(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 442 179 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90301520.4**

(22) Date of filing: **13.02.90**

(51) Int. Cl.5: **B65D 5/32**, B65D 5/54, B65D 77/32

(43) Date of publication of application:
21.08.91 Bulletin 91/34

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

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(54) Improved carton manufacture and design.

(57) An easy-open carton for transport-display is erected from a plurality of blanks (13:14:17:18) of stiff but foldable board material which together define a top wall (19), a bottom wall (20), end walls (21:22a,22b) and side walls (13, 14). The blanks (13, 14) which define the side walls include tear strips (12) which extend skew-wise across each side wall.

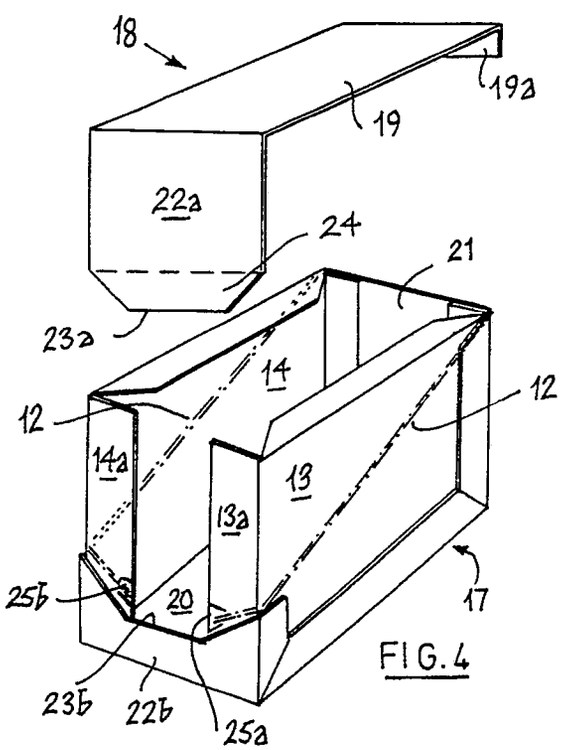

FIG.4

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IMPROVED CARTON MANUFACTURE AND DESIGN

This invention relates to cartons erected from one or more blanks of stiff but foldable board material and has particular reference to the provision of easy-open facilities e.g. such as permit a packaging carton to easily be transformed into a display carton without the need to use any form of cutting tool. The invention has particular, but not exclusive, reference to cartons erected from laminated corrugated board material and especially double-faced corrugated paperboard (a term which in this specification will be taken to mean a laminated material with a corrugated paper web sandwiched between two facing paper webs) which incorporates one, and preferably two, strips of reinforcing material to provide a tear strip. The invention finds specific expression in (a) a method of making a blank for a carton, (b) a carton blank and (c) a carton and broad statements of these three aspects of the invention will now be given.

According to the first aspect of the invention a method of making a blank for a wall of a carton which comprises the steps of laminating at least two webs together to form a board of stiff but foldable material, securing at least one length of reinforcing material to at least one of the webs and cutting the board to form the blank with the length of reinforcing material disposed to provide a tear strip, is characterised in that the blank is cut from the board so that the tear strip extends skew-wise across the wall.

Preferably the board is double-faced corrugated paperboard and a length of reinforcing material is incorporated between one facing paper web and the corrugated paper web during the manufacture of the board on a corrugator. With this method of manufacture, the reinforcing material most conveniently extends at right angles to the direction of the flutes formed in the corrugated web.

Desirably two parallel lengths of reinforcing material are used, a narrow length exposed on the outer surface of one of the facing webs and a wider, longitudinally tearable, length of reinforcing material, sandwiched between the other facing web and the corrugated web, both lengths of reinforcing material being disposed one behind the other when viewed from one exposed surface of the board. Conveniently both lengths are of fibrous tape such as that manufactured by Sesame Industries Ltd. of Quebec, Canada under the trade mark "Sesame", but the narrow length could be a wire, string or the like. By providing two aligned lengths of reinforcing material of different width on the board material so that the narrower length can be used to longitudinally sever the wider length, a particularly neat tear line is produced in the board material when the tear strip is used. Further, incorporating the reinforcing material in the board in the manner described makes it possible to provide a starting end of the tear strip simply from a pre-cut edge region of the board.

According to the second aspect of the invention there is provided a carton blank of stiff but foldable board material having an area destined to define one wall of a carton with two spaced-apart crease lines demarking different edges of the said side wall and with a length of reinforced material applied to and/or incorporated in the said board material and extending between said crease lines, said length(s) of reinforcing material providing a tear strip to permit the wall to be severed by pulling the tear strip away from the board material, which blank is characterised in that the tear strip extends across the said area between the crease lines at an oblique angle to each crease line.

Conveniently the crease lines are parallel and demark opposite side edges of the side wall.

Suitably the board material and the length(s) of reinforcing material used in this second aspect have the preferred, convenient, or desired features discussed above with respect to the first aspect.

The oblique angle(s) suitably lie(s) between 10 and 80°, and more conveniently between 20 and 70°.

According to the third aspect of the invention there is provided a right parallelepipedic carton erected from a plurality of blanks of double-faced corrugated paperboard which together define top and bottom walls, two end walls and two side walls of the carton, the separate blanks being secured together to provide a carton enclosing at least one article and having an integral tear strip, based on a length of reinforcing material and adapted to define an access opening for the at least one article by tearing board material using the tear strip, is characterised in that a tear strip extends skew-wise across each side wall, and in that the length of reinforcing material is incorporated between one facing paper web and the corrugated paper web of the board during the manufacture of the board on a corrugator.

Conveniently the carton is erected from four blanks, one defining each side wall and the remaining two defining the top, bottom and end walls, the tear strip on each side wall extending from a region of one end wall where the edges of two blanks confront to an edge meeting with the top wall of the carton.

Two embodiments of carton, blanks and method of making the same in accordance with this invention will now be described, by way of exam-

ple, with reference to the accompanying drawings, in which:

Figures 1 to 3 show the four blanks required for erecting into a first embodiment of carton,

Figure 4 shows the carton being assembled from two of the blanks of Figure 1 and the blanks of Figures 2 and 3,

Figure 5 shows the erected carton of Figure 4 opened up by use of the integral tear strips provided thereon,

Figure 6 shows, in enlarged cross-section, a preferred construction for the tear strip used in the blanks of Figure 1, and

Figure 7 shows two cartons according to a second embodiment opened and stacked one on the other.

Referring to Figure 1, there is shown, in plan, a panel 10 of double-faced corrugated paperboard which incorporates strips 12a to 12c of reinforcing tape 12 applied on the corrugator in which the board was made. The flute direction of the corrugated central web is shown by the double-headed arrow A and the direction of advance of the panel in the corrugator is shown by the arrow B. Pairs of blanks 13, 14 (three pairs are shown in Figure 1) are cut from the panel 10 to provide opposite side walls of a packaging carton, these panels being cut skew-wise from the panel 10 so that the tape 12 makes an oblique angle with crease lines 15, 16 subsequently formed thereon.

Figures 2 and 3 show two other blanks 17 and 18 cut from double-faced corrugated paperboard, these providing a top wall 19, a bottom wall 20, one end wall 21 and the component parts 22a, 22b of an opposite end wall 22. The flute directions are again shown by arrows A.

The four blanks 13, 14, 17 and 18 are assembled together as shown in Figure 4, edge flaps of the walls being used to secure the blanks together to create a right parallelepipedic carton. The completed carton is sensibly closed, since an edge 23a of part 22a closely confronts an edge 23b of part 22b. The securing together of the four blanks is arranged in any convenient way (e.g. sticking or stitching) but leaves a flap 24 adjacent to the edge 23a free to be bent away from the vertical edge flaps 13a, 14a to expose pre-cut tabs 25a, 25b which include the lower ends of the lengths of tape 12 incorporated in the blanks 13, 14.

Figure 5 shows the effect of pulling on the tabs 25a, 25b. Each of the panels 13, 14 is severed skew-wise to provide a wedge-shaped lid of the carton which can be hinged back (or torn off) along the edge defined by the junction between the top wall 19 and its attachment flap 19a. The reinforcing tape which provided the easy opening facility is embodied in the tear strips 26a and 26b.

A preferred construction for the tear strips is shown in Figure 6. In this Figure, the inner web of the double-faced corrugated paperboard is shown at 30, the corrugated web at 31 and the outer web at 32. Stuck on the inner surface of web 30 is a narrow strip 33 of reinforcing material (e.g. 5 mm wide "Sesame" tape) and stuck between webs 31 and 32 is a wider strip 34 of longitudinally tearable reinforcing material (e.g. 11 mm wide "Sesame" tape) the narrow strip underlying the centre of the wider strip. Thus when the tapes are put in tension by a tearing action being applied to one end of the tear strip, the narrow tape is torn through the wider tape leaving two parallel clean tear lines in each blank 13, 14. It is not felt to be essential to use "Sesame" tapes and particularly the inner length of reinforcing material could be a string or wire since its purpose is to provide a member for rupturing the wider length in a direction parallel to its length.

Figure 7 shows a second embodiment of carton in which the tear strips terminate intermediate the ends of the top wall 19. Similar reference numerals have been used in Figure 7 as have been used in Figures 4 and 5 to represent equivalent components.

The cartons features in Figures 4, 5 and 7 are capable of being used for a wide range of articles but are particularly convenient for liquid-filled flexible sachets, e.g. of soft drinks or washing auxiliaries.

Where a suitable reinforcing material is available for application to a carton blank remote from the corrugator it is, of course, possible to produce cartons of the kind described herein by applying the material skew-wise across a blank or panel and thereby reduce the amount of waste board material left when blanks themselves have to be cut skew-wise from a panel of board material. Narrow and wide tapes of such reinforcing material can be applied in alignment on opposite sides of a carton blank (or a panel from which carton blanks will be cut) remote from the corrugator to provide a tear strip which produces a "clean cut" through the board material when used to form an access opening.

Claims

1. A method of making a blank (13, 14) for a wall of a carton which method comprises the steps of laminating at least two webs (30, 31, 32) together to form a board (10) of stiff but foldable material, securing at least one length (33, 34) of reinforcing material to at least one of the webs and cutting the board to form the blank with the length of reinforcing material disposed to provide a tear strip (12), characterised in that the blank (13, 14) is cut from the board so that the tear strip (12) extends skew-

wise across the wall.

2. A method as claimed in claim 1, characterised in that the board (10) is double-faced corrugated paperboard and a length of reinforcing material (34) is incorporated between one facing paper web (32) and the corrugated paper web (31) during the manufacture of the board (10) on a corrugator.

3. A method as claimed in claim 2, characterised in that two parallel lengths of reinforcing material are used, a narrow length (33) exposed on the outer surface of one of the facing webs (30) and a wider, longitudinally tearable, length (34) of reinforcing material, sandwiched between the other facing web (32) and the corrugated web (31), both lengths (33, 34) of reinforcing material being disposed one behind the other when viewed from one exposed surface of the board (10).

4. A carton blank (13) of stiff but foldable board material (10) having an area destined to define one wall of a carton with two spaced-apart crease lines (15, 16) demarking different edges of the said wall and with a length (12) of reinforcing material applied to and/or incorporated in the said board material and extending between said crease lines (15, 16), said length(s) of reinforcing material providing a tear strip to permit the wall to be severed by pulling the tear strip away from the board material, characterised in that the tear strip (12) extends across the said area between the crease lines (15, 16) at an oblique angle to each crease line.

5. A blank as claimed in claim 4, characterised in that the crease lines (15, 16) are parallel and demark opposite side edges of a side wall.

6. A blank as claimed in claim 4 or claim 5, characterised in that the board (10) is double-faced corrugated paperboard and two lengths of reinforcing material (33, 34) are used, a narrow length (33) exposed on the outer surface of one of the facing webs (30) and a wider, longitudinally tearable, length (34) of reinforcing material, sandwiched between the other facing web (32) and the corrugated web (31) during the manufacture of the board on a corrugator, both lengths (33, 34) of reinforcing material being disposed one behind the other when viewed from one exposed surface of the board (10).

7. A blank as claimed in any one of claims 4 to 6, characterised in that the oblique angle(s) lie(s) between 10 and 80°, preferably between 20 and 70°.

8. A right parallelepipedic carton erected from a plurality of blanks (13, 14, 19, 20) of double-faced corrugated paperboard which together define top and bottom walls, two end walls and two side walls of the carton, the separate blanks being secured together to provide a carton enclosing at least one article and having an integral tear strip (12), based on a length of reinforcing material and adapted to define an access opening for the at least one article by tearing board material using the tear strip, characterised in that a tear strip (12) extends skew-wise across each side wall (12, 13) and in that the length of reinforcing material (12) is incorporated between one facing paper web (32) and the corrugated paper web (31) of the board during the manufacture of the board on a corrugator.

9. A carton as claimed in claim 8, characterised in that the carton is erected from four blanks, one (13, 14) defining each side wall and the remaining two (19, 20) defining the top, bottom and end walls, the tear strip (12) on each side wall extending from a region of one end wall where the edges of two blanks confront to an edge meeting with the top wall of the carton.

10. A carton as claimed in claim 8 or claim 9, characterised in that two parallel lengths of reinforcing material are used, a narrow length (33) exposed on the outer surface of one of the facing webs (30) of the board (10) and a wider, longitudinally tearable, length (34) of reinforcing material, sandwiched between the other facing web (32) and the corrugated web (31), both lengths of reinforcing material being disposed one behind the other when viewed from one exposed surface of the board (10).

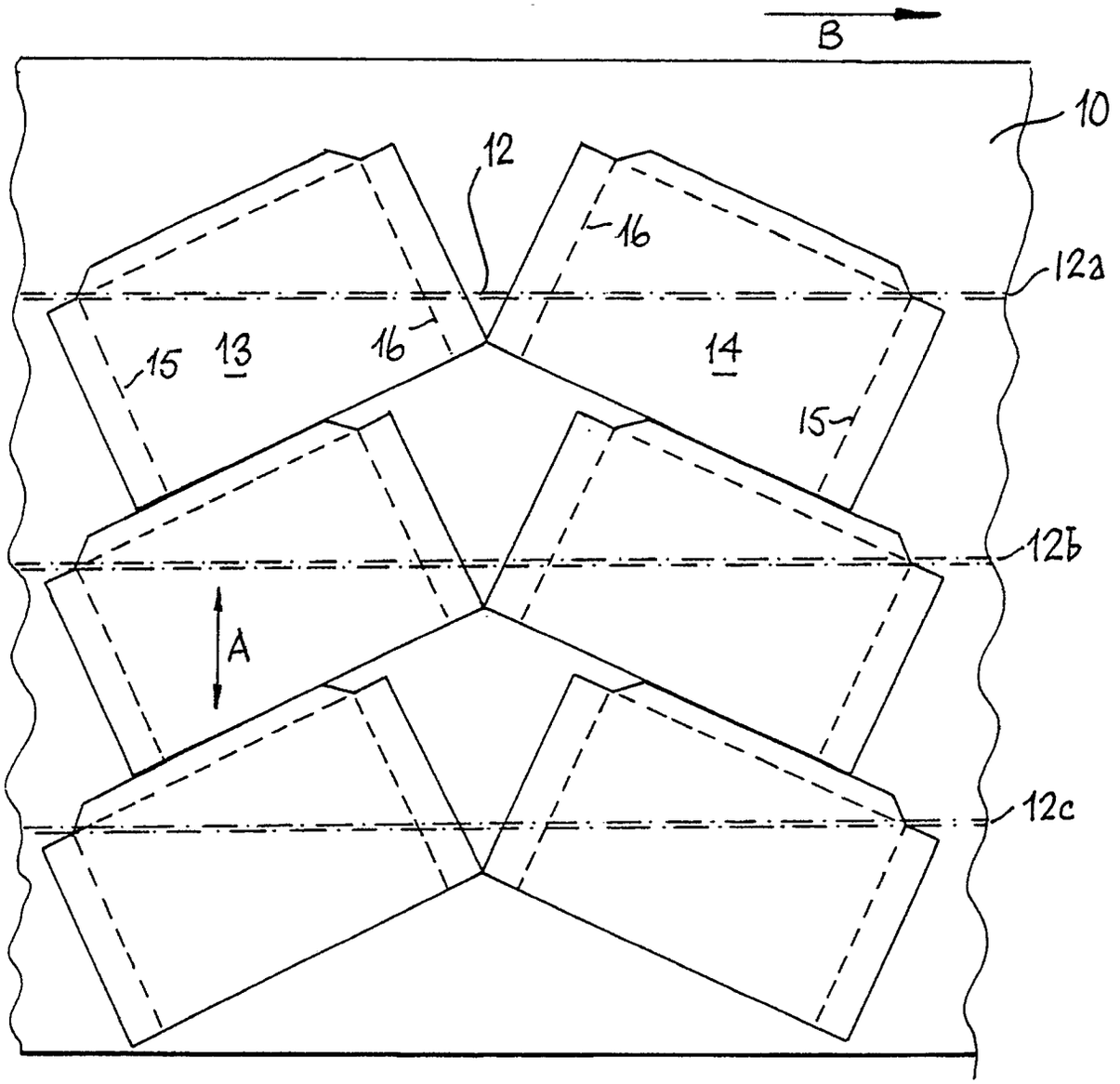

FIG.1

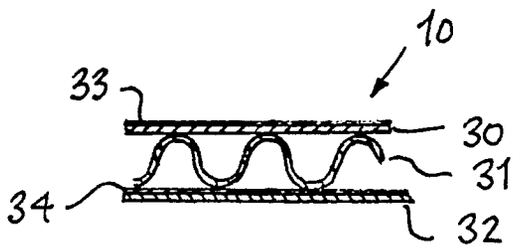

FIG.6

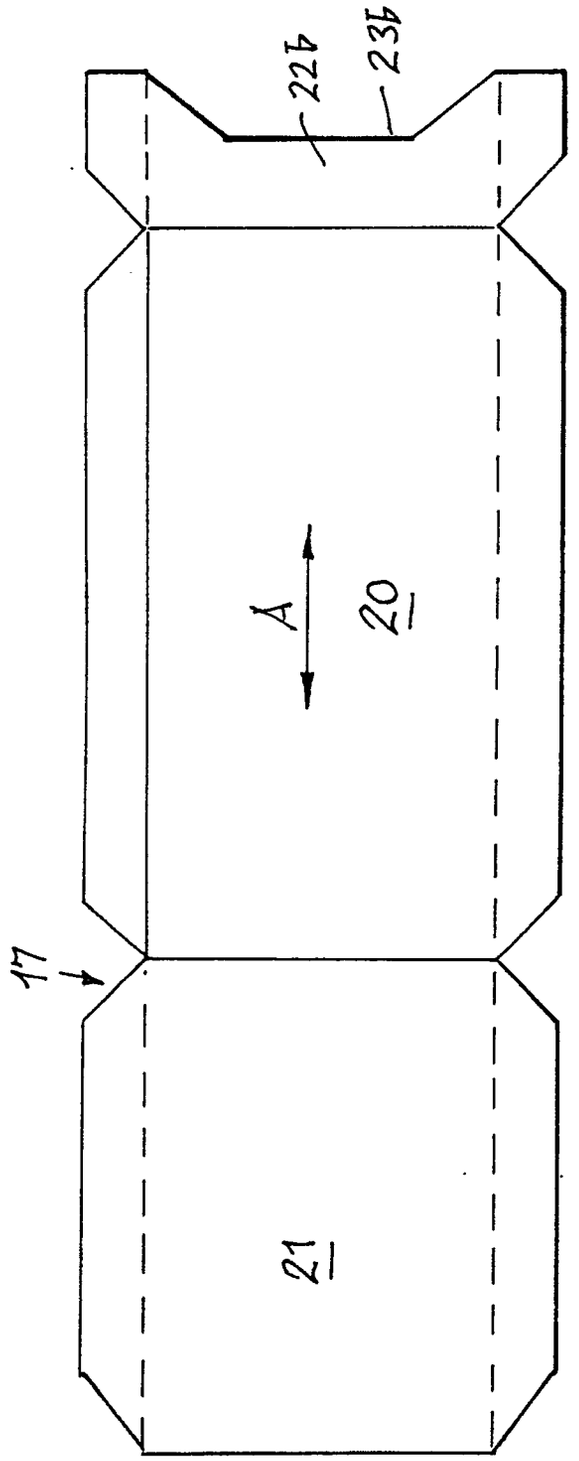

FIG. 2

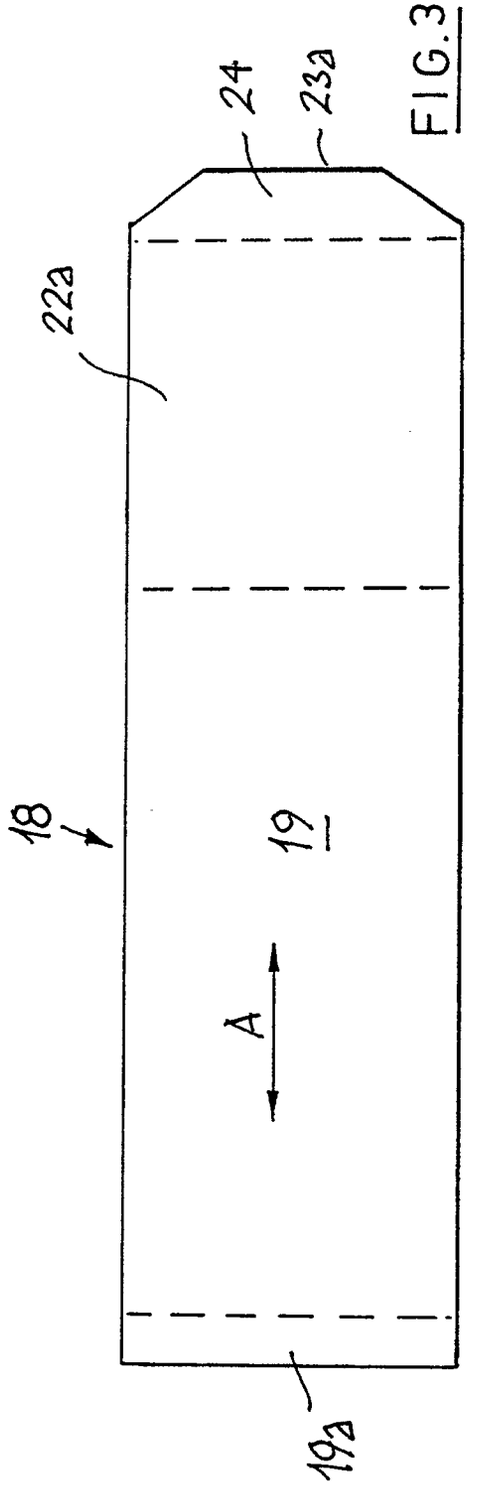

FIG. 3

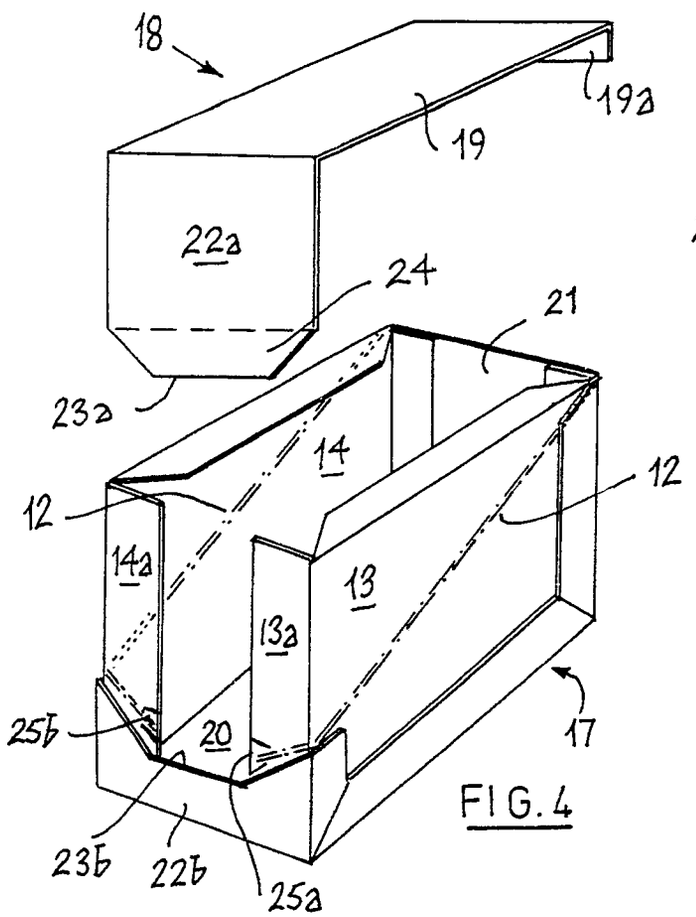

FIG.4

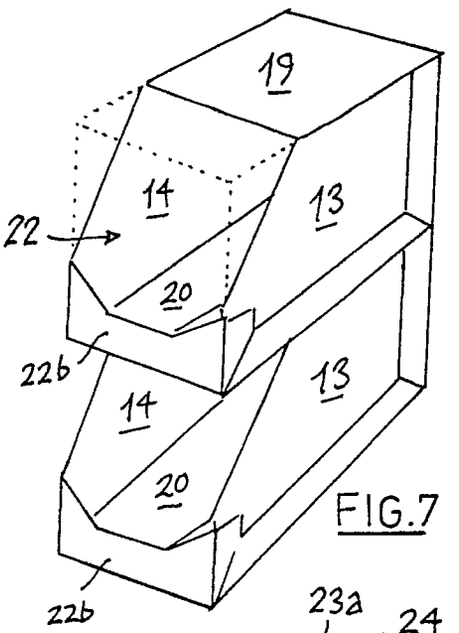

FIG.7

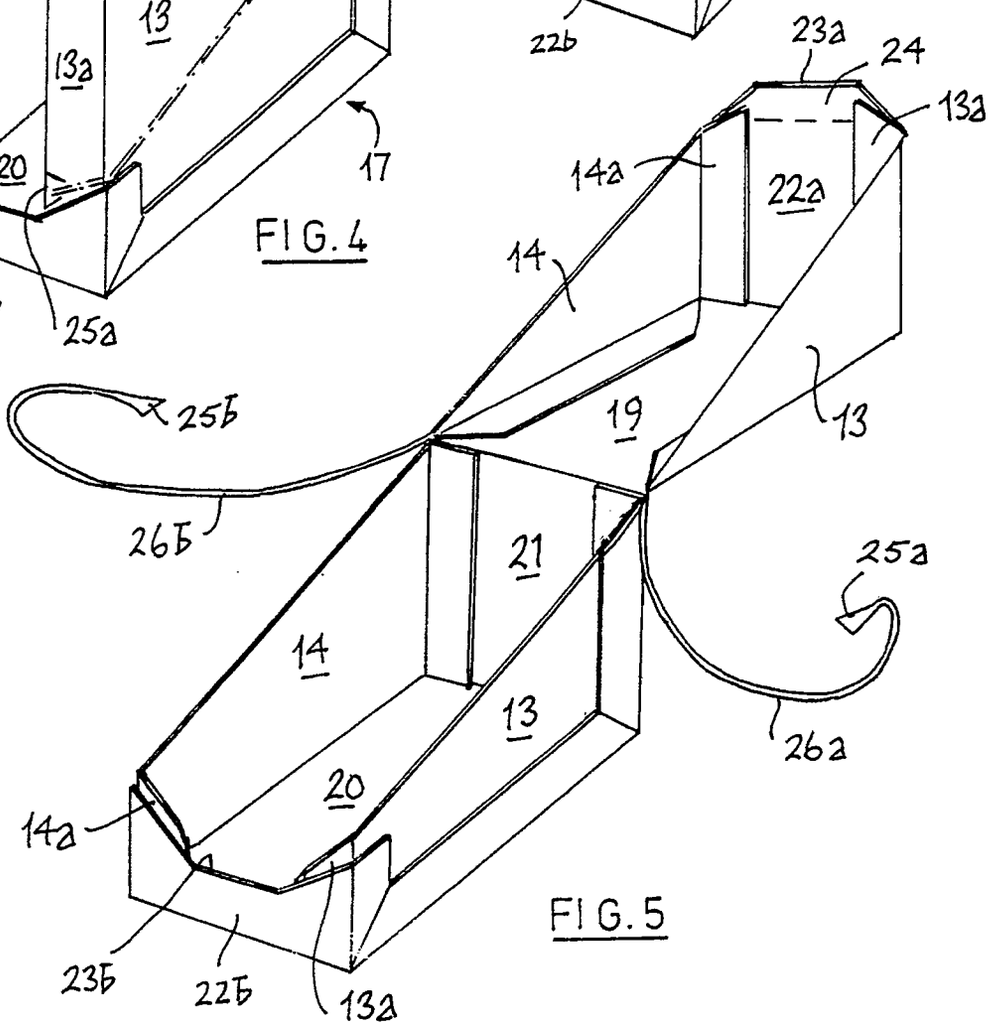

FIG.5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 1520

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)
Y	US-A-2 082 677 (S.P. BELSINGER) * Figures 7,8,11; page 2, left-hand column, lines 40-63; right-hand column, lines 10-16 *	1-7	B 65 D 5/32 B 65 D 5/54 B 65 D 77/32
Y	EP-A-0 344 996 (H.B. FULLER CO.) * Figures 1,3,4; column 3, line 53 - column 4, line 56; claim 5 *	1-7	
Y	US-A-4 784 271 (C.L. WOSABA et al.) * Figures 5,7,8; column 5, line 58 - column 6, line 4 *	2,3,6	
A		10	
A	EP-A-0 218 186 (ALTONAER WELLPAPPENFABRIK) * Figure 1; column 5, lines 10-58 *	8,9	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D
B 31 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23-08-1990	PERNICE,C.

CATEGORY OF CITED DOCUMENTS

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