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(54) Carton with internal lining.

(57) A carton blank made of cardboard, paperboard or similar lightweight foldable sheet material, including a row of hingedly interconnected body panels (1-4) for forming a sealingly contiguous tubular body, end closure flaps (6-9) hingedly connected to said body panels for closing the respective ends of said tubular body, and at least one liner sheet (10) secured to the inside face of the blank, which liner sheet or sheets extends completely across at least one, but not all, of said body panels in the direction of the length of the said row and is/are so arranged as, upon erection of the carton, to be sealingly incorporated in at least two of the corner regions which are defined between the said body panels and the said end closure flaps at each end of the carton.

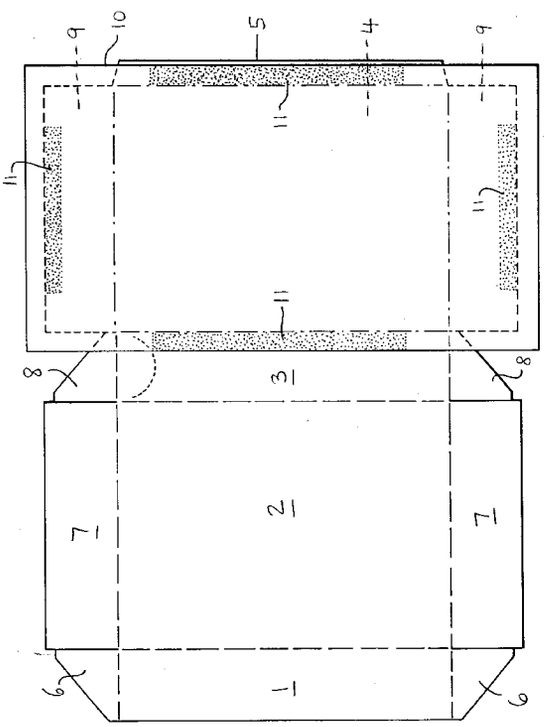


FIG.1.

EP 0 580 441 A1

This invention relates to cartons made of cardboard, paperboard or similar lightweight foldable sheet material and provided with a liner to seal at least some of the corners of the carton, for example to make it sift-resistant or to protect the contents from the atmosphere.

Many types of lined cartons are already known. There are ones in which the contents are received in a separate paper or plastics bag inside the carton, but the provision of such a bag adds considerably to the cost of the carton and causes problems during automatic erection and filling. Another type employs a flat paper or plastics liner which is applied to the carton blank to substantially cover all of the major internal surfaces thereof and which effectively forms an internal bag upon erection; again this is expensive and can cause problems during erection and filling.

The present invention is based on the recognition that a particularly simple and economical form of lined carton can be provided by incorporating therein at least one liner sheet so arranged as to be effective only in those corner regions where sealing is particularly needed.

According to the present invention there is provided a carton blank made of cardboard, paperboard or similar lightweight foldable sheet material, including a plurality of hingedly interconnected body panels for forming a carton body, end closure flaps hingedly connected to said body panels for closing at least one end of said body, and at least one liner sheet secured to the inside face of the blank, which liner sheet or sheets extends completely across at least one, but not all, of said body panels and is/are so arranged as, upon erection of the carton, to be sealingly incorporated in at least two of the corner regions which are defined between the said body panels and the said end closure flaps.

Preferably the said body panels are arranged in a row so as to form a sealingly contiguous tubular carton body, the said end closure flaps are arranged to close both ends of said body, and the said liner sheet or sheets extends across said at least one body panel in the direction of the length of said row.

If it is desired only to seal corner regions of the erected carton, two separate liner sheets could be provided, one at each end of a said body panel with a gap between them. Two such separate liner sheets could indeed be located on two different, e.g. opposite, body panels so as to seal diagonally opposite corners at the respective ends of the carton. Preferably however a single said liner sheet extends from end to end of said at least one body panel and extends far enough beyond the same, both lengthwise and laterally, as to be sealingly incorporated in at least those two corner regions of the erected carton at each end thereof which are defined partly by said one body panel.

It will be appreciated that if the said liner sheet does not extend completely over the end closure flaps at the respective ends of said at least one body panel, it will be incorporated only in those two corner regions at each end of the erected carton which are defined partly by that body panel. If desired however the said liner sheet may be arranged to extend completely over the end closure flaps at the respective ends of said at least one body panel, so as to be sealingly incorporated in all of those corner regions which are defined partly by said flaps.

In one preferred form of the invention there is provided a blank having four of said body panels for making a four-sided skillet carton with full flap closures at both ends, wherein a single, substantially rectangular, liner sheet wholly covers one of said body panels and extends to cover major portions of the two adjoining body panels and the six end closure flaps hinged to said three body panels, but does not extend over the fourth body panel. The extent of the said liner sheet may then be such that, in the erected carton, it is sealingly incorporated in those four corners regions which are partly defined by the said one body panel, but not in the other four corner regions.

The or each liner sheet may be of paper, which may be suitably impregnated or surfaced to enhance its sealing qualities, or of plastics.

The scope of the invention of course also extends to cartons made from blanks are set forth above.

Three embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of a blank for making a carton, according to a first embodiment;

Figures 2 to 5 are perspective views illustrating the process of closing and sealing one end of a carton made from the blank of Figure 1;

Figures 6 to 10 are similar views of a second embodiment; and

Figures 11 to 15 are similar views of a third embodiment.

Referring first to Figure 1, a cardboard blank for making a so-called skillet carton with full flap glued closures at both ends is shown. This particular carton is intended to be sift-resistant, for containing for example rice grains, grass seed, or comparatively coarse powders. The blank comprises a row of four body panels 1 to 4 with a gluing flap 5 at one end of the row, and arrays of end closure flaps 6 to 9 hingedly connected to the respective body panels. A rectangular liner sheet 10 of paper is glued to what will be the inside face of the blank in the erected carton, along four glue lines 11, so as to completely cover the body panel 4 and the end closure flaps 9, and partially cover the body panel 3 and connecting flap 5. The liner sheet covers not more than about half of the total area of the face of the blank.

Referring now to Figure 2, this shows the condition during machine erection of the carton when the

tubular body has been formed by gluing the flap 5 to the panel 1, but the ends of the carton have yet to be closed. It will be understood that the tubular body thus formed is sealingly contiguous therearound, whereby leakage of a product to be stored in the carton can only occur at its ends.

To close each end, the flap 9 is first folded down to the position shown in Figure 3, and it will be noted that at this point the edges of the liner sheet 10 are left protruding around all three of the free edges of the flap 9. Flaps 6 and 8, which were ploughed out to lie at right angles to their associated body panels 1 and 3 as the blank was fed into the erecting machine, are now folded in, to the positions shown in Figure 4, thereby trapping and compressing the edges of the liner sheet. A glue line 12 is now applied to the flap 7 as shown in Figure 4, and finally flap 7 is folded closed, whereupon glue line 12 adheres to flaps 6, 8 and 9. The effect of this sequence of steps is that the liner sheet becomes incorporated in all of the folds around the boundary of each of the two end closures, and in particular is incorporated in the folded structure at all of the corner regions, where leakage of a product stored in the carton would otherwise be most likely to occur.

Referring now to the embodiment of Figures 6 to 10, here the cardboard blank is identical to that of the first embodiment, and bears similar reference numerals, but the liner sheet 14 is arranged differently. This time the liner sheet completely covers the body panel 2 and is glued to the body panels 1 and 3 and the end closure flaps 7 along glue lines 15. To close the ends, once the tubular carton body has been formed up as before, flap 9 is first folded down through 90°, clearing the protruding end of the liner 14 and leaving the liner protruding when it reaches the position shown in Figure 8. Flaps 6 and 8 are then folded in, thereby trapping and compressing the edges of the liner sheet as in the first embodiment, to reach the position shown in Figure 9. A glue line 16 is then applied to flap 7 and the latter is folded down and glued to flaps 6, 8 and 9 to close the end of the carton.

It will be noted that in this second embodiment the liner 14 only becomes incorporated in two of the four corner regions of the carton at each end. It has been found, however, that a carton formed in accordance with the second embodiment is, surprisingly, sift-resistant to substantially the same extent as that of the first embodiment, indicating that in this particular form of skillet carton those corners which are not protected by the liner 14 are not in fact prone to leak in any event.

The liner employed in carton blanks and cartons according to Figures 1 to 10 greatly reduces the possibility of leakage of the contents, firstly by providing a layer of material extending right across the very small gap that may exist at at least some of the corner regions of a carton made by folding a flat blank, and secondly by substantially increasing the length of the path which a particle must follow to find its way to such a gap from the interior of the carton. As compared with known sift-resistant cartons employing an internal bag type liner, or a liner sheet which covers the whole blank, there is a substantial reduction in the amount of liner material used, and substantial simplification of the process of applying the liner to the flat blank.

Referring now to Figures 11 to 15, this embodiment of the invention provides a partially lined carton in which the liner, which is in this embodiment made of a suitable plastics sheet material, acts as a barrier to protect the contents to a desired extent against deterioration caused by the ingress of air. In particular the carton is intended to house a block of ice-cream 16 sitting on a shallow plastics tray 17. The blank is generally similar to that of the previous embodiments, in that it comprises a row of four body panels 1 to 4 with end closure flaps 6 to 9 hingedly connected thereto. The liner sheet 18 completely covers the body panel 3 and also covers a major part of each of the body panels 2 and 4 and the end closure flaps 7 to 9 at both ends, being secured by glue lines 19. The effect of this arrangement in the erected carton is that the plastics liner sheet substantially surrounds the top and sides of the ice-cream block 16 or other article to be housed so that, bearing in mind that its underside sits on the plastics tray 17, the housed article is substantially completely surrounded by a plastics barrier. The manner of closing the ends of the carton is similar to the previous embodiments and will be clear from Figures 12 to 15.

Claims

1. A carton blank made of cardboard, paperboard or similar lightweight foldable sheet material, including a plurality of hingedly interconnected body panels (1-4) for forming a carton body, end closure flaps (6-9) hingedly connected to said body panels for closing at least one end of said body, and at least one liner sheet (10;18) secured to the inside face of the blank, which liner sheet or sheets extends completely across at least one, but not all, of said body panels and is/are so arranged as, upon erection of the carton, to be sealingly incorporated in at least two of the corner regions which are defined between the said body panels and the said end closure flaps.

2. A carton blank as claimed in claim 1, wherein the said body panels (1-4) are arranged in a row so as to form a sealingly contiguous tubular carton body, the said end closure flaps (6-9) are arranged to close both ends of said body, and the said liner sheet (10;18) or sheets extends across

said at least one body panel in the direction of the length of said row.

3. A carton blank as claimed in claim 2, wherein a single said liner sheet (10;18) extends from end to end of said at least one body panel and extends far enough beyond the same, both lengthwise and laterally, as to be sealingly incorporated in at least those two corner regions of the erected carton at each end thereof which are defined partly by said one body panel.

4. A carton blank as claimed in claim 3, wherein the said liner sheet (10) extends completely over the end closure flaps (9) at the respective ends of said at least one body panel (4), so as to be sealingly incorporated in all of those corner regions which are defined partly by said flaps (9).

5. A carton blank as claimed in any preceding claim, wherein the said liner sheet or sheets covers not more than about half of the said face of the blank.

6. A carton blank as claimed in claim 2, having four of said body panels (1-4) for making a four-sided skillet carton with full flap closures at both ends, wherein a single, substantially rectangular, liner sheet (18) wholly covers one of said body panels (3) and extends to cover major portions of the two adjoining body panels (2,4) and the six end closure flaps (7-9) hinged to said three body panels (2-4), but does not extend over the fourth body panel (1).

7. A carton blank as claimed in claim 6, wherein the extent of the said liner sheet (18) is such that, in the erected carton, it is sealingly incorporated in those four corners regions which are partly defined by the said one body panel (3), but not in the other four corner regions.

8. A carton blank as claimed in any preceding claim, wherein the or each said liner sheet is of paper.

9. A carton blank as claimed in any of claims 1 to 7, wherein the or each said liner sheet is of plastics.

10. A carton made from a blank as claimed in any of claims 1 to 9.

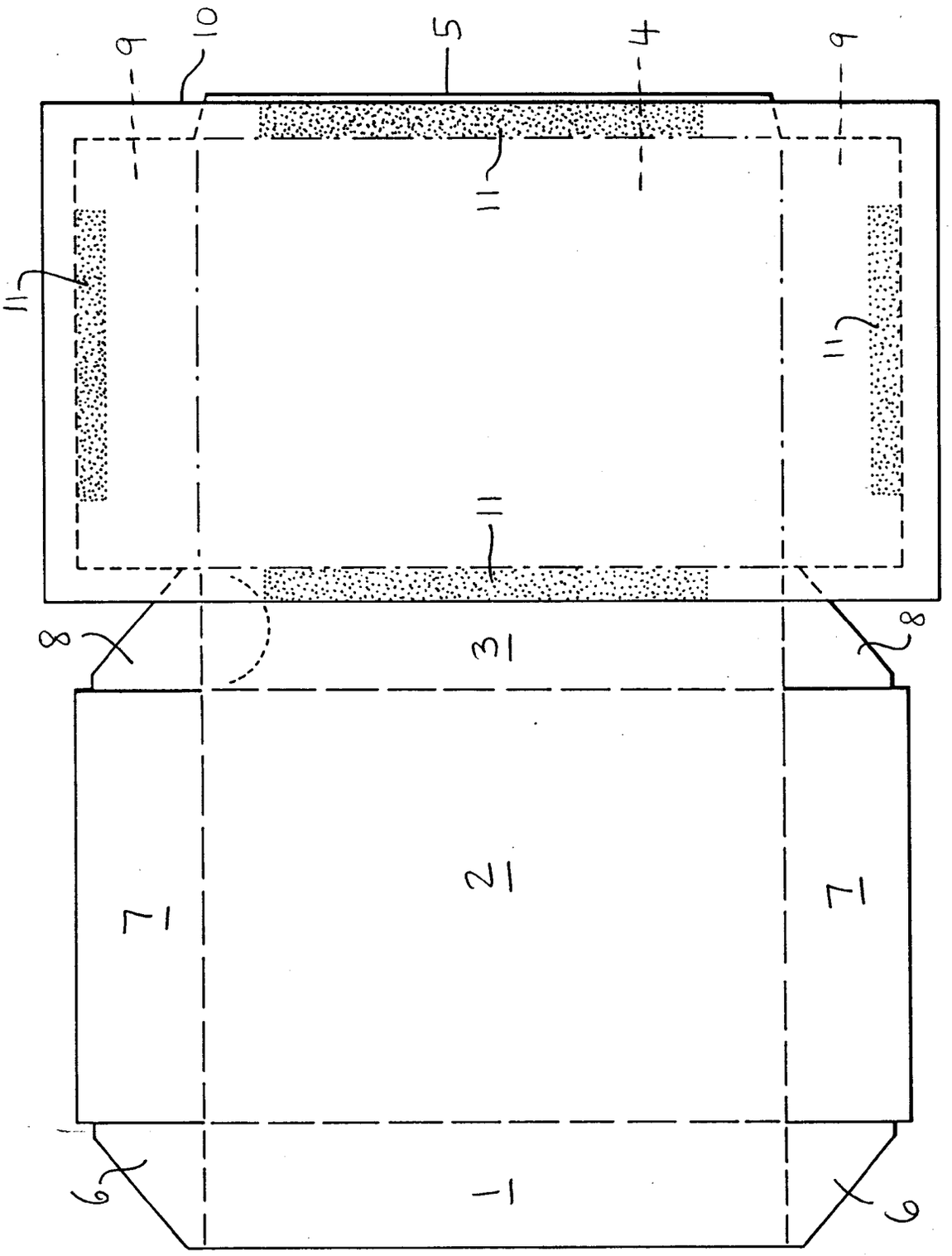
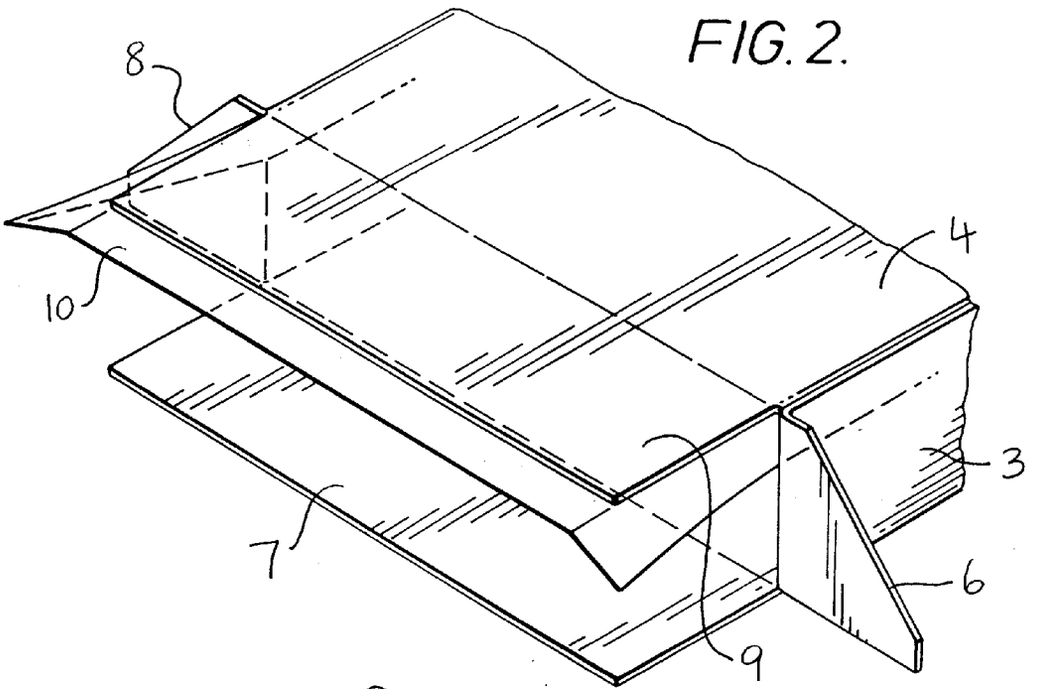


FIG.1.

FIG. 2.



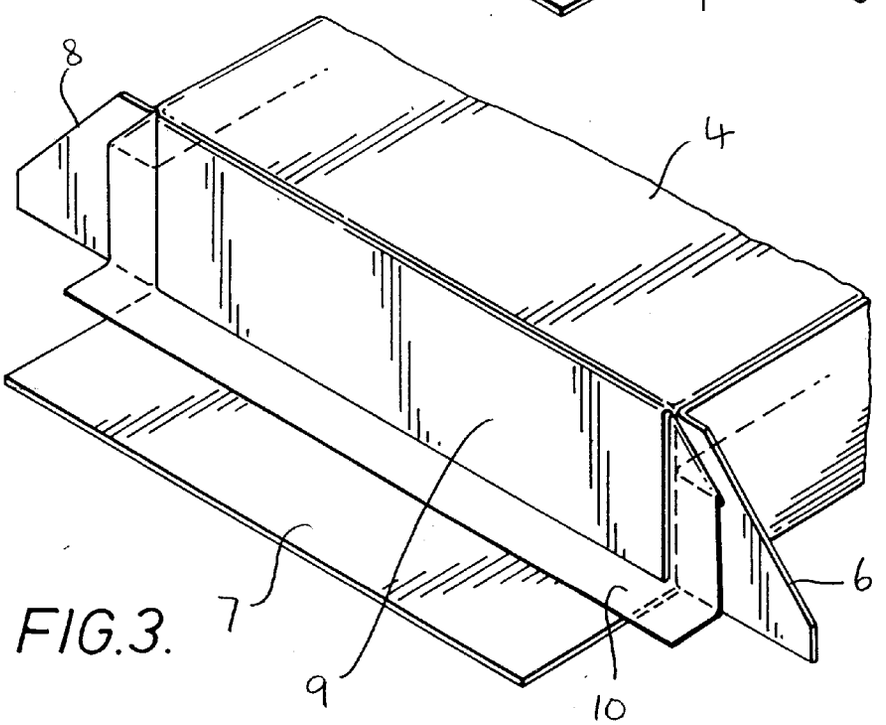
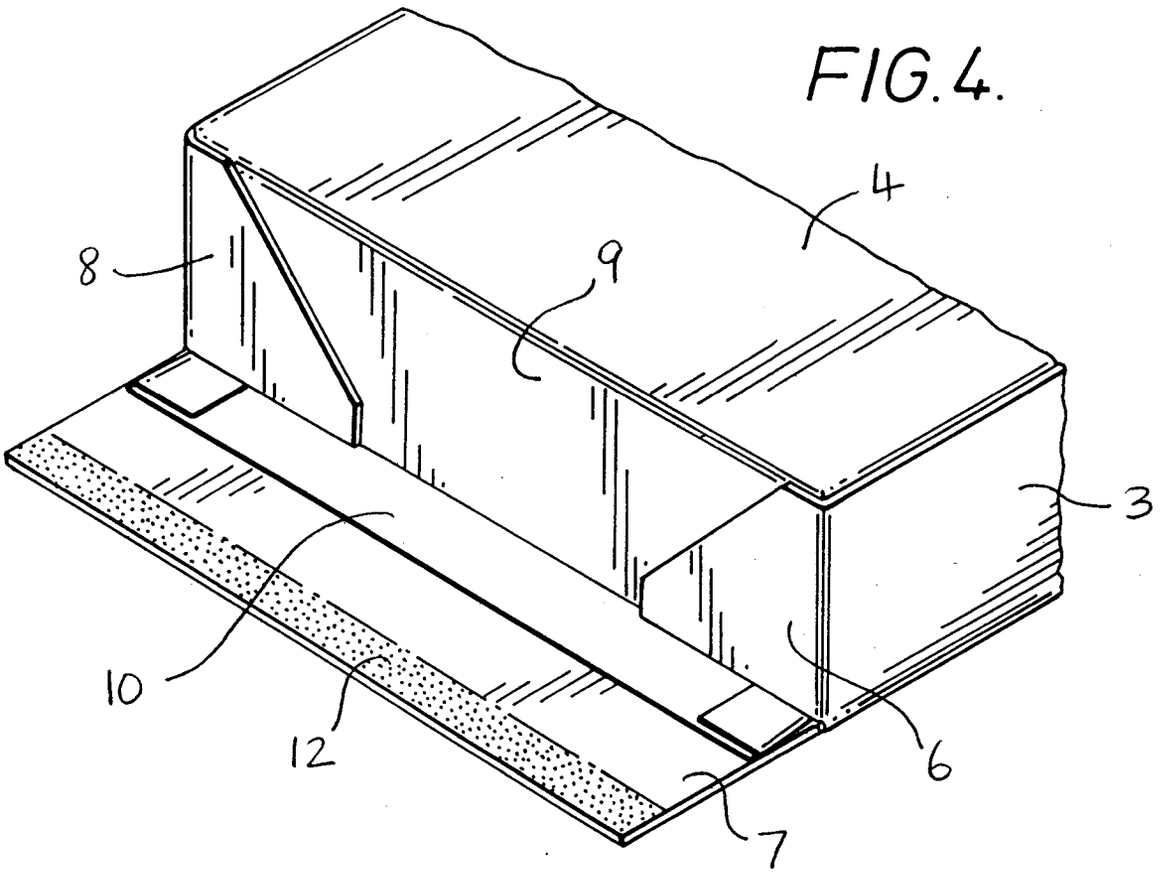


FIG.3.

FIG. 4.



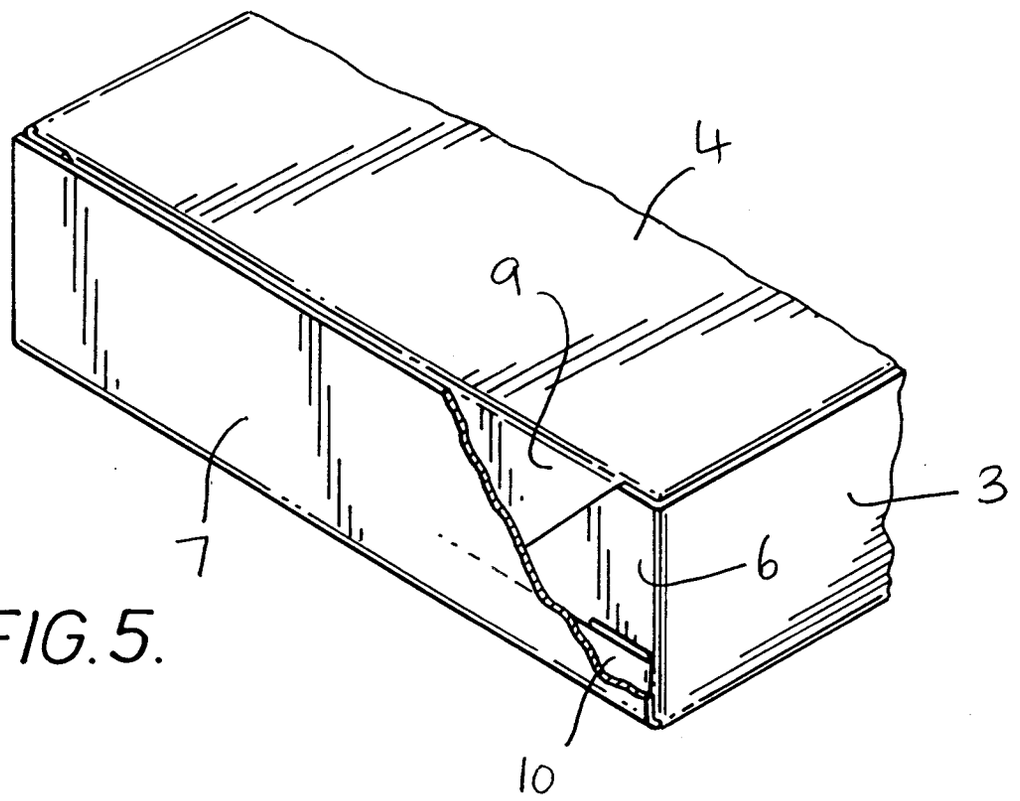


FIG. 5.

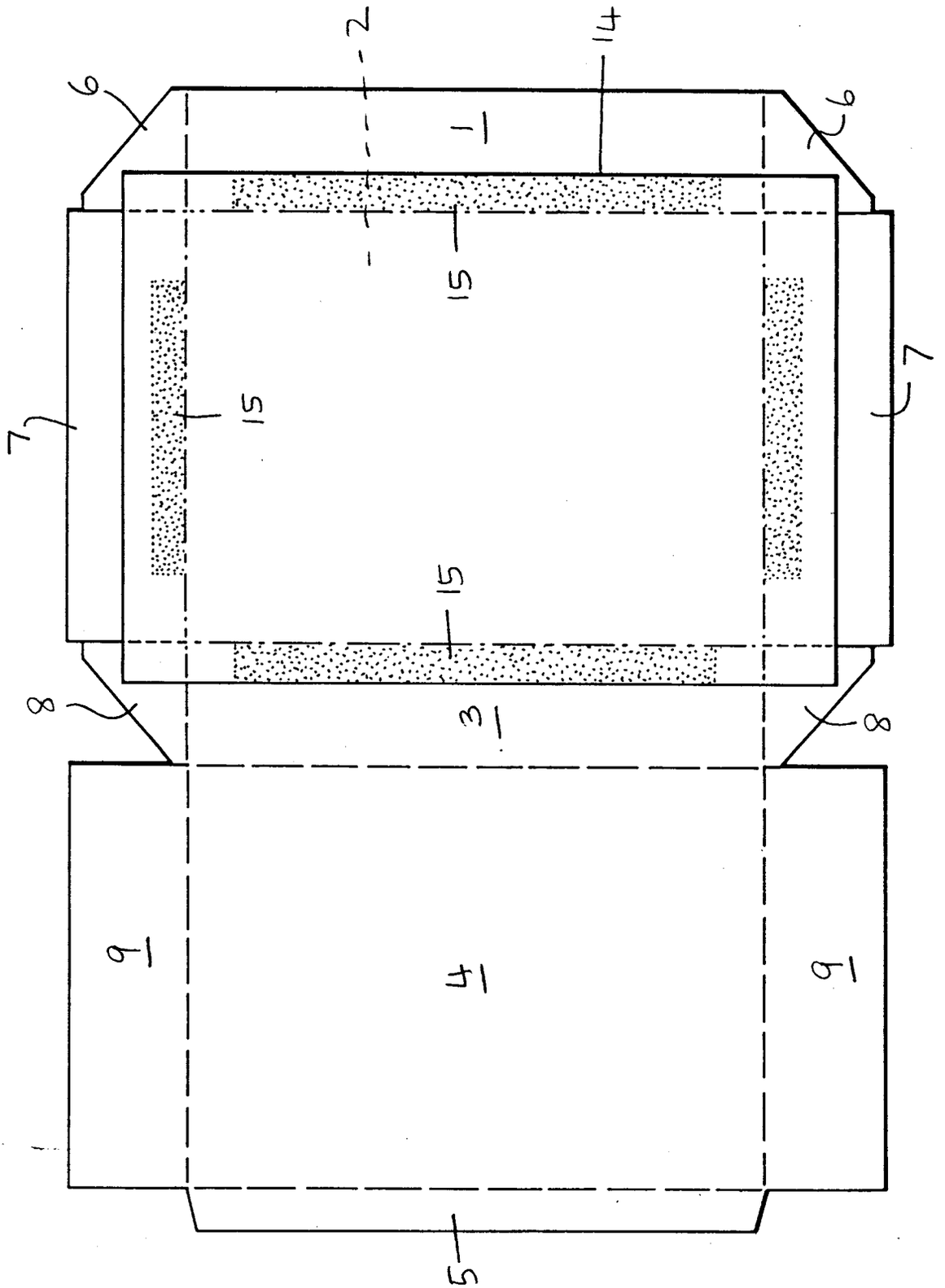


FIG.6.

FIG.7.

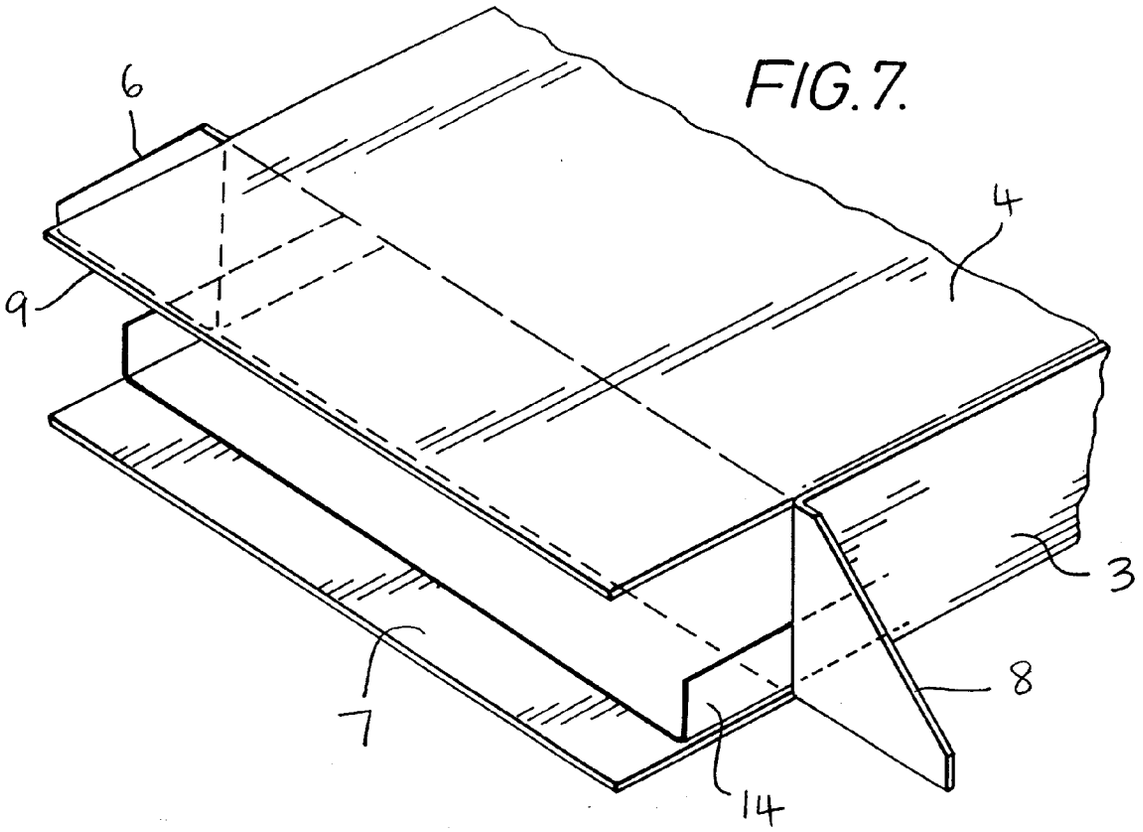


FIG.8.

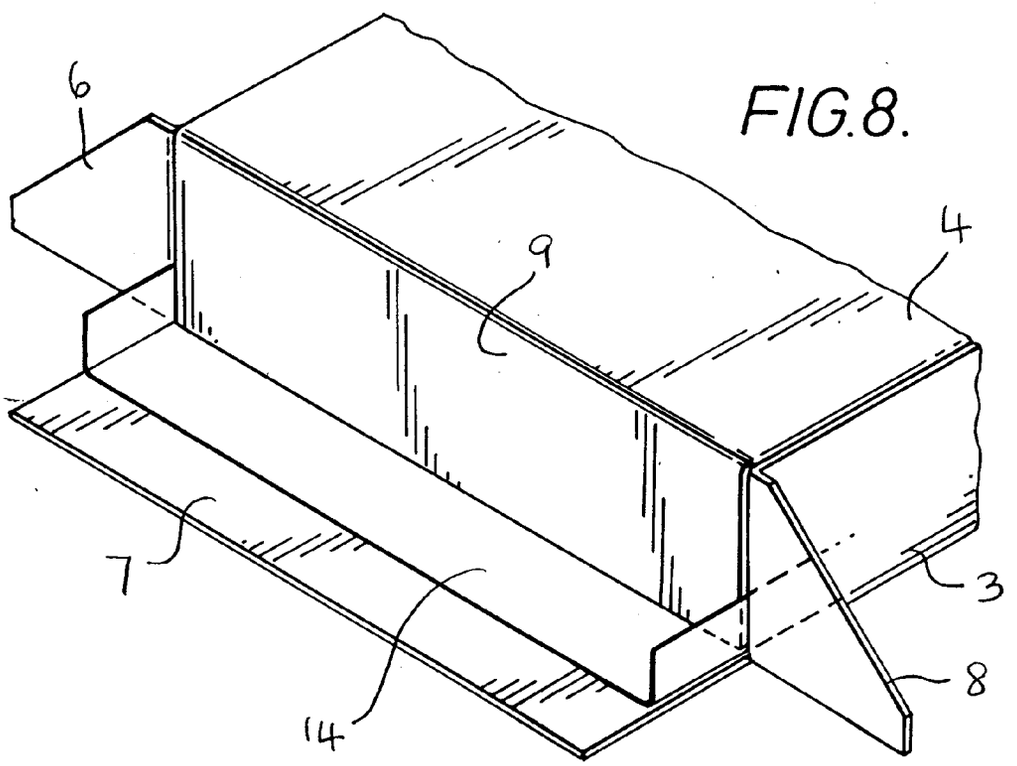
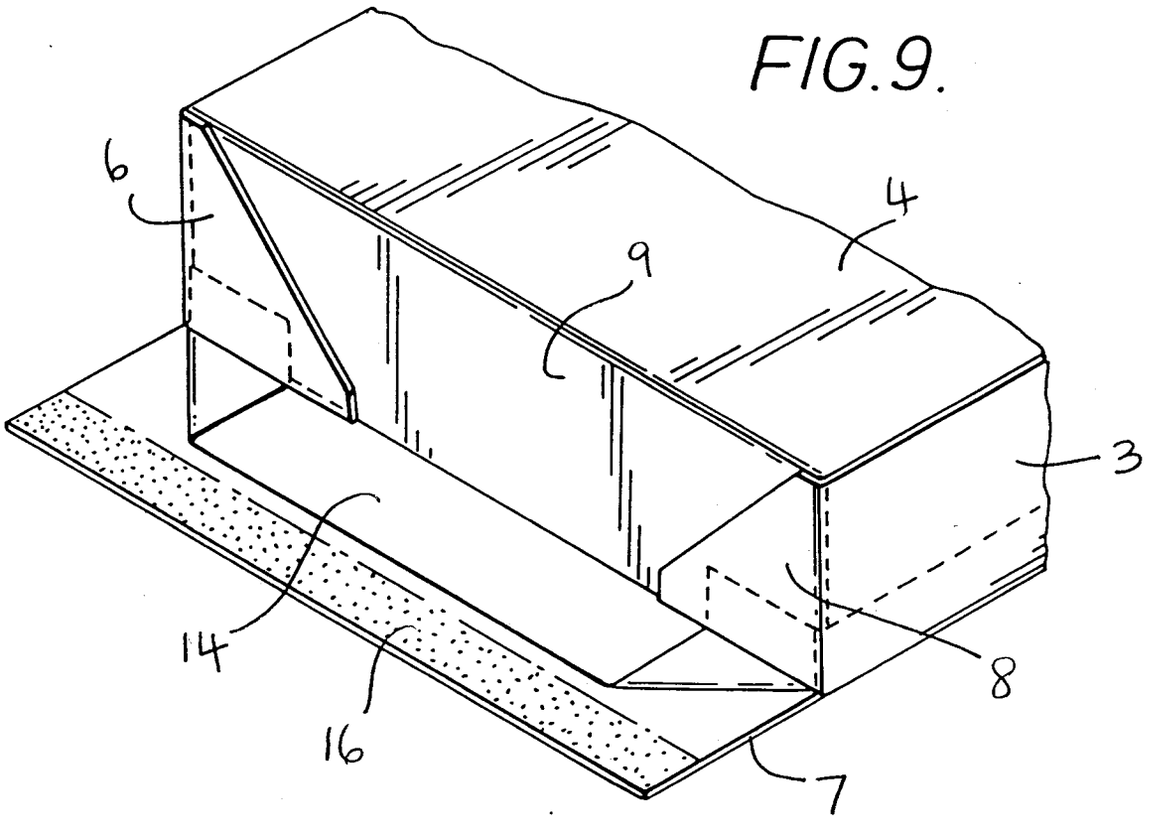


FIG.9.



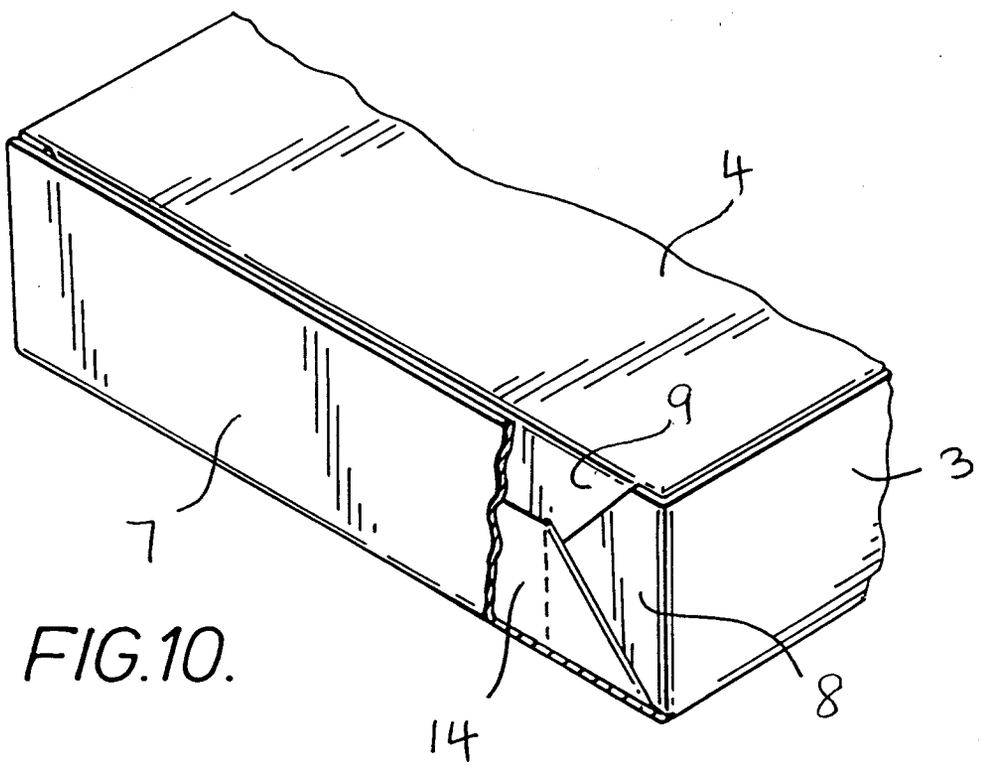


FIG.10.

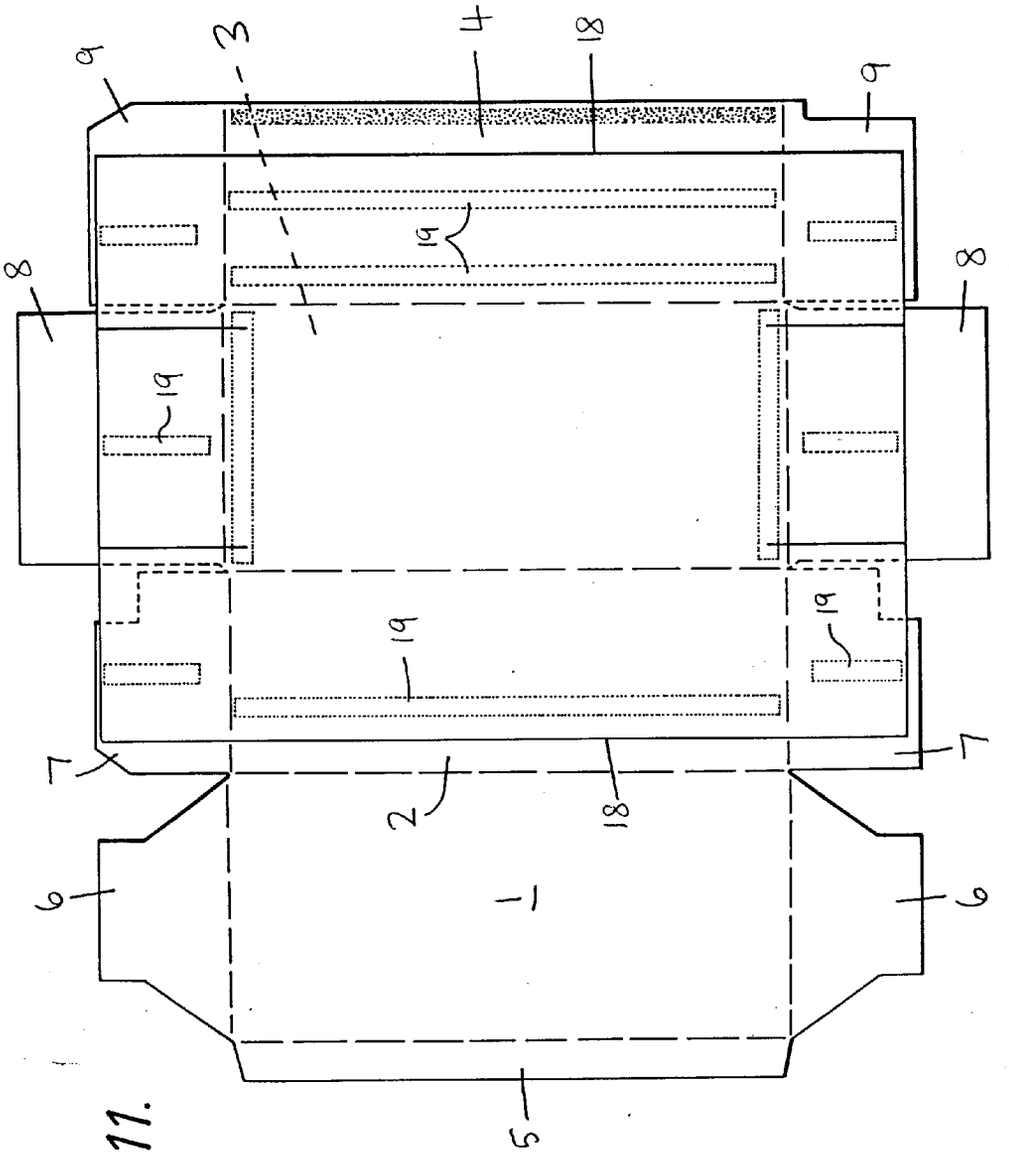


FIG.11.

FIG.12.

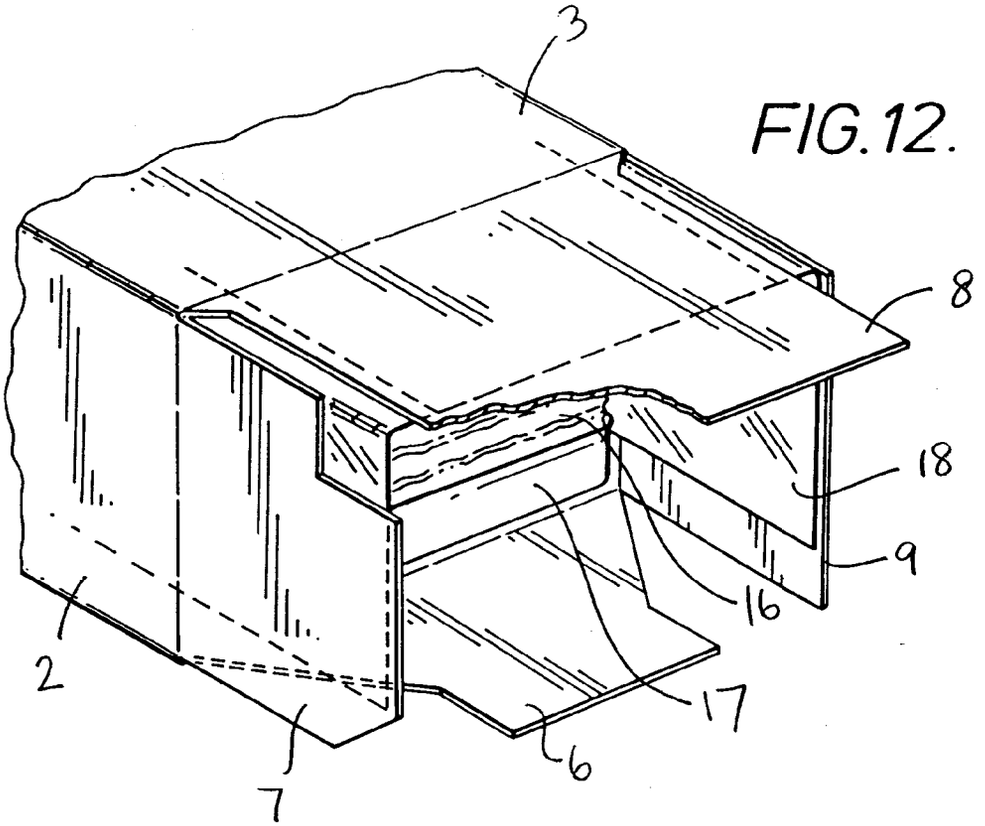


FIG.13.

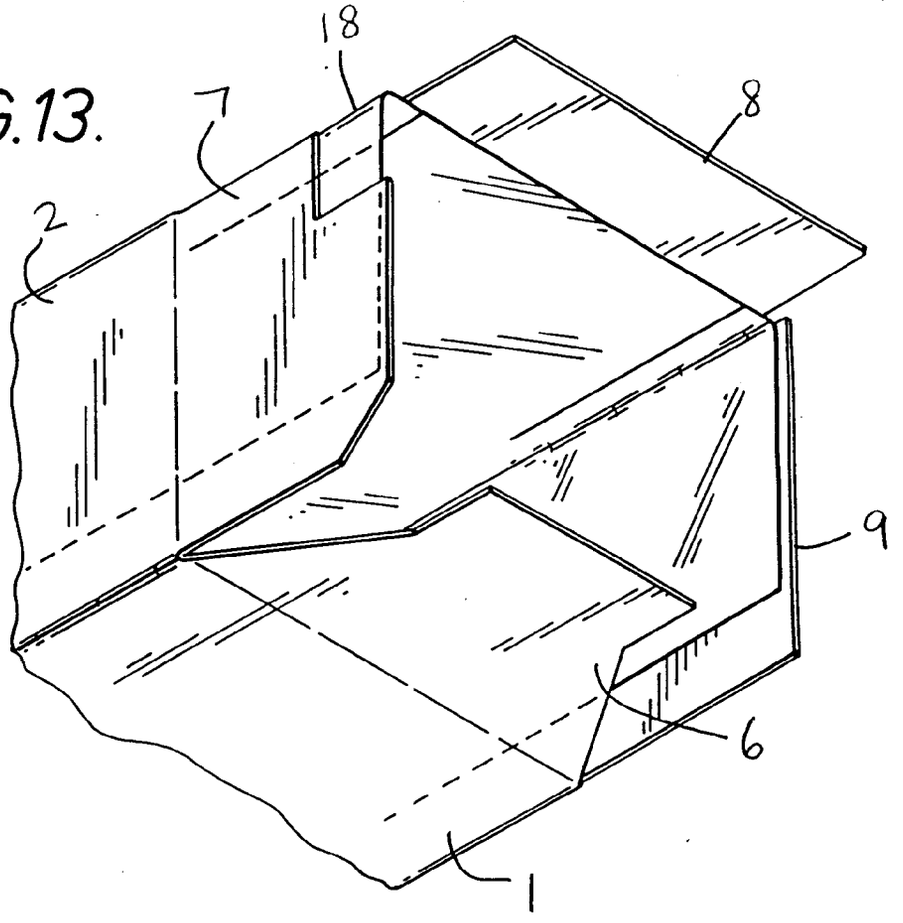


FIG.14.

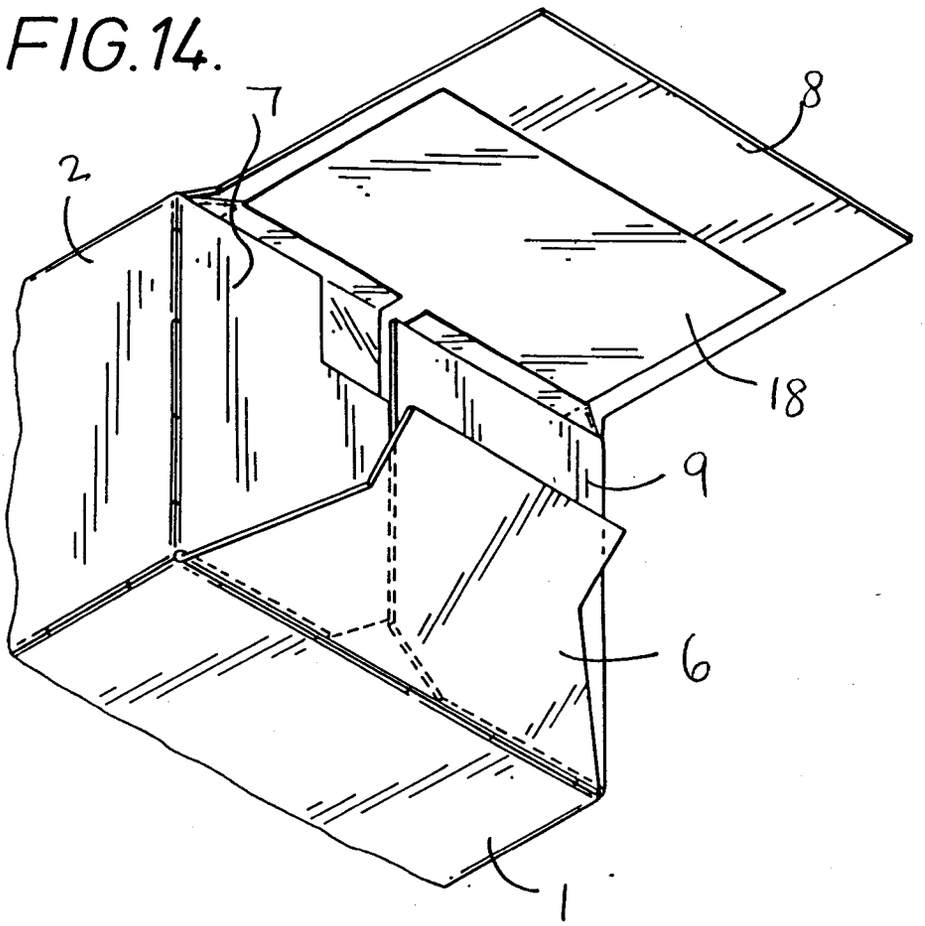
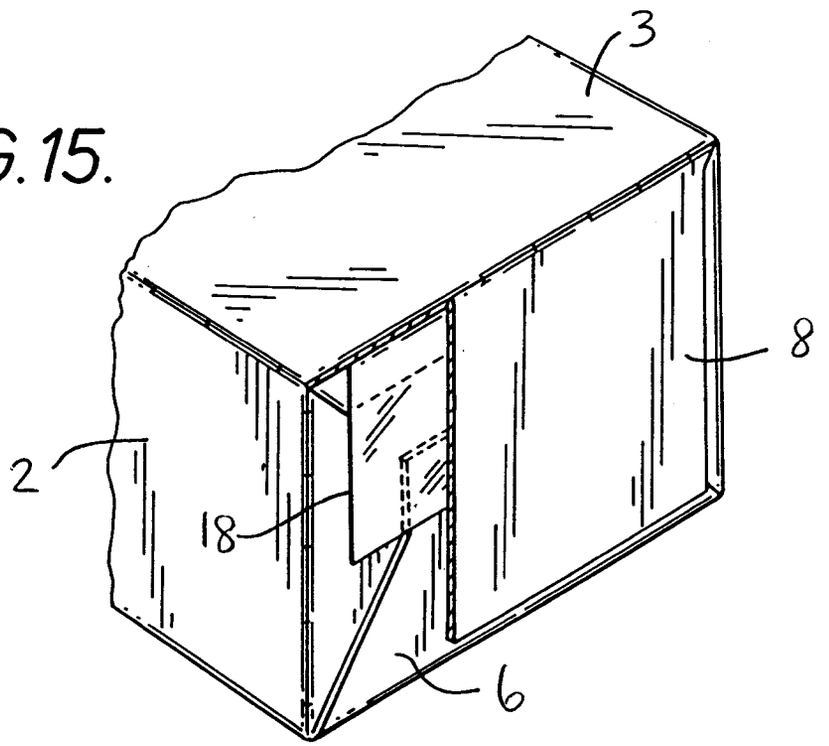


FIG.15.



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EUROPEAN SEARCH REPORT

Application Number
EP 93 30 5809

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X A	DE-B-11 48 936 (E.HENSEN) * figures *	1-4,10 5,6,9	B65D5/60
Y	DE-A-38 11 542 (MITSCHERLICH H.) * column 3, line 46 - line 68; figure 3 *	1-4,9	
Y A	BE-A-647 959 (AKERLUNG & RAUSING) * figures *	1-4,9 10	
A	US-A-1 988 721 (B.J.DAVDSON) * column 1, line 44 - line 51 *	1,8	
A	GB-A-2 001 934 (UNILEVER) * abstract; figures *	1	
A	DE-A-36 12 032 (HERMETIC VERPACKUNG) * figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 November 1993	ZANGHI, A

CATEGORY OF CITED DOCUMENTS

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