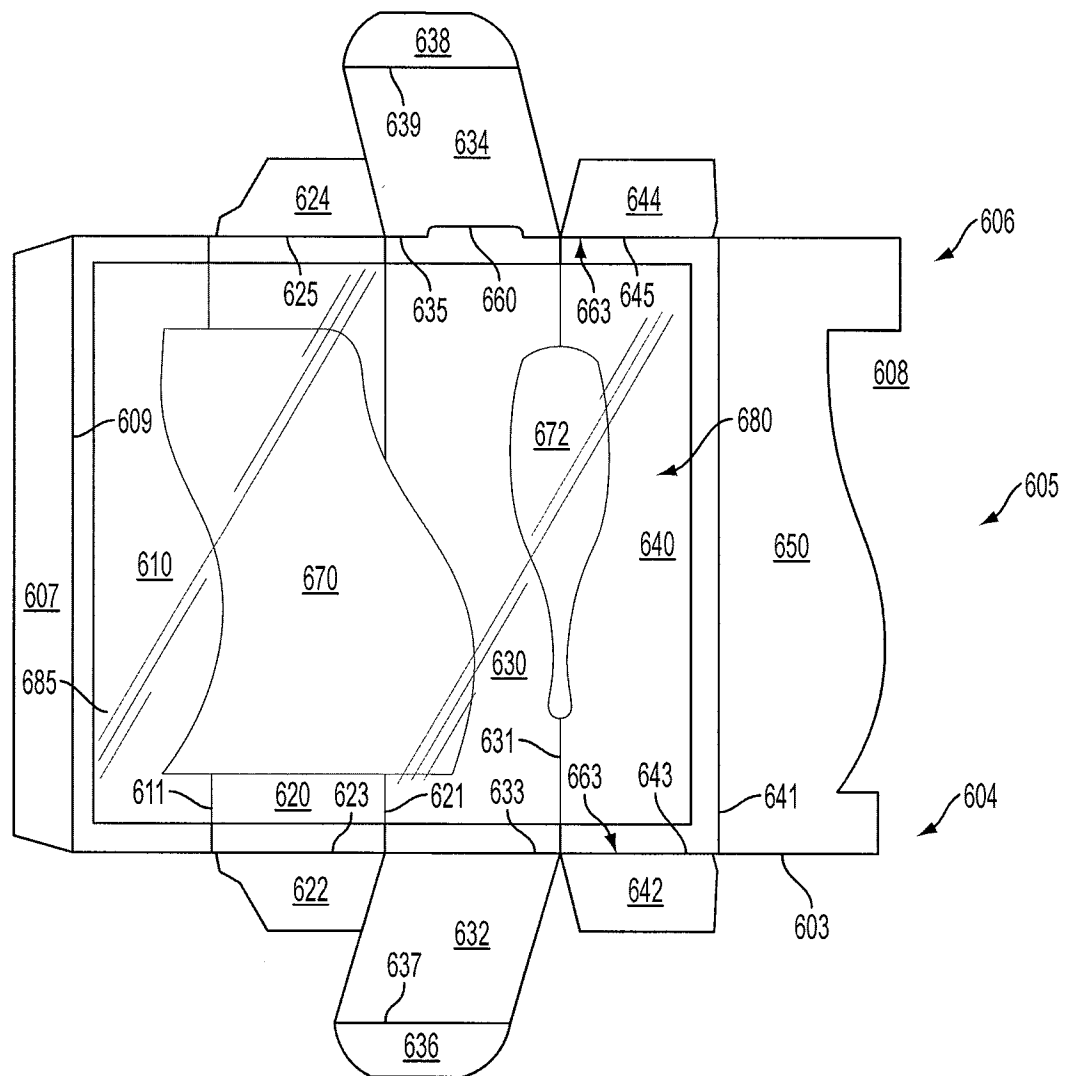


FIG. 22

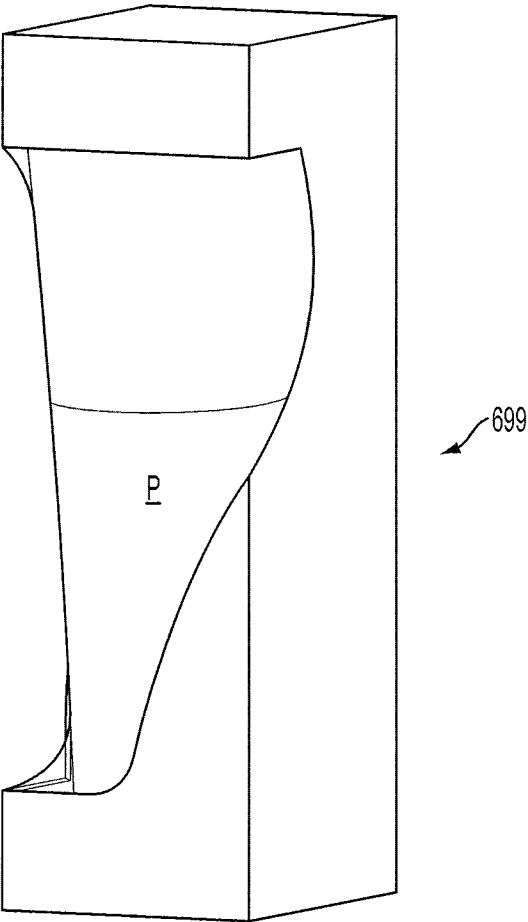


FIG. 23

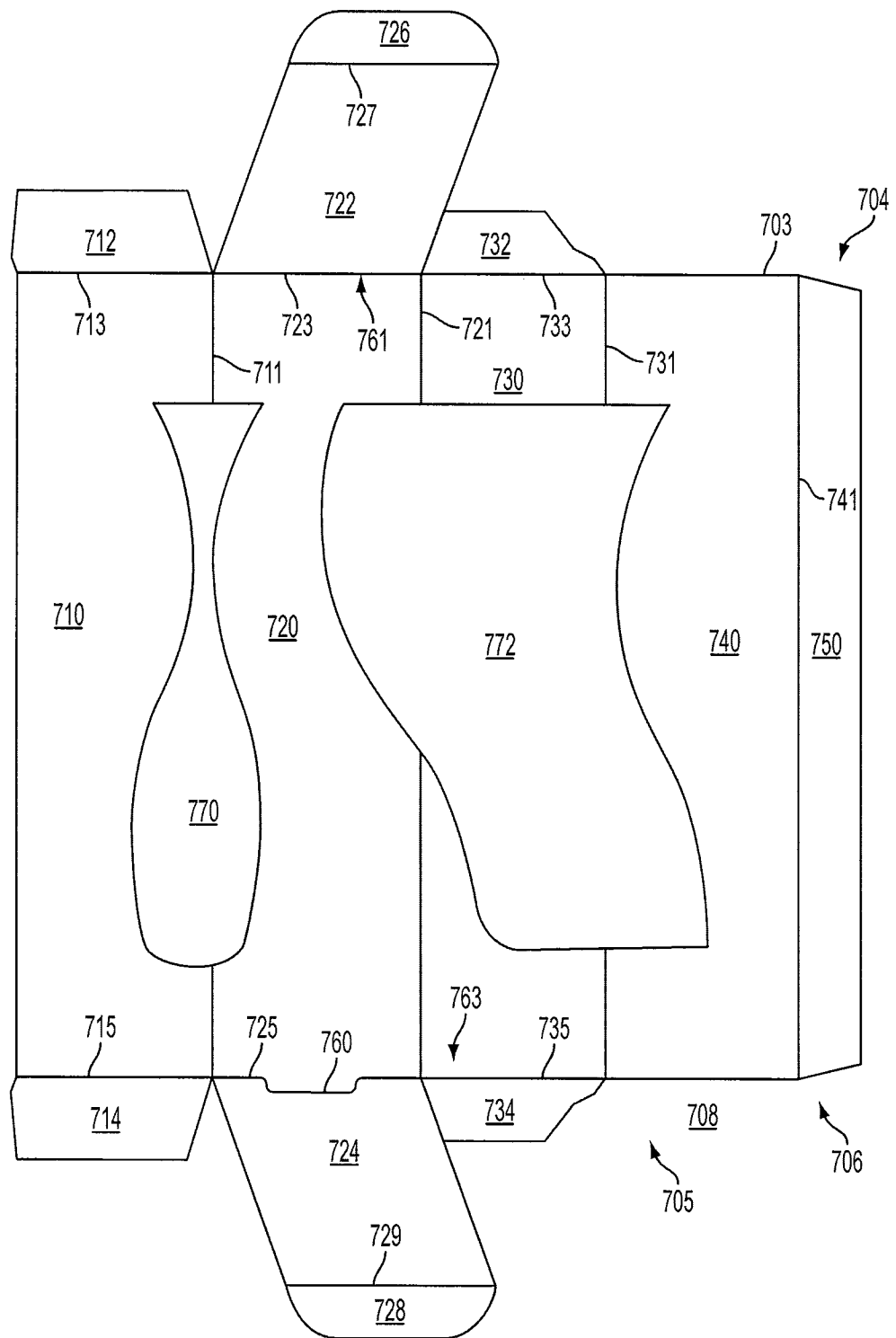


FIG. 24

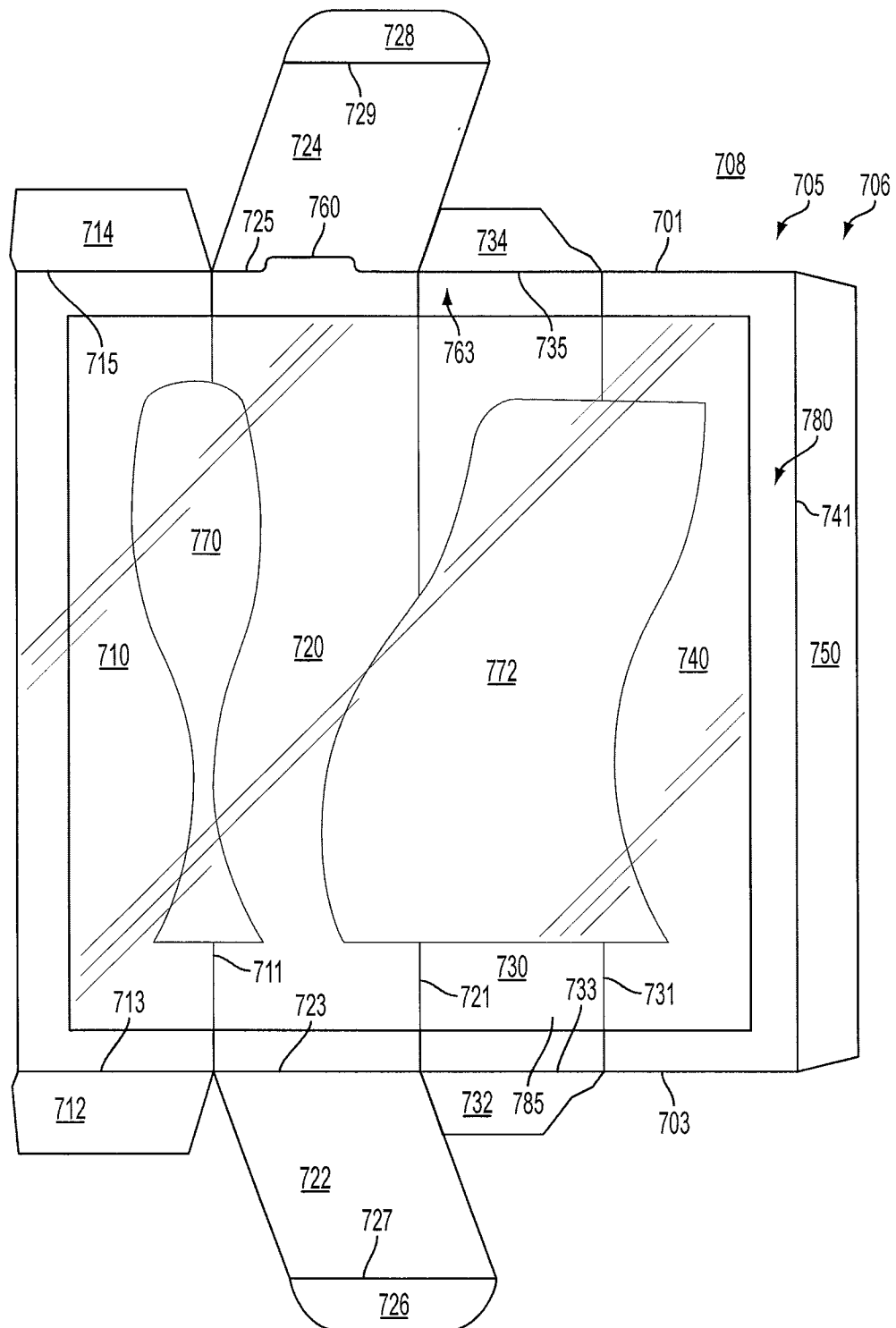


FIG. 25

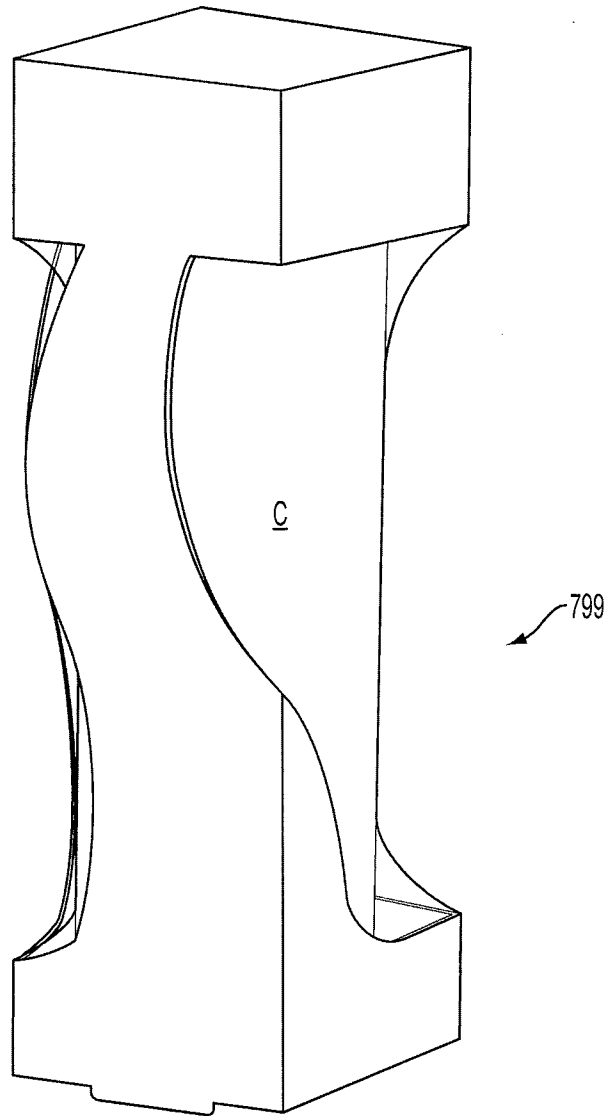


FIG. 26

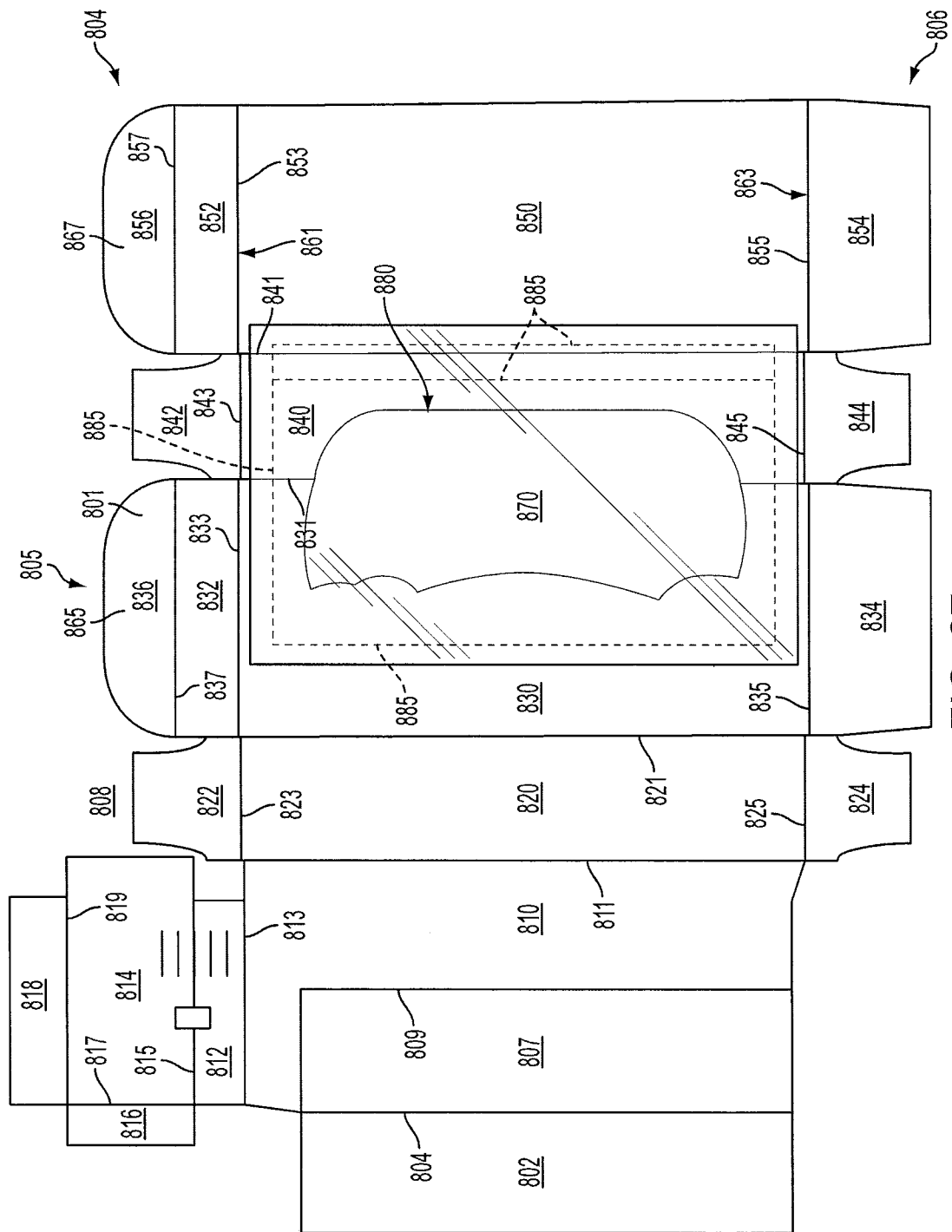


FIG. 27

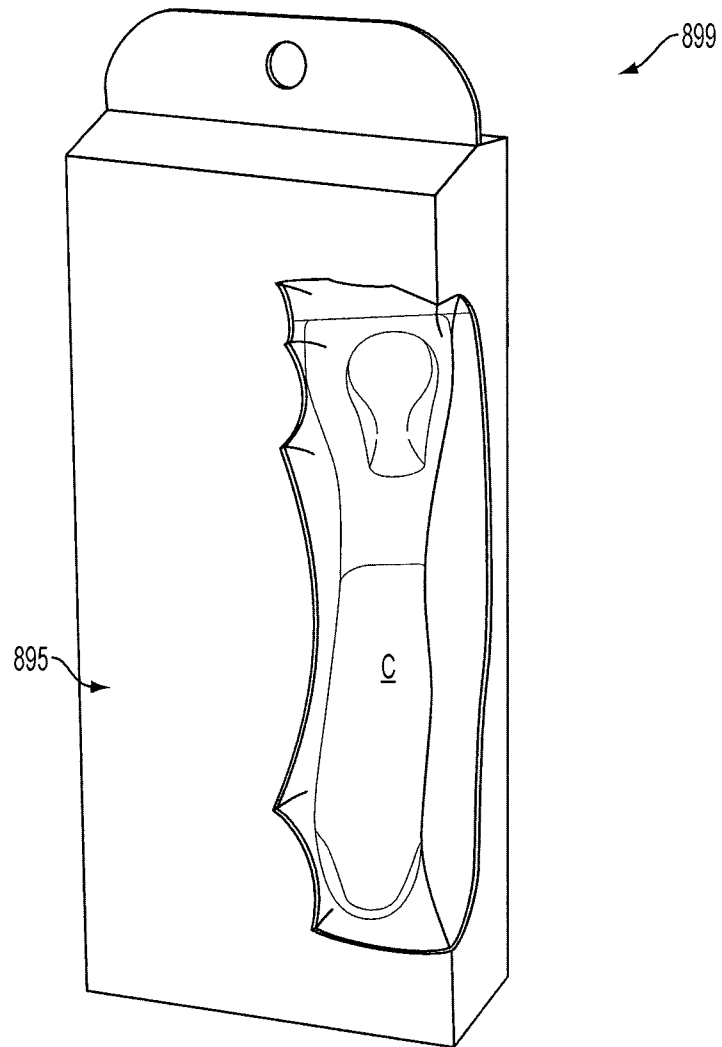


FIG. 28

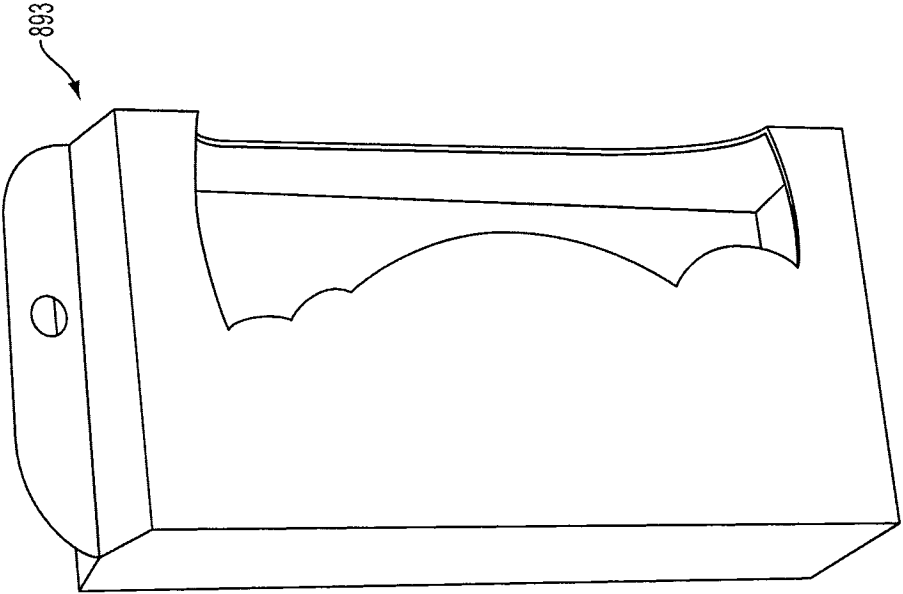


FIG. 29A  
PRIOR ART

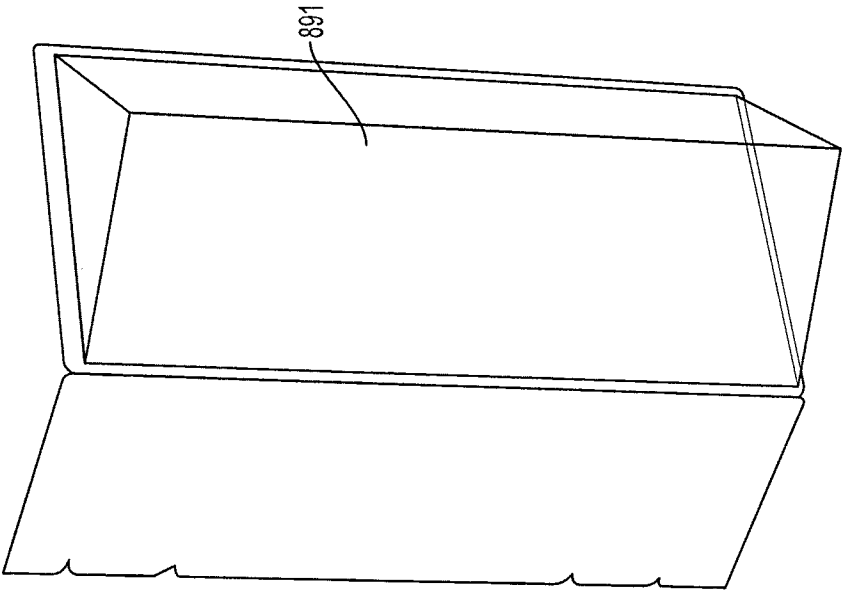


FIG. 29B  
PRIOR ART

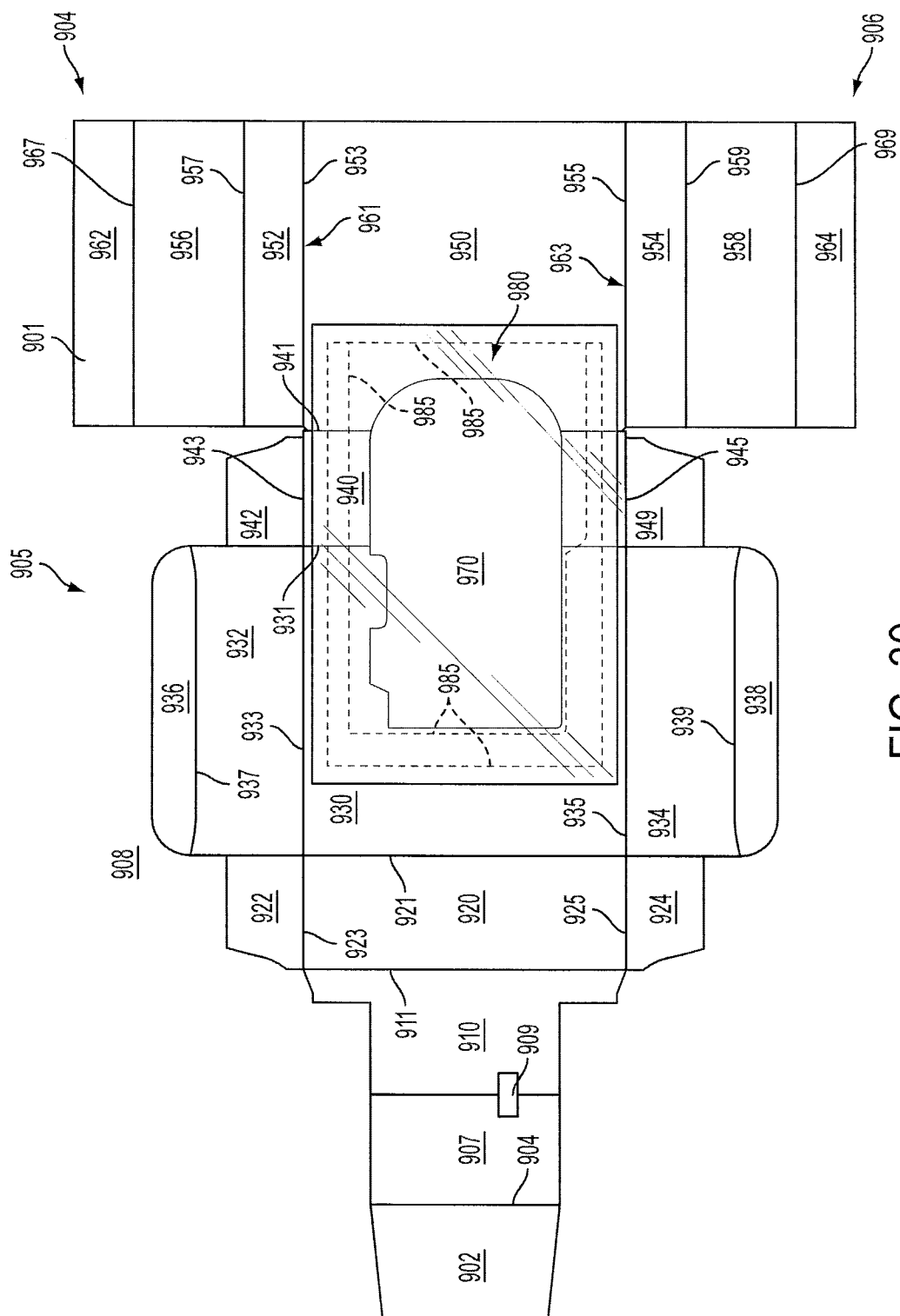


FIG. 30

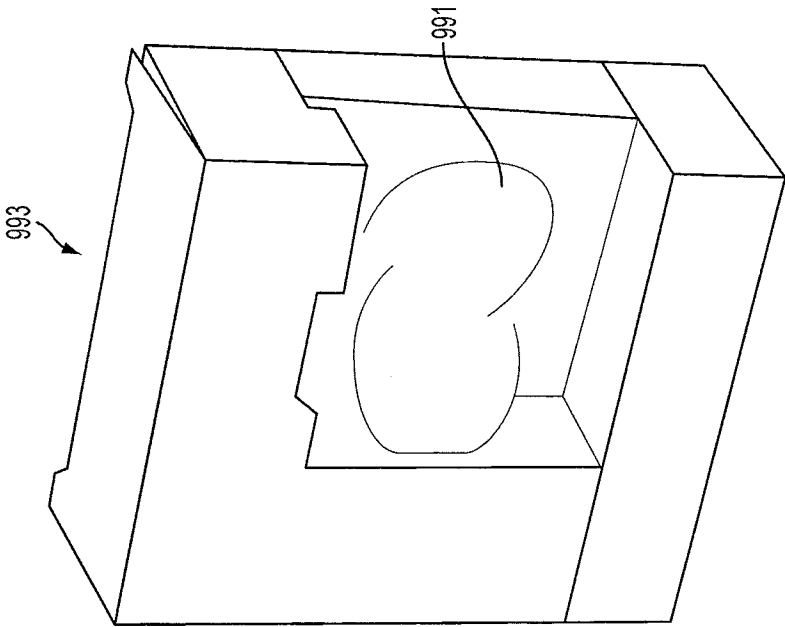


FIG. 31B  
PRIOR ART

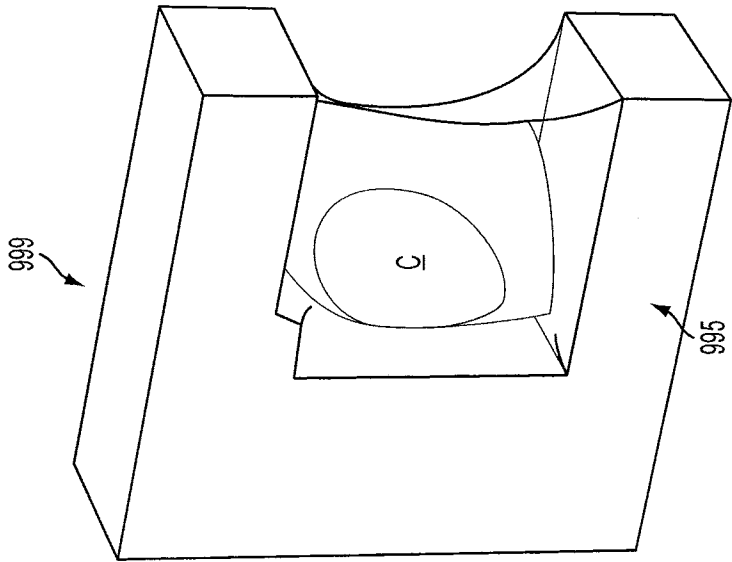
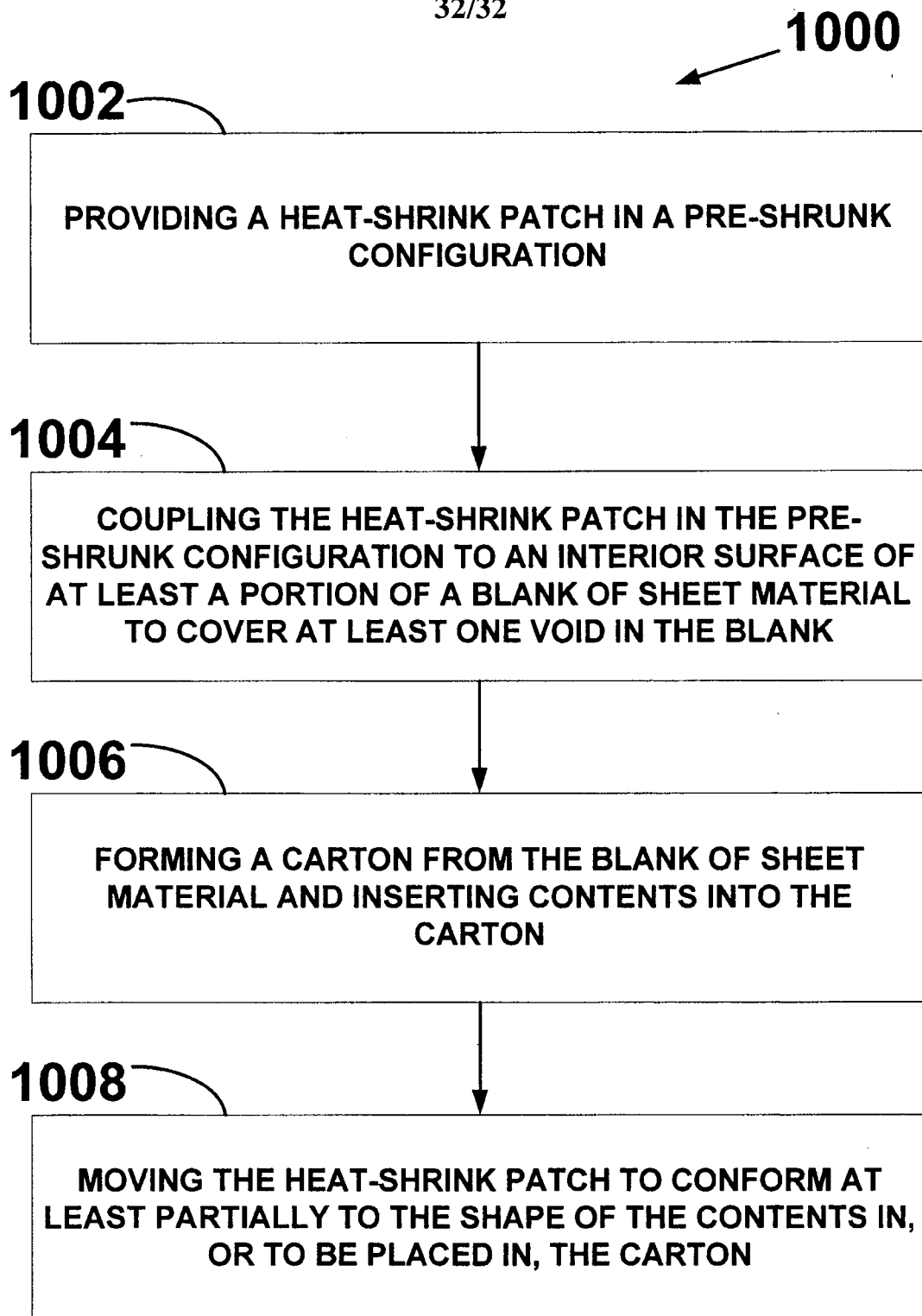


FIG. 31A

**FIG. 32**