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(72) Inventeur/Inventor:
SAULAS, ALAIN, FR

(73) Propriétaire/Owner:
MEADWESTVACO PACKAGING SYSTEMS LLC, US

(74) Agent: RIDOUT & MAYBEE LLP

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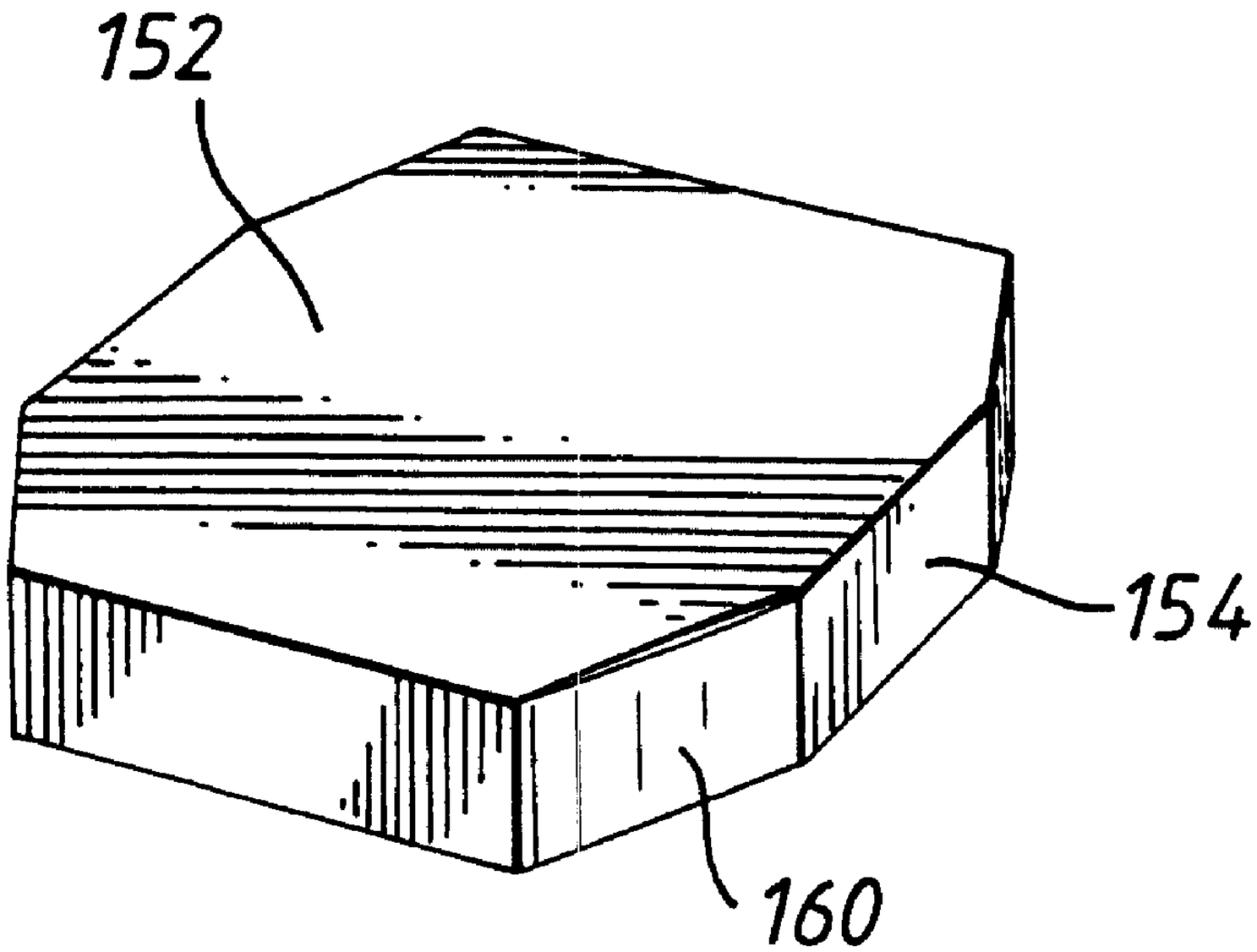

(57) Abrégé/Abstract:
A carton and blank for forming a carton for accommodating a pizza or the like, comprising a top, a base panel, a pair of oppositely disposed side panels interconnecting said top and said base to provide a flat tubular structure and an end closure arrangement to close opposite ends of the carton including at each corner of the carton a corner panel hinged to adjacent side wall and top and base and having means for attachment to further end flaps hinged to said top and bottom panels.

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(71) Applicant *(for all designated States except US)*: THE MEAD CORPORATION [US/US]; Courthouse Plaza, Northeast, Dayton, OH 45463 (US).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: SAULAS, Alain [FR/FR]; 24, rue de la Loutre, F–36000 Chateauroux (FR).

(74) Agents: DREW, Michael, V. et al.; The Mead Corporation, 4850D North Church Lane, Smyrna, GA 30080 (US).

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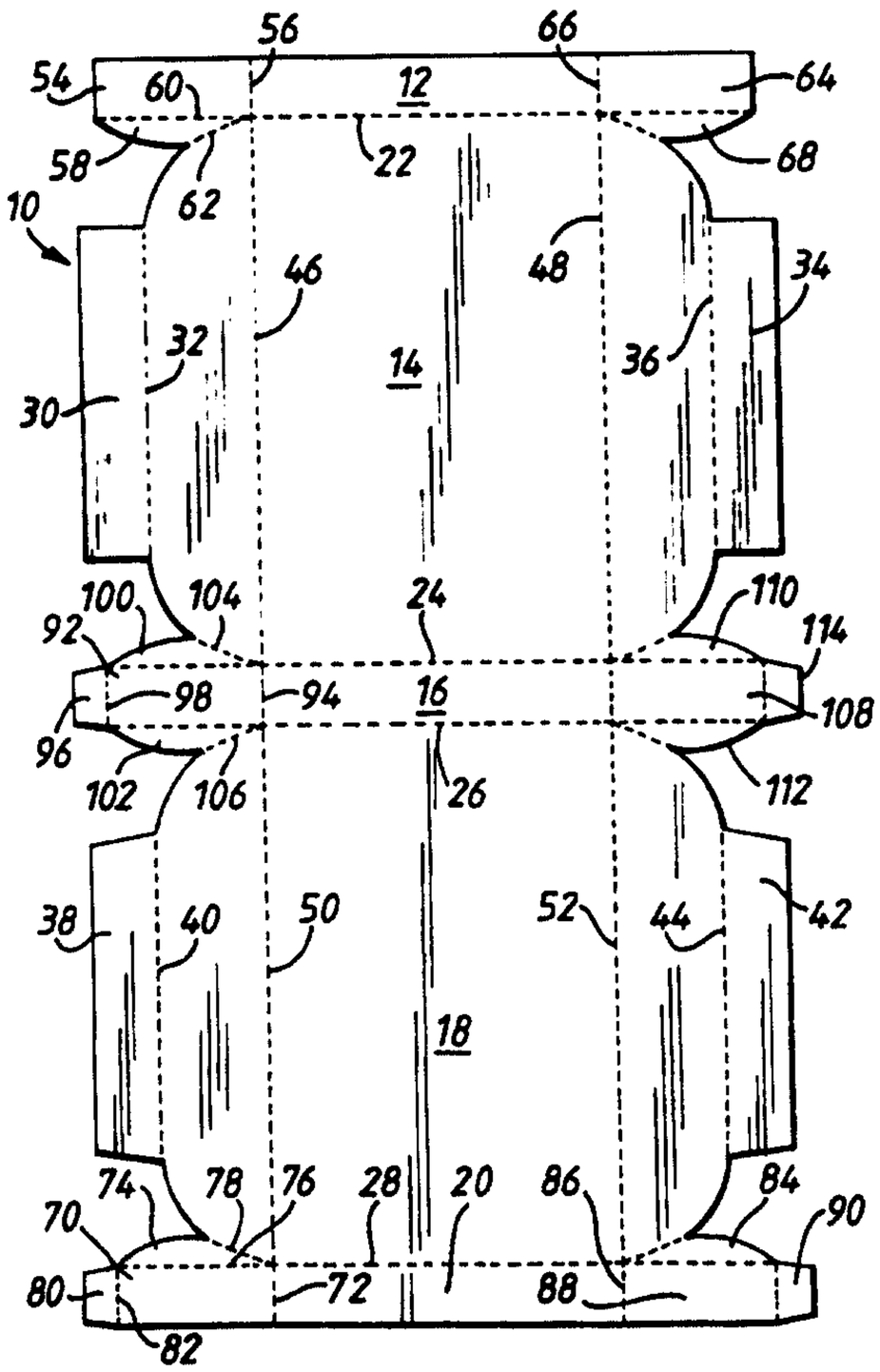
(57) Abstract

A carton and blank for forming a carton for accommodating a pizza or the like, comprising a top, a base panel, a pair of oppositely disposed side panels interconnecting said top and said base to provide a flat tubular structure and an end closure arrangement to close opposite ends of the carton including at each corner of the carton a corner panel hinged to adjacent side wall and top and base and having means for attachment to further end flaps hinged to said top and bottom panels.



SEALABLE CARTON

The invention relates to sealable cartons, and more particularly to sealable cartons having diagonal corner blanks for forming such cartons.

A tray-like shallow carton having angled (or diagonal) corners is a convenient means for packaging many items, particularly generally flat food items such as pizza. One example is illustrated in US 3, 512, 697. The angled corners provide a geometric structure that strengthens the carton by increasing its load bearing capacity. The contents of such a carton are protected from damage that might occur from loads typically placed upon the carton. An example of a typical load is the weight produced when multiple cartons are stacked one upon another for shipping and/or storage. Often, although the angled corner structure is beneficial the resulting geometric configuration results in a substantially open or openable corner structure through which contaminants may enter. What is needed is a diagonally cornered carton whose angled corners inhibit the entrance of contaminants into the carton.

Blanks for forming cartons are made from paperboard or other suitable material. It is highly desirable to minimise the amount of excess carton forming material when such blanks are made. Preferably the blank should be manufactured with a minimum of excess carton forming material.

According to one aspect of the invention, there comprises a top, a base panel, a pair of oppositely disposed side panels interconnecting said top and said base to provide a flat tubular structure and end closure flaps to close opposite ends of the carton wherein at each corner of the carton there is a corner structure comprising a plurality of panels to connect an adjacent side wall to said top, base and said adjacent end closure flap thereby to provide a sealed corner so as to substantially prevent the ingress of contaminants into the carton.

According to one optional feature, said corner panel may be displaced inwardly of said end flaps.

According to another optional feature, the corner structure may comprise a central panel adapted to provide a bevelled corner to said carton and a first gusset panel hinged to said central panel and said top and a second gusset panel hinged to said central panel and said base wherein said first and second gusset panels extend outwardly from said central panel.

According to another optional feature of this aspect of the invention said first and second gusset panels may be juxtaposed the outer corner portions of said top and base respectively.

According to another optional feature of this aspect of the invention, the corner structure may comprise a central panel adapted to provide a bevelled corner to said carton and a gusset panel hinged to said central panel and said top by means of a connecting portion, and a second gusset panel hinged to said central panel and said base by means of a connecting portion wherein said gusset panels extend in an overlapping relationship with said top and said base respectively.

According to a further optional feature of this aspect of the invention the corner structure may comprise a central panel hingeably connected to the top panel, a second corner panel positioned adjacent its bottom panel but separated by a substantially ellipsoid intermediate panel, and a flap hingeably connected to the side panel wherein the first and second corner panels overlap.

According to yet a further optional feature of this aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said carton hingeably connected to the base panel and a pair of gusset panels hingeably

connected along a side edge of the central panel and to one of the end closure flaps of the base panel, and a second pair of gusset panels hingeably connected to the opposing side edges of the central panel and to a side edge of the adjacent side panel interconnecting the top and the base panel.

According to a still further optional feature of this aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said carton hingeably connected to the top panel and a gusset panel hingeably connected to the end flap and a second gusset panel hingeably connected to the adjacent side panel interconnecting the top and base panels, the gusset panels being interconnected to the central panel by connecting portions and wherein the gusset panels are adapted to overlap externally of the corner panel.

A second aspect of the invention provides a blank for forming a flat tubular carton comprising a top panel, a base panel, a pair of oppositely disposed side and end walls hingeably connected to said top panel and/or said base panel and an end closure arrangement wherein at each corner of the blank when erected into a carton, there is a corner structure comprising a plurality of panels to connect an adjacent side wall to said top panel, base panel and said adjacent end closure flap thereby to provide a sealed corner of the blank when erected to form a carton so as to substantially prevent the ingress of contaminants into the carton.

According to an optional feature of the second aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said blank when erected to form a carton and a gusset panel hinged to said central panel and said top and a second gusset panel hinged to said central panel and said base panel.

According to another optional feature of the second aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said blank when erected to form a carton and a gusset panel hinged to said central panel and said top by means of a connecting portion, and a second gusset panel hinged to said central panel and said base panel by means of a connecting portion.

According to a further optional feature of the second aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said blank when erected to form a carton hingeably connected to the top panel, a second corner panel positioned adjacent the base panel but separated by a substantially ellipsoid intermediate panel, and a flap hingeably connected to the adjacent side panel.

According to yet another optional feature of the second aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said blank when erected to form a carton hingeably connected to the base panel and a pair of gusset panels hingeably connected along a side edge of the central panel and to one of the end closure flaps of the base panel, and a second pair of gusset panels hingeably connected to the opposing side edges of the central panel and to a side edge of the adjacent side panel interconnecting the top and the base panel.

According to a still further optional feature of the second aspect of the invention the corner structure may comprise a central panel adapted to provide a bevelled corner to said blank when erected to form a carton hingeably connected to the top panel and a gusset panel hingeably connected to the top panel and a second gusset panel hingeably connected to the side panel interconnecting the top and base panels, the gusset panels being interconnected to the central panel by connecting portions.

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 a blank for forming a sealable carton according to a preferred embodiment of the invention;

FIGURE 2 is an isometric illustration of a carton fully closed and sealed;

FIGURE 3 is a plan view of a blank for forming a sealable container according to a second preferred embodiment of the invention;

FIGURE 4 is an isometric illustration of a carton erected from a blank of Figure 3 fully closed and sealed;

FIGURE 5 is a plan view of a blank for forming a sealable carton according to a third preferred embodiment of the invention;

FIGURE 6 is an isometric illustration of a carton erected from a blank of Figure 5 fully closed and sealed;

FIGURE 7 is a plan view of a blank for forming a sealable carton according to a fourth embodiment of the invention;

FIGURE 8 is an isometric illustration of a carton erected from a blank of Figure 7 fully closed and sealed;

FIGURE 9 is a plan view of a blank for forming a sealable carton according to a fifth embodiment of the invention; and

FIGURE 10 is an isometric illustration of a carton erected from a blank of Figure 9 fully closed and sealed.

Referring first to Figure 1, there is illustrated a blank 10 for forming a sealable carton according to a preferred embodiment of the invention. The carton blank is made from paperboard or other similar foldable sheet material. The blank comprises a first side panel 12, a top panel 14, a second side panel 16, a base panel 18, an

outer side panel 20 hingeably connected one to the next along fold lines 22,24,26,28 respectively.

An end flap 30 is hingeably connected to a side edge of top panel 14 along fold line 32. A second end flap 34 is hingeably connected to the opposing side edge of top panel 14 along fold line 36. Likewise, an end flap 38 is hingeably connected to a side edge of base panel 18 along fold line 40. A second end flap 42 is hingeably connected to the opposing side edge of base panel 18 along fold line 44.

Top panel 14 and base panel 18 include a pair of fold lines 46,48;50,52 extending longitudinally between side panel 12, side panel 16 and side panel 16, side panel 20 respectively.

A corner panel 54 is hingeably connected to a side edge of side panel 12 along fold line 56. Corner panel 54, is hingeably connected to gusset panel 58 along lateral fold line 60, which in this embodiment is an extension of fold line 22. Gusset panel 58 is substantially arcuate in shape and is hingeably connected to top panel 14 along fold line 62. Fold line 62 extends outwardly from the intersection of fold lines 56 and 60, to the intersection of the free edges of top panel 14 and gusset panel 58.

Similarly, a second corner panel 64 is hingeably connected to the opposing side edge of side panel 12 along fold line 66. A second gusset panel 68 hingeably connects corner panel 64 and top panel 14. Corner panel 64 and gusset panel 68 are in symmetrically opposite positions to corner panel 54 and gusset panel 58 and are of similar construction and not therefore more specifically described.

A corner panel 70 is hingeably connected to a side edge of outer side panel 20 along fold line 72. Corner panel 70, is hingeably connected to gusset panel 74 along lateral fold line 76, which in this embodiment is an extension of fold line 28. Gusset panel 74 is substantially arcuate in shape, being hingeably connected to base panel 18 along fold line 78. Fold line 78 extends outwardly from the intersection of fold lines 28 and 72, to the intersection of the free edges of base panel 18 and gusset panel 74.

Similarly, a second corner panel 88 is hingeably connected to the opposing side edge of side panel 20 along fold line 86. A second gusset panel 84 hingeably connects corner panel 88 and base panel 18. Corner panel 88 and gusset panel 86 are in symmetrically opposite positions to corner panel 70 and gusset panel 74 and are of similar construction and not therefore more specifically described.

As shown in Figure 1, a pair of corner panels 92,108 is struck from opposing side edges of the side panel 16. In particular, corner panel 92 is hingeably connected to a side edge of side panel 16 along fold line 94. Fold line 44 extends longitudinally between fold line 46 and fold line 50. A glue flap 96 is hingeably connected along the opposing side edge of corner panel 92 along fold line 98. Gusset panels 100 and 102 are hingeably connected to opposing upper and lower edges of corner panel 92 by fold lines 101,103 respectively. Fold lines 101 and 103 are lateral extensions of fold lines 24 and 26 respectively.

Gusset panel 100 is substantially arcuate in shape and is hingeably connected to top panel 14 along fold line 104. Fold line 104 extends outwardly from the intersection of fold lines 94 and 24, to the intersection of the free edges of top panel 14 and gusset panel 100.

Likewise, gusset panel 102 is substantially arcuate in structure and hingeably connected to base panel 18 along fold line 106. Fold line 106 extends outwardly from the intersection of fold lines 94 and 26, to the intersection of the free edges of base panel 18 and gusset panel 102.

Likewise, the opposing side edge of side panel 16 is hingeably connected to a corner panel 108 which also comprises a pair of gusset panels 110 and 112 and a glue flap 114. The aforementioned panels are in symmetrically opposite positions to corner panel 92, gusset panels 100,102 and glue flap 96 and are of similar construction and not therefore more specifically described.

Turning to the construction of the carrier, illustrated in Figure 2, side panel 12 is folded about fold line 22 and into substantially perpendicular relationship with top panel 14, thereby folding corner panels 54 and 64 into substantially perpendicular relationship with gusset panels 58 and 68 respectively. Top panel 14 and base panel 18 are folded into a spaced face to face relationship. More specifically, side panel 16 is folded into substantially perpendicular relationship with top panel 14 and base panel 18 about fold lines 24 and 26 respectively such that top panel 14 and base panel 18 are aligned but separated by side panels 12 and 16.

Central panels 92 and 108 are in a perpendicular relationship with respective pairs of gusset panels 100,102 and 110,112. Outer side panel 20 is folded about fold line 28 into substantially perpendicular relationship with base panel 18 and into a face to face relationship with side panel 12. It will be appreciated by those skilled in the art that panels 12 and 20 can be interchanged so that, for example panel 12 could form the outer side panel, according to particular manufacturing requirements.

Side panels 12 and 20 and, preferably, corner panels 54,70 and 64,88 are secured together by glue or other means known in the art thereby forming a flat tubular structure.

The carrier is in a part erected condition and is able to receive flat food items, for example a pizza, from either end of the carton. The pizza is inserted from one side and to avoid the pizza being caught on either the base or top panel, part of the top panel 14 and bottom panel 18 are temporarily folded out of alignment with the rest of aforesaid panels about fold lines 46 and 50 or, depending on the point of entry of the pizza, fold lines 48 and 52. The temporary folds 46,48;50,52 also provide flexibility to the top and base panels when constructing the corner structures.

Once the flat food item has been placed within the carton, the corner structures are then formed. Corner panel 92, is folded in an inward direction about fold line 94 such that gusset panels 100 and 102 are also folded out of alignment. More particularly, gusset panel 100 is folded about fold line 104 and into a face to face relationship with top panel 14 such that a substantially perpendicular relationship is formed with corner panel 92 about fold line 101. Likewise gusset panel 102 is folded about fold line 106 and into a substantially face to face relationship with base panel 18 such that a substantially perpendicular relationship is formed with corner panel 92 about fold line 103.

Likewise, corner panels 70,54 are folded inwardly such that gusset panels 74 and 58 are folded in substantially the same way as gusset panels 100 and 102 described above. Thereafter glue flaps 80,96 are folded into an angular relationship with corner panels 92 and 70 respectively and end flaps 30 and 38 are folded about fold

lines 32 and 40 and into a perpendicular relationship with top panel 14 and base panel 18 respectively. End flaps 30 and 38 are connected together by glue or other means known in the art and connected to glue flaps 80 and 96 by glue or other means known in the art. An end structure E is thereby formed, as illustrated in Figure 2.

The opposing end structure incorporating corner panels 88,64 and 108 and end flaps 34,42 is constructed in a similar way to corner panels 54,70 and 92 and end flaps 30,38 and are therefore not described in any greater detail. Thus, the carton is in its completed form illustrated in Figure 2.

Turning to the second embodiment illustrated in Figures 3 and 4, the blank is substantially similar to the embodiment illustrated in Figures 1 and 2 with side panels 150,154,158, top and base panels 152,156 and end flaps and therefore only the differences are described in any greater detail. In this embodiment, the corner structures comprise a corner panel 160 hingeably connected to side panel 154 about fold line 162. A gusset panel 164 is hingeably connected to the upper edge of corner panel 160 along fold line 166. Gusset panel 164 is connected to top panel 152 by means of a connecting portion 168 which is hingeably connected to gusset panel 164 along fold line 170 and is hingeably connected to top panel 152 along fold line 172. Gusset panel 164 is positioned adjacent to top panel 152 but separated therefrom by cut line 174 which extends from the inner edge of fold line 172 to the intersection of fold lines 162 and 166.

Likewise, a gusset panel 176 is hingeably connected to the lower edge of corner panel 160 along fold line 178. Gusset panel 176 is connected to base panel 156 by means of a connecting portion 180 which is hingeably connected to gusset panel 176 along fold line 182 and is hingeably

connected to base panel 156 along fold line 184. Gusset panel 176 is positioned adjacent to base panel 156 but separated therefrom by cut line 186 which extends from the inner edge of fold line 184 to the intersection of fold lines 162 and 178.

The other corner structures are formed in substantially the same way as corner panel 160 and gusset panels 164,176 and are therefore not described in any greater detail.

The construction of the corner structure is carried out after the carton is partly erected into a flat tubular structure as described earlier. The corner structure is formed by folding corner panel 160 inwardly towards the adjacent end flaps by folding corner portions 168 and 180 about fold lines 172,170 and 184,182 respectively such that corner portion 168 is in a face to face relationship with top panel 152 and corner portion 180 is in a face to face relationship with base panel 156. Gusset panels 164 and 176 are folded out of alignment and into substantially perpendicular relationship with corner panel 160 such that corner portion 168 forms a face to face relationship with gusset panel 164 and corner portion 180 forms a face to face relationship with gusset panel 176. Preferably, gusset panel 164 is secured to top panel 152 by glue or other means known in the art. Likewise, gusset panel 176 is preferably secured to base panel 156 by glue or other means known in the art. The other corner structures are constructed in the same way, as understood by those skilled in the art, and the end flaps secure together to form the carton in its completed sealed form as illustrated in Figure 4.

Turning to the third embodiment illustrated in Figures 5 and 6, the blank is substantially similar to the embodiment illustrated in Figures 1 and 2 comprises side

panels, top and base panels and end flaps and therefore only the differences are described in any detail. In this embodiment an octagonal structure is formed. A first corner structure comprises a pair of corner panels 210,202 hingeably connected to respective ones of top panel and base panel. Corner panel 202 is positioned adjacent to its top panel but is separated by an ellipsoidal intermediate panel 204 hingeably connected to a top panel along fold line 206 and to corner panel along fold line 208. A glue flap 210 is hingeably connected to the adjacent side panel. Other corner structures are identical to the corner structure described above and are therefore not described in any greater detail.

The construction of the corner structure is carried out after the carton is partly erected into a flat tubular structure as described earlier. The corner structure is formed by folding corner panel 200 into a substantially perpendicular relationship with base panel and by folding corner panel 202 about fold line 208 and intermediate panel about fold line 206 with top panel such that a substantially perpendicular relationship is formed between corner panel 202 and the top panel. The corner panels 200 and 202 are placed into an overlapping relationship and connected together by glue or other means known in the art. The corner structure is connected to the side panel by glue flap 210. The other corner structures are constructed in the same way, as understood by those skilled in the art so that the carton is in its completed sealed form, as illustrated in Figure 6.

Turning to the construction of the fourth embodiment illustrated in Figures 7 and 8 and the fifth embodiment illustrated in Figures 9 and 10, the blanks are substantially similar to the embodiments illustrated above comprising side walls, top and base panels and end flaps

and therefore only the differences in each embodiment are described in any great detail.

In the fourth embodiment shown in Figure 7, a corner panel 300 is hingeably connected to base panel along fold line 302. A pair of gusset panels 304,306 are hingeably connected along a side edge of corner panel 300 and to an end flap of the base panel. Likewise, a pair of gusset panels 308 and 310 are hingeably connected to the opposing side edge of corner panel 300 and to a side edge of side panel interconnecting the top panel and base panel.

In the fifth embodiment shown in Figure 9, a corner panel 400 is hingeably connected to the top panel along fold line 402. A gusset panel 404 is hingeably connected to an end flap being connected to the top panel. Gusset panel 404 is substantially triangular in shape. A second gusset panel 406 is hingeably connected to a side panel interconnecting the top and base panels. The shape of the gusset panels can be altered to provide overlapping arrangement depending upon manufacturing requirements. The corner panel 400 is hingeably connected to gusset panel 404 by connecting portion 408. Likewise, corner panel 400 is hingeably connected to gusset panel 406 by connected portion 410. The other corner structures of each embodiment are formed in substantially the same way and are not therefore described in any greater detail.

The construction of the corner structure of the fourth and fifth embodiments are carried out after the carton is partly erected into a flat tubular structure as described earlier.

The corner structure in the fourth embodiment illustrated in Figure 7 and 8, is formed by folding the pair of gusset panels 304,306 into a face to face relationship with each other and the pair of gusset panels

308 and 310 into face to face relationship such that the upper edge of corner panel 300 comes into contact with the free edge 312 of the top panel and are connected together by means of a glue flap 314. It will be appreciated by those skilled in the art that the end flaps from the top panel and base panel respectively are thus placed in an overlapping relationship and can be connected together. Optionally, the gusset panels can be secured to the side wall or end flap to provide a sealed carrier, as illustrated in Figure 8.

Turning to the construction of the corner structure of the fifth embodiment the connecting portion 408 is folded into an overlapping face to face relationship with corner panel 400 and gusset panel 404. Likewise, connecting portion 410 is folded into an overlapping face to face relationship with corner panel 400 and gusset panel 406. Preferably, the corner panel 400 and gusset panels 404,406 are secured together by glue or other means known in the art. Gusset panel 404 is connected to base panel by means of glue flap 412. The other corner structures are constructed in the same way and the end flaps secured together by glue or other means known in the art to provide a sealed carrier as illustrated in Figure 10.

Of course, the construction of the corner structures of any of the embodiments can be carried out at substantially the same time or, if preferred, one end can be constructed prior to inserting the pizza. In addition, the shape of the corner panels and gusset panels can be adapted according to the desired final shape of carton. Preferably the gusset panels are secured in a face-to-face relationship with top panel, base panel or, as the case may be, side panel to provide a fully sealed unit. The corner panels are intended to be load bearing so that cartons can be stacked. By positioning the corner panels

closer to the notional centre point C of the carton, shown in Figure 2, a stronger carton, capable of supporting a greater load, can be provided.

The present invention and its preferred embodiments relate to a flat tubular structure which is shaped to provide a satisfactory rigidity to hold items such as a pizza securely but with a degree of flexibility so that the load transferred from stacked cartons can be better absorbed by the carrier. The shape of the blank minimises the amount of paperboard required in each embodiment. The items can be applied to the carrier by hand or by automatic machinery. It is anticipated that the invention can be applied to a variety of carriers and not limited to those of the flat tubular sort.

CLAIMS:

1. A blank for forming a flat tubular carton, comprising a plurality of panels for forming outer walls of the carton including a top, a base, a pair of oppositely disposed side walls interconnecting said top and said base to provide a flat tubular structure and end flaps to close opposite ends of the carton wherein at a corner of the carton, there is a corner structure comprising plurality of panels to connect a first wall panel of the outer wall to adjacent wall panels, the corner structure comprises a corner panel hingedly connected to the first wall panel and adapted to provide a bevelled corner and a first gusset panel hingedly connected to said corner panel and a first adjacent wall panel of said first wall panel by means of a first connecting portion, and a second gusset panel hinged to said corner panel and a second adjacent wall panel of said first wall panel by means of a second connecting portion characterized in that a portion of said first gusset panel is positioned adjacent said first adjacent wall panel and separated therefrom by a first cut line, and a portion of said second gusset panel is positioned adjacent said second adjacent wall panel and separated therefrom by a second cut line and in that each portion of said first and second gusset panels extends inwardly in a substantially face contacting relationship with the respective first and second adjacent wall panels in a set up condition.

2. A blank as claimed in claim 1 wherein said first and second gusset panels extend in an overlapping relationship with the respective connecting portion in a set up condition.

3. A blank as claimed in claim 1 or claim 2 wherein the first adjacent wall panel is a panel for forming said base, the second adjacent wall panel is a panel for forming said top and the first wall panel is a panel for forming one of said opposed side walls interconnecting said top and said base.

RIDOUT & MAYBEE LLP
Toronto, Canada
Patent Agents

FIG. 1

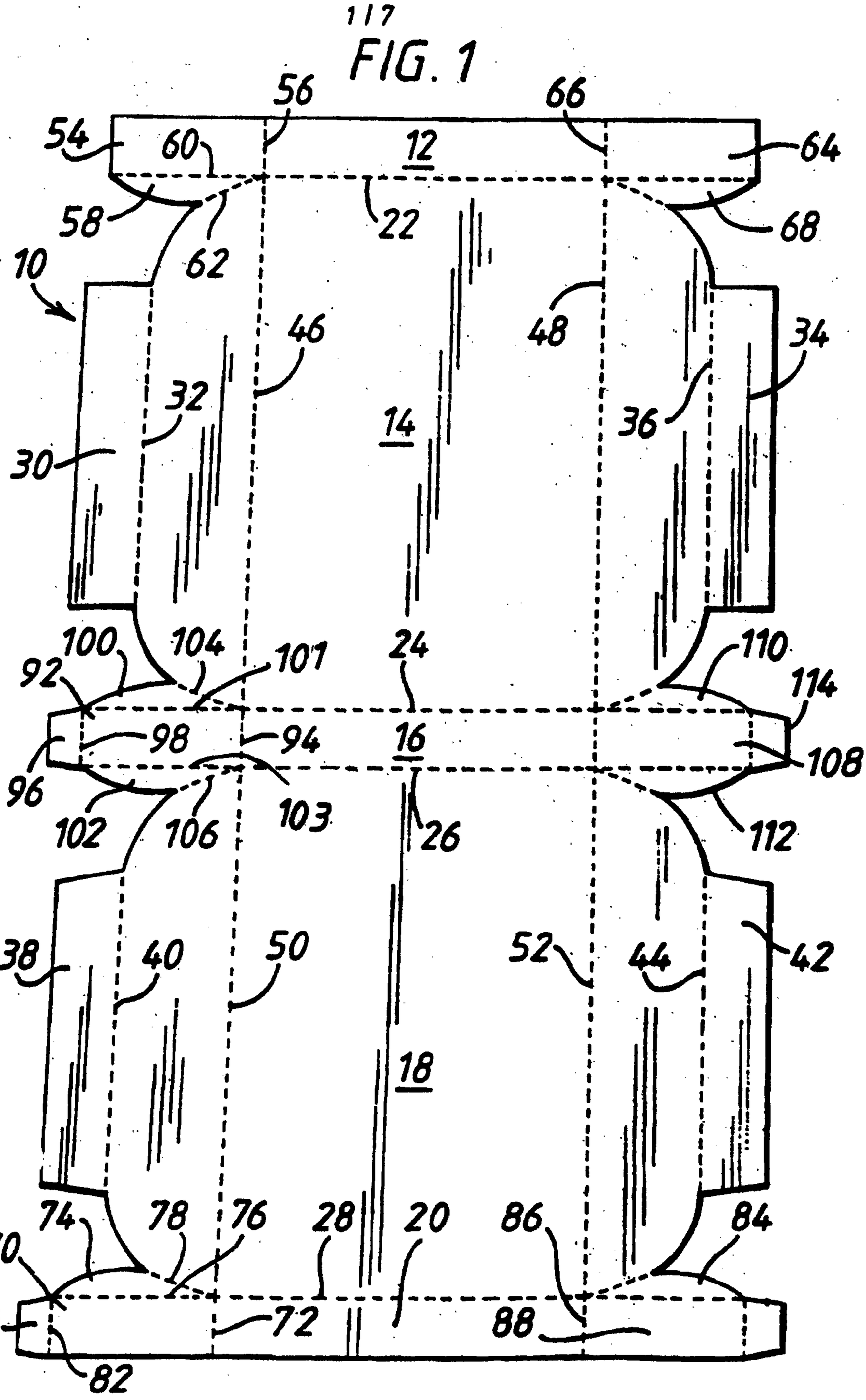

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FIG. 2

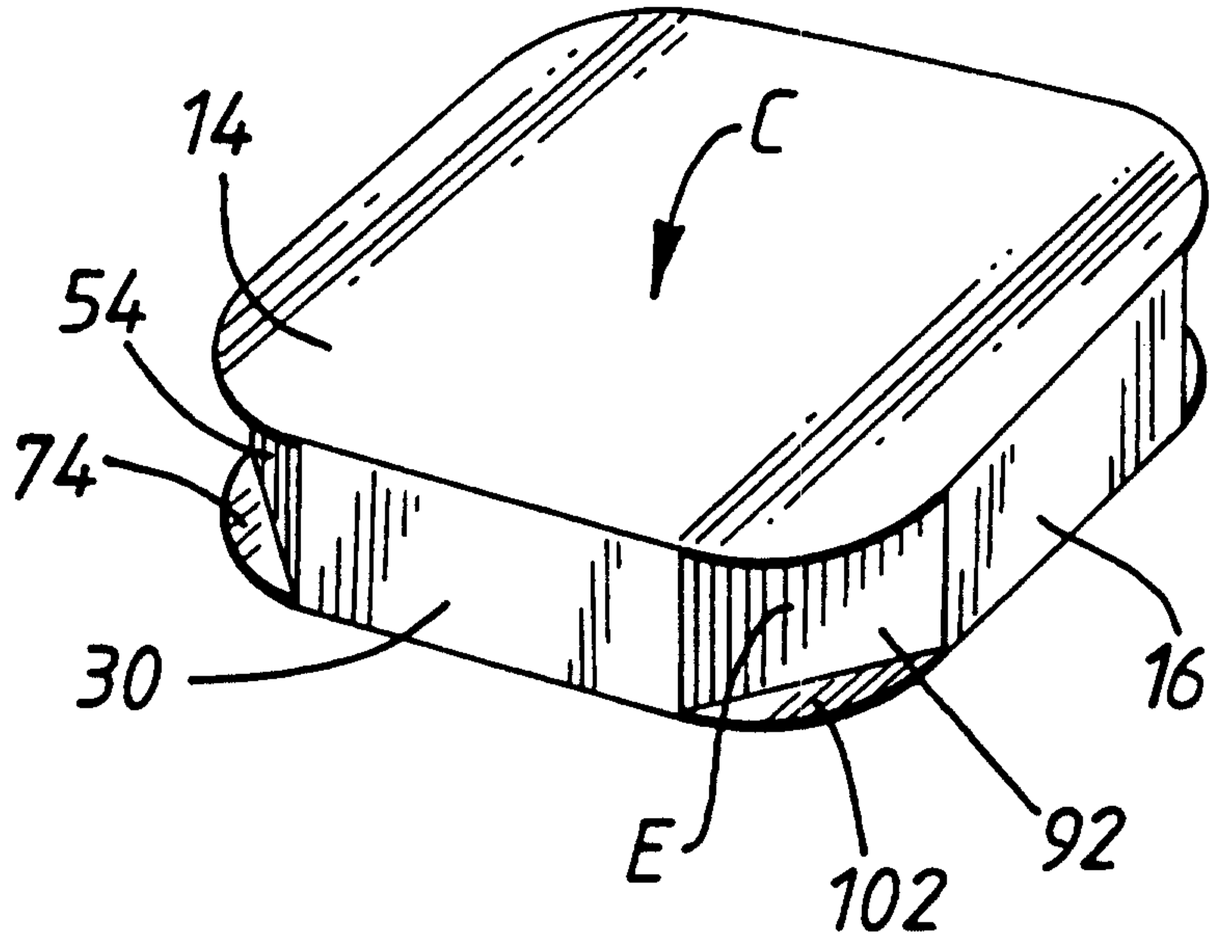

FIG. 4

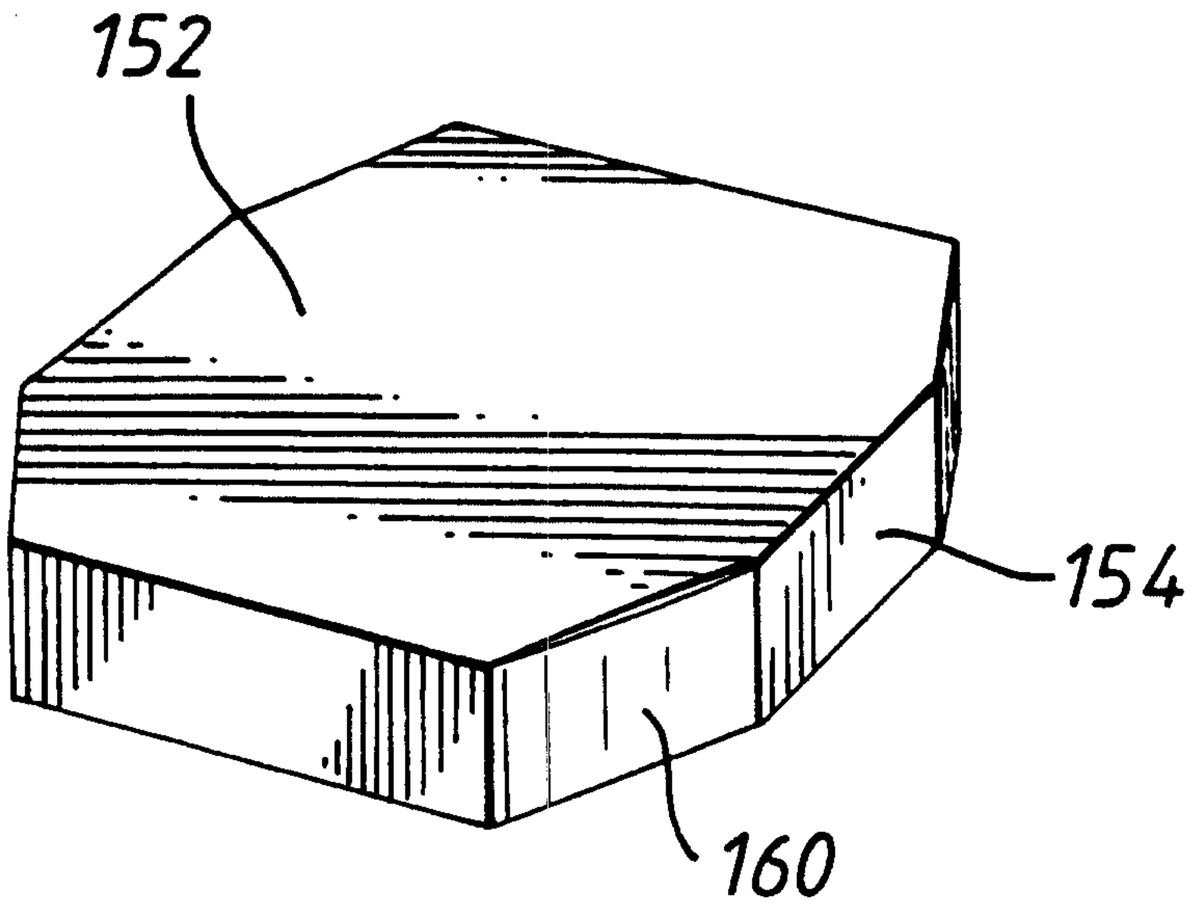

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FIG. 3

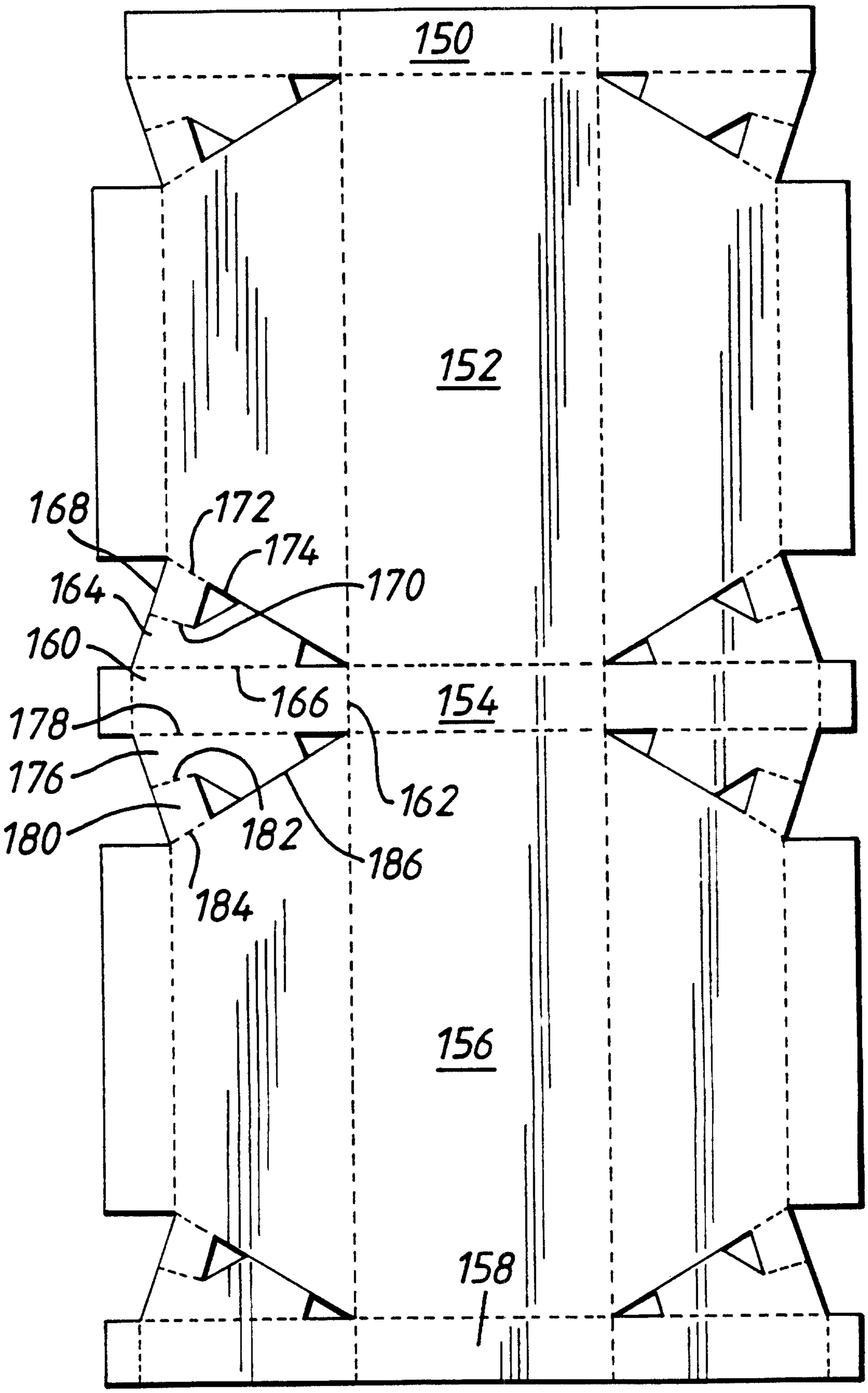
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FIG. 5

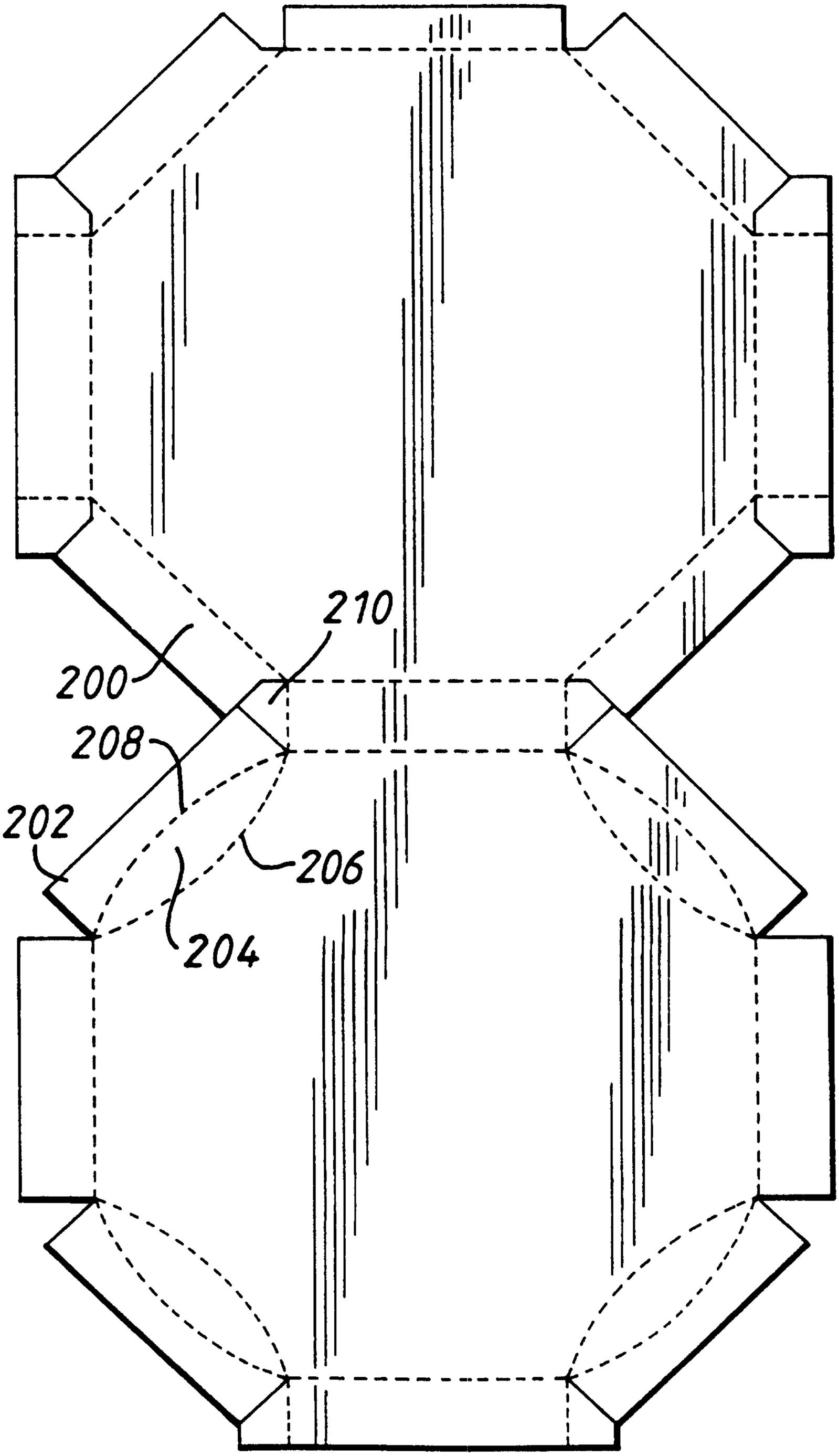

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FIG. 6

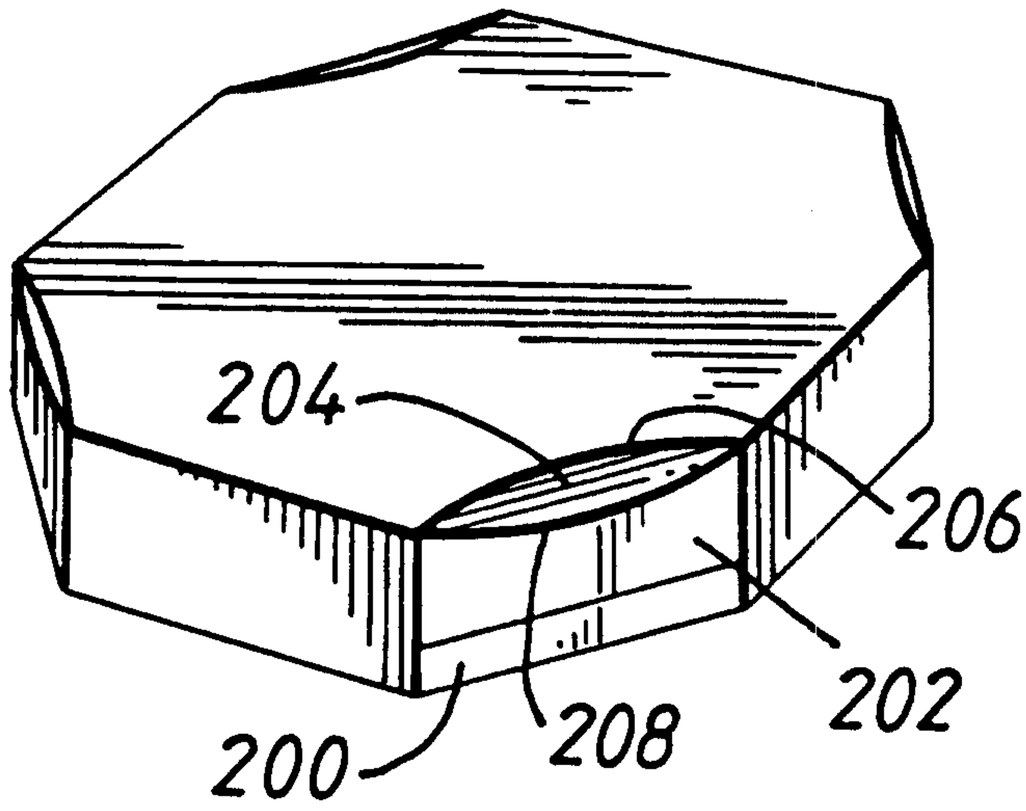

FIG. 8

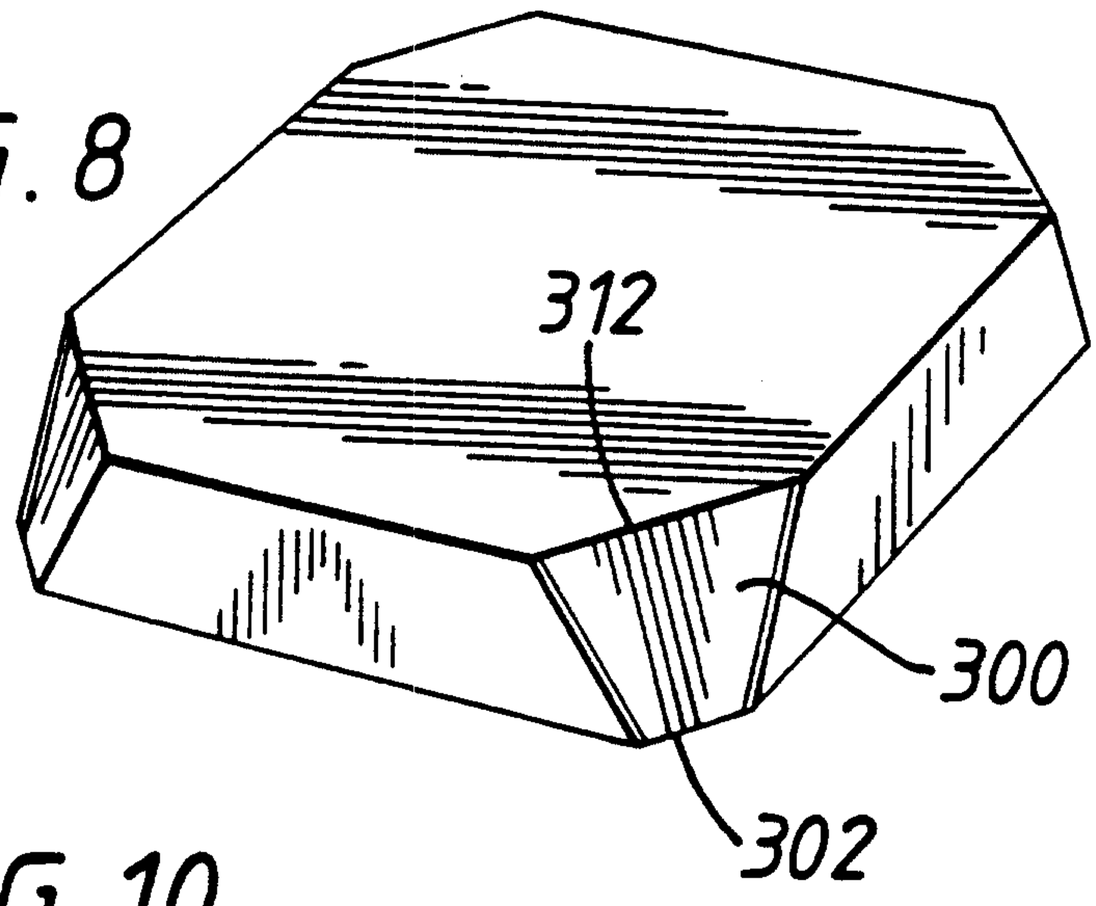

FIG. 10

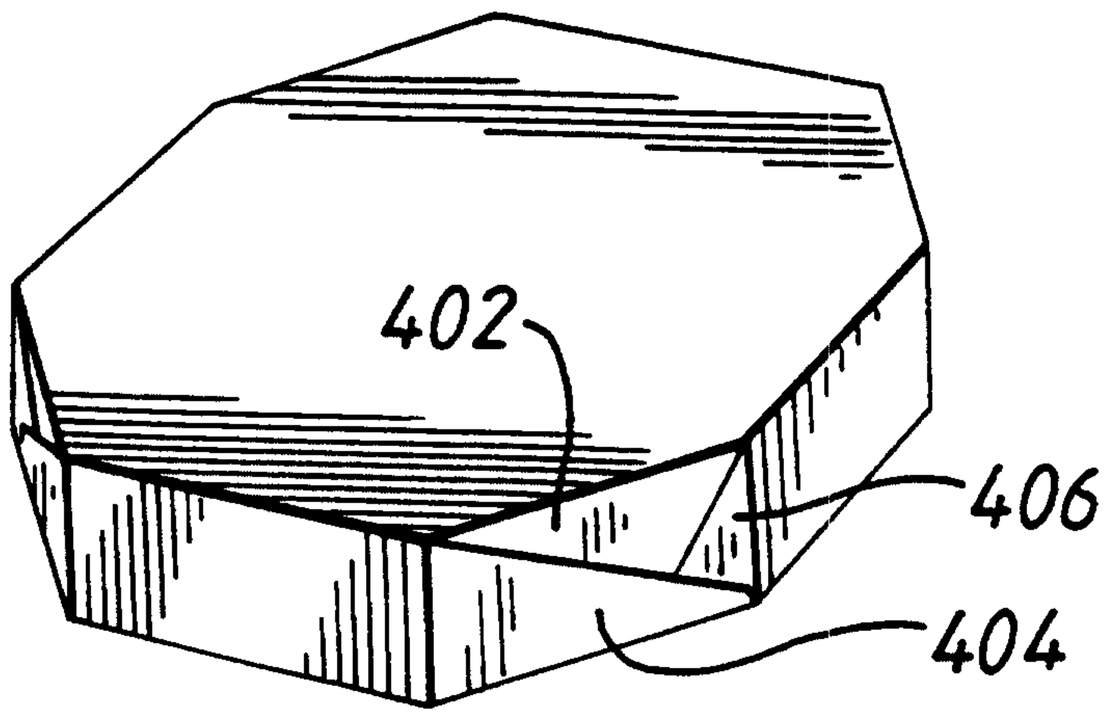

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FIG. 7

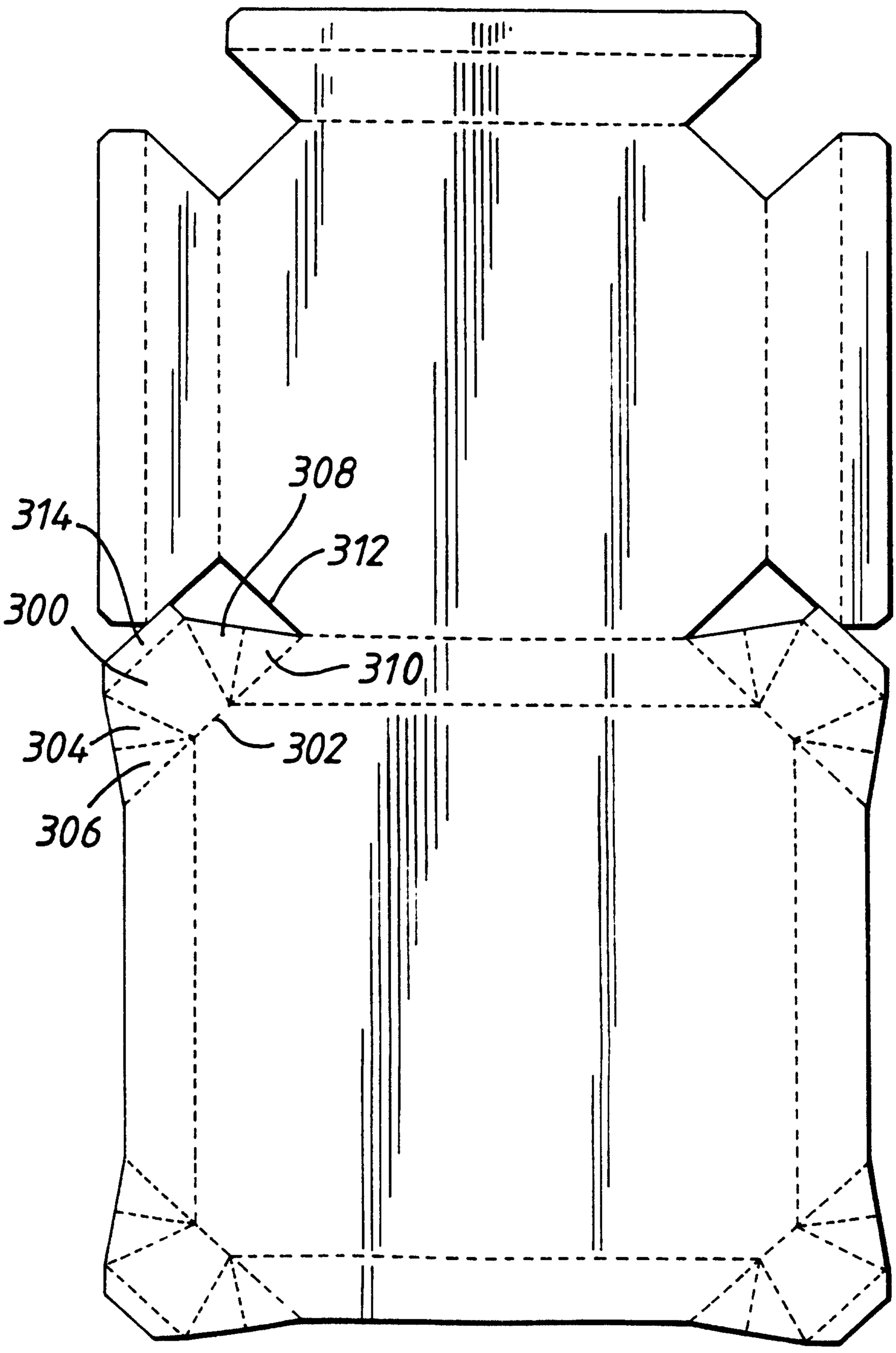
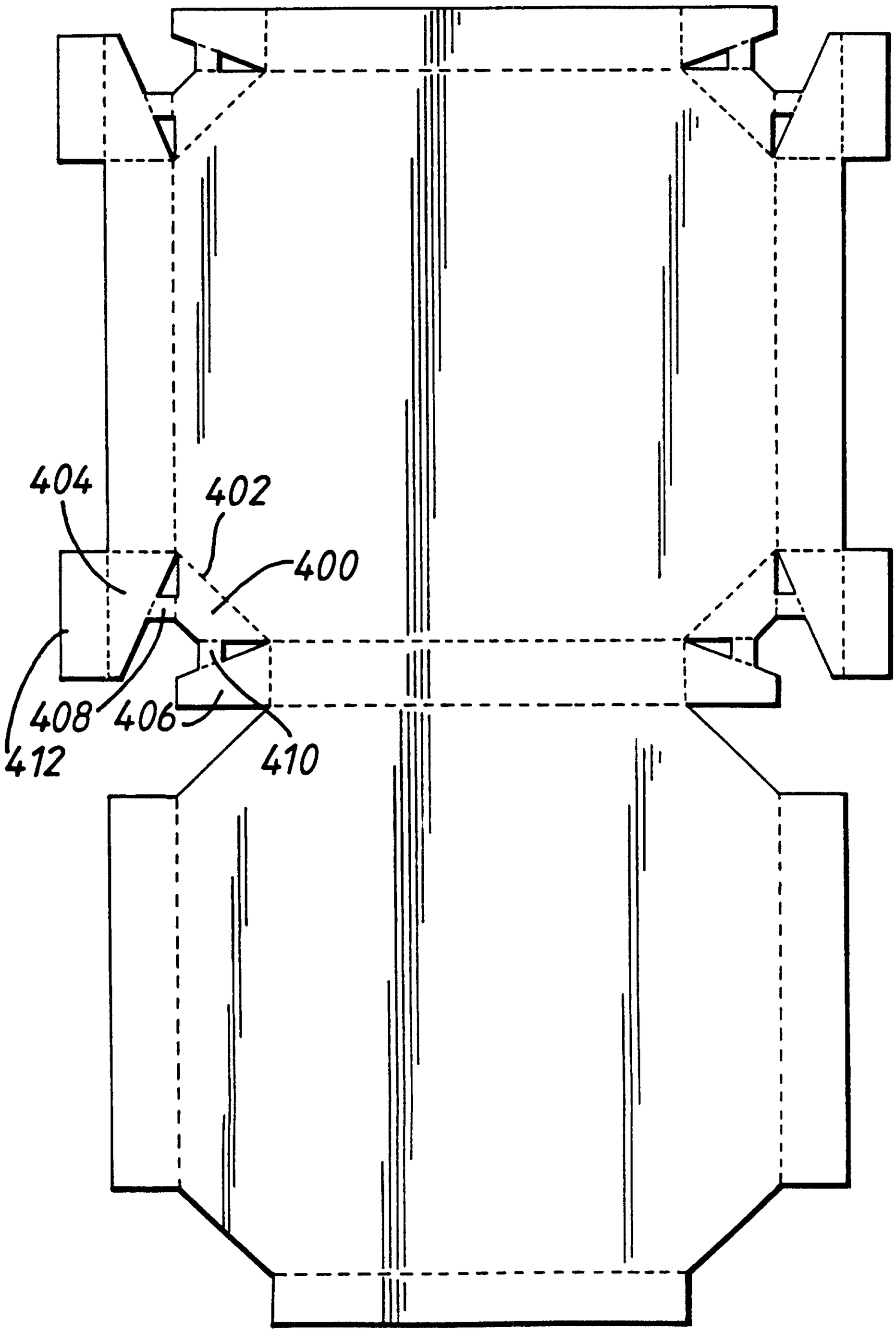
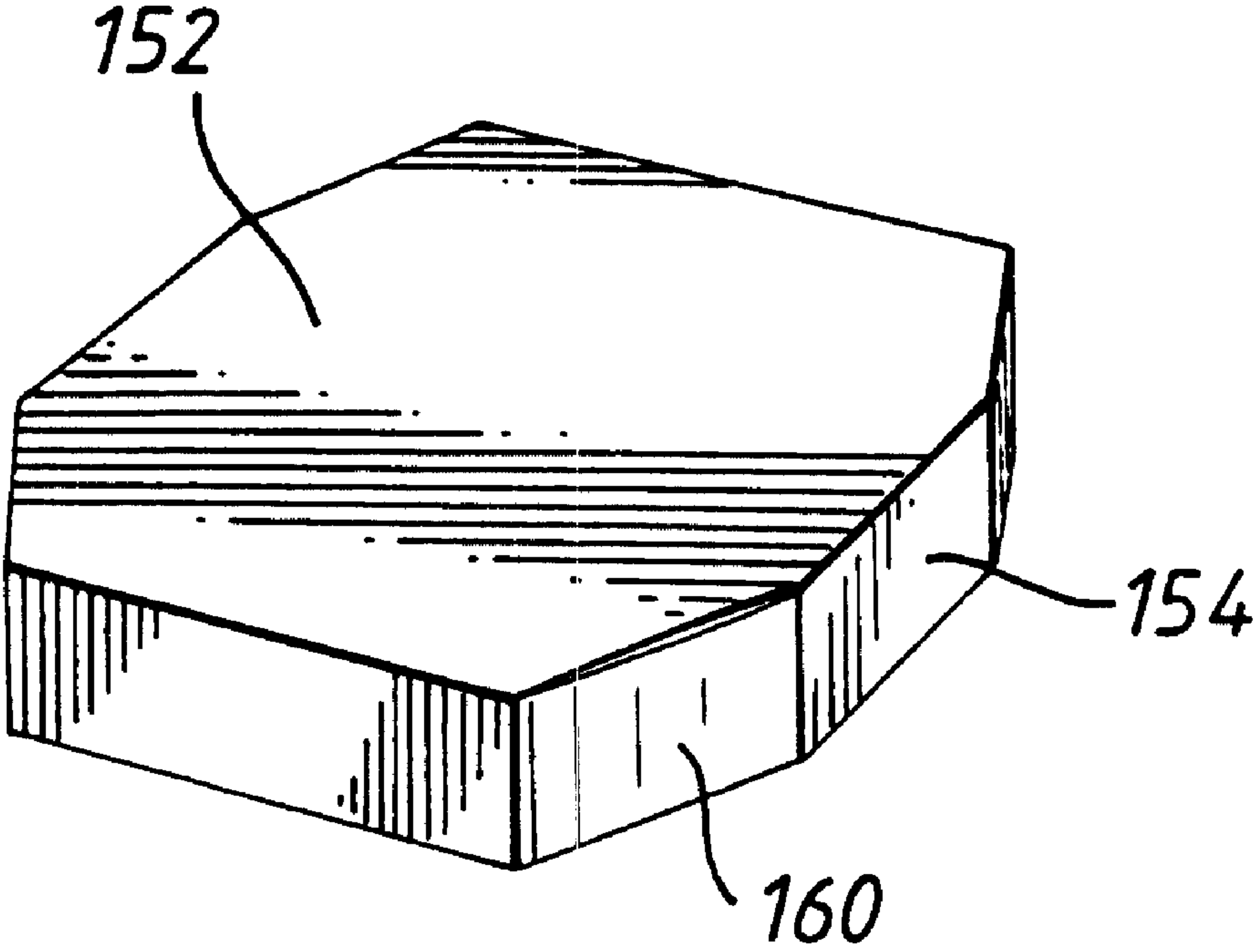


FIG. 9

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