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**CORRECTED EUROPEAN PATENT SPECIFICATION**

Note: Bibliography reflects the latest situation

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Siegelbare Faltschachtel

Boite pliante soudable

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accordance with Art. 76 EPC:**98906101.5 / 1 015 328**(72) Inventor: **Saulas, Alain**  
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**DE-A- 2 261 649** **US-A- 3 792 646**  
**US-A- 5 553 771** **US-A- 5 595 339**

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## Description

**[0001]** The invention relates to sealable cartons, and more particularly to sealable cartons having diagonal corner blanks for forming such cartons.

**[0002]** 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.

**[0003]** US-A-5 553 771 is considered to be the closest prior art and forms the basis of the precharacterising portion of claim 1.

**[0004]** 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.

**[0005]** A first aspect of the present invention provides a carton for accommodating a pizza or the like, comprising a plurality of panels for forming outer walls of the carton including a top panel, a base panel, a pair of oppositely disposed side panels interconnecting said top and base panels 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 for connecting one of said top and base panels to adjacent wall panels of the carton, characterized in that the corner structure comprises a corner panel hingedly connected to said one of said top and base panels, a first gusset panel hingedly connected to the corner panel by connecting panel and to an adjacent one of said end flaps and a second gusset panel hingedly connected to the corner panel by connecting panel and to an adjacent one of said side panels, wherein a glue flap is hingedly connected to one of said first and second gusset panels and secured to the other of said top and base panels

**[0006]** Preferably, said corner panel is trapezoidal in shape.

**[0007]** Preferably, said first and second gusset panels overlap externally of the corner panel.

**[0008]** Preferably, said corner panel provides a bevelled corner that is inclined from the top panel outwardly and downwardly to the base panel.

**[0009]** A second aspect of the present invention pro-

vides a blank for forming a flat tubular carton for accommodating a pizza or the like, the blank comprising a plurality of panels for forming outer walls of the carton including a top panel, a base panel, a pair of side panels

5 for interconnecting said top and base panels to provide a flat tubular structure when the blank is erected into a carton, and a pair of end flaps hingedly connected to opposed ends of one of said top and base panels to close opposite ends of the carton in an erected condition, 10 wherein at a corner of said one panel there is a corner structure for connecting said one panel to adjacent wall panels of the carton when the blank is in the erected condition, characterized in that the corner structure comprises a corner panel hingedly connected to said one of 15 said top and base panels, a first gusset panel hingedly connected to the corner panel by connecting panel and to an adjacent one of said end flaps and a second gusset panel hingedly connected to the corner panel by connecting panel and to an adjacent one of said side panels, 20 wherein a glue flap is hingedly connected to one of said first and second gusset panels and secured to the other of said top and base panels when the blank is in an erected condition.

**[0010]** Preferably, said corner panel is trapezoidal in shape.

**[0011]** Preferably, a glue flap is hingedly connected to the corner structure to be secured to the other of said top and base panels when the blank is in an erected condition.

**[0012]** According to an optional feature of this aspect of the present invention there is provided a carton formed from a blank according to one of the preceding paragraphs. Embodiments of the invention will now be described, by way of example only, with reference to the 35 accompanying drawings in which:

FIGURE 1 is a plan view of a blank for forming a sealable carton whereby the corner structure is not realised according to the invention;

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

FIGURE 9 is a plan view of a blank for forming a sealable carton according to a 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.

**[0013]** 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 55 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 hingedly connected one to the next

along fold lines 22,24,26,28 respectively.

**[0014]** An end flap 30 is hingedly connected to a side edge of top panel 14 along fold line 32. A second end flap 34 is hingedly connected to the opposing side edge of top panel 14 along fold line 36. Likewise, an end flap 38 is hingedly connected to a side edge of base panel 18 along fold line 40. A second end flap 42 is hingedly connected to the opposing side edge of base panel 18 along fold line 44.

**[0015]** 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.

**[0016]** A corner panel 54 is hingedly connected to a side edge of side panel 12 along fold line 56. Corner panel 54, is hingedly 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 hingedly 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.

**[0017]** Similarly, a second corner panel 64 is hingedly connected to the opposing side edge of side panel 12 along fold line 66. A second gusset panel 68 hingedly 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.

**[0018]** A corner panel 70 is hingedly connected to a side edge of outer side panel 20 along fold line 72. Corner panel 70, is hingedly 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 hingedly 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.

**[0019]** Similarly, a second corner panel 88 is hingedly connected to the opposing side edge of side panel 20 along fold line 86. A second gusset panel 84 hingedly 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.

**[0020]** 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 hingedly 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 hingedly connected along the opposing side edge of corner panel 92 along fold line 98. Gusset panels 100 and 102 are hingedly 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.

**[0021]** Gusset panel 100 is substantially arcuate in shape and is hingedly 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.

**[0022]** Likewise, gusset panel 102 is substantially arcuate in structure and hingedly 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.

**[0023]** Likewise, the opposing side edge of side panel 16 is hingedly 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.

**[0024]** 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.

**[0025]** 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.

**[0026]** 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.

**[0027]** 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.

**[0028]** 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.

**[0029]** 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.

**[0030]** 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.

**[0031]** Turning to the construction of the embodiment according to the invention illustrated in Figures 9 and 10, the blank is 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.

**[0032]** In the embodiment shown in Figure 9, a corner panel 400 is hingedly connected to the top panel along fold line 402. A gusset panel 404 is hingedly 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 hingedly 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 406 is hingedly connected to gusset panel 404 by connecting portion 408. Likewise, corner panel 400 is hingedly connected to gusset panel 406 by connecting 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.

**[0033]** The construction of the corner structure of the embodiment shown in Figure 9 are carried out after the carton is partly erected into a flat tubular structure as described earlier.

**[0034]** Turning to the construction of the corner structure of the embodiment shown in Figure 9 the connecting portion 408 is folded into an overlapping face to face re-

lationship 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.

**[0035]** 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 center point C of the carton, shown in Figure 2, a stronger carton, capable of supporting a greater load, can be provided.

**[0036]** 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 carton for accommodating a pizza or the like, comprising a plurality of panels for forming outer walls of the carton including a top panel, a base panel, a pair of oppositely disposed side panels interconnecting said top and base panels 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 for connecting one of said top and base panels to adjacent wall panels of the carton, **characterized in that** the corner structure comprises a corner panel (400) hingedly connected to said one of said top and base panels, a first gusset panel (404) hingedly connected to the corner panel (400) by connecting panel (408) and to an adjacent one of said end flaps and a second gusset panel (406) hingedly connected to the corner panel (400) by connecting panel (410) and to an adjacent one of said side panels, wherein a glue flap (412) is hingedly

connected to one (404) of said first (404) and second (406) gusset panels and secured to the other of said top and base panels

2. A carton as claimed in claim 1 wherein said corner panel (400) is trapezoidal in shape. 5

3. A carton as claimed in any of claims 1 to 2 wherein said first and second gusset panels (404, 406) overlap externally of the corner panel (400). 10

4. A carton as claimed in any of claims 1 to 2 wherein said corner panel provides a beveled corner that is inclined from the top panel outwardly and downwardly to the base panel. 15

5. A blank for forming a flat tubular carton for accommodating a pizza or the like, the blank comprising a plurality of panels for forming outer walls of the carton including a top panel, a base panel, a pair of side panels for interconnecting said top and base panels to provide a flat tubular structure when the blank is erected into a carton, and a pair of end flaps hingedly connected to opposed ends of one of said top and base panels to close opposite ends of the carton in an erected condition, wherein at a corner of said one panel there is a corner structure for connecting said one panel to adjacent wall panels of the carton when the blank is in the erected condition, **characterized in that** the corner structure comprises a corner panel (400) hingedly connected to said one of said top and base panels, a first gusset panel (404) hingedly connected to the corner panel (400) by connecting panel (408) and to an adjacent one of said end flaps and a second gusset panel (406) hingedly connected to the corner panel (400) by connecting panel (410) and to an adjacent one of said side panels, wherein a glue flap (412) is hingedly connected to one (404) of said first (404) and second (406) gusset panels and secured to the other of said top and base panels when the blank is in an erected condition. 20

6. A blank as claimed in claim 5 wherein said corner panel (400) is trapezoidal in shape. 25

### Patentansprüche

1. Schachtel für die Aufnahme einer Pizza oder der gleichen, umfassend eine Vielzahl von Wandflächen zum Ausbilden von Außenwänden der Schachtel, einschließlich einer Deckenwandfläche, einer Bodenwandfläche, einem Paar von gegenüberliegend angeordneten Seitenwandflächen, die die Deckenwandfläche und die Bodenwandfläche miteinander verbinden, um eine flache röhrenförmige Struktur bereitzustellen, sowie Endklappen, um die gegenüberliegenden Enden der Schachtel zu verschließen, wobei an einer Ecke der Schachtel eine Eckstruktur vorhanden ist, um eine Wandfläche der Deckenwandfläche und der Bodenwandfläche mit angrenzenden Wandflächen der Schachtel zu verbinden, **dadurch gekennzeichnet, dass** die Eckstruktur eine Eckwandfläche (400) umfasst, die gelenkig mit der einen Wandfläche der Deckenwandfläche und der Bodenwandfläche verbunden ist, eine erste Zwickelwandfläche (404), die über die Verbindungswandfläche (408) mit der Eckwandfläche (400) und mit einer angrenzenden Endklappe der Endklappen gelenkig verbunden ist, sowie eine zweite Zwickelwandfläche (406), die über die Verbindungswandfläche (410) mit der Eckwandfläche (400) und mit einer angrenzenden Seitenwandfläche der Seitenwandflächen gelenkig verbunden ist, wobei eine Klebeklappe (412) gelenkig mit der ersten (404) oder der zweiten (406) Zwickelwandfläche verbunden ist und an die andere Wandfläche der Deckenwandfläche und der Bodenwandfläche befestigt ist. 30

2. Schachtel nach Anspruch 1, wobei die Eckwandfläche (400) trapezförmig ist. 35

3. Schachtel nach Anspruch 1 oder 2, wobei sich die erste und die zweite Zwickelwandfläche (404, 406) außerhalb der Eckwandfläche (400) überlappen. 40

4. Schachtel nach Anspruch 1 oder 2, wobei die Eckwandfläche eine abgeschrägte Ecke bereitstellt, die von der Deckenwandfläche nach außen und zu der Bodenwandfläche nach unten geneigt ist. 45

5. Zuschnitt zum Ausbilden einer flachen röhrenförmigen Schachtel für die Aufnahme einer Pizza oder der gleichen, wobei der Zuschnitt eine Vielzahl von Wandflächen zum Ausbilden von Außenwänden der Schachtel umfasst, einschließlich einer Deckenwandfläche, einer Bodenwandfläche, einem Paar von Seitenwandflächen, um die Deckenwandfläche und die Bodenwandfläche miteinander zu verbinden, um eine flache röhrenförmige Struktur bereitzustellen, wenn der Zuschnitt in eine Schachtel aufgerichtet wird, sowie ein Paar von Endklappen, die gelenkig mit gegenüberliegenden Enden von einer Wandfläche der Deckenwandfläche und der Bodenwandfläche verbunden sind, um gegenüberliegende Enden der Schachtel in einem aufgerichteten Zustand zu verschließen, wobei an einer Ecke der einen Wandfläche eine Eckstruktur vorhanden ist, um die eine Wandfläche mit angrenzenden Wandflächen der Schachtel zu verbinden, wenn sich der Zuschnitt im aufgerichteten Zustand befindet, **dadurch gekennzeichnet, dass** die Eckstruktur eine Eckwandfläche (400) umfasst, die gelenkig mit der einen Wandfläche der Deckenwandfläche und der Bodenwandfläche verbunden ist, eine erste Zwickelwandfläche (404), die über die Verbindungswandfläche

(408) mit der Eckwandfläche (400) und mit einer angrenzenden Endklappe der Endklappen gelenkig verbunden ist, sowie eine zweite Zwickelwandfläche (406), die über die Verbindungswandfläche (410) mit der Eckwandfläche (400) und mit einer angrenzenden Seitenwandfläche der Seitenwandflächen verbunden ist, wobei eine Klebeklappe (412) gelenkig mit einer Wandfläche der ersten (404) und der zweiten (406) Zwickelwandfläche verbunden ist und an die andere Wandfläche der Deckenwandfläche und der Bodenwandfläche befestigt ist, wenn sich der Zuschnitt in einem aufgerichteten Zustand befindet.

6. Zuschnitt nach Anspruch 5, wobei die Eckenwandfläche (400) trapezförmig ist.

**Revendications**

1. Une boîte en carton pour loger une pizza ou similaire qui comprend une pluralité de panneaux pour former les parois extérieures de la boîte en carton incluant un panneau supérieur, un panneau de base, une paire de panneaux latéraux situés de façon opposée reliant ledit panneau supérieur et ledit panneau de base entre eux pour fournir une structure tubulaire plate et des rabats d'extrémité pour fermer les extrémités opposées de la boîte en carton où, à un coin de la boîte en carton il y a une structure de coin pour relier l'un desdits panneaux supérieur et de base aux panneaux de paroi adjacents de la boîte en carton, **caractérisée par le fait que** la structure de coin comprend un panneau de coin (400) relié de façon articulée à ce dit un desdits panneaux supérieur et de base, un premier panneau de gousset (404) relié de façon articulé au panneau de coin (400) par un panneau de raccordement (408) et à l'un adjacent desdits rabats d'extrémité et un deuxième panneau de gousset (406) relié de façon articulée au panneau de coin (400) par le panneau de raccordement (410) et à l'un adjacent desdits panneaux latéraux, où un rabat de colle (412) est relié de façon articulée à l'un (404) des premier (404) et deuxième (406) panneaux de gousset et fixé à l'autre desdits panneaux supérieur et de base lorsque la découpe est en état assemblé.

2. Une boîte en carton tel que revendiqué dans la revendication 1 où ledit panneau de coin (400) est de forme trapézoïdale.

3. Une boîte en carton tel que revendiqué dans l'une quelconque des revendications 1 à 2 où lesdits premier et deuxième panneaux de gousset (404, 406) chevauchent à l'extérieur du panneau de coin (400).

4. Une boîte en carton tel que revendiqué dans l'une quelconque des revendications 1 à 2 où ledit panneau de coin fournit un coin biseauté qui est incliné depuis le panneau supérieur vers l'extérieur et vers le bas au panneau de base.

5. Une découpe pour former une boîte en carton tubulaire plate pour loger une pizza ou similaire, la découpe comprenant une pluralité de panneaux pour former les parois extérieures de la boîte en carton incluant un panneau supérieur, un panneau de base, une paire de panneaux latéraux pour relier entre eux lesdits panneaux supérieur et de base pour fournir une structure tubulaire plate lorsque la découpe est assemblée en une boîte en carton, et une paire de rabats d'extrémité reliés de façon articulée aux extrémités opposées de l'un desdits panneaux supérieur et de base pour fermer les extrémités opposées de la boîte en carton en un état assemblé où, à un coin de ce dit un panneau, il y a une structure de coin pour relier ledit un panneau aux panneaux de paroi adjacents de la boîte en carton lorsque la découpe est en état assemblé, **caractérisé par le fait que** 1a structure de coin comprend un panneau de coin (400) relié de façon articulée audit un desdits panneaux supérieur et de base, un premier panneau de gousset (404) relié de façon articulé au panneau de coin (400) par le panneau de raccordement (408) et à l'un adjacent desdits rabats d'extrémité et un deuxième panneau de gousset (406) relié de façon articulée au panneau de coin (400) par le panneau de raccordement (410) et à l'un adjacent desdits panneaux latéraux, où un rabat de colle (412) est relié de façon articulée à l'un (404) desdits premier (404) et deuxième (406) panneaux de gousset et fixé à l'autre desdits panneaux supérieur et de base lorsque la découpe est en état assemblé.

6. Une découpe telle que revendiquée dans la revendication 5 où ledit panneau de coin (400) est de forme trapézoïdale.

FIG. 1

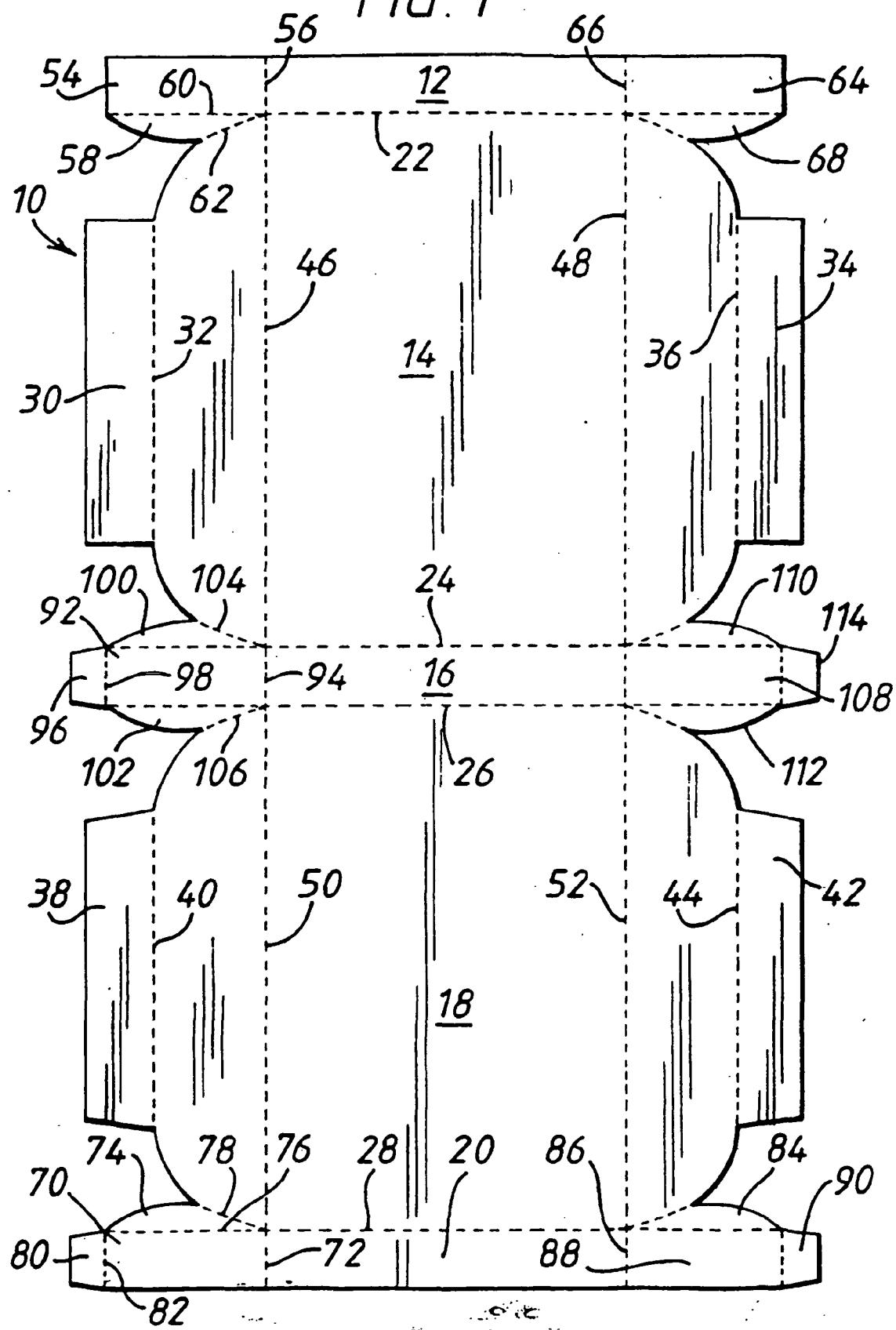


FIG. 2

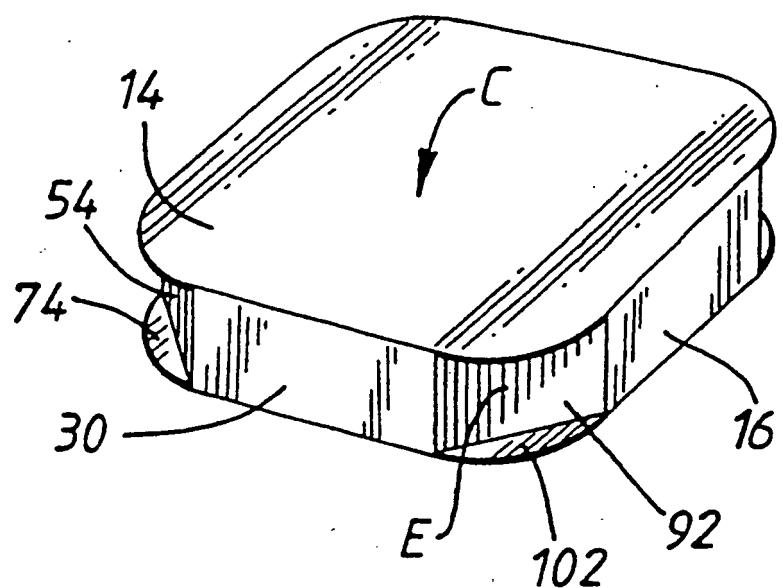


FIG. 9

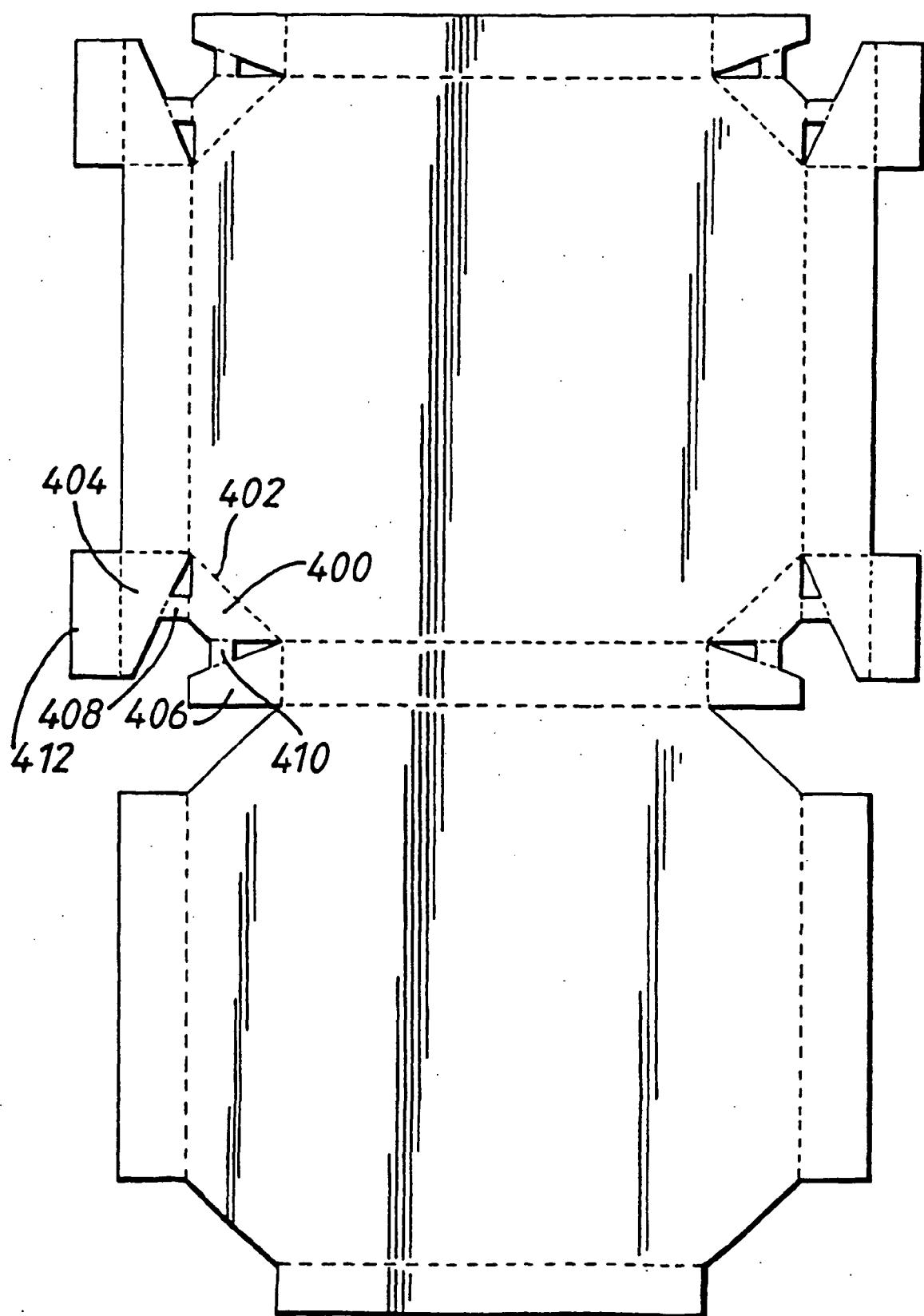
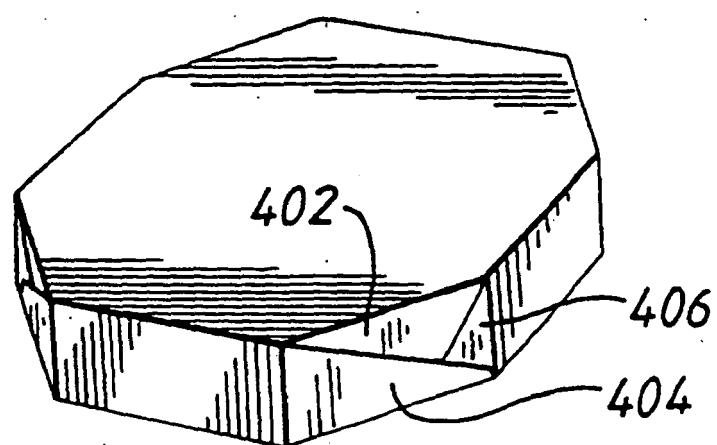


FIG. 10



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 3512697 A [0002]
- US 5553771 A [0003]