

(19)



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(11)

EP 0 881 152 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.12.1998 Bulletin 1998/49

(51) Int Cl.⁶: **B65D 5/42**

(21) Application number: **98304215.1**

(22) Date of filing: **28.05.1998**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Linlau, Cynthia**
B-8810 Lichtervelde (BE)
• **Vernaeye, Guido**
B-9940 Ertvelde (BE)

(30) Priority: **28.05.1997 GB 9710965**

(74) Representative: **Leale, Robin George**
Frank B. Dehn & Co., European Patent Attorneys,
179 Queen Victoria Street
London EC4V 4EL (GB)

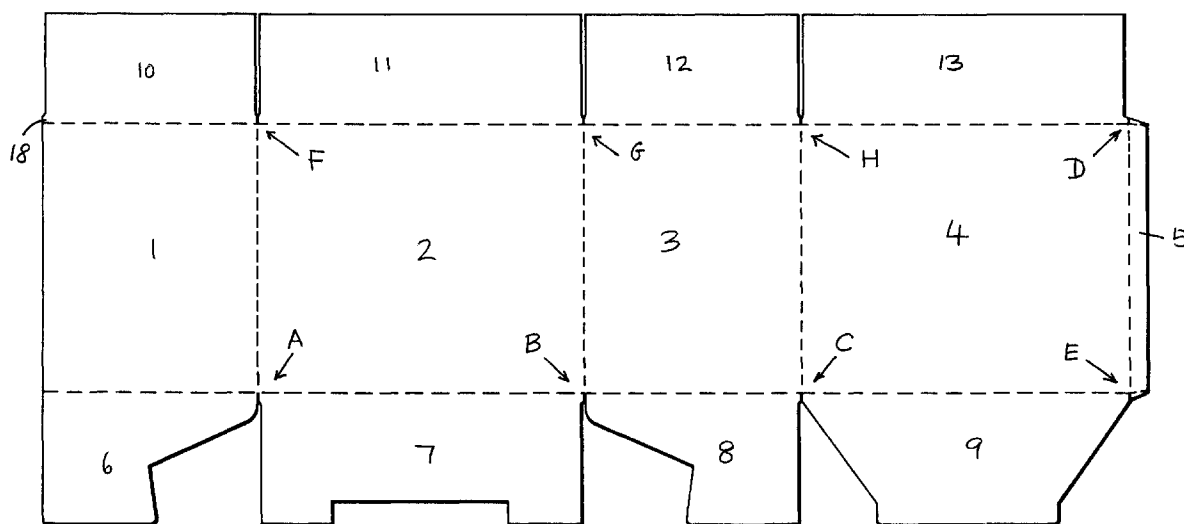
(71) Applicant: **SCA Packaging Limited**
Aylesford, Kent ME20 7PF (GB)

(54) **Carton with leak-proof corner construction and blank therefor**

(57) A blank for making a cardboard or like container incorporating a manufacturer's joint, wherein extensions (16) are provided at the respective ends of the

connecting strip (5) arranged to be incorporated in the two corners of the made up container at the joint, inside of the closure flaps at the corners.

FIG.1.



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Description

This invention relates to containers made of cardboard, corrugated board or similar lightweight semi-rigid sheet material, of the kind having a tubular body formed by a row of hinged interconnected wall panels joined end to end by a connecting strip which is contiguous with one of the end panels of the row and is secured, usually by gluing, to the panel at the other end. This join between the end panels of the row to make the tubular body is known as "the manufacturer's joint". The container is closed by suitable arrays of end closure flaps hinged to opposite ends of the respective wall panels and foldable inwardly to close the ends of the tubular body.

Such a container has a number of corners, each defined at the meeting point of three hinge lines, namely the hinge line between two adjacent wall panels and the hinge lines between those wall panels and their associated closure flaps. The latter flaps are of course separate from each other at such corners, and this can cause a problem if it is desired to make the made up container dust-tight and/or light-tight to a degree, because dust or light can find its way through the separations between the end closure flaps in the corners of the container. This problem is particularly noticeable at those corners which are located at the respective ends of the manufacturer's joint previously referred to, because the aforementioned connecting strip constitutes an extra thickness of board which further separates the mutually adjacent regions of the closure flaps at the joint.

Viewed from one aspect the present invention provides a blank made of cardboard, corrugated board or similar lightweight semi-rigid sheet material, for making a container incorporating a manufacturer's joint as herein defined, wherein at least one sealing part is provided in the blank, arranged so as to be located in the region of at least one end of the manufacturer's joint in the made up container, and arranged to be incorporated in sealing fashion in the relevant corner of the made up container inside of the said closure flaps at said corner.

Such sealing part or parts will be arranged to underlie and thereby effectively close any gap that would otherwise be present between the edges of the respective closure flaps adjacent the corner.

Such a sealing part could be provided at only one end of the manufacturer's joint, so as to provide an enhanced seal at only one corner of the made up container. Such an arrangement may be useful for example if the container is to be kept one way up, with the sealed corner at the top. Preferably however at least two said sealing parts are provided, arranged to be located one at each end of the manufacturer's joint.

The said sealing parts may be provided on any convenient part of the blank adjacent the ends of the manufacturer's joint, for example on the said connecting strip, and/or on one or other of the end closure flaps at the relevant corner, and/or on a combination of such el-

ements by spanning between them. Preferably however the said sealing parts are provided on the said connecting strip, one at each end thereof. The sealing parts are preferably hingedly connected to the said connecting strip, although this is not essential as they could be manually folded relative to the strip during erection of the container.

It is normal for the adjacent edges of each adjoining pair of end closure flaps to be at least slightly laterally spaced away from each other adjacent the relevant corner to enable them to be folded in without interfering with each other at the corner, or in other words to allow for the thickness of the board upon such folding in. However, despite the advantage of such an arrangement in permitting the flaps to be folded in a tidy fashion, it has the disadvantage of exacerbating the problem, already referred to, of making the corners of the container dust-tight and/or light-tight to a degree. In a preferred form of the invention, therefore the said closure flaps at the said relevant corners are not laterally spaced apart at their adjoining edges adjacent the said corners.

Preferably the last mentioned feature is also applied to the other adjacent pairs of closure flaps of the blank, i.e. those not forming part of the corners at the ends of the manufacturer's joint. Thus in a preferred form of the invention all of the adjacent pairs of closure flaps are not laterally spaced apart at their adjoining edges adjacent what will be the corners of the made up container.

An embodiment 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 made of double faced corrugated board, according to the invention; Figures 2 to 6 are enlarged fragmentary views of the corner regions of the blank indicated by the reference letters A to E respectively in Figure 1; Figure 7 is a fragmentary perspective view of the inside of the corner B of the made up container; Figure 8 is a similar view of the inside of the corner F as indicated in Figure 1; Figures 9 and 10 are fragmentary perspective views showing successive stages in the erection of the container in the corner E thereof; and Figures 11 and 12 are similar views relating to corner D.

Referring first to Figure 1, a blank for forming a four-sided box-like container according to the invention comprises a row of four hinged interconnected side wall panels 1 to 4, with a connecting strip 5 hinged to the panel 4 and intended to be glued to the edge of the panel 1 in the conventional manner referred to as the manufacturer's joint, to form the four-sided tubular body of the container. Arrays of bottom end closure flaps 6 to 9 and top end closure flaps 10 to 13 are hinged to the ends of the respective wall panels.

Referring now to Figures 2 to 4, at each of the corner

regions A to C the two end closure flaps are only separated by a cut 14 adjacent the corner, rather than being spaced apart by a narrow slot as is conventional. The same is the case at the corners F to H in Figure 1.

Figure 7 shows the bottom corner region B of the erected container, on the inside looking down. Bottom closure flap 7 is folded in first, followed to flap 8. As a result of there only being a cut 14 between the closure flaps, rather than a slot, the region 15 of flap 7 adjacent the cut is crushed into the angle between wall panel 3 and flap 8, so as to enhance the dust-tightness and light-tightness of the corner. The effect at corners A and C is similar.

Figure 8 shows the top corner region F of the erected container, on the inside looking up. The closure flap 11 is folded in first, then the closure flap 10. The region 16 of the flap 11 is crushed into the angle between the wall panel 1 and the closure flap 10, with the same effect as described above. Similar effects are achieved at top corners G and H.

Referring now to Figures 5 and 6, sealing parts in the form of small triangular extensions 16 are hingedly connected to the respective ends of the connecting strip 5, separated from the adjoining closure flaps 9 and 13 by cuts 17.

Figures 9 and 10 show how top corner D is erected, from the inside looking up. Top closure flap 10 is folded in first, followed by closure flap 13. As flap 10 is folded in, it pushes extension 16 down about its hinge line so that the extension becomes incorporated in the erected corner, inside of the closure flaps, to enhance the dust-tightness and light-tightness of the corner. The same effect is achieved at bottom corner E as illustrated in Figures 11 and 12. Here, bottom closure flap 6 is folded in first, followed by flap 9. Also, at corner D, region 18 of top closure flap 10 is crushed into the angle between wall panel 4 and flap 13, to further enhance the seal.

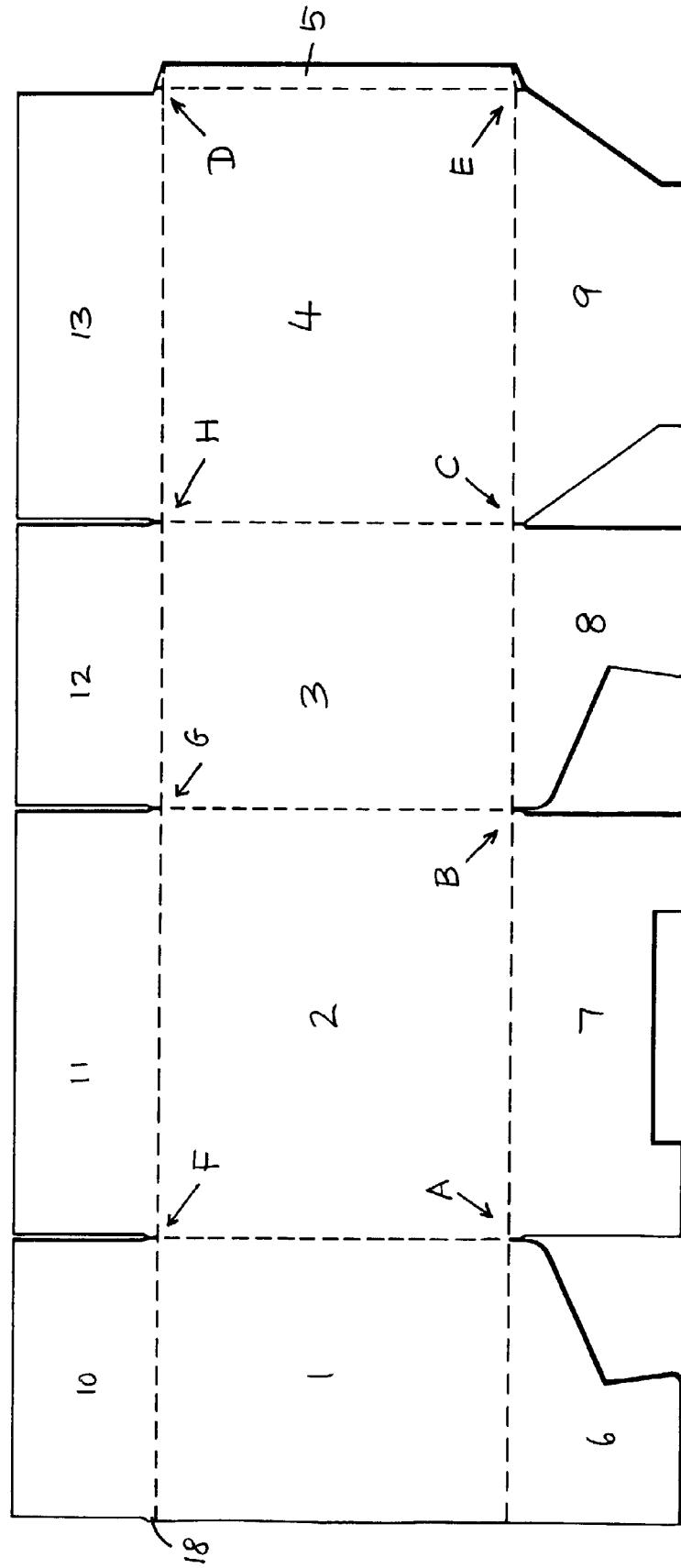
one at each end thereof.

4. A blank as claimed in claim 3, wherein the said sealing parts are hingedly connected to the said connecting strip.
5. A blank as claimed in any preceding claim, wherein the said closure flaps at at least one of the said relevant corners are not laterally spaced apart at their adjoining edges adjacent the said corners.
6. A blank as claimed in any of claims 1 to 4, wherein all of the adjacent pairs of closure flaps are not laterally spaced apart at their adjoining edges adjacent what will be the corners of the made up container.
7. A blank as claimed in claim 1, substantially as hereinbefore described with reference to Figure 1 of the accompanying drawings.
8. A container made from a blank as claimed in any of claims 1 to 5.

Claims

1. A blank made of cardboard, corrugated board or similar lightweight semi-rigid sheet material, for making a container incorporating a manufacturer's joint as herein defined, wherein at least one sealing part is provided in the blank, arranged so as to be located in the region of at least one end of the manufacturer's joint in the made up container, and arranged to be incorporated in sealing fashion in the relevant corner of the made up container inside of the said closure flaps at said corner.
2. A blank as claimed in claim 1, wherein at least two said sealing parts are provided, arranged to be located one at each end of the manufacturer's joint.
3. A blank as claimed in claim 2, wherein the said sealing parts are provided on the said connecting strip,

FIG.1.



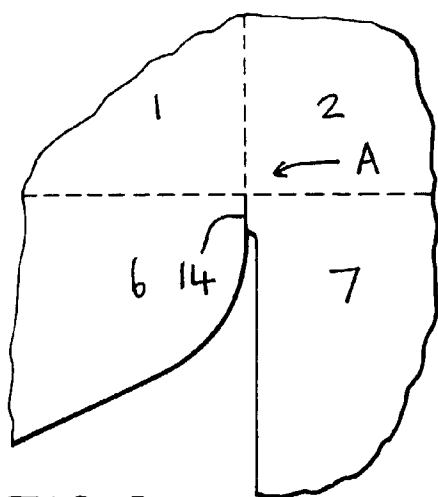


FIG. 2.

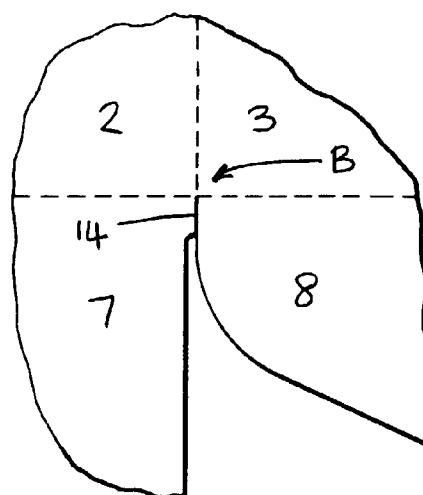


FIG. 3.

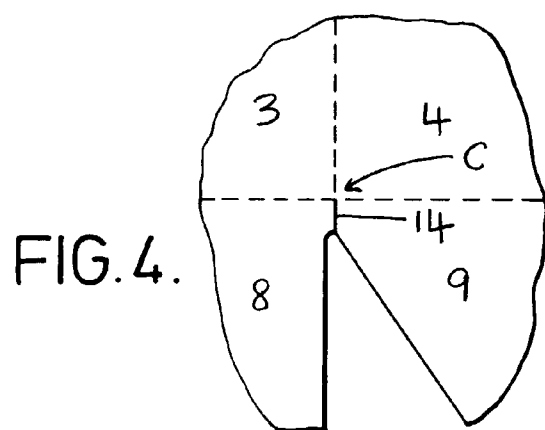


FIG. 4.

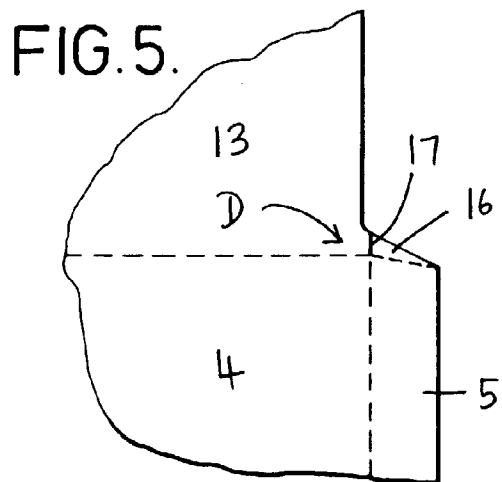


FIG. 5.

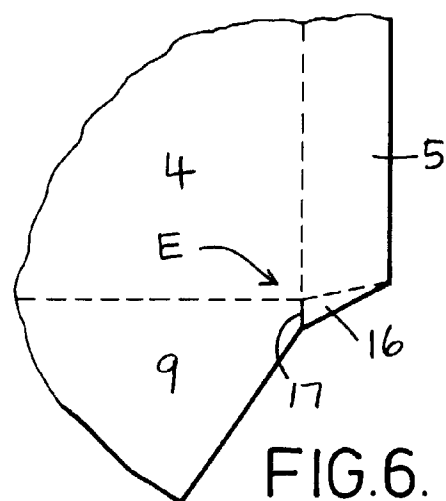


FIG. 6.

FIG.7.

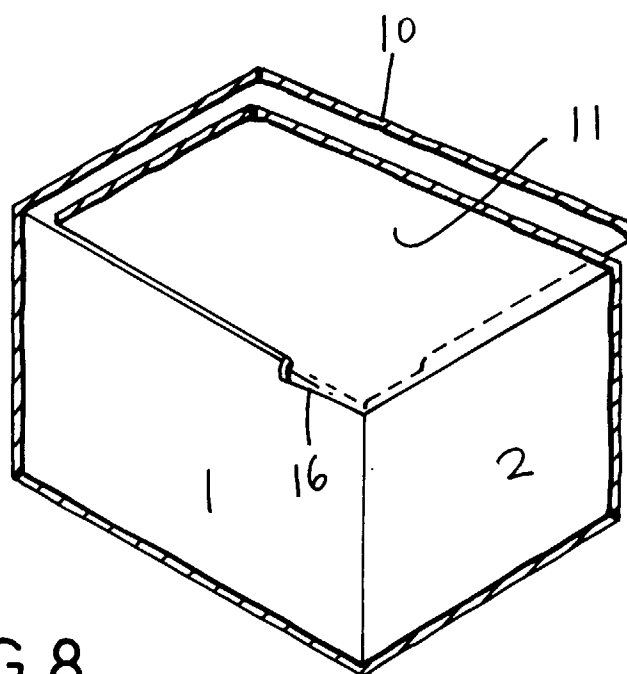
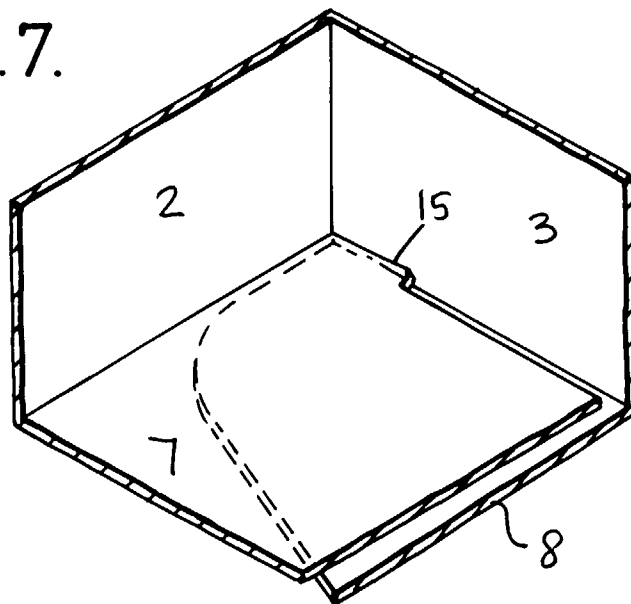
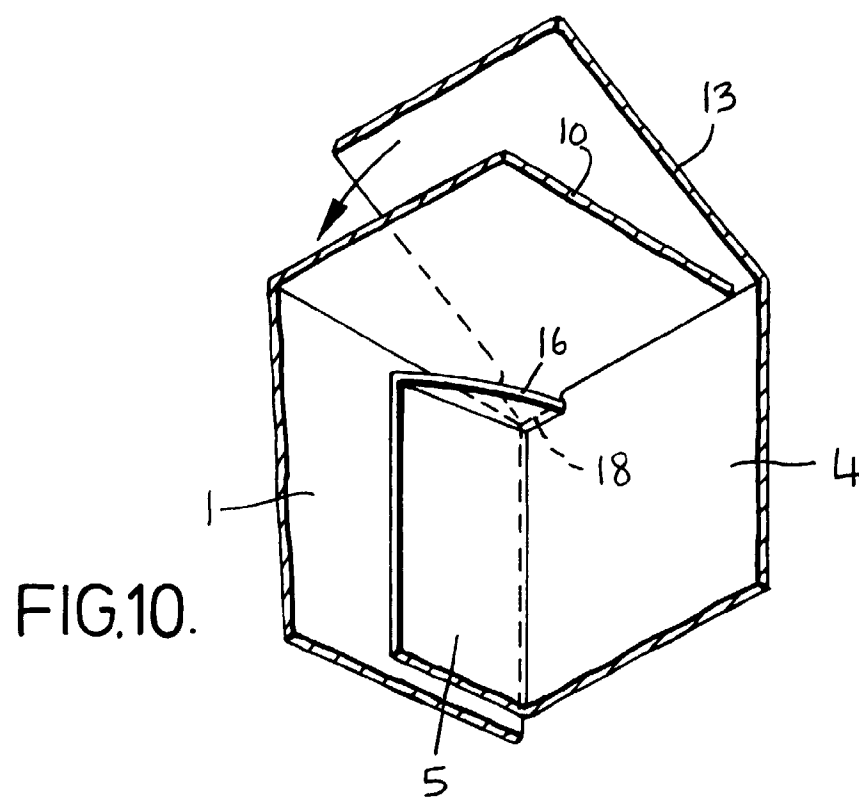
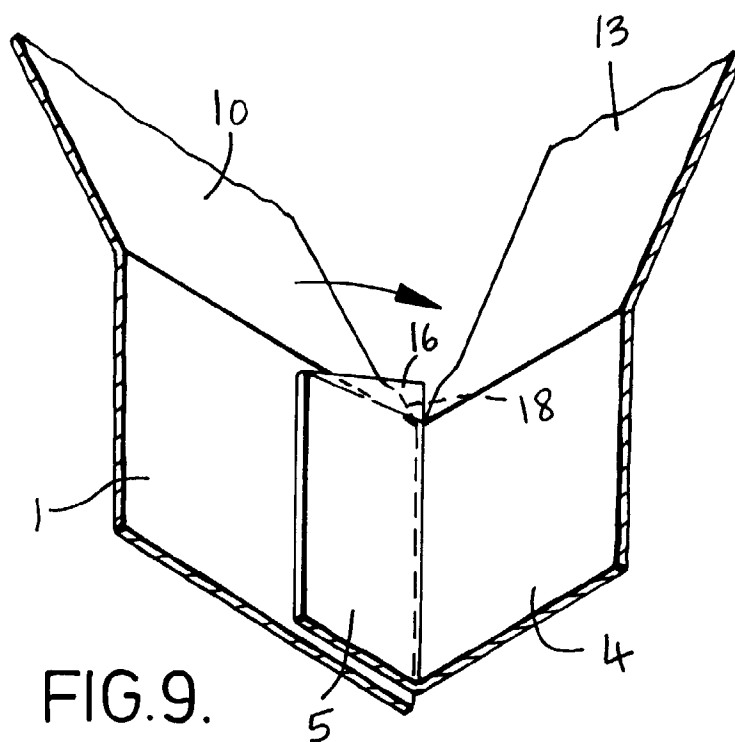
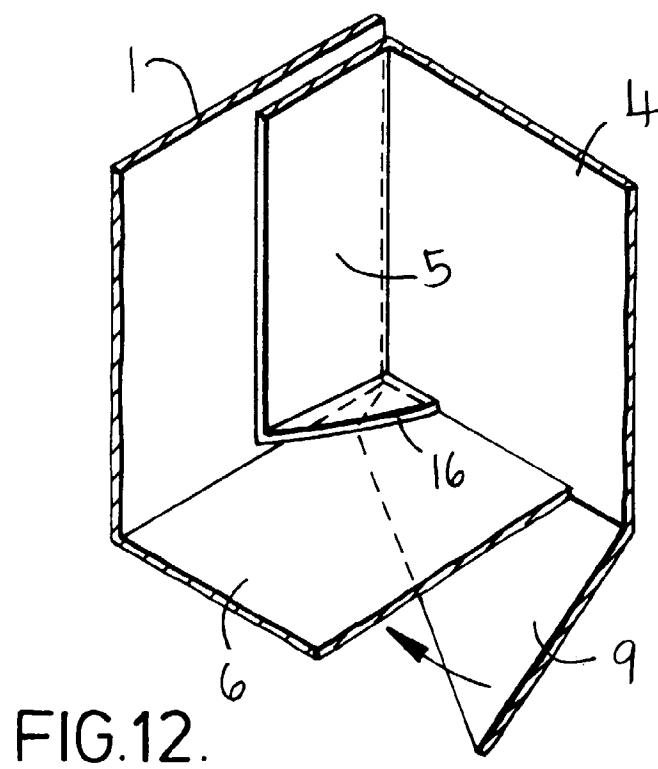
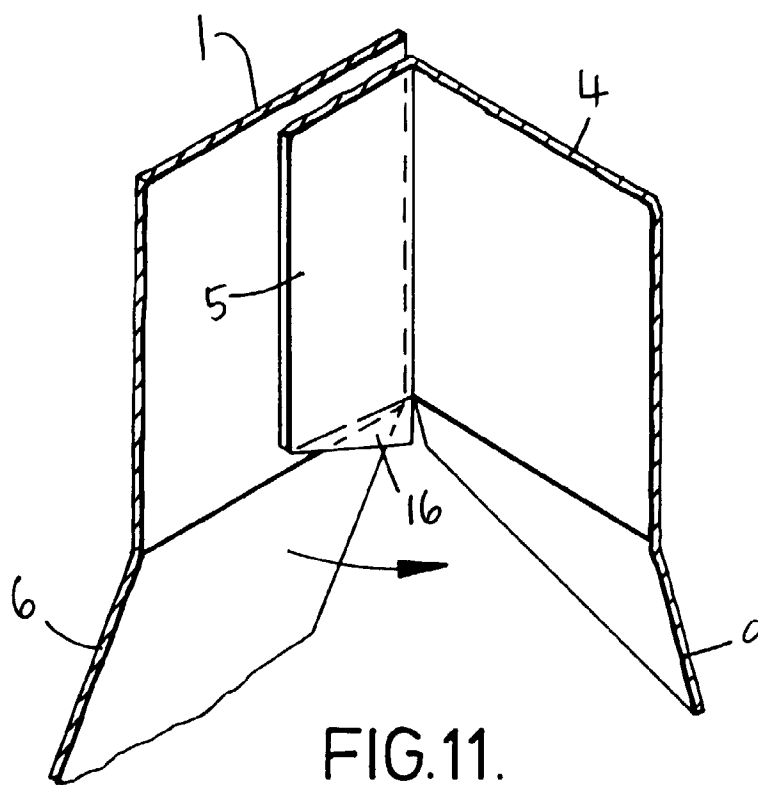


FIG.8.







European Patent
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PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

EP 98 30 4215

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.6)
X	EP 0 171 275 A (OWENS-ILLINOIS) 12 February 1986	1-4, 8	B65D5/42
Y	* page 5, line 7 - page 6, line 9; figures 1-5, 11 *	5, 6	
A	DE 74 31 479 U (HOECHST) 19 December 1974 * page 3, line 1 - line 11; figure 1 *	1-4	
A	US 3 981 432 A (BERGSTEIN) 21 September 1976 * column 5, line 15 - line 65; figures 1-3, 5 *	1-4	
Y	US 1 921 150 A (BOMBERGER) 8 August 1933 * page 1, line 95 - page 2, line 24; figures 1-4 *	5, 6	
A	US 5 160 082 A (MCCORMICK) 3 November 1992 * column 3, line 56 - line 68; figure 1 * * column 4, line 51 - line 68; figures 7-9 *	5, 6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : 1-6, 8 Claims searched incompletely : Claims not searched : 7 Reason for the limitation of the search: RULE 29.6 EPC			
Place of search		Date of completion of the search	Examiner
THE HAGUE		12 August 1998	Newell, P
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