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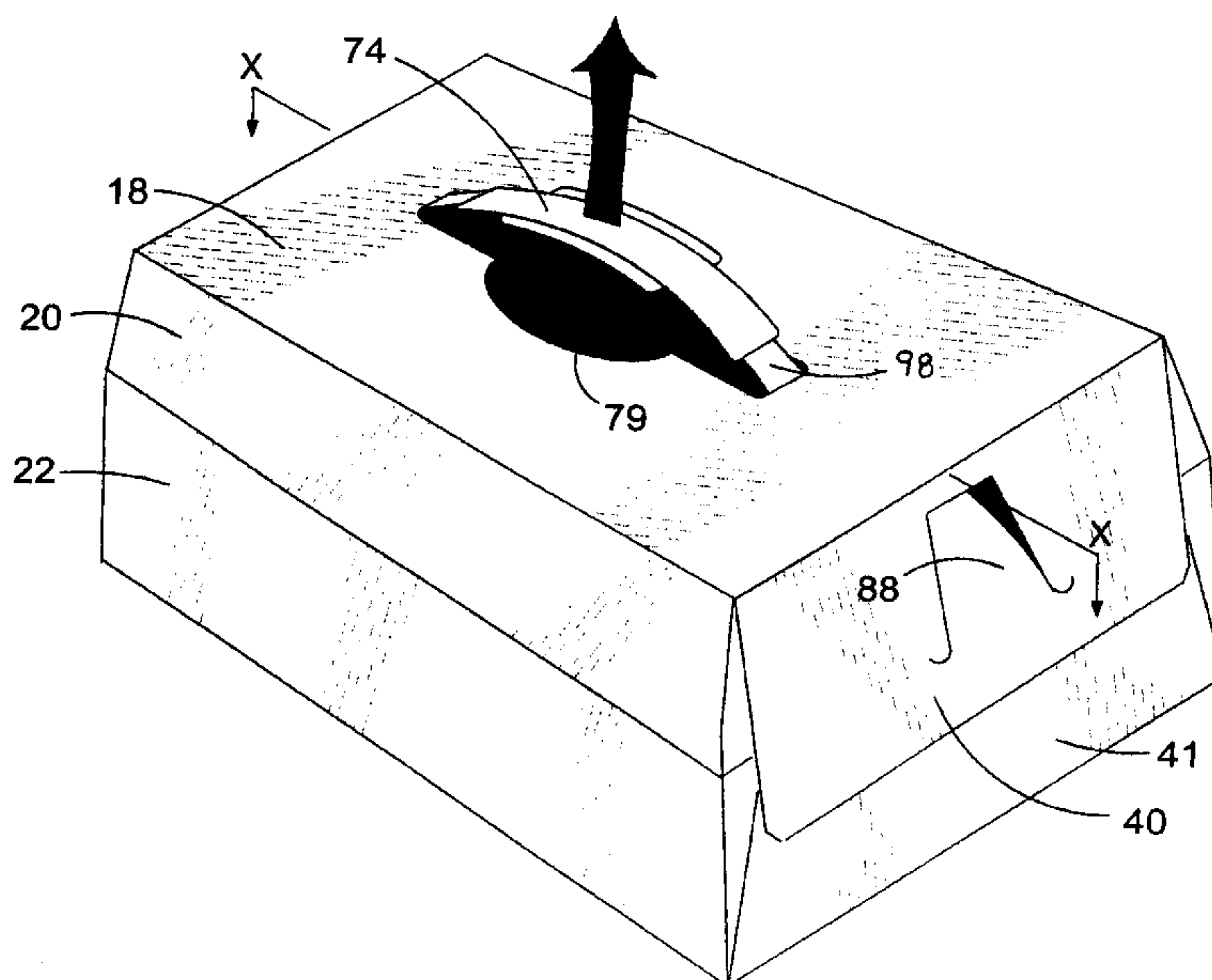
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(54) **CARTON A BOISSONS DISPOSANT D'UNE POIGNEE DE
TRANSPORT EN FORME DE BANDE**

(54) **BEVERAGE CARTON WITH STRAP TYPE CARRYING
HANDLE**



(57) A carton and blank for forming a carton for beverage containers which carton includes a series of hinged panels forming a sleeve and end closure panels hinged to at least one associated hinged panel for closing, at least in part, the opposite ends of a sleeve. The said carton includes handle means by which the carton can be carried, said handle means comprising a strap connected to opposed end panels having a user part which is in substantially co-planar relationship with said one hinged panel when in a stored condition. The strap is so connected at its opposite ends to said end closure panels as to provide a surplus of material to enable said user part to be brought into a position of use. The invention further comprises a carton for holding a plurality of articles in a group, which carton comprising top, opposed side walls and a base, hingedly interconnected together to form a tubular structure wherein at least one said side wall comprises a displaceable zone arranged to protrude out of a plane of the side wall to accommodate a portion of an adjacent article. The displaceable zone comprises a multiplicity of connected sections each occupying a different plane to a next adjacent section.



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(54) Title: BEVERAGE CARTON WITH STRAP TYPE CARRYING HANDLE		
(57) Abstract		
A carton and blank for forming a carton for beverage containers which carton includes a series of hinged panels forming a sleeve and end closure panels hinged to at least one associated hinged panel for closing, at least in part, the opposite ends of a sleeve. The said carton includes handle means by which the carton can be carried, said handle means comprising a strap connected to opposed end panels having a user part which is in substantially co-planar relationship with said one hinged panel when in a stored condition. The strap is so connected at its opposite ends to said end closure panels as to provide a surplus of material to enable said user part to be brought into a position of use. The invention further comprises a carton for holding a plurality of articles in a group, which carton comprising top, opposed side walls and a base, hingedly interconnected together to form a tubular structure wherein at least one said side wall comprises a displaceable zone arranged to protrude out of a plane of the side wall to accommodate a portion of an adjacent article. The displaceable zone comprises a multiplicity of connected sections each occupying a different plane to a next adjacent section.		

BEVERAGE CARTON WITH STRAP TYPE CARRYING HANDLE

This invention relates to a carton which is particularly but not only suitable for accommodating beverage containers such as cans and which incorporates a “strap-type”
5 carrying handle which is automatically set up into a position of use as the carton is being closed after having been loaded.

Beverage cartons which include carrying handles and indeed, strap type carrying handles are known. For example, US 4,166,570 (Lazerand et al) discloses a packaging
10 carton for beverage cans with a strap type handle. The handle strap has a central user portion exposed to view in a handle access aperture in a top wall of the carton, extends across the top wall and has opposite ends which terminate in respective ones of a pair of end closure flaps which are hinged to the top wall. The handle strap is reinforced by a separate strip of reinforcing material, for example, a fibrous tape.

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WO 97/07031 (Riverwood International Corporation) discloses a packaging carton for beverage cans having a handle strap secured at each end thereof to an outer face of an end panel of the carton between a pair of cuts which extend across the hinge between the top panel and the respective end panel. As the carton is lifted via the
20 handle, the provision of a fold line extending between the pairs of cuts on the top panel allows the portions bounded by the cut lines to deflect inwardly.

The present invention has sought to overcome or at least mitigate the problems of the prior art.

One aspect of the invention provides a carton for beverage containers which carton includes a series of hinged wall panels forming a sleeve and end wall panels hinged to at least one associated hinged wall panel for closing, at least in part, the opposite ends of a sleeve, wherein the carton includes handle means by which the carton can be carried. The handle means comprises a strap connected to opposed wall panels of the carton so as to provide a surplus of material wherein ends of the strap are attached to inwardly displaced parts of the opposed wall panels and intermediate parts between the ends which are unattached to one hinged panel are free to provide the surplus of material to enable the user part to be brought into a position of use. The strap has a user part which is in substantially co-planar relationship with one hinged wall panel when in a stored condition and in that the strap is positioned under the hinged wall panel provided with an opening to allow the user to grasp the handle means.

According to an optional feature of this aspect of the invention, the inwardly displaced parts may each comprise a step, the tread of which is provided by one of the opposed wall panels and the riser of the step being provided by one hinged wall panel. Preferably, the step may be automatically put into its operative position when the opposed wall panel is folded into its set up position. More preferably, the step may include a fold line intermediate the fold lines by which it is hinged to the hinged panel and to the opposed wall panel, the step folding in a toggle action along the fold lines when the opposed wall panel is folded into its set up position.

According to another optional feature of this aspect of the invention, a portion of said inwardly displaced part is positioned to be located between upper portions of adjacent articles at that end of the carton to provide a stabilizing spacer therebetween.

- 5 According to a further optional feature of this aspect of the invention the hinged panel is a side wall panel and the tread may abut a side portion of the article and wherein the riser of the step may extend inwardly of and beyond the abutment point between the tread and article side portion thereby to retain the step in a set up condition. Optionally, the lengths of the tread panel and/or riser panel are greater than the distance between the side panel and the article thereby substantially preventing the user portion from collapsing back into a co-planar relationship with the top or side panel once the step has been formed.

- According to another optional feature of this aspect of the invention the ends of the strap may be attached to inwardly displaced parts of gusset and/or side panels. Preferably, the user part of the handle strap may be connected to a portion of a side wall of the carton. More preferably, the user part may be formed from material which is integral with the side wall.

- Alternatively, the user portion of the handle strap may be connected to a portion of a top wall of the carton. Preferably, the central user portion may be formed from material which is integral with the top wall.

- A second aspect of the invention provides a blank for forming a carton, which blank comprises a series of hinged panels for forming a sleeve and end closure panels hinged to at least one associated hinged panel, wherein the blank includes handle means comprising

a strap connected to opposed end closure panels so as to provide a surplus of material wherein ends of the strap remote from the user portion are attached to inwardly displaceable parts of the end panels and intermediate parts between the user portion and the ends which are unattached to the one hinged panel are free to provide the surplus of material to enable the user part to be brought into a position of use. The strap has a user part which is in substantially co-planar relationship with one hinged panel and in that the strap is positioned under the hinged panel provided with an opening to allow the user to grasp the handle in a set up carton.

10 According to an optional feature of the second aspect of the invention the inwardly displaceable parts may each comprise a step, the tread of which is provided by one of the opposed wall panels and riser of the step being provided by the hinged panel. Preferably, the step may include a fold line intermediate the fold lines by which it is hinged to the hinged panel and to the end closure panel, the step folding in a toggle action along the
15 fold lines when the gusset panel is folded into its end retaining position. More preferably, the hinged panel may be a side wall panel and the tread abuts a side portion of the article and wherein the riser of the step extends inwardly of and beyond the abutment point between the tread and article side portion thereby to retain the step in a set up condition. More preferably, the lengths of the tread panel and/or riser panel may be greater than the
20 distance between the side panel and the article in a set up carton thereby substantially preventing the user portion from collapsing back into a co-planar relationship with the top or side panel once the step has been formed.

According to another optional feature of the second aspect of the invention the ends of the strap may be attached to inwardly displaceable parts of a gusset and/or side panels. Optionally, the user part of the handle strap may be struck from a portion of the side wall of the carton. More preferably, the user part may be formed from material which is integral with the side wall.

Alternatively, the user portion of the handle strap may be connected to a portion of a top wall of the carton. Preferably, the central user portion may be formed from material which is integral with the top wall.

Exemplary embodiments of the invention will now be described, by way of example, with reference to the following drawings in which:

FIGURE 1 is a plan view of a blank for forming a carton according to one embodiment of the invention;

FIGURE 2 is a plan view of the blank shown in Figure 1 incorporating a handle strap;

FIGURE 3 is a perspective view of a carton formed from the blank shown in Figure 1;

FIGURE 4 is a perspective view of the carton shown in Figure 3 illustrating the handle structure in a set up condition;

More preferably, the stabilizing step may be automatically put into its operative position when the end panel retention means is folded into its end retaining position.

According to another optional feature of the third aspect of the invention, the
5 stabilizing step may include a fold line intermediate the fold lines by which it is hinged to the top panel and to the end closure panel, the stabilizing flap folding in a toggle action along the fold lines when the end closure panel is folded into its end retaining position.

10 A fourth aspect of the invention provides a blank for forming a carton, which blank comprises a series of hinged panels for forming a sleeve and end closure panels hinged to at least one associated hinged panel, wherein the blank includes handle means comprising a strap connected to opposed end panels having a user part which is in substantially co-planar relationship with one of the hinged panels, the strap being
15 connected at its opposite ends to the end closure panels wherein ends of the strap remote from the user portion are attached to inwardly displaceable parts of the end closure panels spaced from the one hinged panel and in that intermediate parts between the user portion and the ends which are unattached to the one hinged panel are free to provide the surplus of material when the carton is in use.

20

A fifth aspect of the invention provides a blank for forming a carton, which blank comprises a series of hinged panels for forming a sleeve and end closure panels hinged to at least one associated hinged panel, wherein the blank includes handle means comprising a strap connected to opposed end panels having a user part which is in

substantially co-planar relationship with the one hinged panel, the strap being so connected at its opposite ends to the end closure panels as to provide a surplus of material wherein ends of the strap remote from the user portion are attached to inwardly displaceable parts of the end closure panels and intermediate parts between the user
5 portion and the ends which are unattached to the one hinged panel are free to provide the surplus of material to enable the user part to be brought into a position of use, the inwardly displaced parts each comprising a step, the tread and riser of the step being provided by an end panel.

10 Embodiments of the invention will now be described by way of example, with reference to the following drawings in which:

FIGURE 1 is a plan view of a blank of a wraparound carton according to one embodiment of the invention;

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FIGURE 2 is a plan view of the blank shown in Figure 1 incorporating a handle strap;

FIGURE 3 is a perspective view of a carton formed from the blank shown in
20 Figure 1;

FIGURE 4 is a perspective view of the carton shown in Figure 3 illustrating the handle structure in a set up condition;

FIGURE 5 is a cross sectional view of the carton shown in Figure 4 through "X - X";

FIGURE 6 is a plan view of a blank of a wraparound carton according to a
5 second embodiment of the invention;

FIGURE 7 is a plan view of the blank shown in Figure 6 incorporating a handle strap;

10 FIGURE 8 is a perspective view of a carton formed from the blank shown in Figure 6; and

FIGURE 9 is a perspective view of the carton shown in Figure 8 illustrating the handle structure in a set up condition;

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FIGURE 10 is a plan view of a blank for a wraparound carton according to a third embodiment of the invention;

FIGURE 11 is a plan view of the blank shown in Figure 10 incorporating a
20 handle strap;

FIGURE 12 is a perspective view of a carton formed from the blank shown in Figure 10;

FIGURE 13 is a perspective view of the carton shown in Figure 12 illustrating the handle structure in a set up condition in one class of embodiments; and

FIGURE 14 is a cross sectional view of a portion of the carton and an article
5 showing the arrangement of handle flaps in another class of embodiments.

Referring to the drawings, and in particular Figures 1, 2, 6, 7, 10 and 11 thereof, an article carrier is formed from a unitary blank 10, 210, 310 made from paper board or other suitable foldable sheet material, which can be adapted to accommodate the variety
10 of articles, for example twelve bottles arranged in three rows of four bottles each. It is envisaged the carrier can be adapted to accommodate a different number of bottles according to user requirements.

Turning to the carton blank 10 illustrated in Figure 1, this blank includes a first
15 base panel 12, lower side panel 14, upper side panel 16, top panel 18, second upper panel 20, second lower side panel 22, hingedly connected one to the next in a longitudinal plane along fold lines 24, 26, 28, 30 and 32 respectively.

The blank further comprises an end closure structure 34, 36 including a pair of
20 opposed upper ends closure panels (or "adpanels") 38, 40 hingedly connected to the top panel along interrupted fold lines 42 and 44 respectively, positioned along the end edges of the top panel 18 and a pair of lower end closure panels 39, 41 hingedly connected to base panel 12 along fold lines 43, 45 respectively.

The end closure structure 34 includes gusset panels 46 and 48 connected together by panel portion 50. Gusset panels 46, 48 extend outwardly from lower and upper side panels 22, 20 respectively and are connected thereto by fold lines 52, 54. A further overlapping panel 56 is connected to end panel 38 by a lateral fold line and to
5 gusset panel 46 along fold line 58. The gusset panels 46, 48 and overlapping panel 56 are adapted to form a corner structure as is well known in the art.

Likewise, the opposing corner of the end closure structure 34 also includes gusset panels 60 and 62 connected together by panel portion 64. Gusset panels 60, 62
10 extend outwardly from lower and upper side panels 14, 16 respectively and are connected thereto by fold lines 66, 68. A further overlapping panel 70 is connected to end panel 38 by lateral fold line 28 and to gusset panel along fold line 72.

The construction along the opposing side of the top panel and bottom comprises
15 an end closure structure 36 which is similar and therefore like parts at one end of the top panel are designated by reference numerals to like parts of the opposite end with the addition of suffix 'a' and are not described in any greater detail.

The top panel 18 can further comprise a central user portion 74, frangibly
20 connected to the top panel 18. In this embodiment, the central user portion 74 is substantially rectangular in shape and comprises a pair of support panels 76, 78 extending into a central user aperture 79 and connected to the side edges of central user portion along fold lines 80, 82 respectively. Additionally, a handle strap 98, shown in the Figure 2 can be applied to the inner surface of the blank 10, preferably being

secured to the central user portion 74 and the opposed end closure panels 38, 40 by glue at glue points G or by other means known in the art. It is further preferred that the handle strap is formed from paper board, laminated paper board, fibrous tape or other suitable plastics material.

5

In one class of embodiments, a stabilizing (or bottle neck spacer) flap 84 shown in Figure 1 is struck from the blank in the end closure panel 38 so that the flap 84 is hinged to that panel, but otherwise cut out from the blank. Likewise, a second flap 88 is struck from the other end closure panel 40 and is hingedly connected thereto.

10

The second embodiment shown in Figure 6 and 7 corresponds substantially to the first embodiment and therefore like parts are designated by reference numerals which are prefixed with the numeral "2". Only those parts of the second embodiment which differ from the first embodiment are hereinafter described. Thus, a stabilizing (or bottle neck spacer) flap 284 shown in Figure 6 is struck from the blank in the end closure panel 238 so that the flap 284 is hinged to that panel and to the top panel about fold line 286, but otherwise cut out from the blank. Flap 284, preferably comprises a tread panel 285 and a riser panel 287, connected together along fold line 289, which panels are adapted during carton construction to define a step (or keel element).

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The top panel 218 can further comprise a central user portion 274, frangibly connected to the top panel 218. In this embodiment, the central user portion 274 is substantially rectangular in shape and comprises a pair of support panels 276, 278 extending into a central user aperture 279 and connected to the side edges of central

user portion along fold lines 280, 282 respectively. Additionally, a handle strap 298, shown in Figure 7 can be applied to the inner surface of the blank 210, being secured to the central user portion 274 and the opposed end closure panels 238, 240 by glue at glue points G or by other means known in the art. Preferably, the handle strap 298 is also
5 glued, or otherwise secured, to the tread panels 285, 287 of each step as shown in Figure 7. It is further preferred that the handle strap is formed from paper board, laminated paper board, fibrous tape or other suitable plastics material.

The third embodiment shown in Figures 10 to 13 corresponds substantially to
10 the first and second embodiments in many respects and therefore, where possible, like parts are designated by numerals which are prefixed with the numeral "3". Turning to the carton blank 310 illustrated in Figure 10, this blank includes a base panel 312, lower side panel 314, upper side panel 316, top panel 318, second upper panel 320, second lower side panel 322, hingedly connected one to the next in a longitudinal plane along
15 fold lines 321, 326, 328, 330 and 332 respectively.

The blank further comprises one or more end closure structures 334, 336 including a pair of opposed upper ends closure panels (or "adpanels") 338, 340 hingedly connected to the top panel along fold lines 342 and 344 respectively,
20 positioned along the opposing end edges of top panel 318. In this embodiment, the end closure structures 334, 336 also include a pair of lower end closure panels 339, 341 hingedly connected to base panel 312 by fold lines 343, 345 respectively formed along the opposed longitudinal edges of base panel 312.

End closure structure 334 may also include gusset panels 346 and 348 connected together by panel portion 350. Gusset panels 346, 348 extend outwardly from lower and upper side panels 322, 320 respectively and are connected thereto by fold lines 352, 354. A further overlapping panel 356 is connected to upper end panel 338 by a lateral fold line and to gusset panel 346 along fold line 358. The gusset panels 346, 348 and overlapping panel 356 are adapted to form a corner structure, as is well known in the art.

Likewise, the opposing corner of the end closure structure 334 also includes gusset panels 360 and 362 connected together by panel portion 364. Gusset panels 360, 362 extend outwardly from lower and upper side panels 314, 316 and are connected thereto by fold lines 366, 368. A further overlapping panel 370 is connected to upper end panel 338 by a lateral fold line and to gusset panel along fold line 372.

The construction along the opposing side of the top panel and bottom, which includes end closure structure 336, is similar and therefore, like parts at one end of the top panel are designated by reference numerals to like parts of the opposite end, but with the addition of suffix 'a' and are not therefore described in any greater detail.

One or more handle flaps 384, 384a, shown in Figure 10, is struck from the blank, which in this embodiment is formed from the gusset panel 360 and/or side panel 314, so that the flap 384 is hinged to that panel 360 and preferably to the side panel 314 about fold line 386, but is otherwise cut out from the blank by opposed cut lines 392, 394 in substantially parallel spaced arrangement. Flap 384, preferably comprises a

tread panel 387 and a riser panel 389, connected together along a fold line, which panels are adapted during carton construction to define a step (or keel element). In this embodiment the tread panel 387 is separated from the gusset panel 360 by panel 385 and hingedly connected thereto along fold line 390 described in more detail below.

5

Preferably, the handle flap 384 is separated from gusset panel 360 and lower side panel 314 by apertures 393, 395 to make it easier for the flaps to be folded out of alignment with the gusset panel 360 and lower side panel 314.

10

The side panel 314 may further comprise a user portion 374, frangibly connected to the side panel 314 along frangible lines 375 and positioned in a central region of the side panel. In this embodiment, the user portion 374 is substantially rectangular in shape and comprises a pair of support panels 376, 378 extending into a central user aperture 379 and connected to the side edges of central user portion along fold lines 380, 382 respectively.

15

Additionally, a handle strap 398, shown in the Figure 11 can be applied to the inner surface of the blank 310, preferably being secured to the user portion 374 and the opposed gusset panels 338, 340 by glue 416, 414 or other means known in the art.

20 Preferably, the handle strap 398 is also glued to the tread panels 385, 387 of each step. It is further preferred that the handle strap is formed from paper board, laminated paper board, fibrous tape or other suitable plastics material.

Along the opposed lateral edges of user portion 374, there may further comprise a handle tab 400 struck from lower side panel 314 by lateral cut lines 402, 404. In use the handle tabs guide the handle strap when displaced outwardly.

- 5 Cut lines 406, 406a struck from lower end panels 339 and 341 may be included to co-operate with handle flaps 384, 384a.

In another class of embodiments, the handle structure may comprise one or more handle flaps (not shown) struck from the gusset panel 360 or other suitable panel
10 so that the flap is hinged to that panel along one edge but is otherwise cut out from the blank in a manner similar to the first embodiment. Likewise a second flap could be struck from the opposing gusset panel 360a or other suitable panels and be hingedly connected thereto. A handle strap would be secured to the opposing handle flaps and preferably a user portion, but would otherwise be unconnected to the blank.

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Turning to the construction of the carton, illustrated in Figures 3, 4, 5, 8, 9 and 12, 13 the blank 10, 210, 310 requires a series of sequential folding and/or gluing operations which can be performed in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding process is
20 not limited to that described below and can be altered according to particular manufacturing requirements.

The carton is usually supplied to a bottler in a flat collapsed tubular condition: the base panel 12, 212, 312 already connected to lower side panel 22, 222, 322 by

securing the glue flap 94, 294, 394 to the lower side panel 22, 222, 322 by glue or other suitable means. In order to set up the carton, the sides and top and base panels are separated to form a tubular structure, as is well known.

5 Thereafter, articles are introduced to the part constructed carton and the end closure structure is formed. In the first embodiment, the end closure panels 38 and 48 are folded downwardly at each end of the sleeve formed by the wrap around folding action. Gusset panels 46, 48, 50 and 60, 62, 70 are folded inwardly about fold lines 52, 54 and 66, 68 respectively whereby gusset panels 46, 48, 60, 62 come into face to face
10 relationship with side panels 22, 20 and 14, 16 respectively. Panels 56, 70 come into face to face contact with their respective adjacent gusset panels 46, 62.

 Optionally, the faces of gusset flaps 46, 60 in contact with upper side panels 16, 20 respectively may be secured together by means known in the art to hold the end
15 closure panels in place. Thereafter, lower end closure panels are folded about fold lines and into abutment with upper end closure panels 38, 40 and are secured together by glue or other means known in the art. The end structures of the second and third embodiments are formed in a substantially identical manner and construction thereof is not therefore described in any greater detail.

20

 Thus, the cartons of the first, second and third embodiments are in a set up and loaded condition as shown in Figures 3, 8 and 12 respectively. The first embodiment advantageously allows the top and the end of the carton to remain intact thereby

improving the structural integrity of the carton during handling and storage, caused in part because the fold lines connecting the top and upper side panels are continuous.

The embodiment shown in Figure 12 allows the top of the carton to remain
5 intact and thereby also improves the structural integrity of the carton during handling and storage, again caused in part because the fold lines connecting the top and upper side panels are continuous.

In order to form the handle in the first embodiment illustrated in Figures 4 and
10 5, the central user portion 74 can be detached from the top panel 18 whereby at least a portion of the handle strap stands proud of the top panel, shown in Figure 4. It will be seen from Figure 5 that the strap is so connected at the opposite ends of the end closure panels as to provide a surplus of material to enable the central user portion 74 to be brought into a position of use. The support panels 76, 78 are folded under the handle
15 strap, such that the central user portion 74 is wrapped around the strap, the central user portion 74 provides a cushion for the strap, shown in Figure 4. Further, the central user portion 74 is designed for ease of use.

In the second embodiment, the handle is formed by folding each of the
20 stabilising (or bottle neck spacer) flaps 284 and 284a.. Flaps 284 and 284a are formed with cut lines 292, 294 preferably divergent from fold line 289 and cut lines 293, 295 intermediate and substantially perpendicular to fold lines 286 and 289 about which flaps can fold in a toggle action to define a step at each end of the top panel 18. This action can occur automatically upon folding the end closure panels which brings the

flaps into their operative position in which the flaps are displaced out of the plane of the top panel inwardly of the carton, as shown in Figure 9. Optionally, cut lines 292, 294; 293, 295 are shaped to define a shaped edge adapted to cooperate with a neck portion of an article. Once displaced the, or each, stabilizing flap 284 is disposed between neck
5 portions of adjacent rows of articles within the package to assist in maintaining the articles in their correct upright positions within the package, particularly to prevent the articles tipping inwardly whereas the end closure panels prevent the bottles toppling end wise of the package.

10 In order to form the handle of the third embodiment as illustrated in Figure 13 the user portion 374 can be detached from the side panel 314 and, the handle is then formed automatically by folding each of the handle flaps 384. More particularly, a keel structure is formed by folding panels 385, 387 and 389 inwardly of gusset panel 360 such that tread panel 385, 387 and riser panel 389 are substantially perpendicular or
15 more preferably in an acute angular relationship. Thus, the flaps 384 can fold in a toggle action to define a step at each end of the lower side panel 314. This action can occur automatically when a user pulls on the handle strap which brings the flaps into their operative position by which the flaps are displaced out of the plane of the top panel inwardly of the carton, as shown in Figure 13. Once displaced, the or each panel
20 385 abuts the product. Advantageously, the strap 398 is held between the product and carton which permits additional resistance.

In other embodiments, the keel structures 418, 420 are so formed to allow the tread panel 385, 387 to abut the article as shown in Figure 14. Preferably, once the step

is formed and the tread and riser panels are folded into perpendicular (or angular) relationship, they are so constructed to be held in place. More preferably, when the user forms the step, it is "overcentre" of the notional plane X-X between the tangential point of contact between the article and strap and the fold line between the riser and side panel and therefore is prevented from collapsing back to a co-planar relationship with the side and gusset panels. In some embodiments, this is achieved because the tread panel 387 and/or riser panel 389 is greater in length than the distance "d" between the side panel 314 and the article A.

One advantage of this arrangement of handle structure is that the handle structure is more rigid and once the user part has been separated from the side panel it continues to protrude beyond the side panel whilst providing a handle strap that can be shaped to the contour of the outermost article A carried by the carton.

When the carrier of any of the embodiments is in use there is a tendency for the handle strap to draw the end closure structures 34, 36, 234, 236, 334, 336 inwardly thereby to improve the integrity of the carton and providing a self tightening effect. Furthermore, in those embodiments where the strap and/or tread and riser flaps are positioned between neck portions of adjacent bottles, the stability of the carton is improved due to support from the articles.

Advantageously, the preferred embodiments of the present invention illustrate a carton having a strap handle type, the strap being reinforced by a separate strap formed from material at one end of the blank from which the carton is formed. The handle

strap is connected to a handle and has a user portion exposed to view in a handle access aperture but which is otherwise disposed internally of the carton.

The carton is set up as an open-ended sleeve for loading and is then end-loaded
5 whereafter the carton is completed by closure of the end closure panel. The end closure panel closing has an effect on the disposition of the handle strap. As the top end closure panels are folded into their closing positions the handle strap becomes slack into a position ready for use. When the carton is lifted by the central user part of the handle strap, the strap bows upwardly and protrudes through the handle access aperture
10 proud of the top/side wall. The load is transmitted from the handle strap to the end wall of the carton at each of the opposite ends of the handle access aperture and is distributed through the end wall.

The present invention and its preferred embodiment relate to an article carrier
15 which is shaped to provide satisfactory strength to hold articles securely but with a degree of flexibility so that load transfer to the handle is absorbed by the carrier. The shape of the blank minimises the amount of paper board required and the carrier can be applied to an array of articles by hand or automatic machinery. It is anticipated that the invention can be applied to a variety of carrier and is not limited to the wrap around
20 type. For example the top panel 18, side panels 14, 16, 20, 22 and end closure structure 34, 36 of the aforementioned carton can be applied to other carton types for example top gripping cartons, without departing from the scope of the invention.

CLAIMS

1. A carton for beverage containers which carton includes a series of hinged wall panels forming a sleeve [and end wall panels hinged to at least one associated hinged wall panel for closing, at least in part, the opposite ends of a sleeve], wherein the said carton includes handle means by which the carton can be carried, said handle means comprising a strap connected to opposed wall panels of the carton so as to provide a surplus of material wherein ends of the strap are attached to inwardly displaced parts of the opposed wall panels and intermediate parts between said ends which are unattached to said one hinged panel are free to provide said surplus of material to enable said user part to be brought into a position of use characterised in that said strap having a user part which is in substantially co-planar relationship with said one hinged wall panel when in a stored condition and in that said strap is positioned under said hinged wall panel provided with an opening to allow the user to grasp the handle means.

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2. A carton according to claim 1 wherein said inwardly displaced parts each comprise a step, the tread of which is provided by one of the opposed wall panels and the riser of said step being provided by said one hinged wall panel.

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3. A carton according to claim 2 wherein said step is automatically put into its operative position when the opposed wall panel is folded into its set up position.

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4. A carton according to claim 3 wherein said step includes a fold line intermediate the fold lines by which it is hinged to said hinged panel and to said opposed wall panel, said step folding in a toggle action along said fold lines when said opposed wall panel is folded into its set up position.

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5. A carton according to any preceding claim wherein a portion of said inwardly displaced part is positioned to be located between upper portions of adjacent articles at that end of the carton to provide a stabilizing spacer therebetween.

6. A carton according to any of claims 2 to 4 wherein the hinged panel is a side wall panel and the tread abuts a side portion of the article and wherein the riser of said step extends inwardly of and beyond the abutment point between the tread and article side portion thereby to retain said step in a set up condition.

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7. A carton according to claim 6 wherein the lengths of the tread panel and/or riser panel are greater than the distance between the side panel and the article thereby substantially preventing the user portion from collapsing back into a co-planar relationship with the top or side panel once the step has been formed.

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8. A carton according to any preceding claim wherein the ends of the strap are attached to inwardly displaced parts of gusset and/or side panels.

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9. A carton according to claim 8 wherein said user part of said handle strap is connected to a portion of a side wall of the carton.

10. A carton according to claims 9 wherein said user part is formed from material which is integral with said side wall.

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11. A carton according to any one of claims 1 to 7 wherein said user portion of said handle strap is connected to a portion of a top wall of the carton.

12. A carton according to claim 11 wherein said central user portion is formed from material which is integral with said top wall.

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13. A blank for forming a carton, which blank comprises a series of hinged panels for forming a sleeve and end closure panels hinged to at least one associated hinged panel, wherein said blank includes handle means comprising a strap connected to opposed end closure panels so as to provide a surplus of material wherein ends of the strap remote

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from the user portion are attached to inwardly displaceable parts of the end panels and

intermediate parts between the user portion and said ends which are unattached to said one hinged panel are free to provide said surplus of material to enable said user part to be brought into a position of use characterised in that said strap having a user part which is in substantially co-planar relationship with said one hinged panel and in that said strap is
5 positioned under said hinged panel provided with an opening to allow the user to grasp the handle in a set up carton.

14. A blank according to claim 13 wherein said inwardly displaceable parts each comprise a step, the tread of which is provided by one of the opposed wall panels and
10 riser of said step being provided by the hinged panel.

15. A blank according to claim 14 wherein said step includes a fold line intermediate the fold lines by which it is hinged to the hinged panel and to said end closure panel, said step folding in a toggle action along said fold lines when said gusset panel is folded into
15 its end retaining position.

16. A blank according to any of claims 13 to 15 wherein the hinged panel is a side wall panel and the tread abuts a side portion of the article and wherein the riser of said step extends inwardly of and beyond the abutment point between the tread and article side
20 portion thereby to retain said step in a set up condition.

17. A blank according to claim 16 wherein the lengths of the tread panel and/or riser panel are greater than the distance between the side panel and the article in a set up carton thereby substantially preventing the user portion from collapsing back into a co-planar
25 relationship with the top or side panel once the step has been formed.

18. A blank according to any preceding claim wherein the ends of the strap are attached to inwardly displaceable parts of a gusset and/or side panels.

19. A blank according to claim 18 wherein said user part of said handle strap is struck from a portion of the side wall of the carton.
20. A blank according to claims 18 wherein said user part is formed from material
5 which is integral with said side wall.
21. A blank according to any one of claims 13 to 17 wherein said user portion of said handle strap is connected to a portion of a top wall of the carton.
- 10 22. A blank according to claim 20 wherein said central user portion is formed from material which is integral with said top wall.

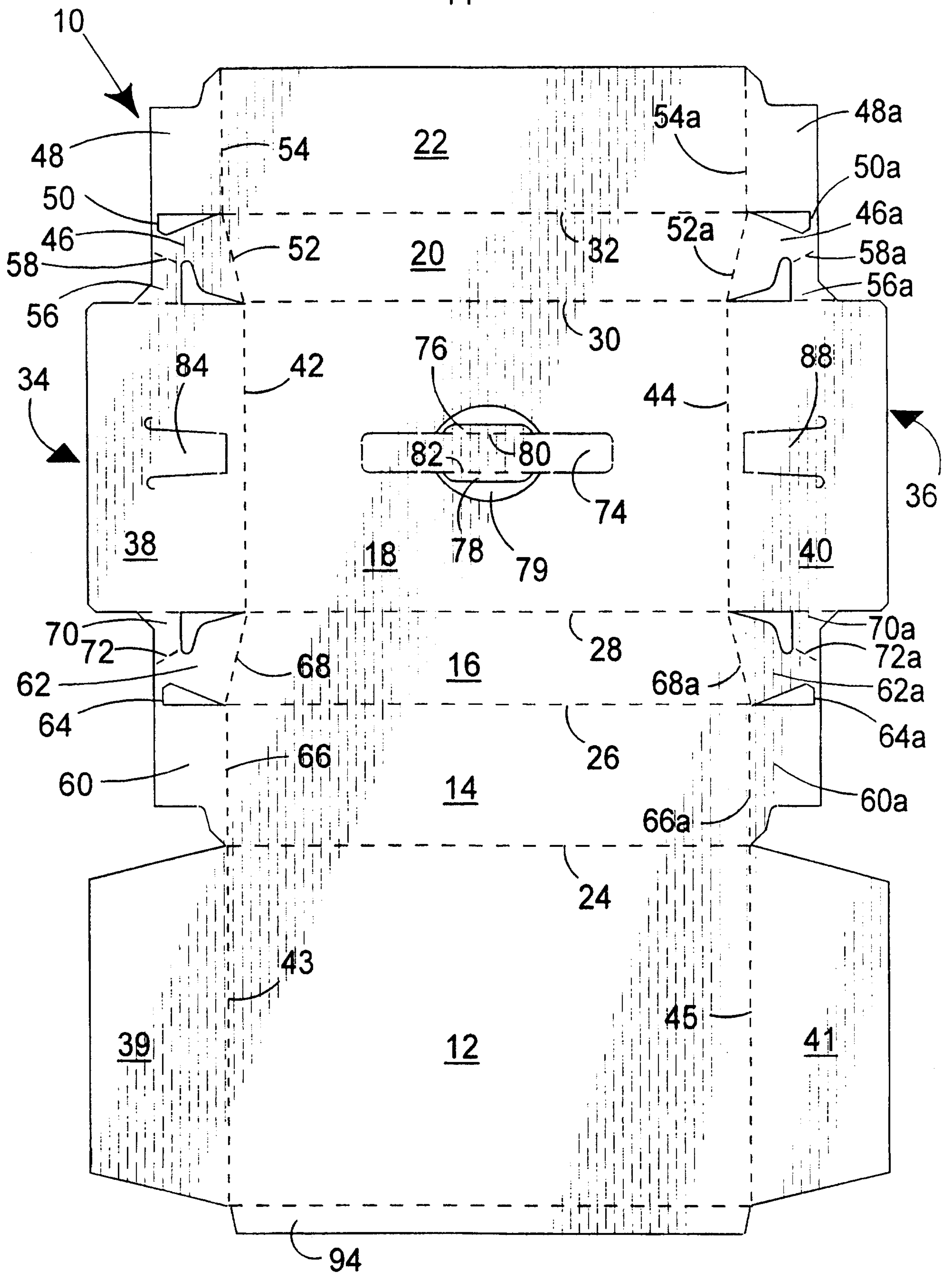
$$\frac{1}{14}$$


FIGURE 1

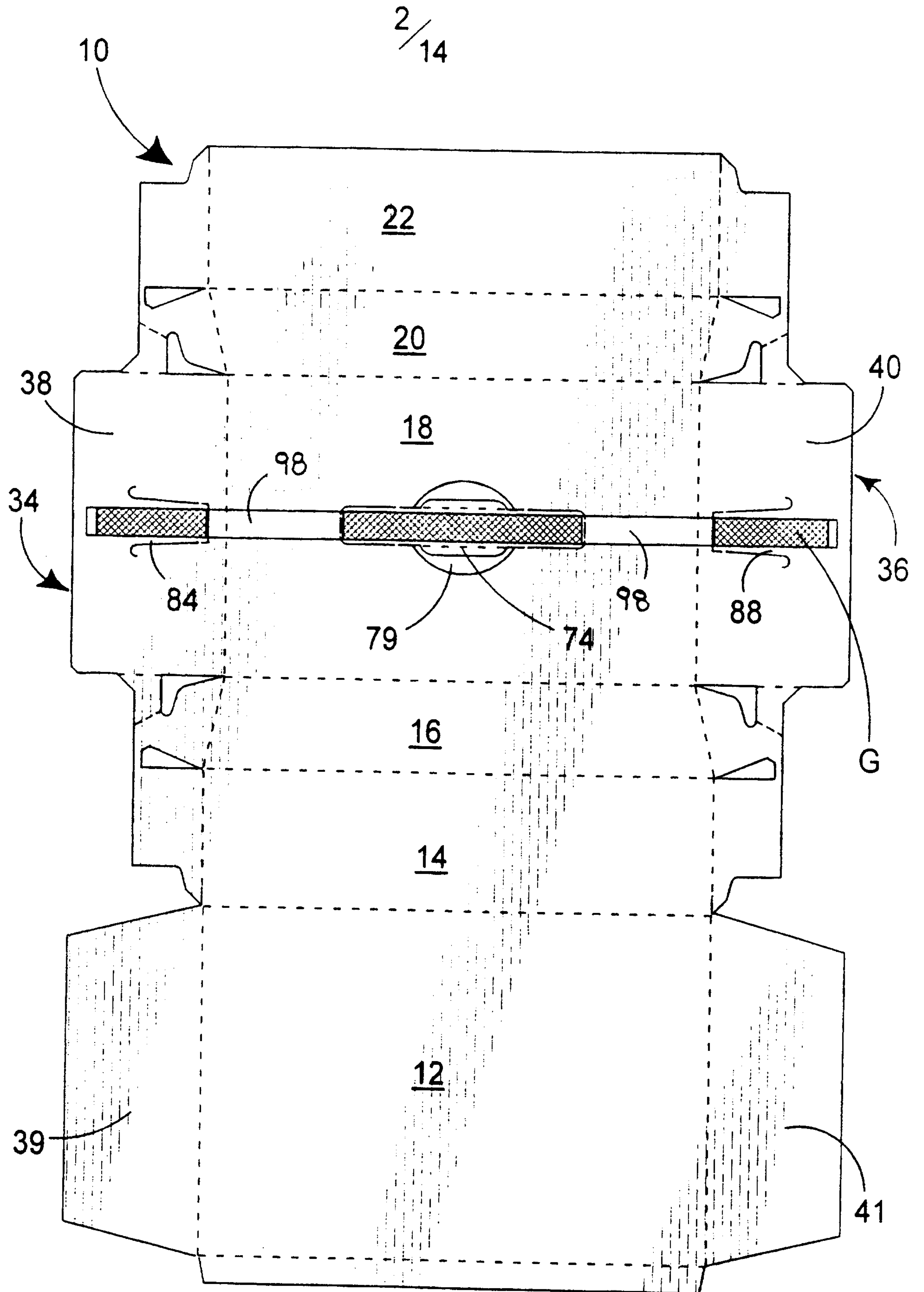
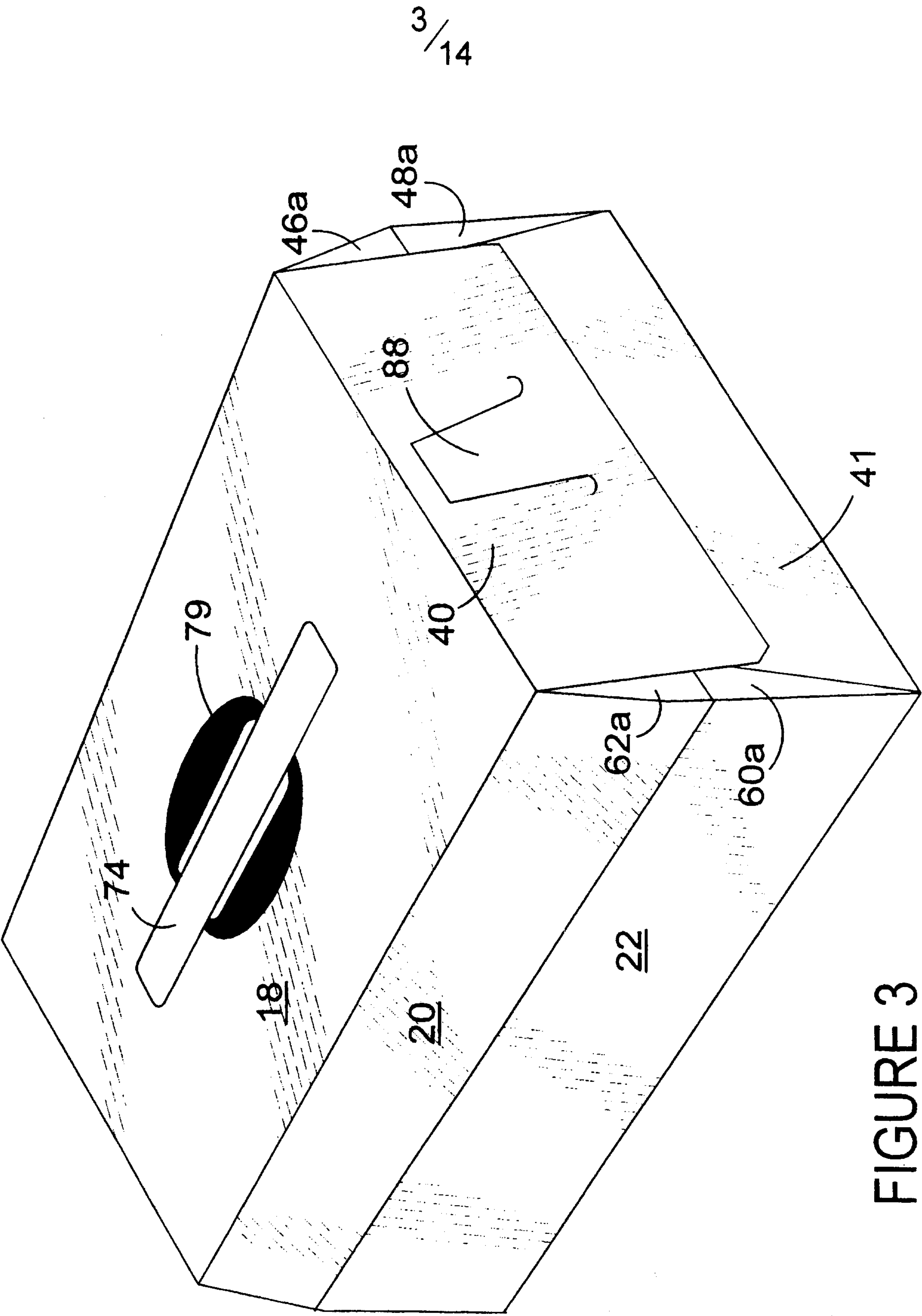


FIGURE 2



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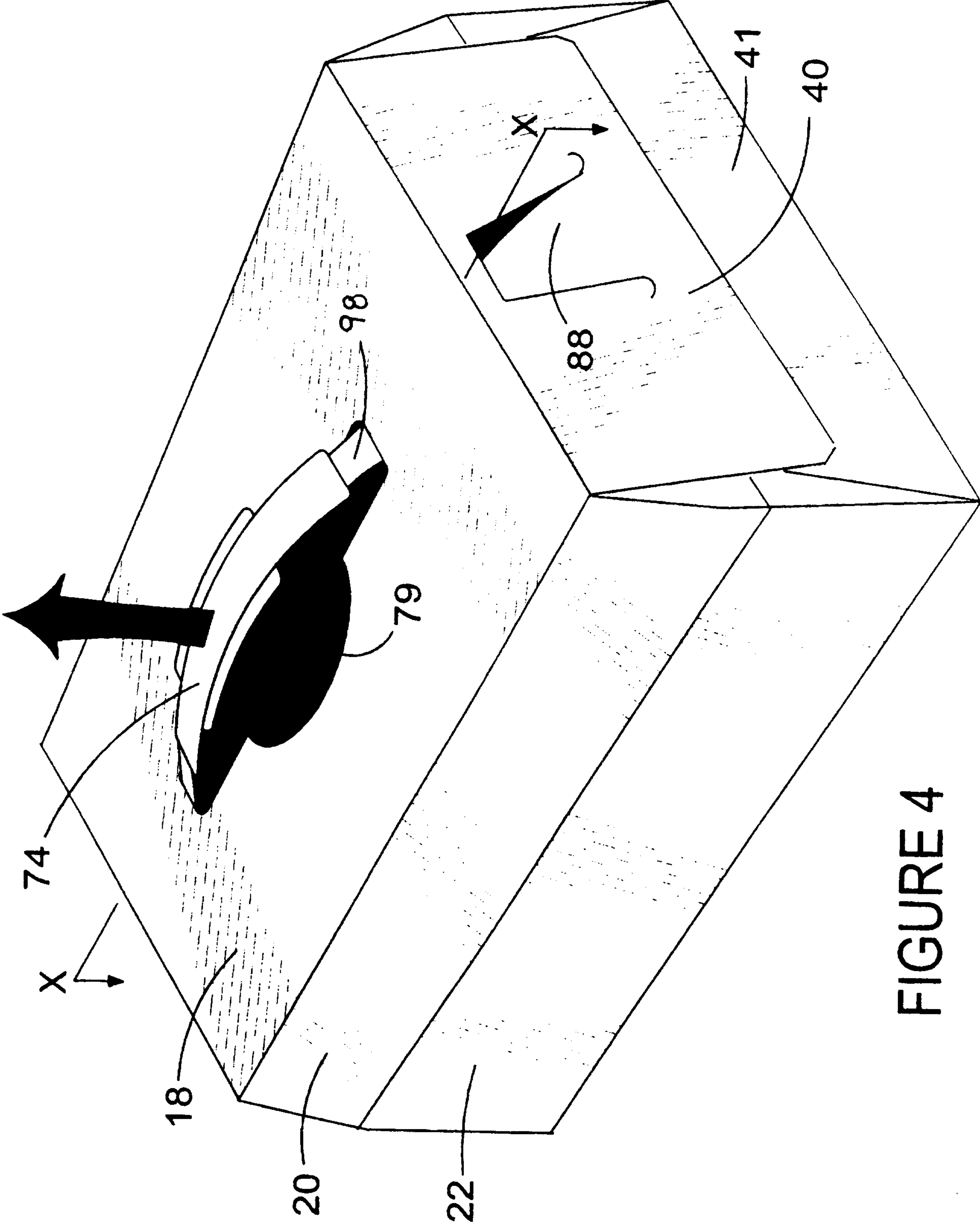


FIGURE 4

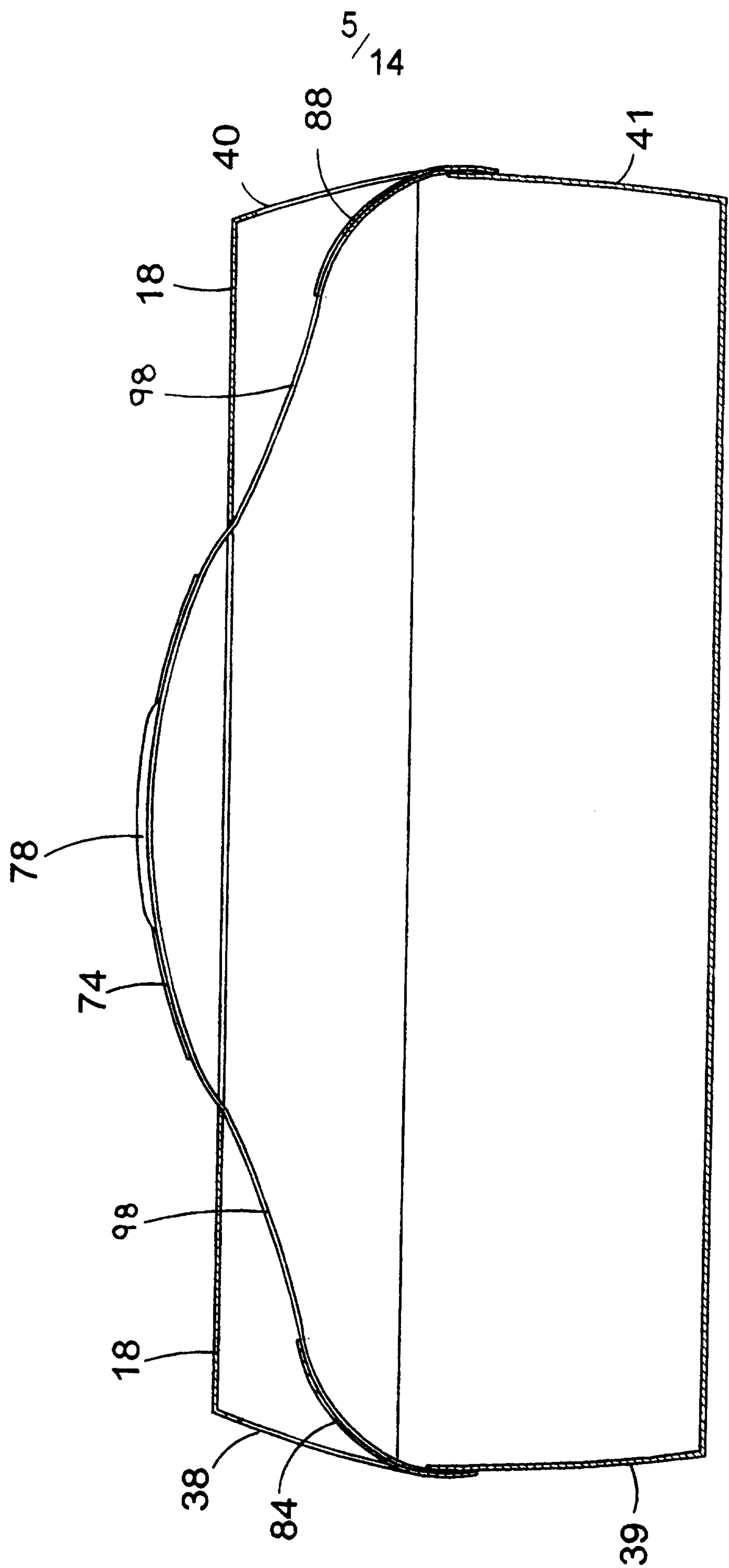


FIGURE 5

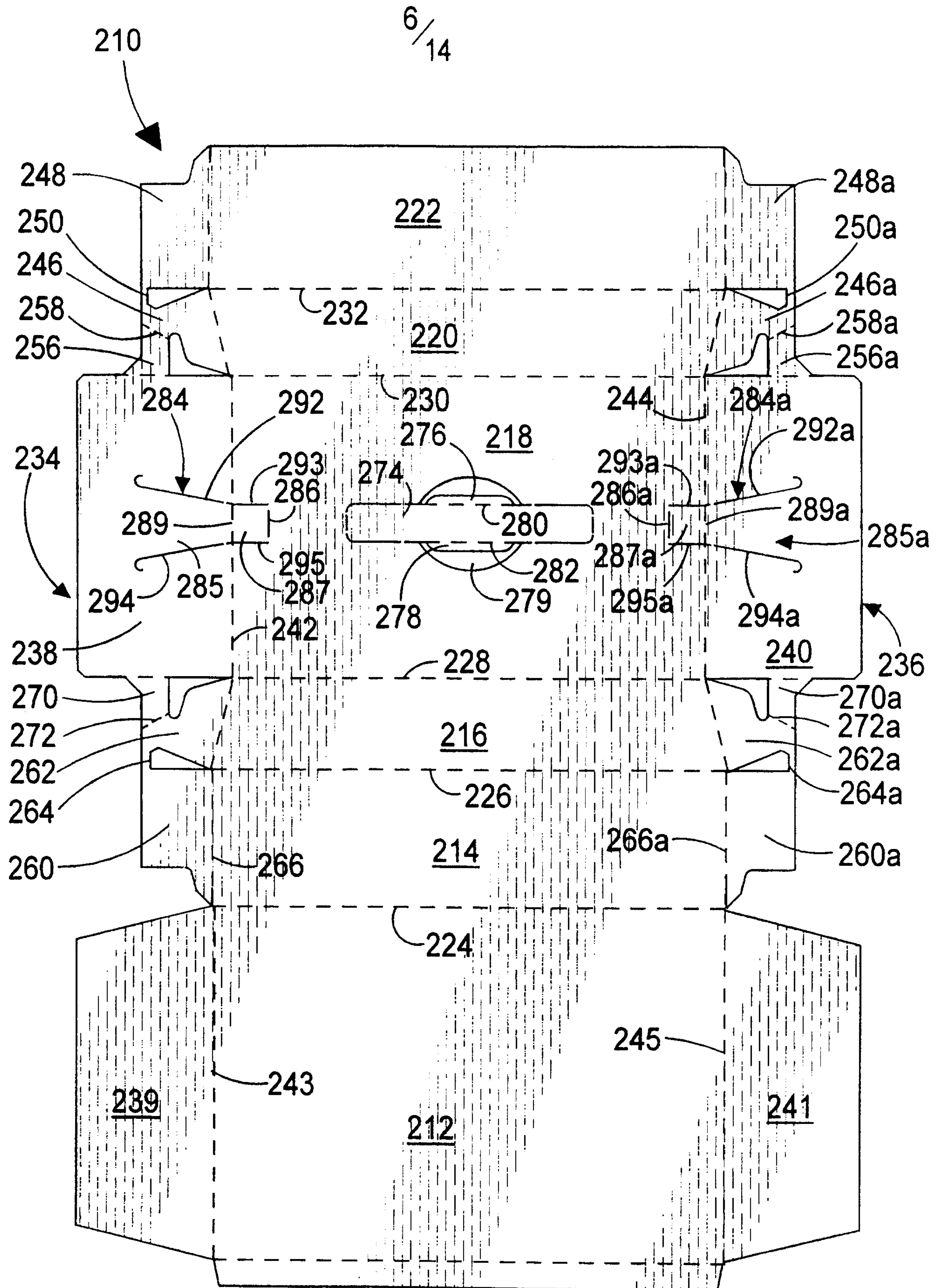


FIGURE 6

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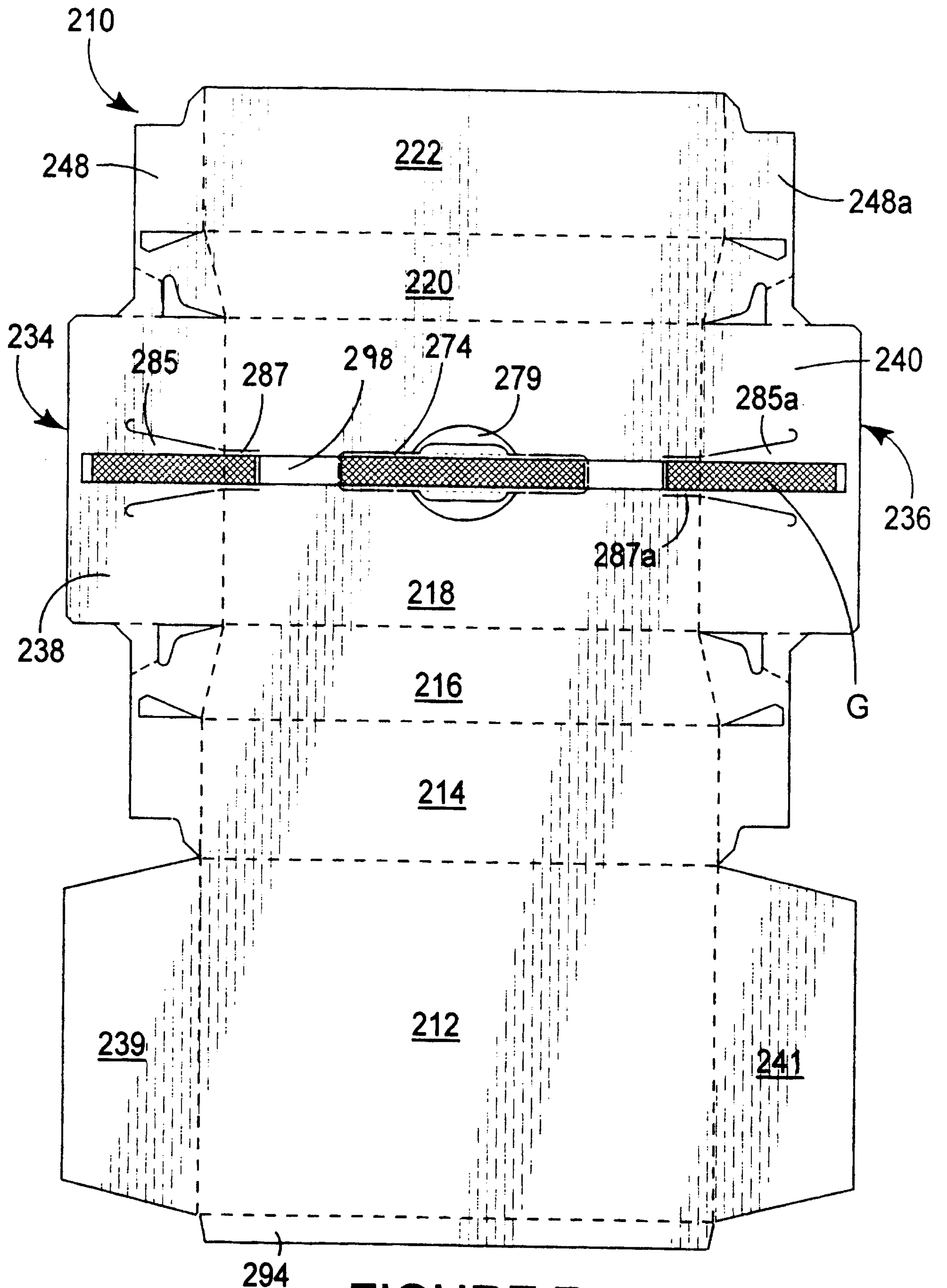


FIGURE 7

8 / 14

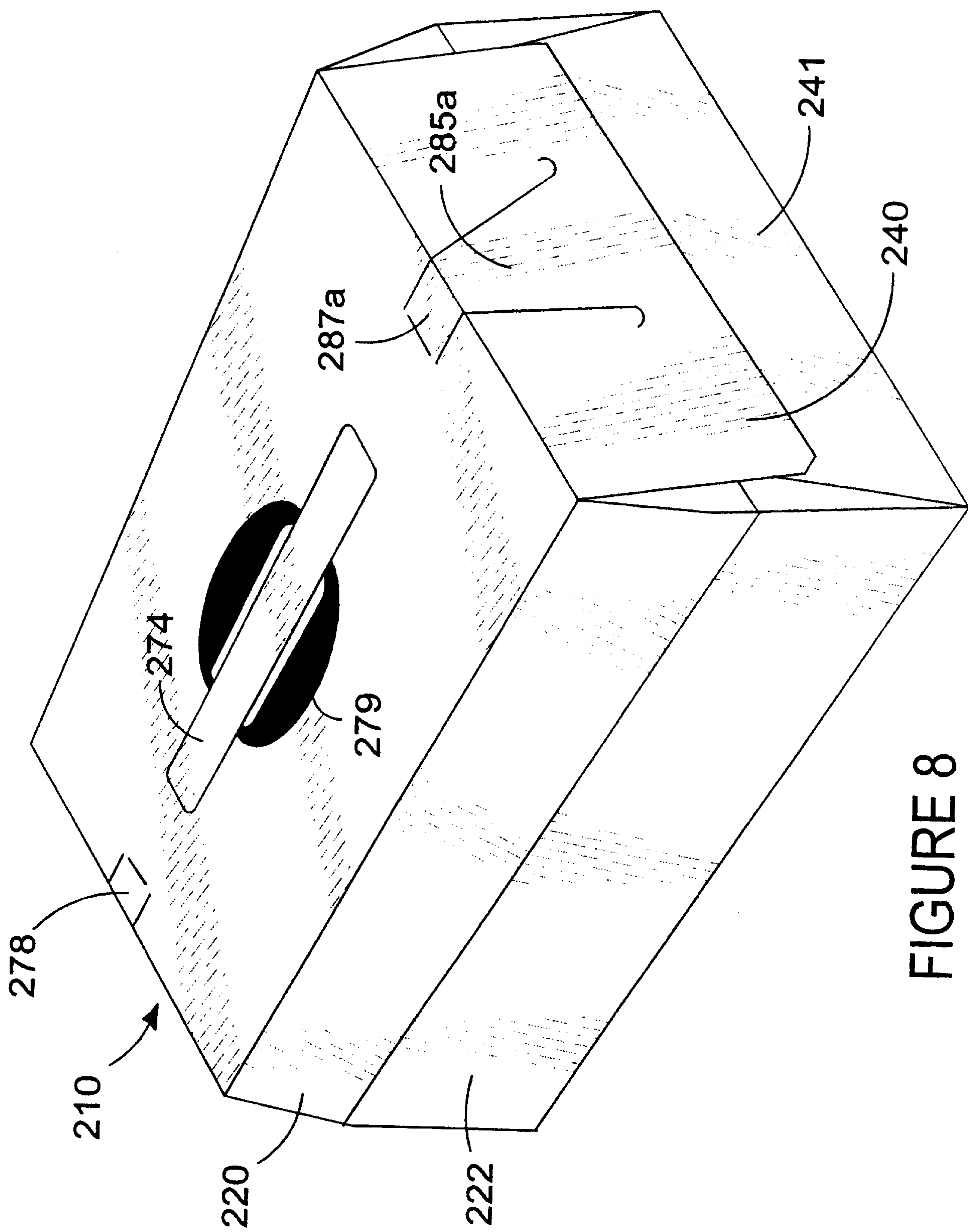


FIGURE 8

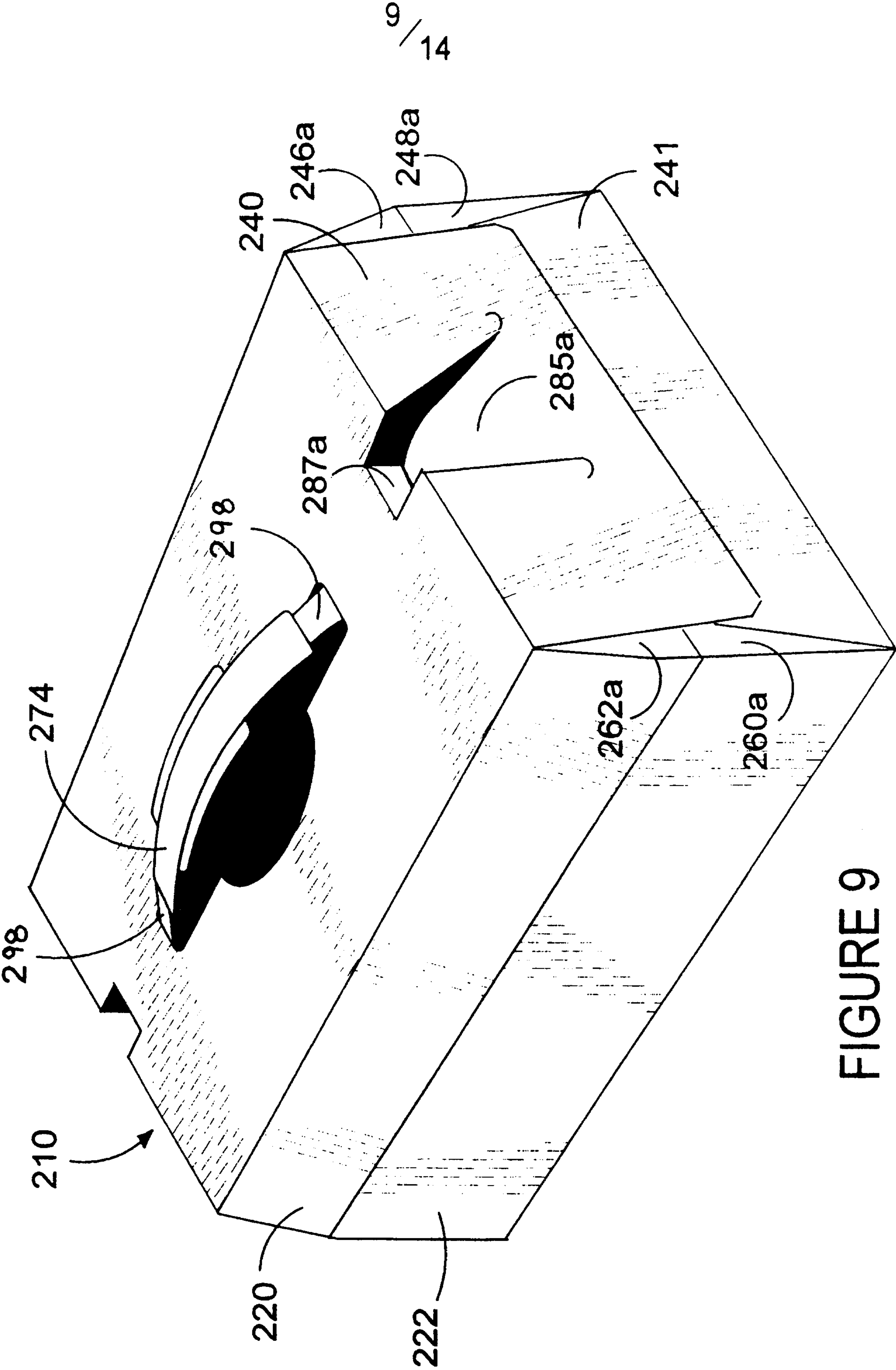


FIGURE 9

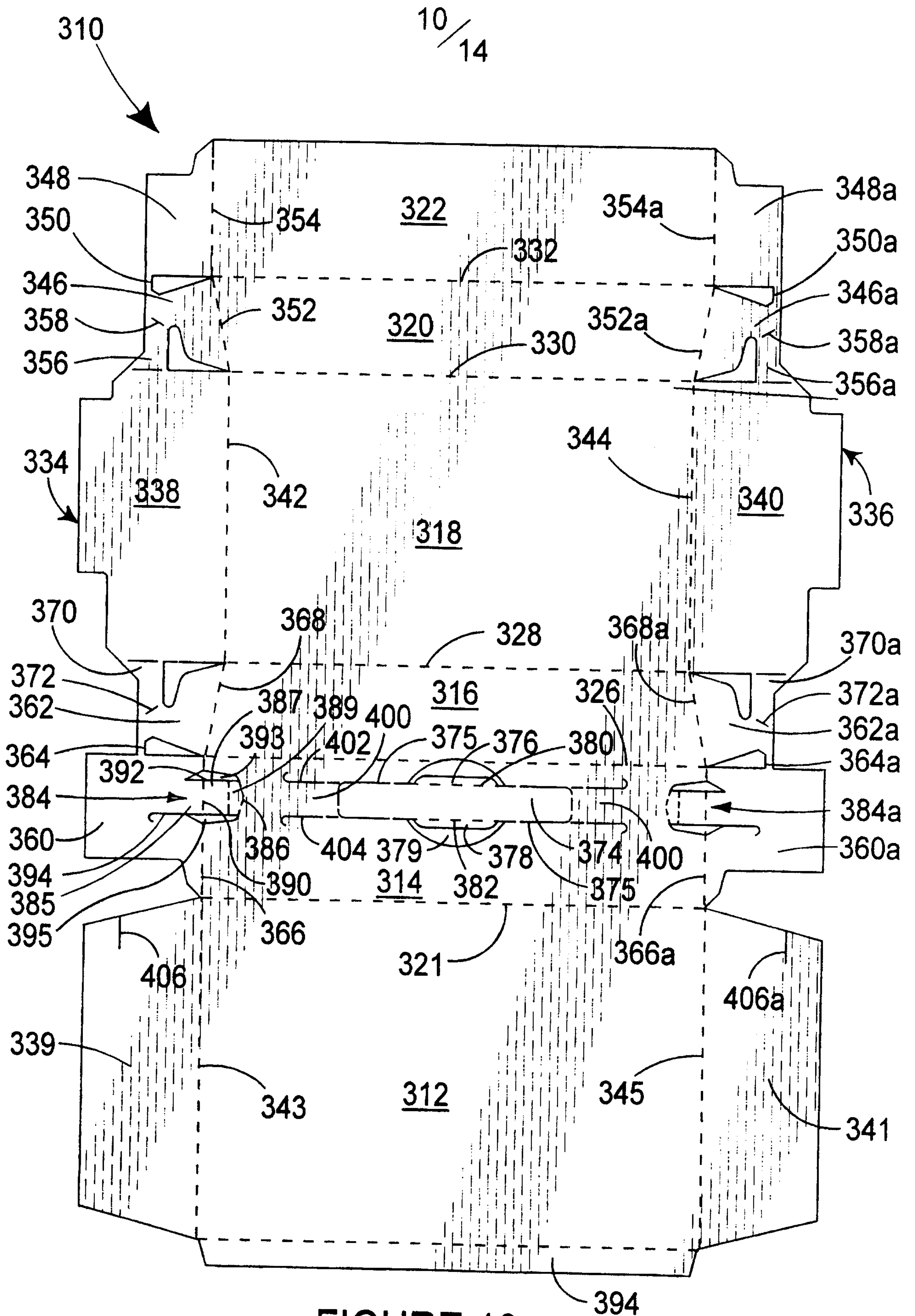


FIGURE 10

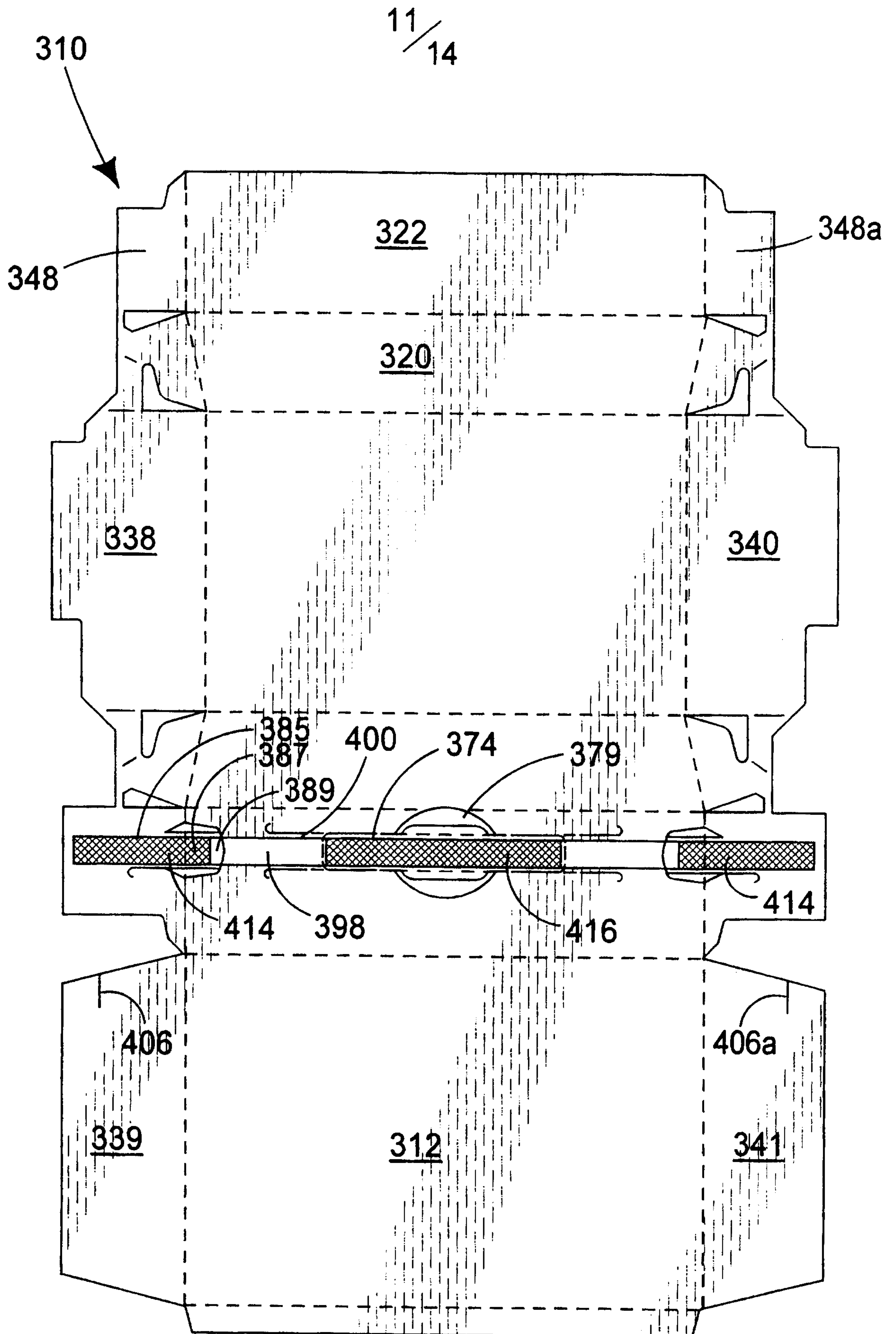


FIGURE 11

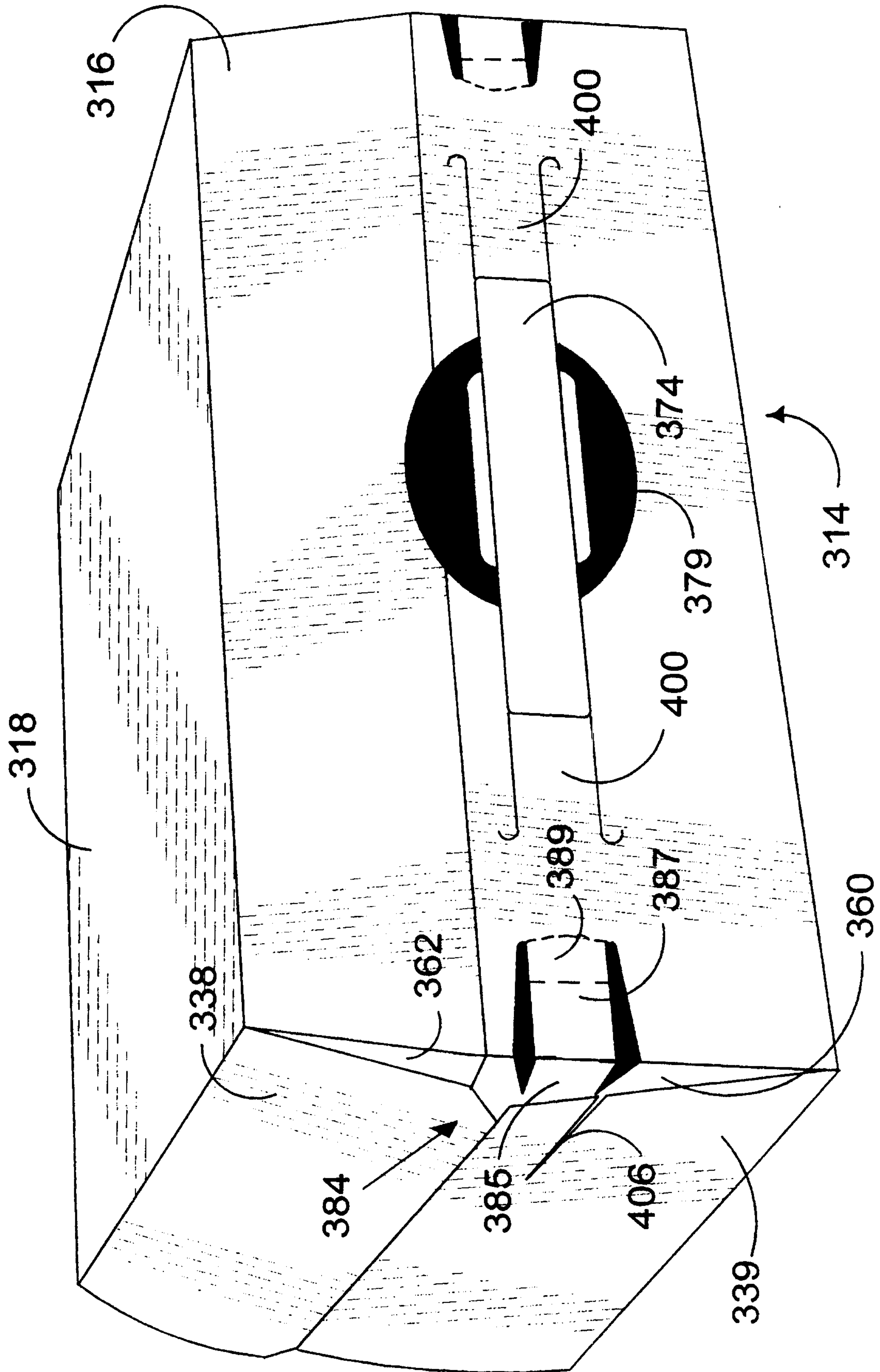
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FIGURE 12

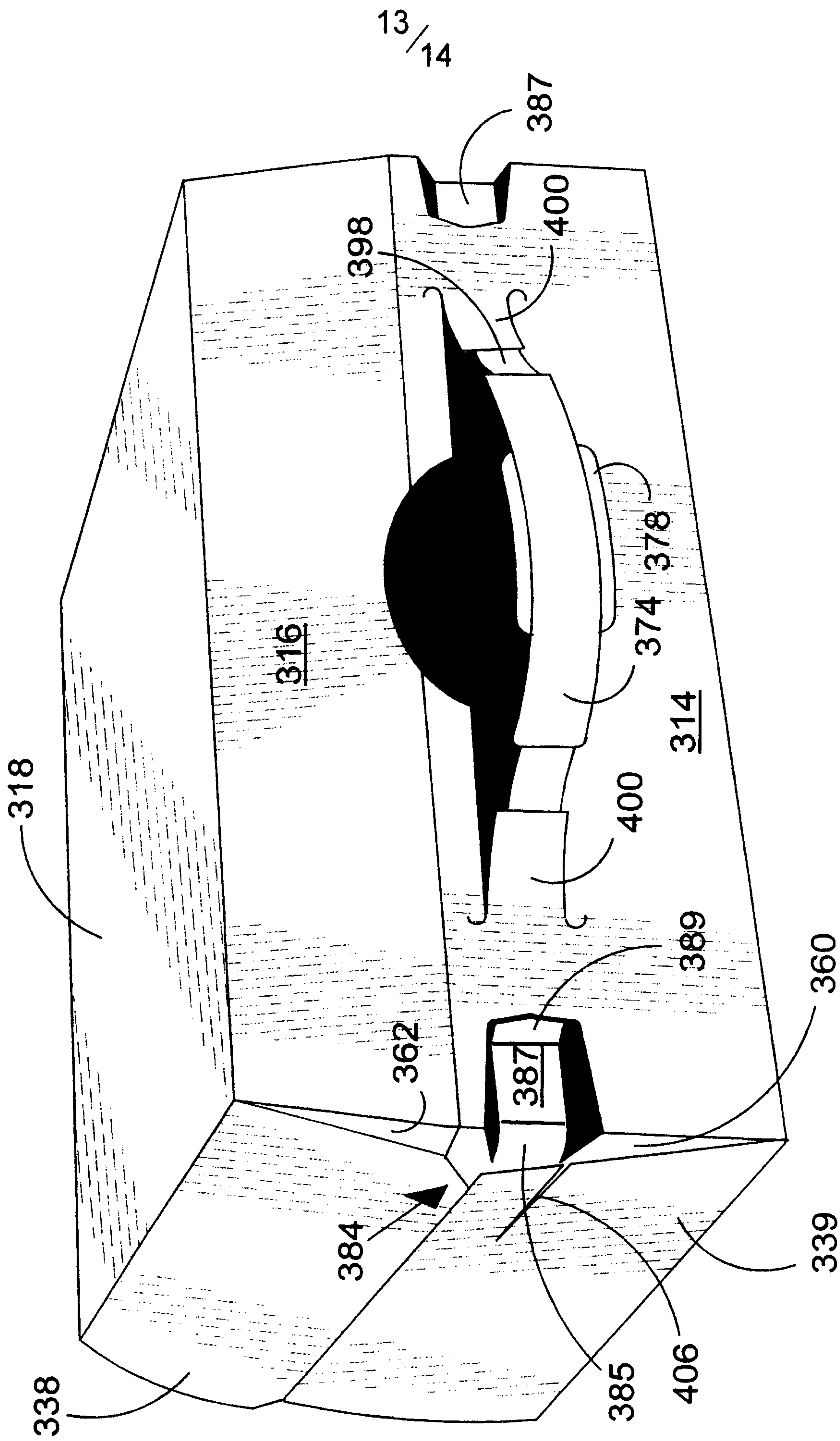


FIGURE 13

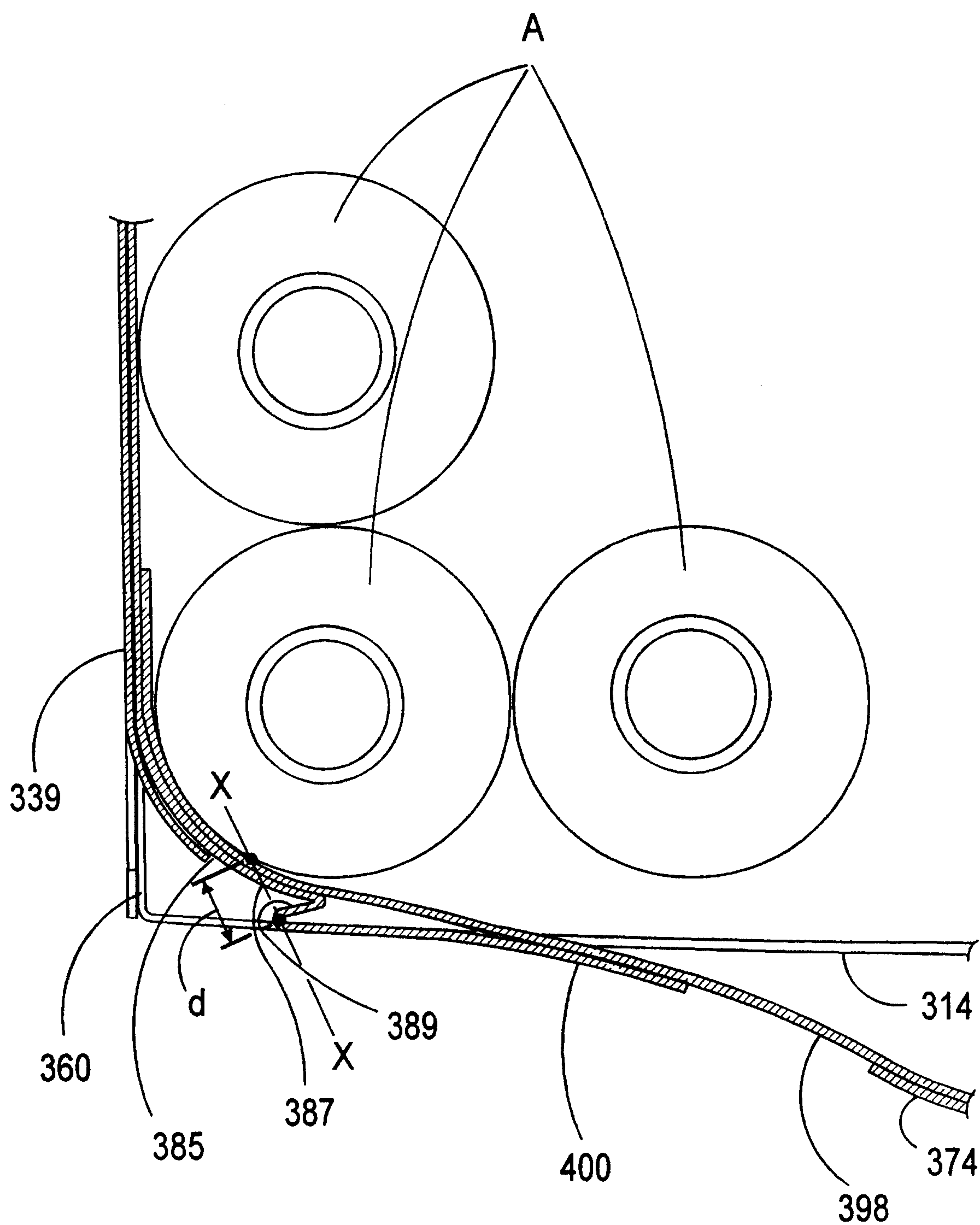
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FIGURE 14

