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(54) **CARTON AND CARTON BLANK**

KARTON UND KARTONZUSCHNITT

EMBALLAGE EN CARTON ET DECOUPE DE CARTON

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## Description

**[0001]** The invention relates to a protective outer casing (or carton) for protecting one or more relatively fragile articles therein from damage by impact which casing is formed from one or more blanks of fibreboard, paperboard, corrugated board or other suitable foldable sheet material.

**[0002]** It is desirable for a carton or casing containing heavy or fragile items to be provided with a base structure that is strengthened to support the article and to minimise the possibility of the carton integrity being destroyed, for example, by carton tearing.

**[0003]** One example of a suitable carton is formed from a unitary blank and includes a base 5 formed by folding and gluing adjacent panels in an "accordion" like manner to construct the triple ply base. An example of such a blank for forming such a carton is illustrated in Figure 1. The side walls are designated by reference numerals 6, 7. However, in order to produce such a base the blank is required to undergo a number of complicated folding and gluing operations to secure the panels in face contacting arrangement which is undesirable.

**[0004]** FR 2 136 306 illustrates a casing with sides and end walls and a multiply base provided by inner flaps and an outer panel which is folded over the flaps and is secured in place by a locking tab and corresponding aperture formed in the side wall. The base is only directly connected to the carrier along one side edge.

**[0005]** The present invention and its preferred embodiments seek to overcome or at least mitigate the problems of the prior art.

**[0006]** One aspect of the invention provides a protective outer casing for protecting one or more relatively fragile articles therein from damage by impact which casing comprises, opposed side and end walls and a base. The base is formed from an outer base panel and one or more inner base panels each of which is directly or indirectly hingedly connected to the outer base panel and adapted to overlie the outer base panel to provide a multi-ply base. The inner and outer base panels are secured together by securing means, which securing means comprises a complementary locking tab and locking aperture struck from respective ones of the panels of the casing to hold the multi-ply base panels in a substantially flat condition. The side walls are each hingedly connected to the outer base panel and wherein the inner base panel is hingedly connected to the outer base panel intermediate the opposed side walls.

**[0007]** Preferably, there further comprises an end wall adjacent at least one of the side walls, the inner base panel being hingedly connected to the outer base panel intermediate the adjacent side and end walls.

**[0008]** Optionally, the inner base panel may further comprise a pair of complementary locking tabs and apertures struck from the adjacent side and end wall panels.

**[0009]** According to another optional feature of this

aspect of the invention the base may further comprise an intermediate base panel hingedly connected to the outer base panel and interposed between the inner and outer base panels to provide a triple ply base structure.

**[0010]** According to another optional feature of this aspect of the invention the inner base wall may be formed from two panels, each panel hingedly connected to the outer base panel along its opposing end edges.

**[0011]** Preferably, each panel of the inner base wall may comprise one or more complementary locking tabs and apertures struck from each side wall panel. Alternatively, the inner base wall may be formed from two panels, each panel hingedly connected to a common side edge of the outer base panel and comprising a protruding portion adapted to be received in a recess struck from the opposing side wall panel to define a base structure with two spaced apart two ply portions.

**[0012]** A second aspect of the invention provides a protective outer casing for protecting one or more relatively fragile articles therein from damage by impact which casing comprises, opposed side and end walls and a base. The base is adapted to hingedly interconnect the opposed side and end walls wherein one or more of the panels of the casing comprises protruding support portions extending downwardly so as to raise the base panels relative to support on which the protruding support panels stand. The protruding support portions are so constructed and arranged as to deform or collapse when the casing is subjected to a compressive force thereby to maintain the integrity of the carton and thereby provide protection to contents. Preferably, the plurality of protruding portions are provided by extensions of the opposing side and end wall panels struck from the base.

**[0013]** A third aspect of the invention provides a blank for forming a protective outer casing for protecting one or more relatively fragile articles therein from damage by impact which blank comprises, opposed side and end walls and a base. The base is formed from an outer base panel and an inner base panel each of which is directly or indirectly hingedly connected to the outer base panel and adapted to overlie the outer base panel to provide a multi-ply base in a set up condition. There further comprises a complementary locking tab and locking aperture struck from respective ones of the panels of the blank to secure the multi-ply base panels in a substantially flat condition wherein opposed side walls are each hingedly connected to the outer base panel and wherein the inner base panel is hingedly connected to the outer base panel intermediate the opposed side walls.

**[0014]** Preferably, there may further comprise an end wall adjacent at least one of the side walls, the inner base panel being hingedly connected to the outer base panel intermediate the adjacent side and end walls.

**[0015]** Optionally, the inner base panel may further comprise a pair of complementary locking tabs and apertures struck from the adjacent side and end panels.

**[0016]** According to another optional feature of the

third aspect of the invention the base may further comprise an intermediate base panel hingedly connected to the outer base panel and adapted in use to be interposed between the inner and outer base panels and adapted to provide a triple ply base structure in a set up casing.

**[0017]** According to another optional feature of the third aspect of the invention the inner base wall may be formed in use from two panels, each panel hingedly connected to the outer base panel along its opposing end edges. Preferably, each panel adapted to form the inner base wall in use may comprise one or more complementary locking tabs and apertures struck from each side wall panel. Alternatively, the inner base wall may be formed in use from two panels, each panel hingedly connected to the outer base panel along a common side edge, each panel of the inner base wall comprising a protruding portion and a recess struck from the opposing side panel.

**[0018]** A fourth aspect of the invention provides a blank for forming a protective outer casing for protecting one or more relatively fragile articles therein from damage by impact which blank comprises, opposed side and end walls and a base. The base is adapted to hingedly interconnect the opposed side and end walls wherein one or more of the panels of the blank comprises protruding support portions. The protruding support portions are so constructed and arranged to protrude downwardly and to deform or collapse when the casing is in a set up condition and subjected to a compressive force thereby provide protection to contents. Preferably, the plurality of protruding portions are provided by extensions of the opposing side and end panels struck from the base.

**[0019]** Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 is a plan view of part of a known blank for forming a triple ply base.

FIGURE 2 is a plan view of a blank for forming a protective outer casing according to a first embodiment of the invention;

FIGURES 3 and 4 illustrate the blank of Figure 2 shown during the folding process;

FIGURE 5 is a perspective view of the protective outer casing formed from the blank illustrated in Figure 2 in a set up condition;

FIGURE 6 is a plan view of the blank for forming a protective outer casing according to a second preferred embodiment of the invention;

FIGURES 7 and 8 illustrate the blank of Figure 6 shown during the folding process;

FIGURE 9 is a perspective view of a protective outer casing formed from the blank illustrated in Figure 6 in a set up condition;

FIGURE 10 is a plan view of a blank for forming a protective outer casing according to a third preferred embodiment of the invention;

FIGURES 11 and 12 illustrate the blank of Figure 10 shown during the folding process;

FIGURE 13 is a perspective view of the protective outer casing formed from the blank shown in Figure 10 in a set up condition;

FIGURE 14 is a plan view of a blank for forming a protective outer casing according to a fourth preferred embodiment of the invention;

FIGURES 15 illustrates the blank of Figure 14 shown during the folding process;

FIGURE 16 is a perspective view of the protective outer casing formed from the blank shown in Figure 14 in a set up condition;

FIGURE 17 is a plan view of a blank for forming a protective outer casing according to a fifth preferred embodiment of the invention;

FIGURE 18 is a perspective view of the protective outer casing formed from the blank shown in Figure 17 in a set up condition;

**[0020]** Referring first to Figure 2 there is shown a blank according to a first preferred embodiment for forming a protective outer casing (or carton) for protecting one or more relatively fragile articles therein from damage by impact which casing is formed from one or more blanks of fibreboard, paperboard, corrugated board or other suitable foldable sheet material. The blank 10 comprises top panel 12, first side wall panel 14, outer base panel 16, second side wall panel 18 hingedly connected one to the next along lateral foldlines 20, 22, 23 respectively. Of course, in other embodiments there may comprise a structure without a top wall. There may further comprise opposed end wall panels 24, 26 which in this embodiment, are hingedly connected to first side wall panel 14 along opposing longitudinal foldlines 28, 30 respectively. An inner base panel 32 is also provided which is hingedly connected to an edge of outer base panel 16 along foldline 34. Preferably, there may further comprise intermediate base panel 36 hingedly connected to opposing edge by foldline 38. Other shapes of the base, side and end walls and/or top panel can be adopted according to the size and/or shape of the or each article to be contained. Further, the hinged connection between the side, end and base panels is not limited to

that described herein, and it is envisaged the carton could be formed in other ways without departing from the scope of invention.

**[0021]** The inner base panel 32 further comprises securing means adapted to secure the inner base panel to the side and/or end wall panels 14, 18, 24, 26. Optionally, the securing means is provided by a complementary locking tab and aperture struck from respective ones of the panels of the casing to hold the multi-ply base panels in a substantially flat condition. In this embodiment, the securing means comprises a locking tab 40 extending opposed side edges of the inner base panel 32 and capable when in use of being secured to the sides of the carton to maintain the integrity of the base structure. The locking tabs 40 are adapted to be received in corresponding apertures 42 formed from opposing side wall panels 14, 18 and extend across foldlines 20, 22 respectively and into outer base panel 16.

**[0022]** There may further comprise a fold line 44 formed across inner base panel 32. In use, fold line 44 allows inner side wall panel to be flexed so that it is placed in a face contacting relationship with the intermediate base panel. This is particularly useful when the thickness of the intermediate base panel is of sufficient thickness to abut the inner base panel and would otherwise cause inner base panel 32 to be oriented in an upward direction. This preferred feature can be applied to any of the other embodiments hereinafter described without departing from the scope of invention.

**[0023]** The construction of the casing is illustrated with reference to the Figures 3 and 4: intermediate base panel 36 is first folded inwardly about foldline 38 to be placed in face contacting relationship with (or to overlie) outer base panel 16. Thereafter, inner base panel 32 is folded inwardly about foldline 34 and into face contacting relationship with intermediate base panel 36 to form a triple ply base structure 50 whereby tabs 40 are placed in close proximity to apertures 42. The base structure is secured in place by folding side wall panels 14, 18 into a substantially perpendicular relationship with outer base panel 16 and to abut the side edges of inner base panel 32. It will be seen from Figure 4 that the tabs 40 are thereby inserted through corresponding apertures 42 such that the inner and intermediate base panels 32, 36 are held in place and are prevented from springing back to their original position by abutment of the upper face of the locking tabs 40 with the upper edges of the apertures 42.

**[0024]** The casing is then loaded with one or more articles, such that the article is placed on the base structure 50 by hand or automatic machinery, as is well known in the art.

**[0025]** The remaining panels of the casing are constructed as shown in Figures 4 and 5: the end wall panels 24, 26 are folded into substantially perpendicular relationship with respective side wall panels, about foldlines 28, 30 respectively and top panel 12 is folded out of alignment with its adjacent side wall panel 14 and into

substantially perpendicular relationship to close the casing, as shown in Figure 4. Thus, the casing is in its completed form with an article, for example a china or glass pot, stored within it and ready to be placed in an outer carton or for the panels to be secured together by suitable means known in the art.

**[0026]** The second embodiment is illustrated in Figures 6 to 9. Figure 6 illustrates a blank for forming a protective outer casing which is similar to the first embodiment, whereby the blank 110 comprises top panel 112, first side wall panel 114, outer base panel 116, second side wall panel 118 hingedly connected one to the next along lateral foldlines 120, 122, 123 respectively. There further comprises opposed end wall panels 124, 126 which in this embodiment, are hingedly connected to outer base panel 116 along opposing longitudinal foldlines 128, 130 respectively. Inner base panel 132 is hingedly connected to an edge of outer base panel 116 along foldline 134 intermediate adjacent side and end walls 118, 124. Preferably, there may further comprise intermediate base panel 136 hingedly connected to another edge of outer base panel by foldline 138, intermediate adjacent side and end panels 118, 126. It will be seen from Figure 6 that foldlines 134, 138 preferably intersect respective fold lines 128, 123 and 130, 123 at an obtuse angular relationship and more preferably diagonally across the corner so that the inner and intermediate base panels can be folded inwardly to overlie the outer base panel, to form a bevelled corner.

**[0027]** In this embodiment, the securing means is provided by a locking tab 140 extending from an end edge of the inner base panel 132 and locking tabs or protrusions 148, 150 extending from the edges adjacent the side and end panels 118, 124. In this embodiment, corresponding apertures 142, 146, 152 are struck from opposing end walls 124, 126 and one or more of the side walls 118 to receive locking tabs 150, 140, 148 respectively. Optionally, intermediate base panel 136 is provided with a locking tab 144 extending from an end edge and locking tabs or protrusions 149, 151 extending from the edges adjacent the side and end panels 118, 124. In this embodiment, corresponding apertures 142, 146, 152 are struck from opposing end walls 124, 126 and one or more of the side walls 118 to receive locking tabs 150, 140, 148 of the inner base panel and locking tabs 144, 151, 149 of the intermediate base panel when the base panels are in overlapping relationship described below.

**[0028]** The construction of the casing is illustrated with reference to the Figures 7 and 8: intermediate base panel 136 is first folded inwardly about foldline 138 to be placed in face contacting relationship with outer base panel 116. Thereafter, inner base panel 132 is folded about foldline 134 and into face contacting relationship with intermediate base panel 136 to form a triple ply base structure 160 whereby locking tabs 144 and 150 overlie aperture 142, locking tabs 140 and 151 are placed above aperture 146; and locking tabs 148, 149

are placed above aperture 152. The base structure 160 is secured in place by folding side panel 118 and end wall panels 124 and 126 upwardly, and preferably into a substantially perpendicular relationship with outer base panel 116, side and end wall panels may abut the side and end edges of inner base panel 132. It will be seen from Figures 8 and 9 that the tabs 144, 150; 140, 151; 148, 149 are thereby inserted through corresponding apertures 142, 146, 150 such that the inner, intermediate base panels 132, 136 are held in place and are prevented from springing back to their original position by abutment of the upper face of the locking tabs with the upper edges of the apertures.

**[0029]** As with the first embodiment, the casing of the second embodiment is then loaded with one or more articles, such that the article is placed on the base structure 160 by hand or automatic machinery and the remaining panels of the casing are constructed: the side wall panel and top panel 114, 112 are folded out of alignment and into substantially perpendicular relationship about foldlines 120, 122 respectively, as shown in Figure 9. Thus, the casing is in its completed form and loaded with an article. The top, end and side wall panels are retained in a set up condition by placement in an outer carton or for the panels to be secured together by suitable means known in the art.

**[0030]** The third embodiment is illustrated in Figures 10 to 13. Figure 10 illustrates a blank for forming a protective outer casing which is similar to the first embodiment, the blank 210 comprises top panel 212, first side wall panel 214, outer base panel 216, second side wall panel 218 hingedly connected one to the next along lateral foldlines 220, 222, 223 respectively. There further comprises opposed end wall panels 224, 226 which in this embodiment, are formed in two parts 224a, 224b and 226a, 226b. End panels 224a and 226a are hingedly connected to first side wall panel 214 along opposing longitudinal foldlines 228, 230 respectively and end wall panels 224b and 226b are hingedly connected to second side wall panel along opposing foldlines 229 and 231. Inner base panel 232 is formed in two parts 236 and 238, which parts are hingedly connected to opposing end edges of outer base panel 216 along foldlines 237 and 239 respectively. In this embodiment, the casing is formed with a two ply base structure, although an intermediate base panel could be incorporated, for example by using a separate blank, or adopting an arrangement described herein, without departing from the scope of the invention. The foldable connection between the top, side, end and base panels is not limited to that described herein, and it is envisaged the casing could be formed in other ways without departing from the scope of invention.

**[0031]** In this embodiment, the securing means is provided by locking tabs 240, 244 extending from one or more edges of each part 238, 236 of the inner base panel and corresponding apertures 242, 246 formed from opposing side wall panels 214, 218 to extend across

foldlines 220, 222 respectively and into outer base panel 216. In one class of embodiments, apertures 242, 246 may be replaced by a single aperture or one or more recesses.

**[0032]** The construction of the casing is illustrated with reference to the Figures 11 and 12: each part 236, 238 of inner base panel is folded inwardly about foldlines 237, 239 to be placed in face contacting relationship with outer base panel 216 to form a double ply base structure 250 whereby tabs 240, 244 overlie apertures 242, 246 respectively, as shown in Figure 11. The base structure 250 is secured in place by folding side panels 214, 218 upwardly, and preferably, into a substantially perpendicular relationship with outer base panel 216 and to abut the side edges of inner base panels. It will be seen from Figure 12 that the tabs 240, 244 are thereby inserted through corresponding apertures 242, 246 such that the inner base panels 236, 238 are held in place and are prevented from springing back to their original position by abutment of the upper face of the locking tabs with the upper edges of the apertures.

**[0033]** As with the first embodiment, the casing of the third embodiment is then loaded with one or more articles, such that the article is placed on the base structure 250 by hand or automatic machinery and the remaining panels of the casing are constructed: the end wall panels 224a and 224b, 226a and 226b are folded into substantially perpendicular relationship with respective side walls 214, 218, about foldlines 228, 230; 229, 231 respectively and top panel 212 is folded out of alignment with its adjacent side wall panel 214 about fold line 220 and into substantially perpendicular relationship to close the casing, as shown in Figure 13. Thus, the casing is in its completed form and loaded with an article and the top and end wall panels are retained in a set up condition by placement in an outer carton or for the panels to be secured together by suitable means known in the art.

**[0034]** The fourth embodiment is illustrated in Figures 14 to 16. Figure 14 illustrates a blank for forming a protective outer casing which is similar to the first embodiment: the blank 310 comprises top panel 312, first side wall panel 314, outer base panel 316, second side wall panel 318 hingedly connected one to the next along lateral foldlines 320, 322, 323 respectively. There further comprises opposed end wall panels 324, 326 which in this embodiment, are hingedly connected to outer base panel 316 along opposing longitudinal foldlines 328, 330 respectively. Inner base panel is formed in two parts 332 and 336, which parts are hingedly connected to a common side edge of outer base panel 316 along foldlines 334 and 338 respectively. In this embodiment, fold lines 334, 338 are extensions of fold line 322. As shown in Figure 14, the inner base parts 332, 336 are adjacent side panel 314 and separated therefrom by cut lines 340 and 342. In this embodiment, the casing is adapted to form a two ply base structure, although an intermediate base panel could be incorporated, for example by using a separate blank, or adopting an arrangement described

herein, without departing from the scope of the invention. The foldable connection between the top, side, end and base panels is not limited to that described above, and it is envisaged the casing could be formed in other ways without departing from the scope of invention.

**[0035]** In this embodiment, the securing means is provided by locking tabs 348, 352 extending from the proximal edges of the inner base panel parts 332, 336 or, more preferably, a prolongation of inner base panel parts and corresponding apertures or recesses 344, 346 formed from the opposing side panel 318.

**[0036]** The construction of the casing is illustrated with reference to the Figures 15 and 16: each part 332, 336 of inner base panel is folded about foldlines 334, 338 to be placed in face contacting relationship with outer base panel 316 to form a double ply base structure 350 whereby the prolongations 348, 352 overlies recesses 344, 346 respectively, and the base structure 350 is secured in place by folding side panels 314, 318 upwards and preferably into a substantially perpendicular relationship with outer base panel 316. It will be seen from Figure 15 that the inner base panel parts 336, 332 are thereby inserted through corresponding recesses 344, 346 such that the inner base panels 332, 336 are held in place and are prevented from springing back to their original position by abutment of their upper faces with the upper edges of the recesses.

**[0037]** As with the first embodiment, the casing of the fourth embodiment is then loaded with one or more articles, such that the article is placed on the base structure 350 by hand or automatic machinery and the remaining panels of the casing are constructed: the end wall panels 324, 326 are folded into substantially perpendicular relationship with respective side walls, about foldlines 328, 330 respectively and top panel 312 is folded out of alignment with its adjacent side wall panel 314 and into substantially perpendicular relationship to close the casing, as shown in Figure 16. Thus, the casing is in its completed form and loaded with an article. The top, end and side wall panels are retained in a set up condition by placement in an outer carton or for the panels to be secured together by suitable means known in the art.

**[0038]** The fifth embodiment is illustrated in Figures 17 and 18. Figure 17 illustrates a blank for forming a protective outer casing which is similar to the first embodiment: the blank 410 comprises top panel 412, first side wall panel 414, base panel 416, second side wall panel 418 hingedly connected one to the next along lateral foldlines 420, 422, 423 respectively. There further comprises opposed end wall panels 424, 426 which in this embodiment, are hingedly connected to base panel 416 along opposing longitudinal foldlines 428, 430 respectively. One or more additional base panels could be incorporated, for example by using a separate blank, or adopting an arrangement described above, without departing from the scope of the invention. The foldable connection between the top, side, end and base panels is not limited to that described above, and it is envisaged

the casing could be formed in other ways without departing from the scope of invention.

**[0039]** One or more of the panels 414, 418, 424, 426 of the casing comprises protruding support portions 432, 436 extending downwardly so as to raise the or each base panel 416 relative to support on which the protruding support panels stand. In this embodiment, the or each protruding support portion 432, 436 is a prolongation of the adjacent side or end panel to extend into apertures 434, 438 struck from the base panel 416. The apertures minimise any impediment of the support portions during construction of the carton. It is envisaged that the support portions could be struck from the base panel 416, without departing from the scope of invention.

**[0040]** The construction of the casing is illustrated with reference to the Figures 18: the casing is loaded with one or more articles, such that the or each article is placed on the base 416 by hand or automatic machinery and the side and end wall panels 414, 418; 424, 426 are folded inwardly, preferably into substantially perpendicular relationship with base panel 416, about foldlines 423, 422; 428, 430 respectively. By folding the side and end wall panels, the support portions 432 and 436 are folded out of alignment with base panel 416 to extend downwardly. Top panel 412 is folded out of alignment with its adjacent side wall panel 414 and into substantially perpendicular relationship to close the casing, as shown in Figure 18. Thus, the casing is in its completed form and loaded with an article. The top, end and side wall panels are retained in a set up condition by placement in an outer carton or for the panels to be secured together by suitable means known in the art.

**[0041]** In use, the protruding support portions are so constructed and arranged as to deform or collapse in direction D when the casing is subjected to a compressive force thereby to maintain the integrity of the carton and to provide protection to the contents.

**[0042]** It is envisaged that the carton or casing of the present invention can be formed by a series of sequential folding operations which can be formed in a straight-line machine so that the carton is not required to be rotated, inverted or glued to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing or user requirements. For example, the article could be inserted into the casing after the triple ply base has been formed but before the side and end wall panels are constructed. Alternatively, it is envisaged the casing could be supplied in a fully constructed or flat collapsed condition with the base already formed as a triple ply structure.

**[0043]** Beneficially, the embodiment of the invention hereinbefore described provides a structure that is sufficiently strong to retain articles and provide an integral casing. The use of paperboard or corrugated board material provides an environmentally friendly alternative to sleeves formed from plastics material and the sleeves

formed from such paperboard or corrugated board can include printed matter for marketing purposes.

**[0044]** It will be recognised that as used herein, directional references such as "top", "base", "end", and "side" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

**[0045]** The invention and its preferred embodiment relate to a casing or a sleeve which is shaped to provide satisfactory rigidity to hold items such as porcelain pots or glassware with increased flexibility. The shape of the blank minimises the amount of paperboard required for the casing. The casing can be constructed from a flat collapsed condition to a position of use and/or loaded by hand or automatic machinery. It is anticipated the invention can be modified without departing from the scope of invention: example: side and end panels can be increased in height or width to provide a casing to receive one or more articles of different shapes and/or sizes without departing from the scope of invention. Additionally or alternatively, it is envisaged the top and/or end panels need not be included in the blank.

## Claims

1. A protective casing for protecting one or more relatively fragile articles therein from damage by impact which casing comprises, opposed side (14, 18) and end walls (24, 26) and a base, which base is formed from an outer base panel (16) and one or more inner base panels (32) each of which is directly or indirectly hingedly connected to the outer base panel (16) and adapted to overlie the outer base panel (16) to provide a multi-ply base, wherein the inner (32) and outer base panels (16) are secured together by securing means, which securing means comprises a complementary locking tab (40) and locking aperture (42) struck from respective ones of the panels of the casing to hold the multi-ply base panels in a substantially flat condition, **characterised in that** opposed side walls (14, 18) are each hingedly connected to the outer base panel (16) and **in that** the inner base panel (32) is hingedly connected to the outer base panel (16) intermediate said opposed side walls (14, 18).
2. A protective outer casing according to claim 1 wherein there further comprises an end wall adjacent at least one of the side walls, the inner base panel (132) being hingedly connected to the outer base panel (116) intermediate said adjacent side (114, 118) and end walls (124, 126).
3. A protective casing according to claim 2 wherein said inner base panel (132) further comprises a pair of complementary locking tabs (140, 144) and apertures (142, 146) struck from said adjacent side (114, 118) and end (124, 126) wall panels.
4. A protective casing according to any one of claims 1 to 3 wherein the base further comprises an intermediate base panel (36, 136) hingedly connected to the outer base panel (16, 116) and interposed between the inner (32, 132) and outer base (16, 116) panels to provide a triple-ply base structure (50, 160).
5. A protective casing according to claim 1, wherein the inner base wall is formed from two panels (236, 238), each panel hingedly connected to the outer base panel (216) along its opposing end edges.
6. A protective casing according to claim 5, wherein each panel of the inner base wall comprises one or more complementary locking tabs (240, 244) and apertures (242, 246) struck from each said side wall panel (214, 218).
7. A protective casing according to claim 1 wherein the inner base wall is formed from two panels (332, 336), each panel hingedly connected to a common side edge of the outer base panel (316) and comprising a protruding portion (348, 352) adapted to be received in a recess (344, 346) struck from the opposing side wall panel to define a base structure with two spaced apart two-ply portions.
8. A protective casing for protecting one or more relatively fragile articles therein from damage by impact which casing comprises, opposed side (414, 418) and end (424, 426) walls and a base (416), which base is adapted to hingedly interconnect said opposed side and end walls **characterised in that** one or more of the panels of the casing comprises protruding support portions (432) extending downwardly so as to raise the base panels relative to support on which the protruding support panels stand, and **in that** the protruding support portions (432) are so constructed and arranged as to deform or collapse when the casing is subjected to a compressive force thereby to maintain the integrity of the carton and thereby provide protection to the contents.
9. A protective casing according to claim 8 wherein said plurality of protruding portions are provided by prolongations of the opposing side and end wall panels (414, 418, 424, 436) struck from the base.
10. A package for holding one or more articles comprising a top, a base, opposed sides and ends and a

protective casing as claimed in any of claims 1 to 9.

11. A blank for forming a protective casing for protecting one or more relatively fragile articles therein from damage by impact which blank comprises, opposed side (14, 18) and end walls (24, 26) and a base, which base is formed from an outer base panel (16) and one or more inner base panels (32) each of which is directly or indirectly hingedly connected to the outer base panel (16) and adapted to overlie the outer base panel (16) to provide a multi-ply base in a set up condition, wherein there further comprises a complementary locking tab (40, 44) and locking aperture (42, 46) struck from respective ones of the panels (14, 18) of the blank to secure the multi-ply base panels (16) in a substantially flat condition, **characterised in that** opposed side walls (14, 18) are each hingedly connected to the outer base panel (16) and wherein the inner base panel is hingedly connected to the outer base panel intermediate said opposed side walls (14, 18).

12. A blank according to claim 11 wherein there further comprises an end wall adjacent at least one of the side walls, the inner base panel (132) being hingedly connected to the outer base panel (116) intermediate said adjacent side (114, 118) and end walls (124, 126).

13. A blank according to claim 12 wherein said inner base panel (132) further comprises a pair of complementary locking tabs (140, 144) and apertures (142, 146) struck from said adjacent side (114, 118) and end panels (124, 126).

14. A blank according to any of claims 11 to 13 wherein the base further comprises an intermediate base panel (36, 136) hingedly connected to the outer base panel (16, 116) and adapted in use to be interposed between the inner and outer base panels (32, 132) and adapted to provide a triple-ply base structure in a set up casing.

15. A blank according to claim 11 wherein the inner base wall is formed in use from two panels (236, 238), each panel hingedly connected to the outer base panel (216) along its opposing end edges.

16. A blank according to claim 15 wherein each panel (236, 238) adapted to form the inner base wall in use comprises one or more complementary locking tabs (240, 244) and apertures (242, 246) struck from each side wall panel (214, 218).

17. A blank according to claim 11 wherein the inner base wall is formed in use from two panels (332, 336), each panel hingedly connected to the outer base panel (316) along a common side edge, each

panel of the inner base wall comprising a protruding portion (348, 352) and a recess (344, 346) struck from the opposing side wall panel.

18. A blank (410) for forming a protective outer casing for protecting one or more relatively fragile articles therein from damage by impact which blank (410) comprises, opposed side (414, 418) and end (424, 426) walls and a base (416), which base is adapted to hingedly interconnect said opposed side and end walls wherein one or more of the panels of the blank comprises protruding support portions (432, 436), extending into the outer base panel (416) and adapted to be foldable out of alignment with said outer base panel (416).

19. A blank for forming a carton according to claim 17 wherein said plurality of protruding portions (432, 436) are provided by extensions of the opposing side and end wall panels.

#### Patentansprüche

1. Schützendes Gehäuse zum Schutz eines oder mehrerer relativ zerbrechlicher Gegenstände darin vor einem Stoßschaden, wobei das Gehäuse gegenüberliegende Seiten- (14, 18) und Endwände (24, 26) umfasst sowie eine Basis, wobei die Basis aus einer äußeren Basiswandfläche (16) und einer oder mehrerer innerer Basiswandflächen (32) ausgebildet ist, von denen jede direkt oder indirekt mit der äußeren Basiswandfläche (16) gelenkig verbunden und angepasst ist, um über der äußeren Basiswandfläche (16) zu liegen, um eine mehrlagige Basis bereitzustellen, wobei die inneren (32) und äußeren (16) Basiswandflächen durch Befestigungsmittel aneinander befestigt sind, wobei die Befestigungsmittel eine komplementäre Verschlusslasche (40) und eine Verschlussöffnung (42) umfassen, die aus der jeweiligen Wandfläche des Gehäuses ausgestanzt ist, um die mehrlagigen Basiswandflächen in einem im Wesentlichen flachen Zustand zu halten, **dadurch gekennzeichnet, dass** die gegenüberliegenden Seitenwände (14, 18) jeweils mit der äußeren Basiswandfläche (16) gelenkig verbunden sind, und dadurch, dass die innere Basiswandfläche (32) mit der äußeren Basiswandfläche (16) zwischen den gegenüberliegenden Seitenwänden (14, 18) gelenkig verbunden ist.
2. Schützendes äußeres Gehäuse nach Anspruch 1, in welchem ferner eine Endwand angrenzend an wenigstens eine der Seitenwände umfasst ist, wobei die innere Basiswandfläche (132) mit der äußeren Basiswandfläche (116) zwischen den angrenzenden Seiten- (114, 118) und Endwänden (124, 126) gelenkig verbunden ist.

3. Schützendes Gehäuse nach Anspruch 2, in welchem die innere Basiswandfläche (132) ferner ein Paar von komplementären Verschlusslaschen (140, 144) und Öffnungen (142, 146) umfasst, die aus den angrenzenden Seiten- (114, 118) und Endwandflächen (124, 126) ausgestanzt sind. 5
4. Schützendes Gehäuse nach einem der Ansprüche 1 bis 3, in welchem die Basis ferner eine dazwischen liegende Basiswandfläche (36, 136) umfasst, die mit der äußeren Basiswandfläche (16, 116) gelenkig verbunden ist und zwischen die innere (32, 132) und äußere (16, 116) Basiswandfläche eingeschoben ist, um eine dreilagige Basisstruktur (50, 160) bereitzustellen. 10
5. Schützendes Gehäuse nach Anspruch 1, in welchem die innere Basiswand aus zwei Wandflächen (236, 238) ausgebildet ist, wobei jede Wandfläche mit der äußeren Basiswandfläche (216) entlang ihrer gegenüberliegenden Endkanten gelenkig verbunden ist. 20
6. Schützendes Gehäuse nach Anspruch 5, in welchem jede Wandfläche der inneren Basiswand eine oder mehrere komplementäre Verschlusslaschen (240, 244) und Öffnungen (242, 246) umfasst, die aus jeder der Seitenwandflächen (214, 218) ausgestanzt sind. 25
7. Schützendes Gehäuse nach Anspruch 1, in welchem die innere Basiswand aus zwei Wandflächen (332, 336) ausgebildet ist, wobei jede Wandfläche mit einer gemeinsamen Seitenkante der äußeren Basiswandfläche (316) gelenkig verbunden ist und einen vorstehenden Abschnitt (348, 352) umfasst, der angepasst ist, um in einer Aussparung (344, 346) aufgenommen zu werden, die aus der gegenüberliegenden Seitenwandfläche ausgestanzt ist, um eine Basisstruktur mit zwei voneinander beabstandeten zweilagigen Abschnitten zu definieren. 30
8. Schützendes Gehäuse zum Schutz eines oder mehrerer relativ zerbrechlicher Gegenstände darin vor einem Stoßschaden, wobei das Gehäuse gegenüberliegende Seiten- (414, 418) und Endwände (424, 426) umfasst sowie eine Basis (416), wobei die Basis angepasst ist, um die gegenüberliegenden Seiten- und Endwände gelenkig miteinander zu verbinden, **dadurch gekennzeichnet, dass** eine oder mehrere der Wandflächen des Gehäuses vorstehende Stützabschnitte (432) umfassen, die sich abwärts erstrecken, um so die Basiswandflächen relativ zu dem Träger, auf welchen die vorstehenden Stützwandflächen stehen, anzuheben, und dadurch, dass die vorstehenden Stützabschnitte (432) so gestaltet und angeordnet sind, dass sie sich verformen oder zusammenfallen, wenn das Gehäuse einer Druckkraft ausgesetzt ist, wodurch die Unversehrtheit der Schachtel erhalten bleibt und wodurch Schutz für den Inhalt bereitgestellt wird. 35
9. Schützendes Gehäuse nach Anspruch 8, in welchem die Vielzahl von vorstehenden Abschnitten durch Verlängerungen der gegenüberliegenden Seiten- und Endwandflächen (414, 418, 424, 436) bereitgestellt ist, die aus der Basis ausgestanzt sind. 40
10. Verpackung zum Halten eines oder mehrerer Gegenstände, die ein Oberteil, eine Basis, gegenüberliegende Seiten und Enden sowie ein schützendes Gehäuse nach einem der Ansprüche 1 bis 9 umfasst. 45
11. Zuschnitt zum Ausbilden eines schützenden Gehäuses zum Schutz eines oder mehrerer relativ zerbrechlicher Gegenstände darin vor einem Stoßschaden, wobei der Zuschnitt gegenüberliegende Seiten- (14, 18) und Endwände (24, 26) umfasst sowie eine Basis, wobei die Basis aus einer äußeren Basiswandfläche (16) und einer oder mehrerer innerer Basiswandflächen (32) ausgebildet ist, von denen jede direkt oder indirekt mit der äußeren Basiswandfläche (16) gelenkig verbunden und angepasst ist, um über der äußeren Basiswandfläche (16) zu liegen, um eine mehrlagige Basis in einem aufgerichteten Zustand bereitzustellen, wobei ferner eine komplementäre Verschlusslasche (40, 44) und eine Verschlussöffnung (42, 46) umfasst sind, die aus der jeweiligen Wandfläche (14, 18) des Zuschnitts ausgestanzt ist, um die mehrlagigen Basiswandflächen (16) in einem im Wesentlichen flachen Zustand zu sichern, **dadurch gekennzeichnet, dass** die gegenüberliegenden Seitenwände (14, 18) jeweils mit der äußeren Basiswandfläche (16) gelenkig verbunden sind, und wobei die innere Basiswandfläche mit der äußeren Basiswandfläche zwischen den gegenüberliegenden Seitenwänden (14, 18) gelenkig verbunden ist. 50
12. Zuschnitt nach Anspruch 11, in welchem ferner eine Endwand angrenzend an wenigstens eine der Seitenwände umfasst ist, wobei die innere Basiswandfläche (132) mit der äußeren Basiswandfläche (116) zwischen den angrenzenden Seiten- (114, 118) und Endwänden (124, 126) gelenkig verbunden ist. 55
13. Zuschnitt nach Anspruch 12, in welchem die innere Basiswandfläche (132) ferner ein Paar von komplementären Verschlusslaschen (140, 144) und Öffnungen (142, 146) umfasst, die aus den angrenzenden Seiten- (114, 118) und Endwandflächen (124, 126) ausgestanzt sind.

14. Zuschnitt nach einem der Ansprüche 11 bis 13, in welchem die Basis ferner eine dazwischen liegende Basiswandfläche (36, 136) umfasst, die mit der äußeren Basiswandfläche (16, 116) gelenkig verbunden und in Gebrauch angepasst ist, um zwischen die innere und äußere Basiswandfläche (32, 132) eingeschoben zu werden, und angepasst ist, um eine dreilagige Basisstruktur in einem aufgerichteten Gehäuse bereitzustellen.
15. Zuschnitt nach Anspruch 11, in welchem die innere Basiswand in Gebrauch aus zwei Wandflächen (236, 238) ausgebildet ist, wobei jede Wandfläche mit der äußeren Basiswandfläche (216) entlang ihrer gegenüberliegenden Endkanten gelenkig verbunden ist.
16. Zuschnitt nach Anspruch 15, in welchem jede Wandfläche (236, 238), die angepasst ist, um in Gebrauch die innere Basiswand auszubilden, eine oder mehrere komplementäre Verschlusslaschen (240, 244) und Öffnungen (242, 246) umfasst, die aus jeder Seitenwandfläche (214, 218) ausgestanzt sind.
17. Zuschnitt nach Anspruch 11, in welchem die innere Basiswand in Gebrauch aus zwei Wandflächen (332, 336) ausgebildet ist, wobei jede Wandfläche mit der äußeren Basiswandfläche (316) entlang einer gemeinsamen Seitenkante gelenkig verbunden ist, wobei jede Wandfläche der inneren Basiswand einen vorstehenden Abschnitt (348, 352) sowie eine Aussparung (344, 346) umfasst, die aus der gegenüberliegenden Seitenwandfläche ausgestanzt ist.
18. Zuschnitt (410) zum Ausbilden eines schützenden äußeren Gehäuses zum Schutz eines oder mehrerer relativ zerbrechlicher Gegenstände darin vor einem Stoßschaden, wobei der Zuschnitt (410) gegenüberliegende Seiten- (414, 418) und Endwände (424, 426) umfasst sowie eine Basis (416), wobei die Basis angepasst ist, um die gegenüberliegenden Seiten- und Endwände gelenkig miteinander zu verbinden, wobei eine oder mehrere der Wandflächen des Zuschnitts vorstehende Stützabschnitte (432, 436) umfassen, die sich in die äußere Basiswandfläche (416) erstrecken und angepasst sind, dass sie aus der Ausrichtung mit der äußeren Basiswandfläche (416) gefaltet werden können.
19. Zuschnitt zum Ausbilden einer Schachtel nach Anspruch 17, in welcher die Vielzahl von vorstehenden Abschnitten (432, 436) durch Verlängerungen der gegenüberliegenden Seiten- und Endwandflächen bereitgestellt ist.

## Revendications

- Un emballage protecteur destiné à protéger un ou plusieurs articles de tout dommage causé par un choc, lequel emballage comprend des montants latéraux opposés (14, 18) et des montants d'extrémité (24, 26) ainsi qu'une base, laquelle base est formée d'un panneau de base extérieure (16) et d'une ou de plusieurs plaques de base intérieures (32), chacune d'entre elles étant directement ou indirectement reliée à la plaque de base extérieure (16) afin de fournir une base multi-couche, à l'occasion de quoi les plaques de base intérieures (32) et extérieures (16) sont verrouillées ensemble au moyen d'un système de blocage, lequel système de blocage comprend une languette de verrouillage complémentaire (40) et d'ouverture (42) joignant chacun des montants de l'emballage et destinée à maintenir les plaques de la base multi-couche bien à plat, lequel emballage est **caractérisé par le fait que** les côtés opposés (14, 18) peuvent se rabattre par rapport à la plaque de base extérieure (16) et que de ce fait la plaque de base intérieure (32) se retrouve, en se rabattant, au contact de la plaque de base extérieure (16) laquelle est encadrée par les dits côtés opposés (14, 18).
- Un emballage protecteur, selon la revendication 1, **caractérisé par le fait que** cet emballage comprend un montant d'extrémité contigu à au moins une des côtés latéraux, la plaque de base intérieure (132) étant, en se rabattant, au contact de la plaque de base extérieure (116), encadré par les côtés opposés (114, 118) et les montants d'extrémité (124, 126).
- Un emballage protecteur, selon la revendication 2, **caractérisé par le fait que** la dite plaque de base intérieure (132) comprend en outre une paire de languettes de verrouillage complémentaire (140, 144) et d'ouvertures (142, 146) joignant les dits côtés opposés (114, 118) et les montants d'extrémité (124, 126).
- Un emballage protecteur, selon une des revendications 1 à 3, **caractérisé par le fait que** la base comprend en outre une plaque de base intermédiaire (36, 136), qui en se rabattant, se retrouve au contact de la plaque de base extérieure (16, 116) et est ainsi placée entre les plaques de base intérieures (32, 132) et les plaques de base extérieures (16, 116), les dites plaques formant ainsi une structure de base multi-couche (50, 160).
- Un emballage protecteur, selon la revendication 1, **caractérisé par le fait que** la plaque de base intérieure est formée de deux plaques (236, 238), chaque plaque étant, en se rabattant, au contact de la

plaque de base extérieure (216) jusqu'à toucher les bords d'extrémité.

6. Un emballage protecteur, selon la revendication 5, **caractérisé par le fait que** chaque plaque de base intérieure comporte une ou plusieurs languettes de verrouillage complémentaire (240, 244) et d'ouvertures (242, 246) joignant chacun des dits montants latéraux (214, 218). 5
7. Un emballage protecteur, selon la revendication 1, **caractérisé par le fait que** la plaque de base intérieure est formée de deux plaques (332, 336), chaque plaque étant, en se rabattant, au contact de la plaque de base extérieure (316) et comprenant une portion saillante (348, 352) destinée à s'imbriquer dans une gorge (344, 346) formée dans le montant de la face opposée afin de former ainsi une structure de base avec deux parties séparées multi-couche. 10 15
8. Un emballage protecteur destiné à protéger un ou plusieurs articles de tout dommage causé par un choc, lequel emballage comprend des montants latéraux opposés (414, 418) et des montants d'extrémité (424, 426) ainsi qu'une base (416), laquelle base est adaptée afin d'être imbriquée entre les dits montants opposés et montants d'extrémité, **caractérisé par le fait qu'un** ou plusieurs des montants de l'emballage comprennent des parties support faisant saillie (432) vers le bas afin de surélever les montants de la base par rapport au support sur lequel les montants support faisant saillie s'appuient et ceci de manière que les parties support faisant saillie (432) sont construites et structurées de telle sorte qu'elles se déformeront ou s'effaceront lorsque l'emballage sera soumis à une force de compression, permettant ainsi à l'emballage de conserver sa structure d'origine et donc de continuer à protéger le contenu. 20 25 30 35 40
9. Un emballage protecteur, selon la revendication 8, **caractérisé par le fait que** la majorité des parties faisant saillie est formée par les prolongements des montants latéraux et des montants d'extrémité (414, 418, 424, 436) joints à partir de la base. 45
10. Un colis destiné à contenir un ou plusieurs articles et composé d'un haut, d'un bas, de faces opposées et d'extrémité ainsi que d'un emballage protecteur selon l'une des revendications 1 à 9. 50
11. Un carton destiné à former un emballage protecteur pour mettre à l'abri de tout dommage par choc un ou plusieurs articles relativement fragiles, lequel carton comprend des côtés opposés (14, 18) et des côtés d'extrémité (24, 26) ainsi qu'une base, laquelle base est formée d'une plaque de base extérieure 55

(16) et d'une ou de plusieurs plaques de base intérieures (32), chacune d'entre-elles étant directement ou indirectement au contact de la plaque de base extérieure (16) et structurée de telle sorte qu'elle recouvre la plaque de base extérieure (16) afin de former une base multi-couche lorsque le montage est effectué, lequel carton comprend en outre une languette de verrouillage complémentaire (40, 44) et d'ouverture (42, 46) joignant chacun des montants du carton (14, 18) afin de renforcer les plaques de la base multi-couche (16) et de les maintenir ensemble bien à plat, **caractérisé par le fait que** les côtés opposés (14, 18) sont chacun d'entre eux rabattus sur la plaque de base extérieure (16) et qu'ainsi la plaque de base intérieure est au contact de la plaque de base extérieure intermédiaire entre les dits côtés opposés (14, 18).

12. Un carton, selon la revendication 11, **caractérisé par le fait que** le dit carton comprend en outre un montant d'extrémité contigu à au moins un des montants latéraux, la plaque de base intérieure (132) étant rabattue sur la plaque de base (116) entre les deux dits côtés adjacents (114, 118) et les côtés d'extrémité (124, 126). 20
13. Un carton, selon la revendication 12, **caractérisé par le fait que** la plaque de base intérieure (132) comprend en outre une paire de languettes de verrouillage complémentaire (140, 144) et d'ouvertures (142, 146) joignant les dits côtés opposés (114, 118) et les montants d'extrémité (124, 126). 30
14. Un carton, selon une des revendications 11 à 13, **caractérisé par le fait que** la base comprend en outre une plaque de base intermédiaire (36, 136), qui en se rabattant, se retrouve au contact de la plaque de base extérieure (16, 116) et structurée de telle sorte qu'elle forme ainsi une structure de base multi-couche lors du montage du carton. 35 40
15. Un carton, selon la revendication 11, **caractérisé par le fait que** la plaque de base intérieure est formée de deux plaques (236, 238), chaque plaque étant, en se rabattant, au contact de la plaque de base extérieure (216) jusqu'à toucher les bords d'extrémité. 45
16. Un carton, selon la revendication 15, **caractérisé par le fait que** chaque plaque (236, 238) structurée pour former la plaque de base intérieure comporte une ou plusieurs languettes de verrouillage complémentaire (240, 244) et d'ouvertures (242, 246) joignant chacun des dits montants latéraux (214, 218). 50 55
17. Un carton, selon la revendication 11, **caractérisé par le fait que** la plaque de base intérieure est for-

mée de deux plaques (332, 336), chaque plaque étant, en se rabattant, au contact de la plaque de base extérieure (316) le long d'un côté commun, chaque couche de la plaque de base intérieure comprenant une partie saillante (348,352) et une gorge (344, 346) formée dans le montant de la face opposée. 5

18. Un carton (410) destiné à former un emballage protecteur pour mettre à l'abri de tout dommage causé par un choc un ou plusieurs articles relativement fragiles, lequel carton (410) comprend des montants latéraux opposés (414, 418) et des montants d'extrémité (424, 426) ainsi qu'une base (416), laquelle base est adaptée afin d'être imbriquée entre les dits montants opposés et montants d'extrémité, à l'occasion de quoi un ou plusieurs des montants de l'emballage comprennent des parties support faisant saillie (432, 436) au contact de la plaque de base extérieure (416) sont structurés de manière à pouvoir être pilés le long de l'alignement formé avec la dite plaque de base (416). 10 15 20

19. Un carton, selon la revendication 17, **caractérisé par le fait que** la majorité des parties faisant saillie (432, 436) est formée par les prolongements des côtés opposés latéraux et des montants d'extrémité. 25

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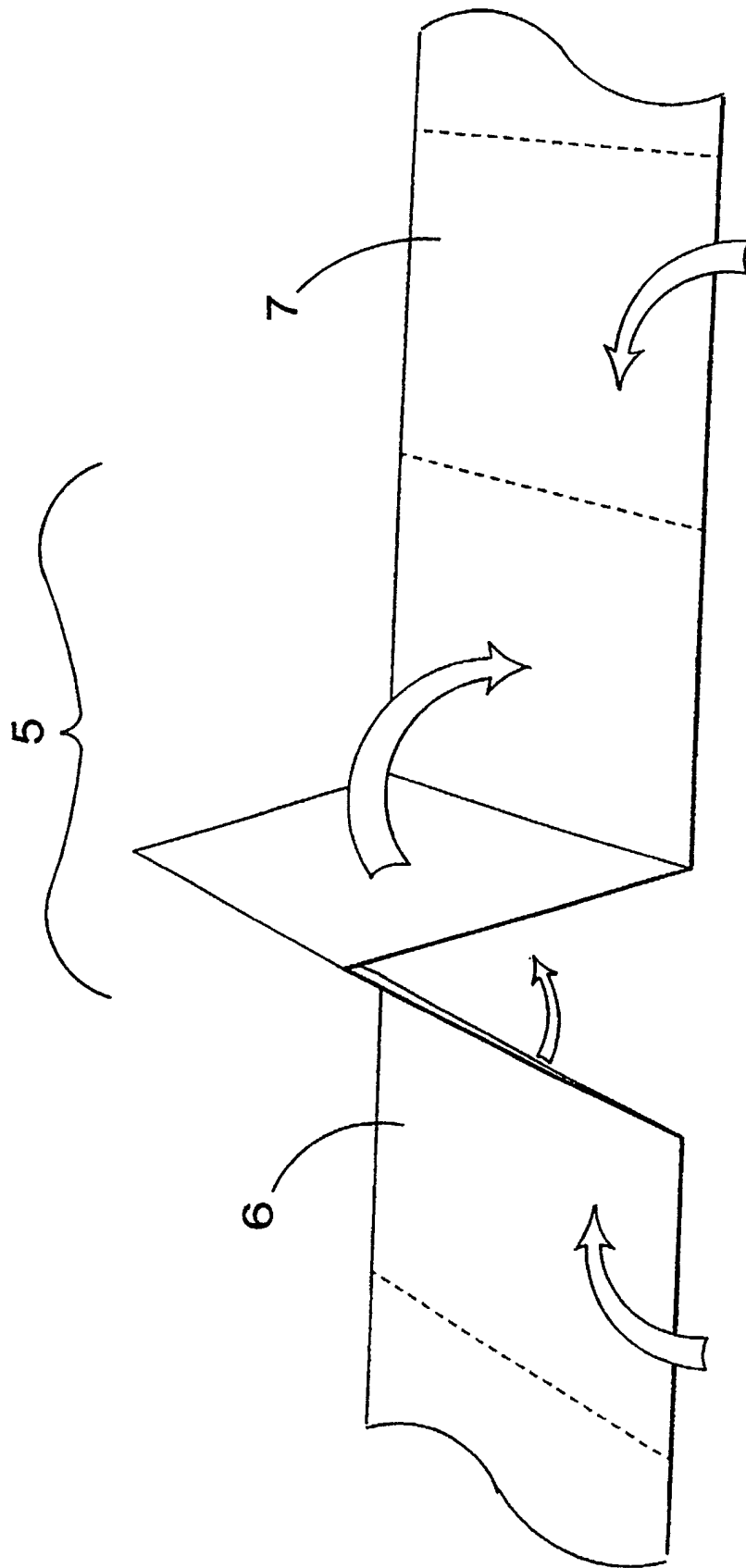


FIGURE 1

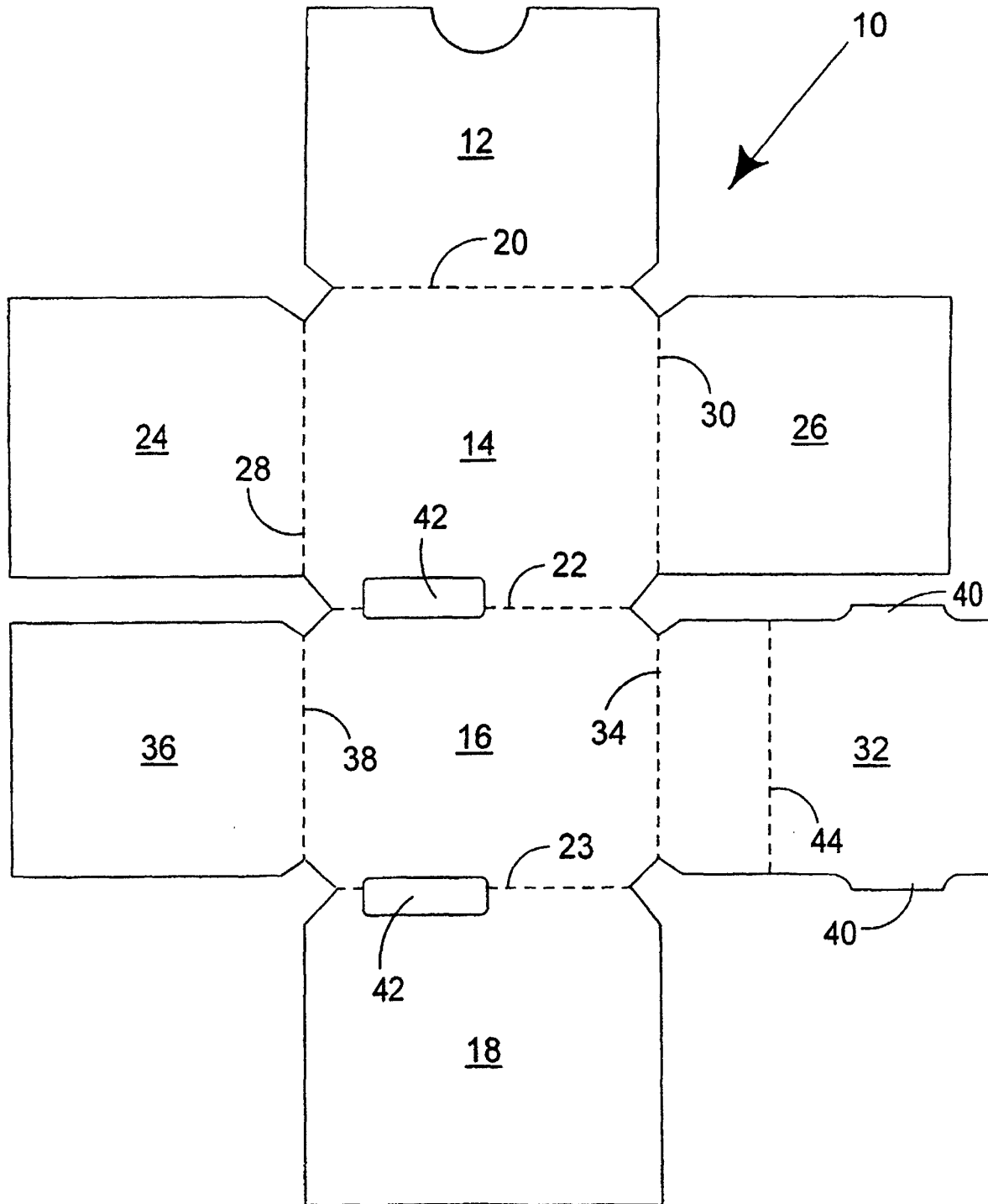


FIGURE 2

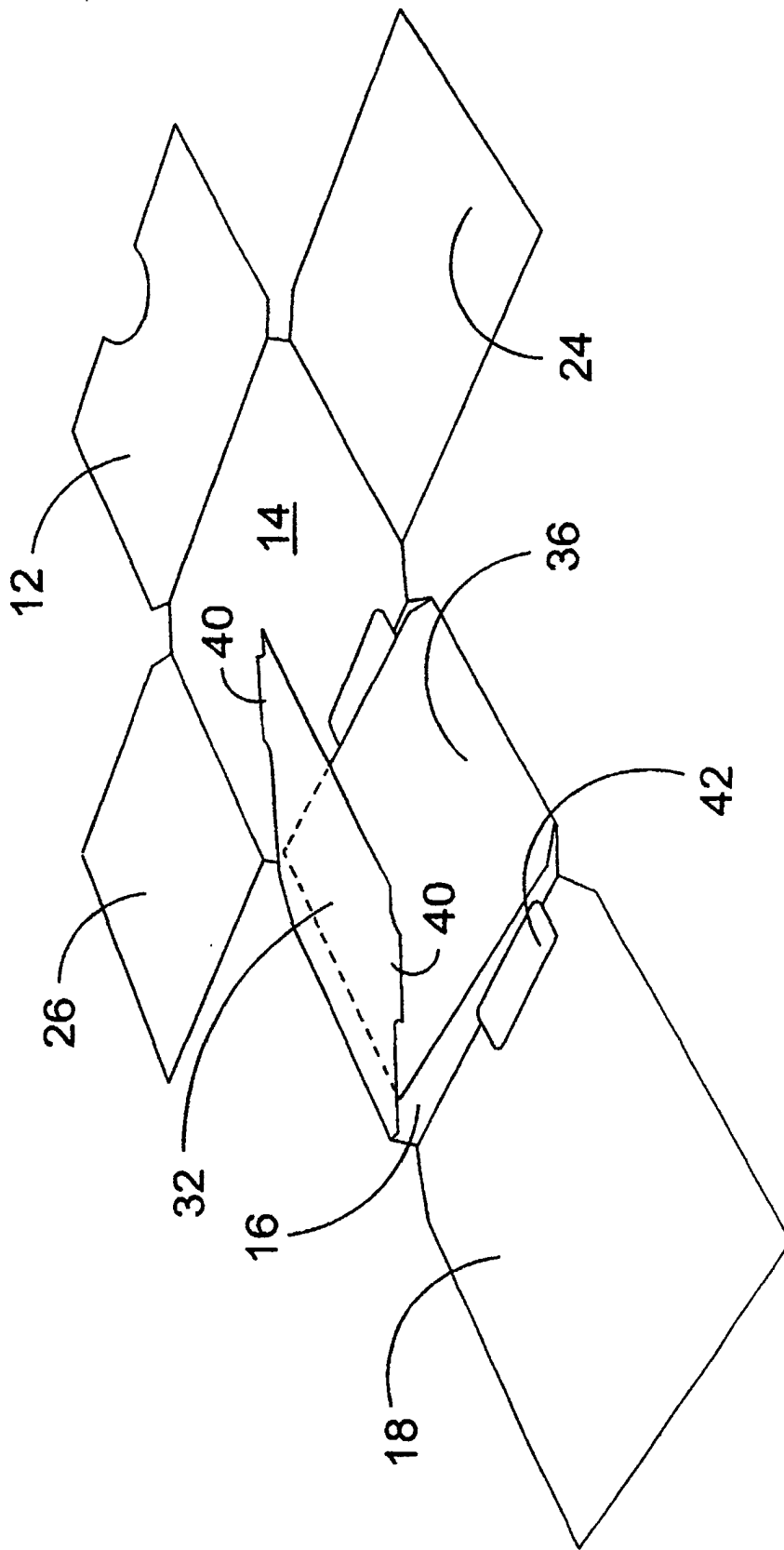


FIGURE 3

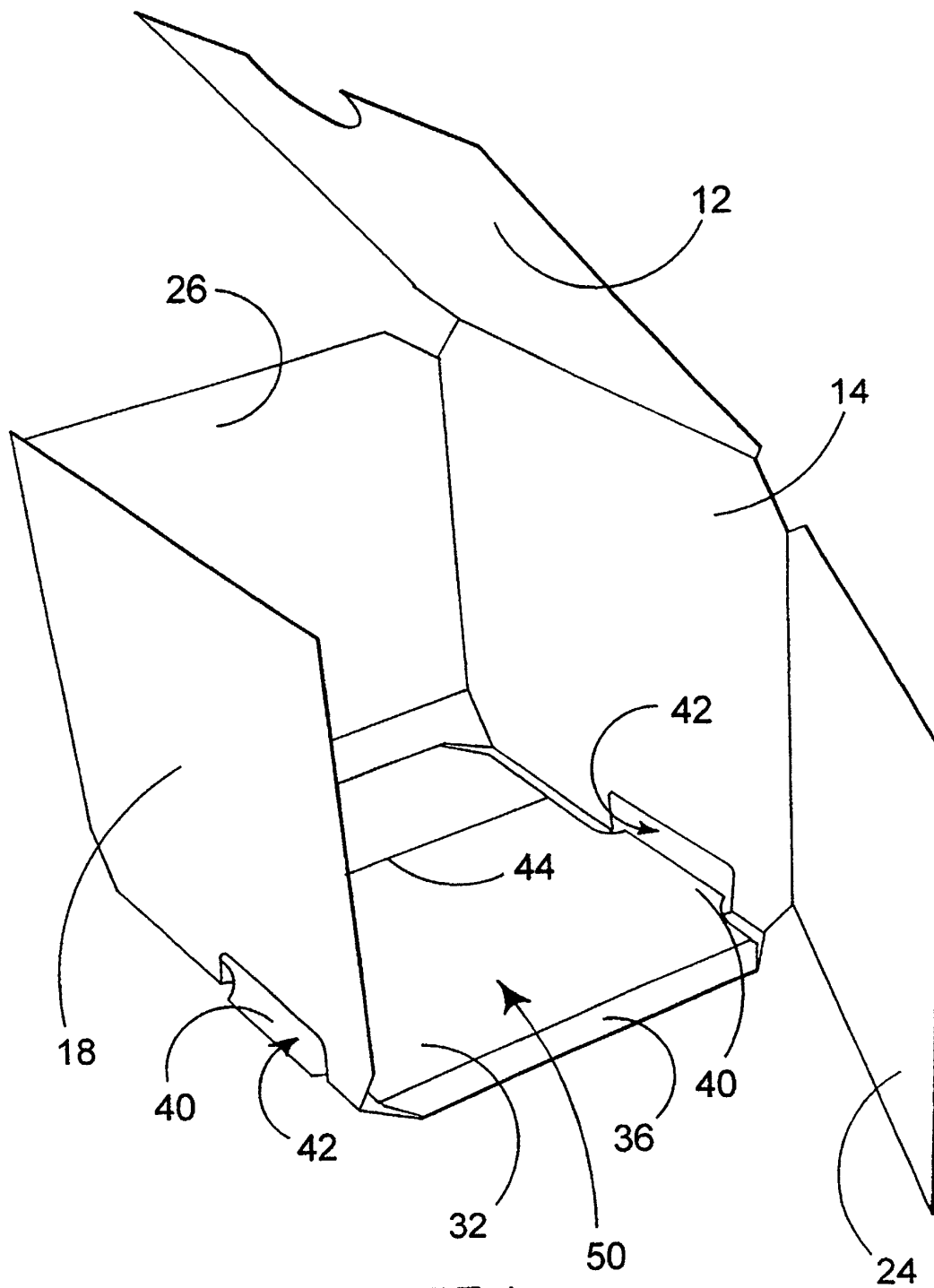


FIGURE 4

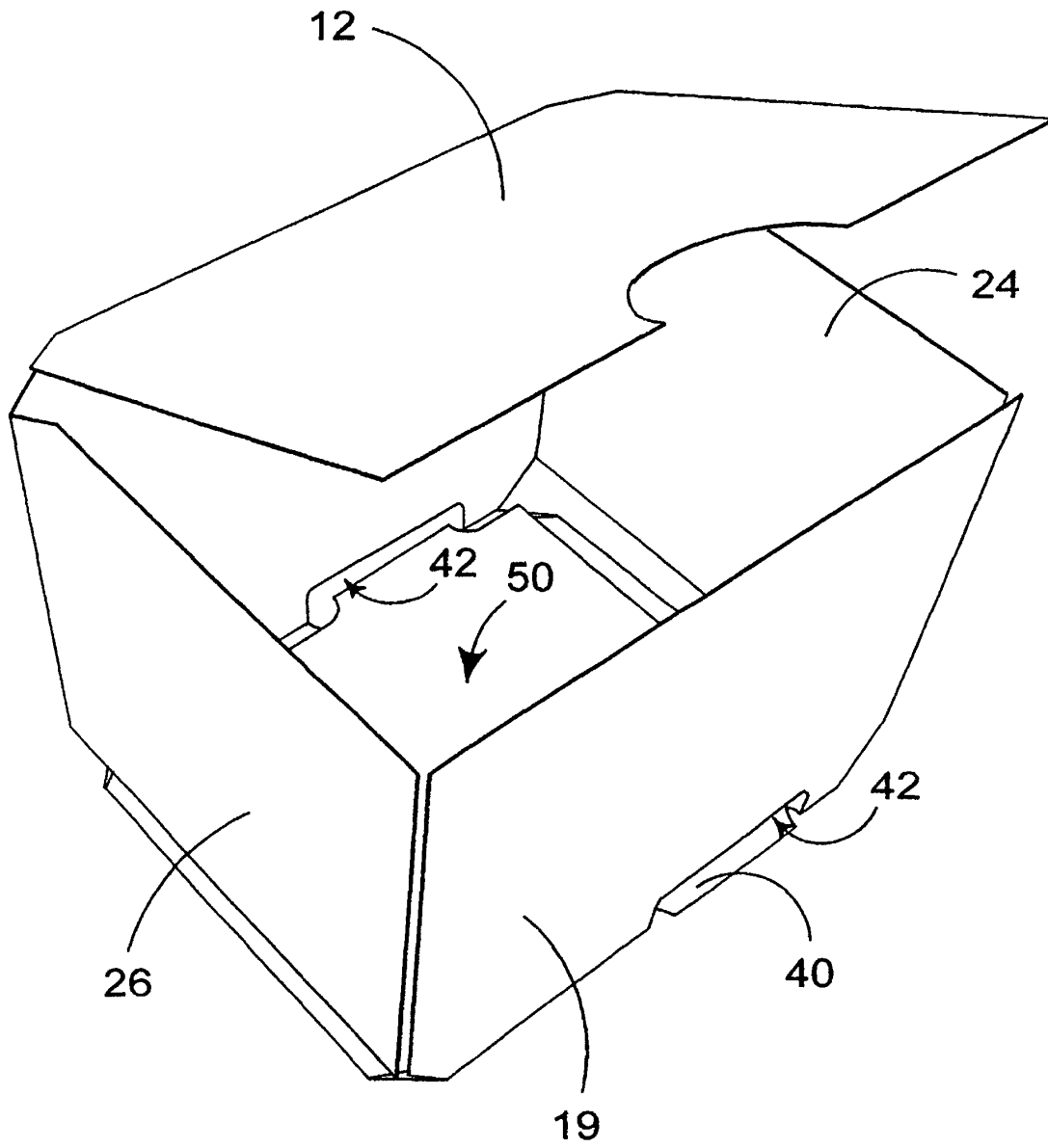


FIGURE 5

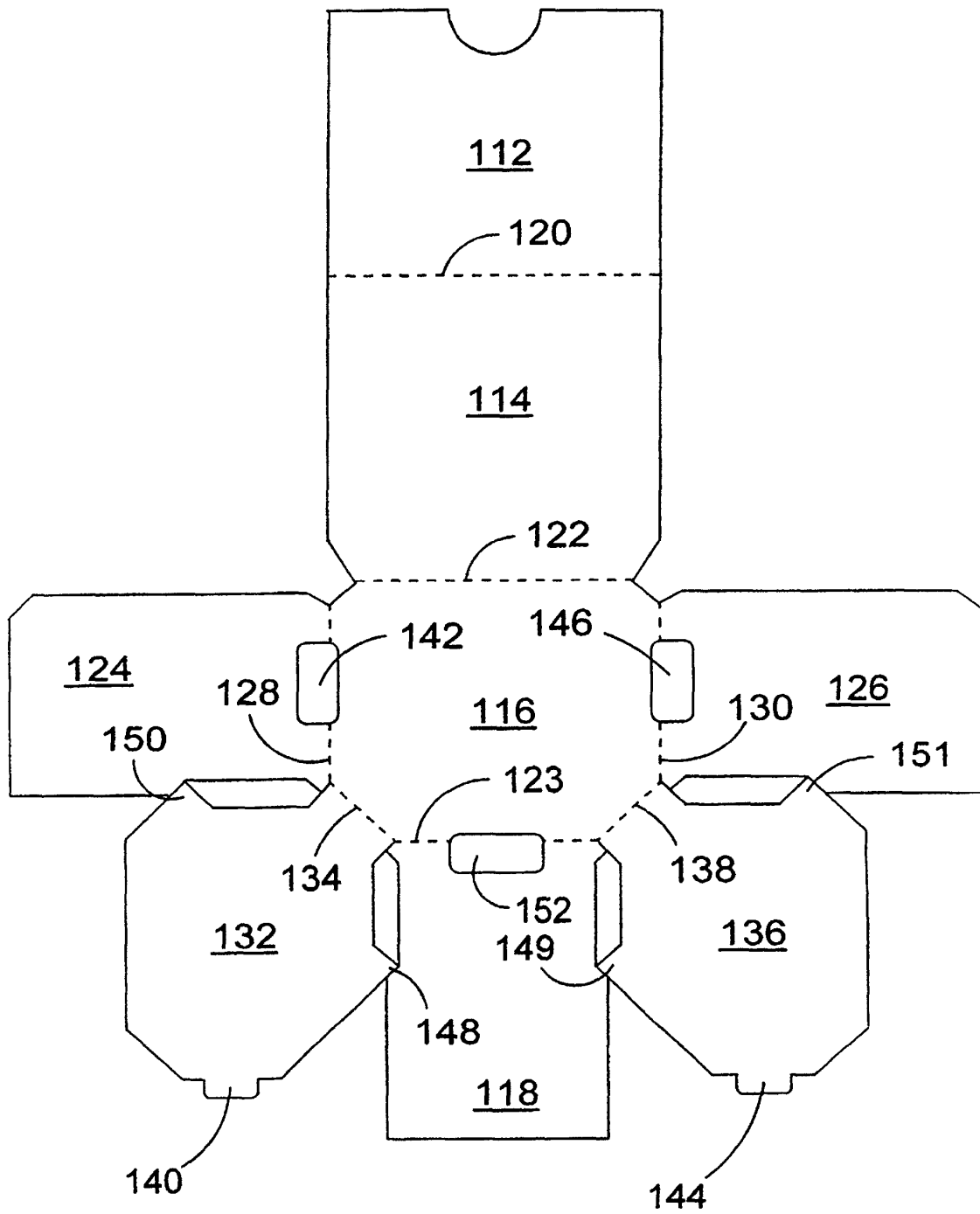


FIGURE 6

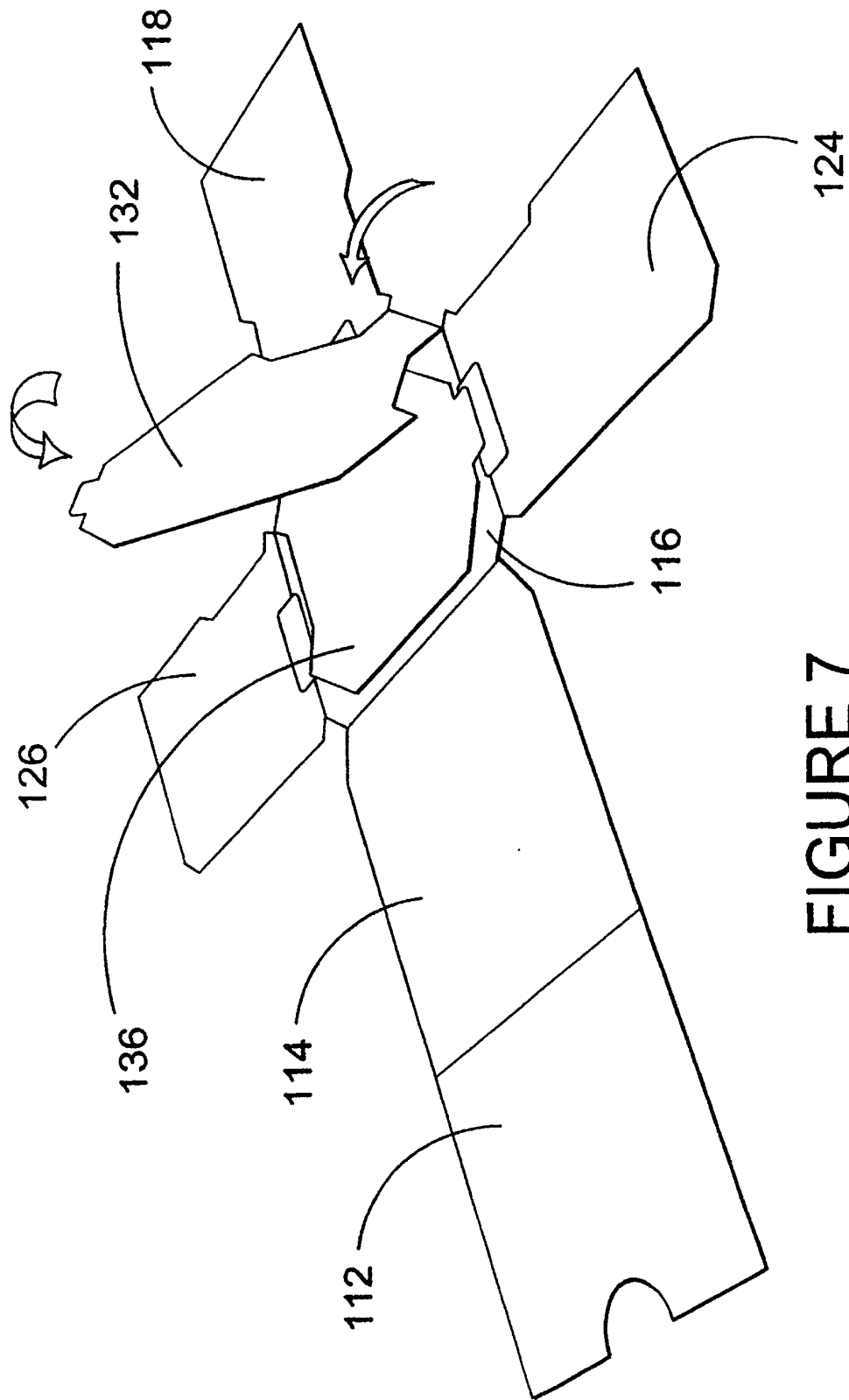


FIGURE 7

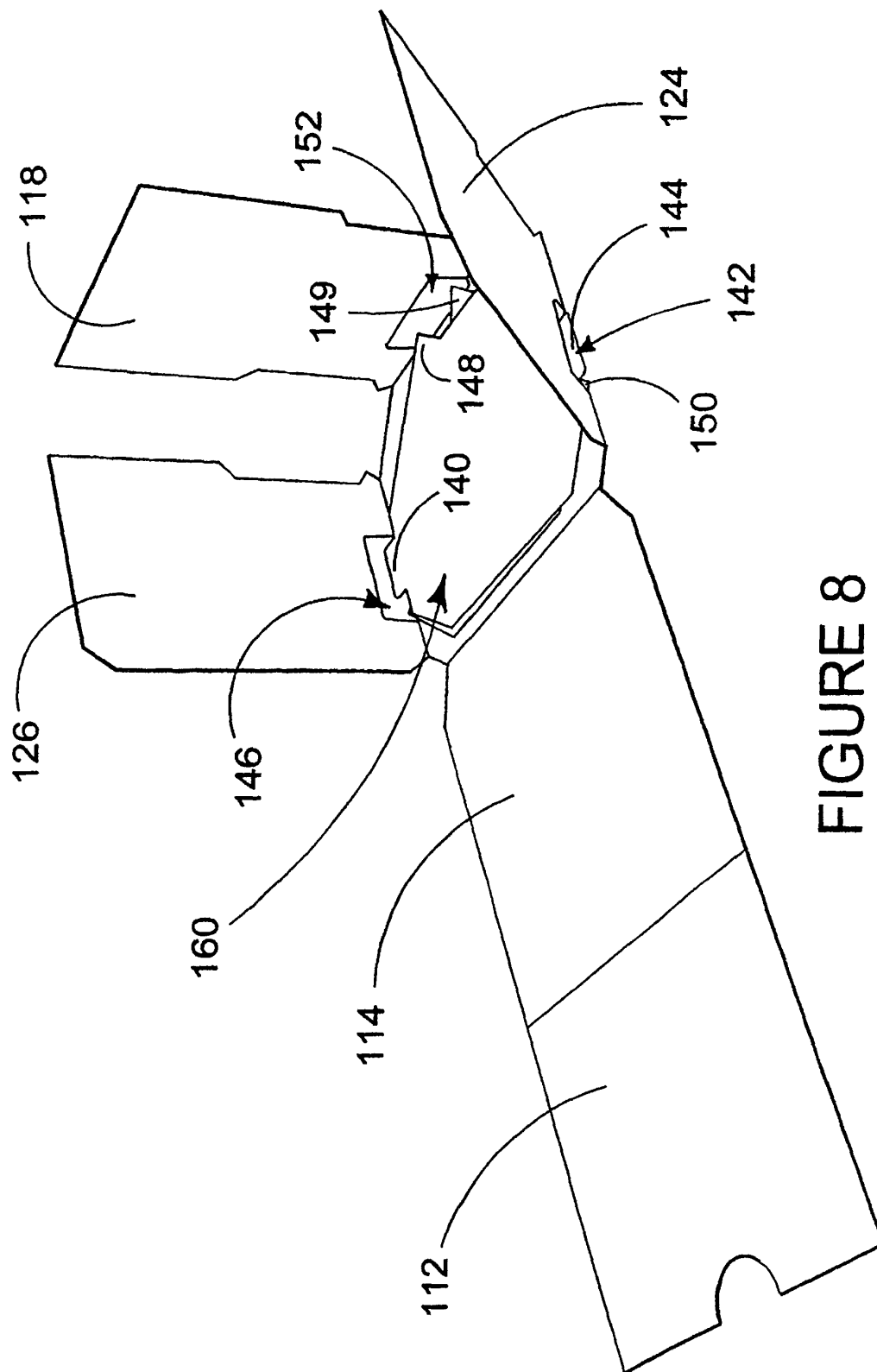


FIGURE 8

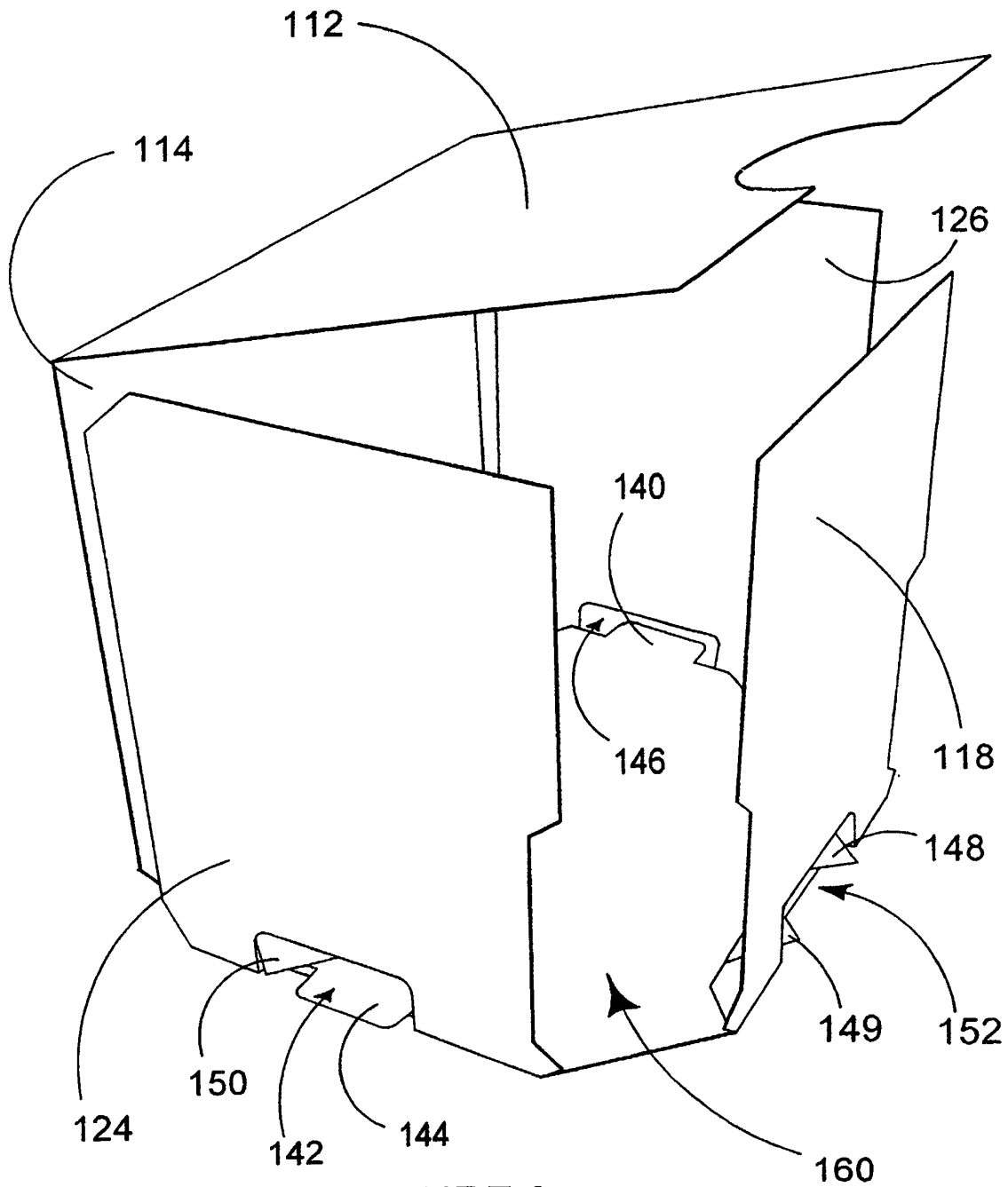


FIGURE 9

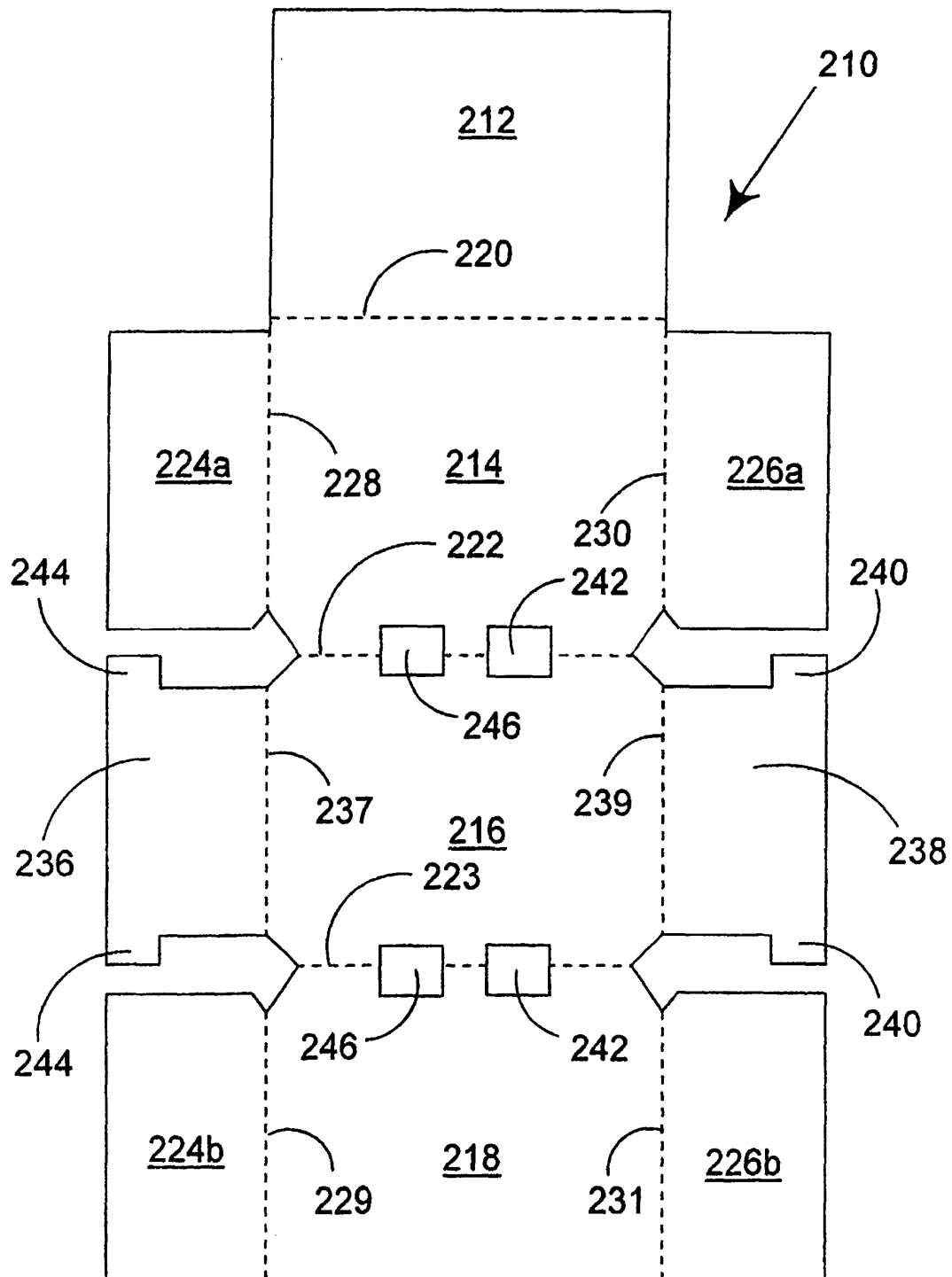
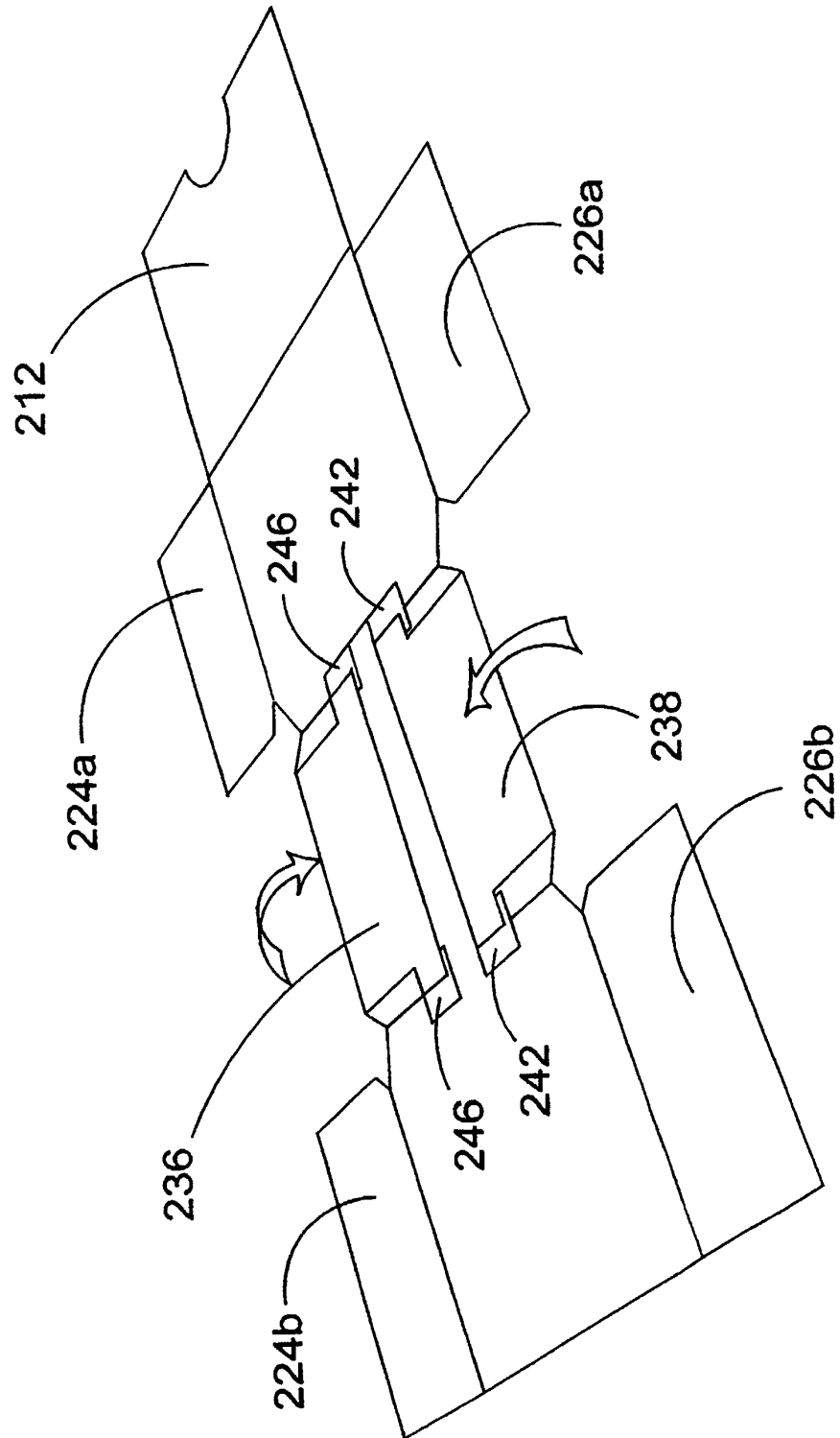


FIGURE 10



# FIGURE 11

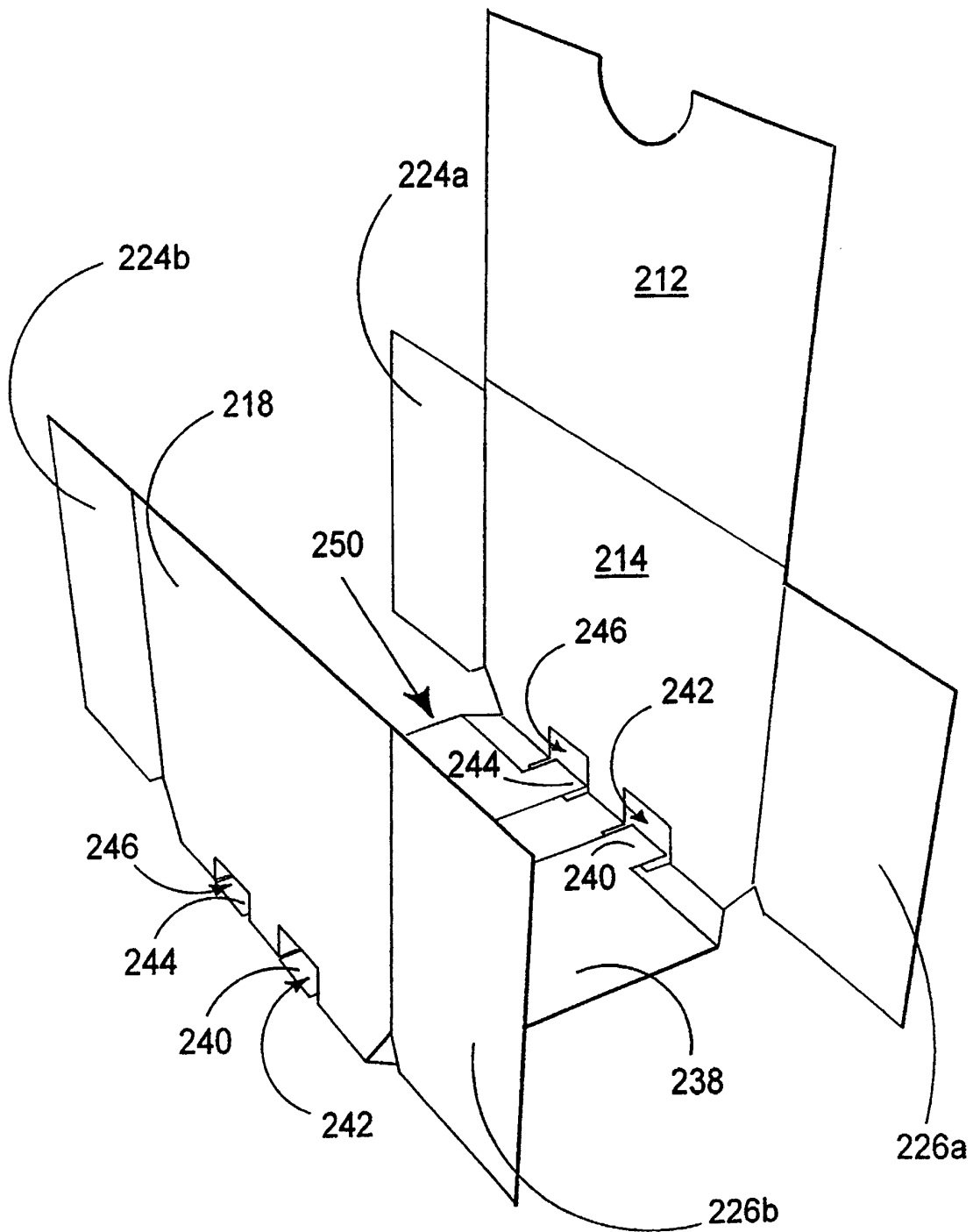


FIGURE 12

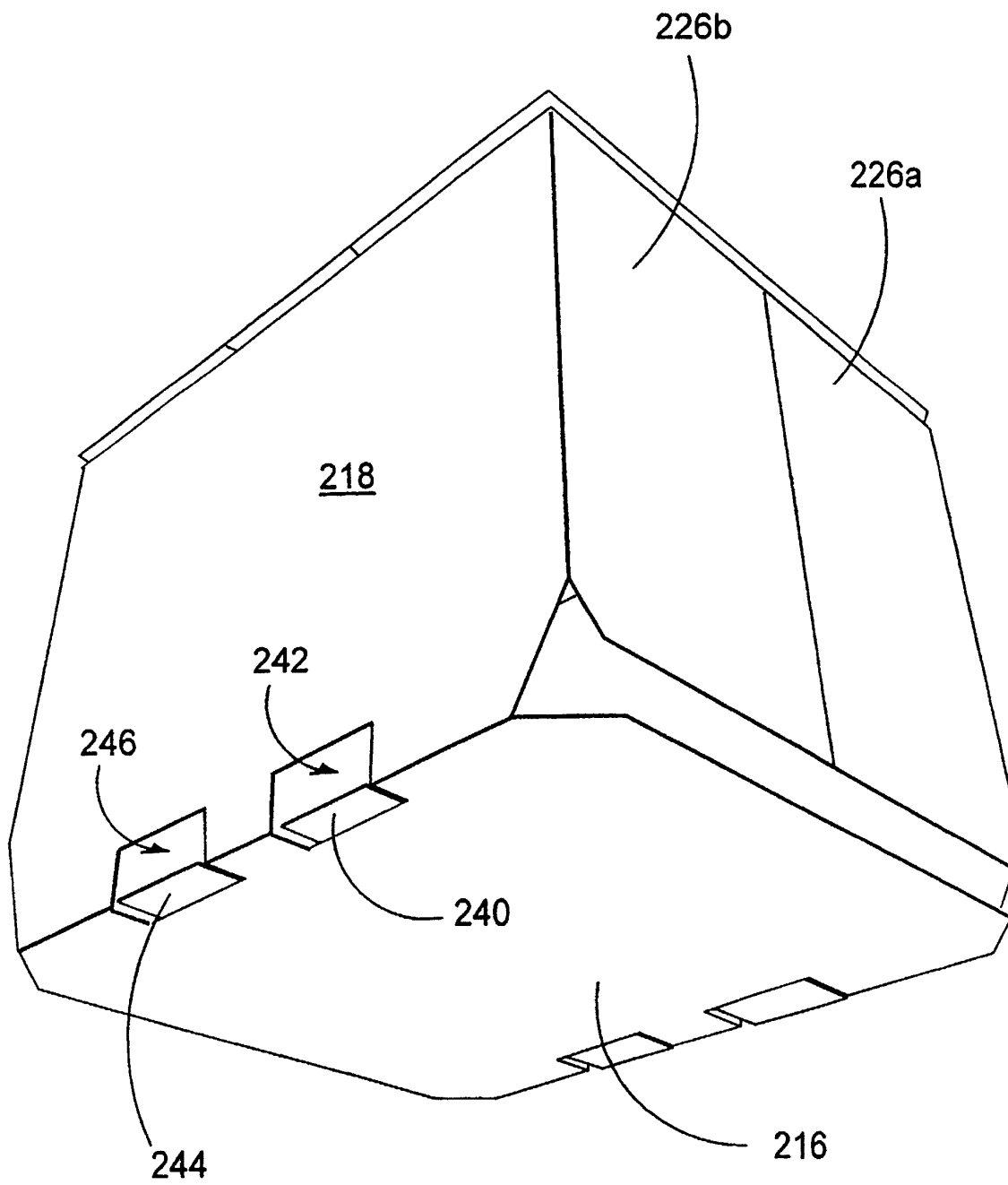


FIGURE 13

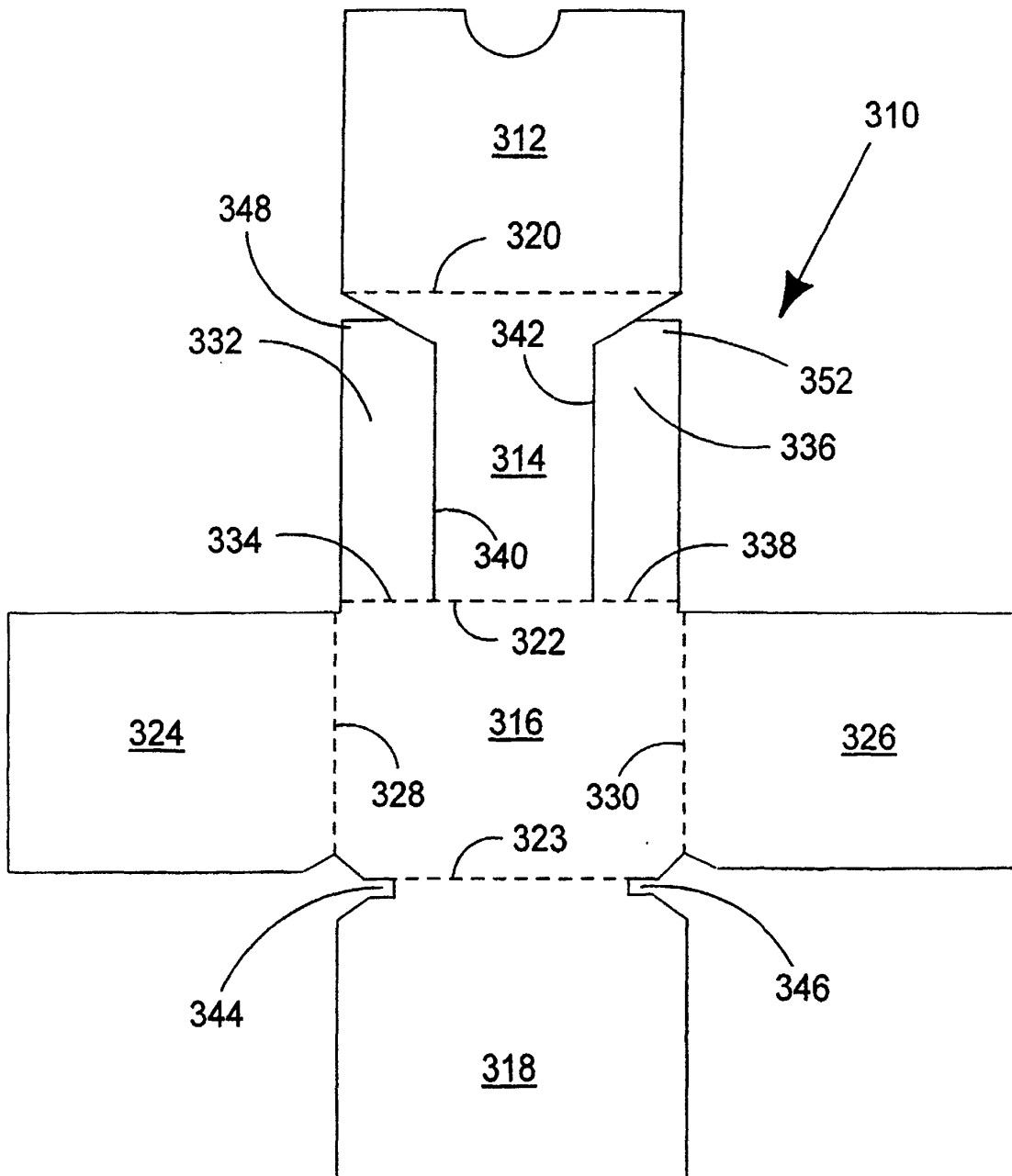


FIGURE 14

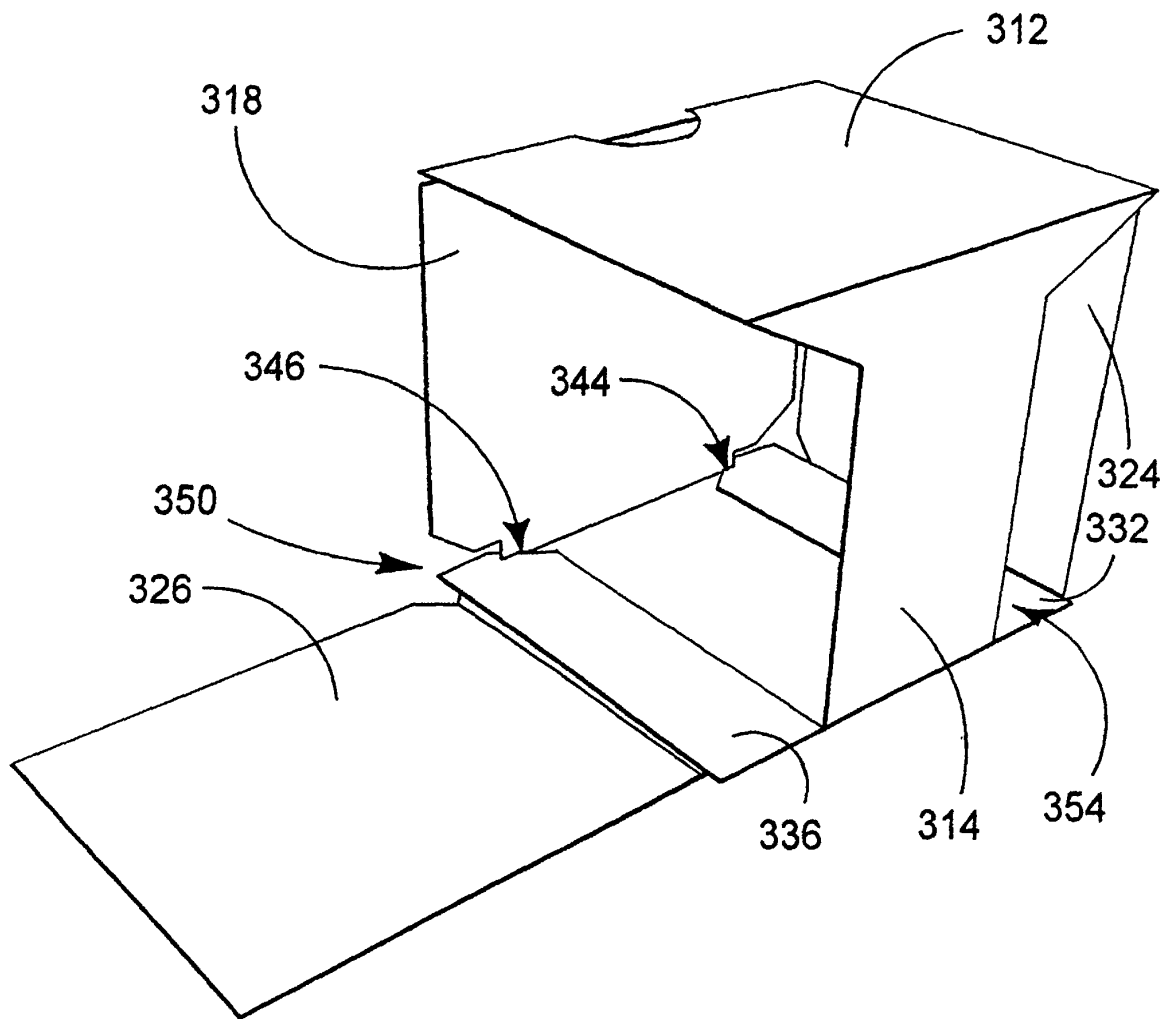


FIGURE 15

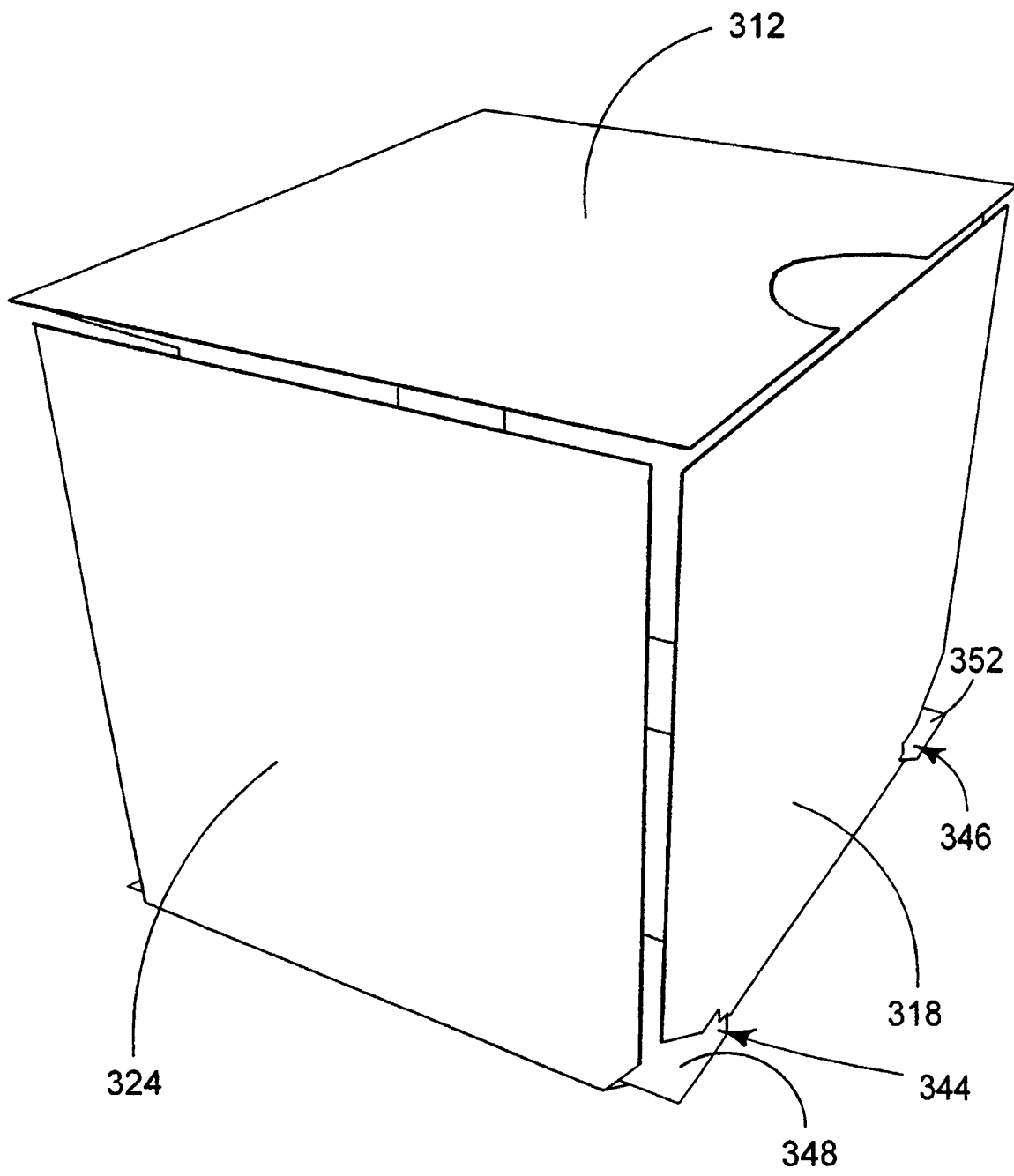


FIGURE 16

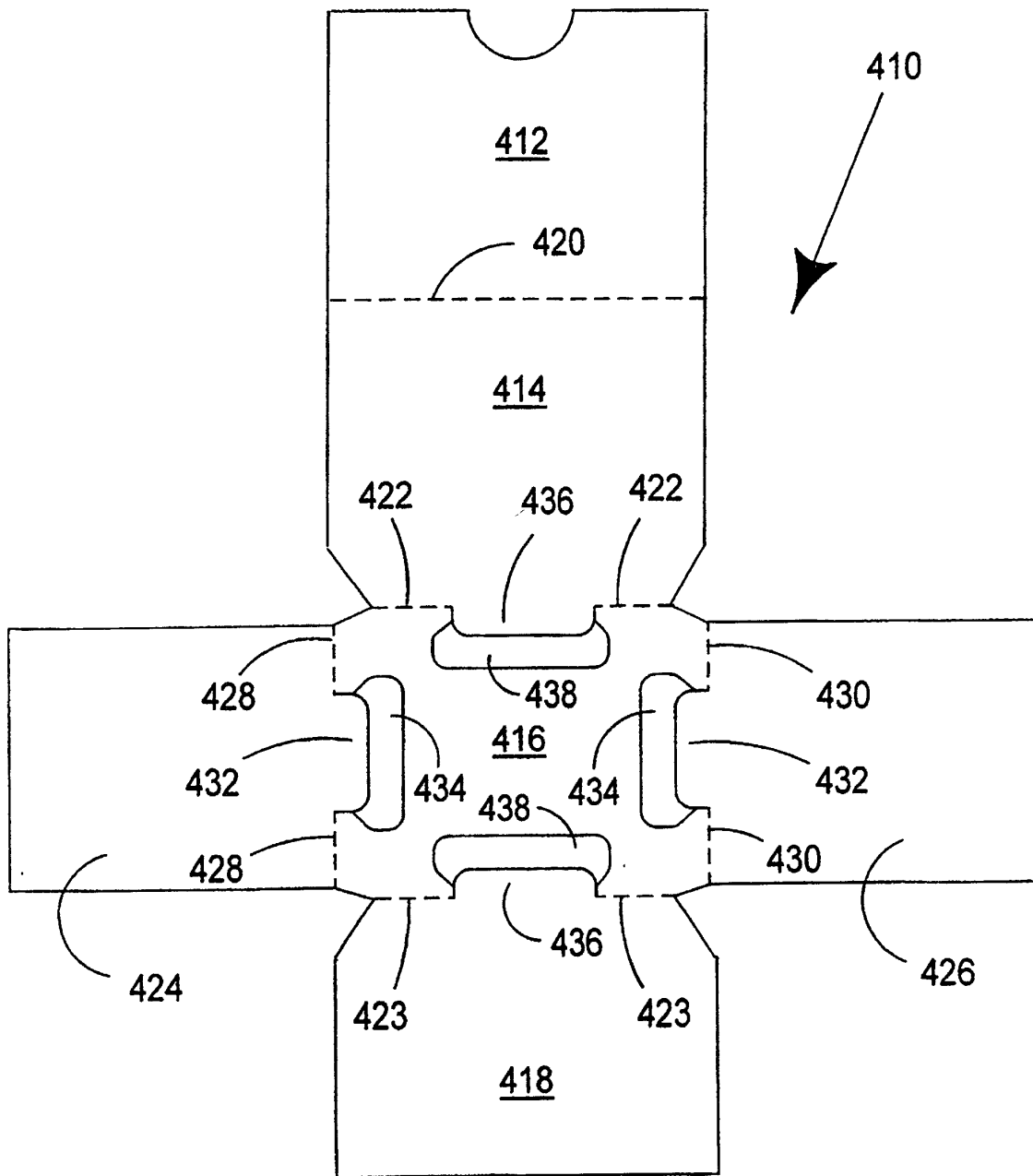


FIGURE 17

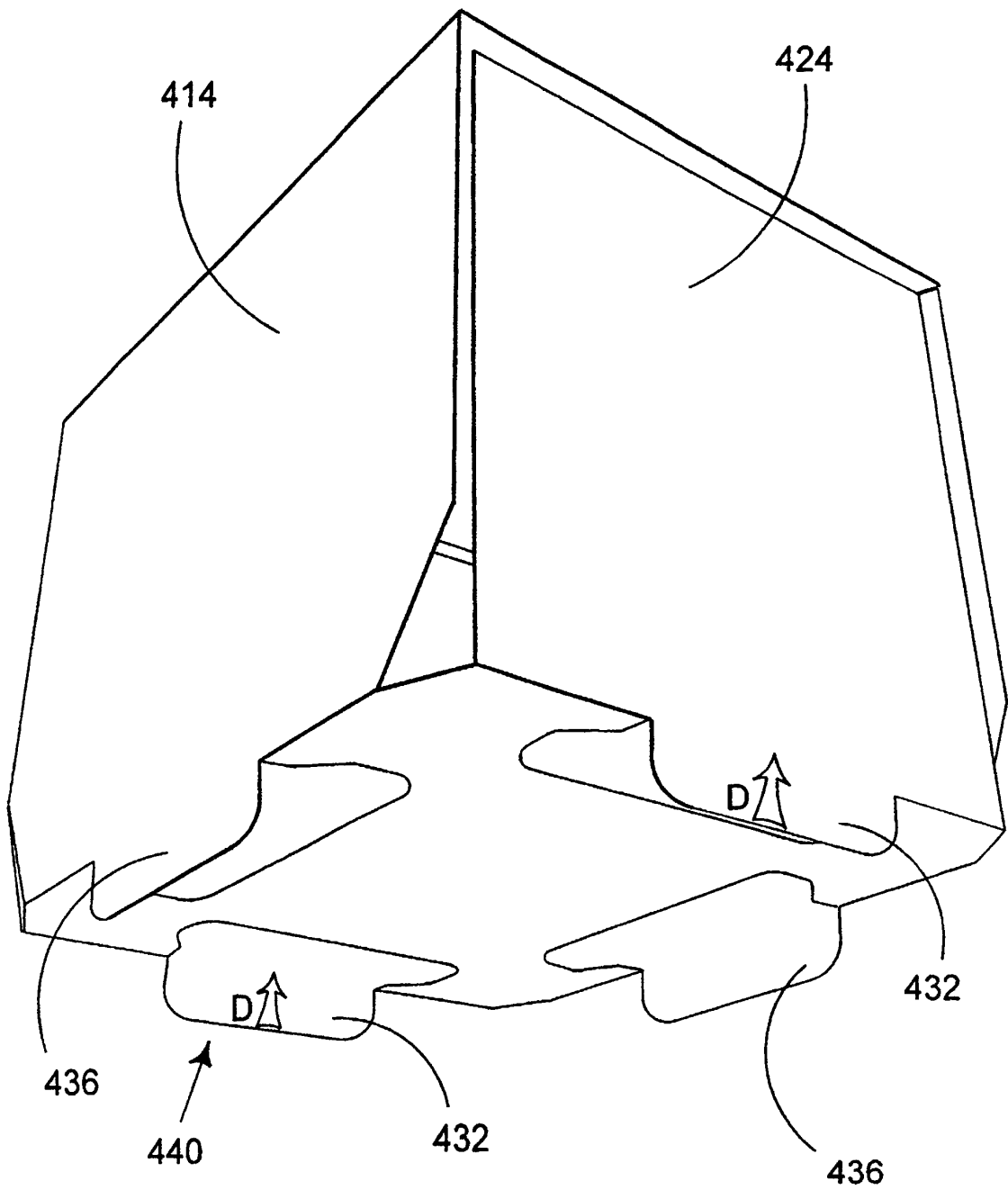


FIGURE 18