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

(11) EP 0 742 157 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.11.1996 Bulletin 1996/46

(51) Int Cl.[6]: **B65D 5/54**, B65D 5/68, B65D 5/56

(21) Application number: **96201325.6**

(22) Date of filing: **13.05.1996**

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

(30) Priority: **12.05.1995 NL 1000349**

(71) Applicant: **Spronk-Dik, Anne**
8244 CE Lelystad-Haven (NL)

(72) Inventor: **Spronk, Johannes Fredericus**
8244 CE Lelystad-Haven (NL)

(74) Representative:
Smulders, Theodorus A.H.J., Ir. et al
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN 's-Gravenhage (NL)

(54) Method for manufacturing a collar box and collar box manufactured using such method

(57) A method for manufacturing a collar box wherein during the cutting or die-cutting operation cover sidewall panels (7) are formed on the base wall (5) of the cover part (2) via folding lines (8), while via a weakened line (9) a bottom sidewall panel (6) is formed on the edge of each cover sidewall panel (7) remote from said folding line (8), and collar part panels (3) are formed on the edges of the base wall (4) of the bottom part (1) via folding lines (10), these sidewall panels and collar part panels being designed without fastening lips, wherein subsequently the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) are bent over through substantially 90° relative to the associated base walls (5 and 4, respectively) and are maintained in the bent position by flexible material strips, wherein subsequently the cover part (2) is placed over the bottom part (1), which parts (1, 2) are joined together with adhesive or by a sealing operation, with the adhesive or the seal being provided adjacent the bottom sidewall panels (6).
The invention also relates to a collar box obtained using the method.

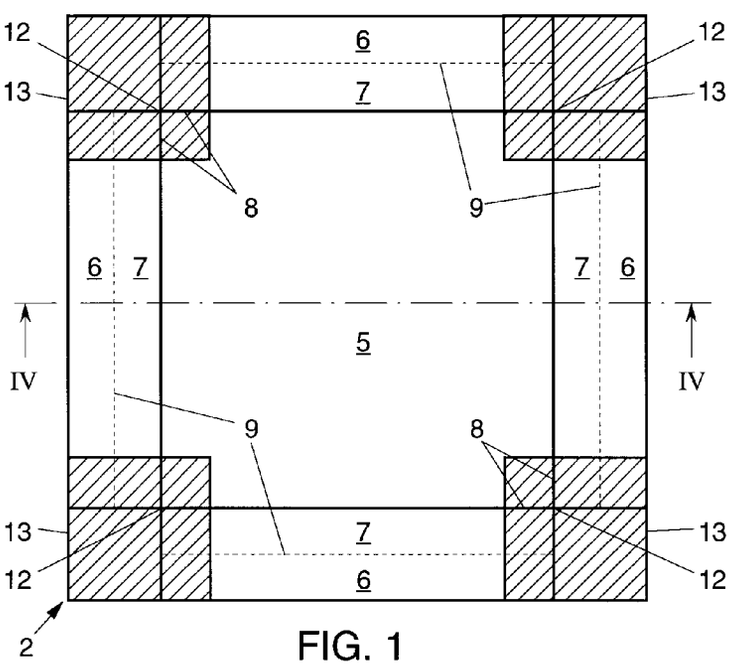

FIG. 1

EP 0 742 157 A1

Description

This invention relates to a method for manufacturing a collar box comprising a bottom part, a cover part and a collar part, both the bottom part and the cover part comprising a base wall on which a number of sidewalls extend substantially perpendicularly, while the collar part also extends substantially perpendicularly to the base walls and is so designed that the sidewalls of the cover part enclose the collar part with a proper fit in a closed position of the box, wherein the blanks for the collar, the bottom and the cover part are formed from a flat plate of foldable material by means of a die-cutting or cutting operation, whereafter by folding and adhesion the collar box is assembled, while during the die-cutting or cutting operation cover sidewall panels are formed on the base wall of the cover part via folding lines, while a bottom sidewall panel is formed on the edge of each cover sidewall panel remote from said folding line via a weakened line, and collar part panels are formed on the edges of the base wall of the bottom part via folding lines, wherein subsequently the cover sidewall panels with the bottom sidewall panels formed thereon and the collar part panels are bent through substantially 90° relative to the associated base walls, with coupling means being provided for keeping the cover sidewall panels with the bottom sidewall panels formed thereon and the collar part panels in the bent position, wherein subsequently the cover part is placed over the bottom part, which parts are joined together with adhesive or by a sealing operation, with the adhesive or the seal being provided adjacent the bottom sidewall panels.

Such a method for manufacturing a collar box is for instance known from DE-A-3 140 886. This known method already signified a tremendous acceleration of the production process compared with the hitherto known method for manufacturing collar boxes which is still frequently used in practice. In the original method, frequently used in practice, the collar box, which is for instance used for packaging cigars and delicacies such as chocolate, is manufactured from three separate blanks, viz. a blank for the bottom part, a blank for the cover part and a blank for the collar part. Then a bottom part, a cover part and a collar part are fabricated from these blanks by folding and adhesion, whereafter the collar is placed in the bottom part and is joined to it by adhesion. Then the cover part is placed on the bottom part and the collar part, with the free end edges of the sidewalls of the bottom part and of the cover part coming to lie against each other, whereafter a label is arranged over the base wall of the cover part and the sidewalls of the bottom part and the cover part, which label connects the bottom part with the cover part. Then the label is cut through at the location of the end edges referred to, with the exception of one sidewall, where the label constitutes the hinge between the bottom part and the cover part. After the box has thus been assembled, it can be filled with the products to be packaged, such as for instance cigars or delicacies such as biscuits or chocolate. Then the box is closed again and sealed with a seal or packaged in film when it is to be closed airtightly.

The original method for manufacturing a collar box is time-consuming and moreover provides a box which is not airtight, which adversely affects the storage properties of the products packaged therein. In addition, the number of operations that must be carried out according to the known method to manufacture a collar box is particularly large, so that the equipment with which the collar box is manufactured is complicated and costly.

With the method known from DE-A-3 140 886 these drawbacks are overcome and the production rate compared with the original method frequently used in practice is tripled.

However, the box which is obtained with the method described in DE-A-3 140 886 has an important disadvantage which resides in particular in the irregular inner contour of the collar box and the irregular outer contour of the collar part. As a consequence of the local depressions in the collar part, the collar box known from DE-A-3 140 886 has a less good air seal than does the collar box manufactured according to the original method, where the collar has a smooth and level contour. Moreover, the risk of damage to the contents is greater in the collar box known from DE-A-3 140 886 in that the cigars, for instance, are not entirely supported by the walls formed by the collar. The irregular inner and outer contours of the collar part are caused by, and are necessary for the accommodation of, fastening lips by means of which the side wall panels and the collar part panels are maintained in the bent position.

The object of the invention is to provide a method for manufacturing a collar box of the type described in the preamble, whereby a collar box is obtained without the above-mentioned disadvantages.

To that end, the method according to the invention is characterized in that the cover sidewall panels with the bottom sidewall panels formed thereon as well as the collar part panels are designed without a fastening lip and the coupling means for keeping the cover sidewall panels with the bottom sidewall panels formed thereon and the collar part panels in the bent position are designed as flexible material strip portions, for instance of paper or film, which, by adhesion or by a sealing operation, at least at the location of the points of intersection of the folding lines, which points of intersection in the assembled condition of the bottom part and the cover part form the corner points thereof, are joined to the blanks of the bottom part and the cover part and, after the cover sidewall panels with the bottom sidewall panels formed thereon and the collar part panels have been bent over, are joined to these panels in such a manner that the panels in question retain the bent position.

By virtue of the fact that the cover sidewall panels with the bottom sidewall panels formed thereon as well as the collar part panels are designed without a fastening lip, and that the mutual connection between the dif-

ferent cover sidewall panels with the bottom sidewall panels formed thereon as well as between the collar part panels is effected by very thin flexible material strips of film or paper, the collar part can be made of level design without depressions. As a result, it is possible to furnish the collar box with an entirely uniform inner contour, and also the airtightness of the box will be optimal owing to the close abutment of the collar part with the cover part.

An additional advantage of the material strips at the corner points of the box is that the corner points are airtight and dust-tight and are inaccessible to vermin.

It will be clear that the invention also relates to a collar box obtained using the method according to the invention.

Further elaborations of the method according to the invention are described in the subclaims and will be further clarified, with reference to the drawings, on the basis of an exemplary embodiment.

Fig. 1 shows the blank of the cover part of an exemplary embodiment of the collar box;

Fig. 2 shows the blank of the bottom part of the exemplary embodiment in question;

Fig. 3 shows a perspective view in cross section of the exemplary embodiment of the collar box in assembled condition; and

Fig. 4 shows a cross section taken on line IV-IV of the blank of the cover part.

A collar box generally comprises a bottom part 1, a cover part 2 and a collar part 3. Both the bottom part 1 and the cover part 2 comprise a base wall 4, 5 on which a number of sidewalls 6, 7 extend substantially perpendicularly. The collar part also extends substantially perpendicularly to the base walls 4, 5 and is so designed that the sidewalls 7 of the cover part 2 enclose the collar part with a proper fit in a closed condition of the collar box. Such a box is particularly robust and features a great resistance to being pulled out of square, so that it is particularly suitable for packaging fragile products, such as for instance cigars and delicatessen such as biscuits or chocolate. The blanks for the collar, bottom and cover parts 3, 1, 2, respectively, are formed from a flat plate of foldable material, such as for instance cardboard, by means of a die-cutting or cutting operation. Then the collar box is assembled from the blanks by folding and adhesion. During the cutting or die-cutting operation, cover sidewall panels are formed on the base wall 5 of the cover part 2 via folding lines 8. Via a weakened line 9 a bottom side wall panel 6 is formed on the edge of each cover sidewall panel 7 remote from the folding line 8. Collar part panels 3 are formed on the edges of the base wall 4 of the bottom part 1 via folding lines 10. Then flexible material strip portions 13 are provided at the corner points 11, 12 of the bottom part 1 and the cover part 2. Then the cover sidewall panels 7 with the bottom sidewall panels 6 formed thereon and the collar part panels 3 are bent over through substantially 90° relative to the associated base walls 5 and 4, respectively. The cover sidewall panels 7 with the bottom sidewall panels 6 formed thereon as well as the collar part panels 3 are maintained in the bent position in that the material strip portions 13 are suitably joined to the panels 6, 7, 3 referred to. This can for instance be effected by adhering the free triangular material strip portion formed upon the bending operation, to one of the bent panels 6, 7, 3. Such adhesion can occur both on the side of the panels 6, 7, 3 proximal to the box interior and on the side thereof that faces outwardly. Then the thus formed cover part 2 can be placed over the bottom part 1. The two parts 1, 2 can be interconnected with adhesive 14 or by a sealing operation, with the adhesive 14 or the seal 14 being provided at the location of the bottom sidewall panels 6.

Because the blank parts 3 of the collar part 3 are formed on the bottom part 1 of the collar box, the collar 3 of the collar box need not be separately assembled and then be separately mounted in a bottom part 1 of the collar box, but the collar box can be assembled in a much simpler manner by folding and adhesion. Firstly, no loose parts need to be gripped separately and be positioned relative to each other and, secondly, as a consequence, the folding operations can be automated much more easily. All this leads to a tripling of the rate of the production process for the manufacture of a collar box compared with the original method for manufacturing a collar box, frequently used in practice. Moreover, what is accomplished by virtue of the absence of the fastening lips, whose function has been taken over by the flexible material strips, is that a highly uniform collar part is obtained with a level inner and outer contour. As a result, a properly closing box with a uniformly shaped box interior is obtained, which, moreover, can be produced in a cheap and simple manner. Furthermore, what is accomplished with the flexible material strips is that also the corner points 11, 12 of the bottom part 1 and the cover part 2 are airtight and dust-tight and inaccessible to vermin.

Before the box is opened, all of the weakened lines 9, or all but one, will have to be broken, whereafter the cover part 2 can be hinged open relative to the bottom part 1 or be removed. In the process, the bottom sidewall panels 6 will remain joined to the collar part panels 3 in that they are connected thereto through adhesive 14 or a seal.

According to a further elaboration of the method according to the invention, the products to be packaged can be placed in the bottom part 1 or the cover part 2 of the collar box after the sidewall panels 7 with the bottom sidewall panels 6 formed thereon and the collar part panels 3 have been bent over through substantially 90° relative to the associated base walls 5 and 4, respectively, and before the cover part 2 is placed over the bottom part 1.

What is thus accomplished is that the products are already accommodated in the collar box during the man-

ufacture of the collar box itself. Compared with the known method, this provides a saving of an entire filling operation of the box, since heretofore the box was first assembled entirely and then filled with a product to be packaged. This was the result of the fact that the box was still to undergo an intermediate treatment for the purpose of bulging the top wall of the box using moisture and heat. Since the operation of bulging one of the walls of the box using moisture and heat need not take place because for this purpose a different method has been developed, which method is the subject of another patent application filed by applicant, the packaging operation can be incorporated into the method of manufacturing the collar box, which saves a large number of operations following the manufacture of the collar box.

According to a further elaboration of the invention, after the bottom part 1 and the cover part 2 have been placed onto each other and been joined together, a printed label can be arranged over the base wall 5 of the cover part 2 and the sidewalls 6, 7 of the cover part 2 and the bottom part 1, respectively. With such a label, in a simple manner the box is given an attractive appearance which promotes the sale of the thus packaged product.

Optionally, according to a first further elaboration of the invention, after the cover part 2 and the bottom part 1 have been connected to each other, all weakened lines 9 or all weakened lines 9 but one, which one weakened line 9 forms a hinge between the bottom and cover parts 1, 2 of the collar box, can be broken. This provides the advantage that it is clear to the user where the box is to be opened, since the separation between the cover and the bottom of the box is clearly visible. Moreover, only a minimum of operations need to be performed to open the box. In order to prevent premature opening of the box, it can be sealed or be packaged in film, which film package moreover provides the advantage that the box is closed virtually airtightly.

For the purpose of breaking the weakened lines 9, in accordance with the invention, use can be made of a knife which is provided with a stop, which stop prevents the knife from engaging the collar part panels 3 as a result of the knife penetrating undesirably far into the sidewall panels 6, 7. Such a knife can for instance be designed as a circular knife with a cylindrical stop extending transversely to the knife by the circumferential surface thereof, which stop comes to lie by its outer circumferential surface against the sidewall panels 6, 7 when the knife has partly penetrated the sidewall panels 6, 7.

According to a second further elaboration of the method according to the invention, rather than breaking the weakened line 9, before the cover part 2 is placed over the bottom part 1, a pull string is arranged adjacent the weakened lines 9, which draw string is received between the sidewall panels 6, 7 and the collar part panels 3 and which, if desired with the exception of a single sidewall of the box which will comprise a hinge between the cover part 2 and the bottom part 1, passes around the entire box and has one end projecting outside the box, so that it can be gripped. The pull string is disposed in the space created by the weakened line 9 between the sidewall panels 6, 7 and the collar part panels 3. Because the bottom sidewall panels 6 and the cover sidewall panels 7 in the still unopened condition of the box are completely interconnected, it is not possible that, given a suitable design of the weakened line 9, the box leaks adjacent the separation line between the bottom part 1 and the cover part 2, since this separation line has not been created yet and is not created until the user wishes to access the contents of the collar box. He can do this by gripping the free end of the pull string projecting outside the box and pulling it. The pull string will thereby cut through the weakened line throughout the circumference of the box, optionally with the exception of the one sidewall where the pull string is not arranged. In this one sidewall, the weakened line 9 forms a hinge between the cover part 2 and the bottom part 1. For the purpose of creating the hinge in this box, it is therefore not necessary to arrange a label over the base wall 5 of the cover part 2 and the sidewalls 6, 7 of the bottom and cover parts 1, 2, which label can subsequently serve as a hinged joint between the bottom part 1 and the cover part 2, since the weakened line 9 which is not broken by the pull string constitutes a hinge, which moreover is more robust than a hinge formed by a label. Optionally, when die-cutting the cover part blank, it may already be taken into account that one of the weakened lines 9 will later form a hinge. To that end, this one weakened line 9 may for instance be cut to a slightly lesser extent than the other weakened lines, which renders it more robust.

It is observed that the folding lines 8, 10 and the weakened lines 9 can be formed by partial incision of the blank material, the so-called score line, or by displacement of the blank material, the so-called crease. It has been found that a weakened line 9 that is suitable in practice is a score line in the form of a triangular incision reaching into the cardboard over three-quarters of the thickness thereof.

It will be clear that the invention is not limited to the exemplary embodiment described, but that various modifications are possible within the framework of the invention. For instance, the box, rather than being rectangular, may be polygonal, which may even degenerate into a cylindrical box. This can for instance be effected by assembling a box with a large number of corners and subsequently covering the sidewalls using a label.

Claims

1. A method for manufacturing a collar box comprising a bottom part (1), a cover part (2) and a collar part (3), both the bottom part (1) and the cover part (2) comprising a base wall (4 and 5, respectively) on which a number of sidewalls (6, 7) extend substan-

tially perpendicularly, while the collar part (3) also extends substantially perpendicularly to the base walls (4, 5) and is so designed that the sidewalls (7) of the cover part (2) enclose the collar part (3) with a proper fit in a closed position of the box, wherein the blanks for the collar, the bottom and the cover part (3, 1, 2) are formed from a flat plate of foldable material by means of a die-cutting or cutting operation, whereafter the collar box is assembled by folding and adhesion, while during the cutting or die-cutting operation cover sidewall panels (7) are formed on the base wall (5) of the cover part (2) via folding lines (8), while via a weakened line (9) a bottom sidewall panel (6) is formed on the edge of each cover sidewall panel (7) remote from said folding line (8), and collar part panels (3) are formed on the edges of the base wall (4) of the bottom part (1) via folding lines (10), wherein subsequently the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) are bent over through substantially 90° relative to the associated base walls (5 and 4, respectively), with coupling means being provided for keeping the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) in the bent position, wherein subsequently the cover part (2) is placed over the bottom part (1), which parts (1, 2) are joined together with adhesive or by a sealing operation, with the adhesive or the seal being provided adjacent the bottom sidewall panels (6),

characterized in that the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon as well as the collar part panels (3) are designed without a fastening lip, and the coupling means for keeping the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) in the bent position are designed as flexible material strip portions (13), for instance of paper or film, which, by adhesion or by a sealing operation, at least at the location of the points of intersection (11, 12) of the folding lines (8, 10), which points of intersection (11, 12) in the assembled condition of the bottom part (1) and the cover part (2) form the corner points (11, 12) thereof, are joined to the blanks of the bottom part (1) and the cover part (2) and, after the cover sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) have been bent over, are joined to these panels (6, 7, 3) in such a manner that these panels (6, 7, 3) retain the bent position.

2. A method according to claim 1, characterized in that, after the sidewall panels (7) with the bottom sidewall panels (6) formed thereon and the collar part panels (3) have been bent over through substantially 90° relative to the associated base walls (5 and 4, respectively), and before the cover part (2) is placed over the bottom part (1), products to be packaged are placed in the bottom part (1) or the cover part (2) of the collar box.

3. A method according to claim 1 or 2, characterized in that after the bottom part (1) and the cover part (2) have been placed onto each other and been joined together, a label with a print is arranged over the base wall (5) of the cover part (2) and the sidewalls (6, 7) of the cover and the bottom part (2, 1).

4. A method according to any one of claims 1-3, characterized in that, after the cover part (2) and the bottom part (1) have been joined together, all weakened lines (9) or all weakened lines (9) but one, which one weakened line (9a) forms a hinge between the bottom part and the cover part (1, 2) of the collar box, are broken.

5. A method according to claim 4, characterized in that the weakened lines (9) are broken by a knife provided with a stop, which stop prevents the knife from engaging the collar part panels (3) as a result of the knife penetrating undesirably far into the sidewall panels (6, 7).

6. A method according to any one of claims 1-3, characterized in that before the cover part (2) is placed over the bottom part (1), at the location of the weakened lines (9) a pull string (11) is arranged, which is accommodated between the sidewall panels (6, 7) and the collar part panels (3) and which, optionally with the exception of a single sidewall of the box, which sidewall will comprise a hinge between the cover part (2) and the bottom part (1), extends around the entire box and by one end projects outside the box, so that it can be gripped.

7. A collar box obtained by the method according to any one of the preceding claims.

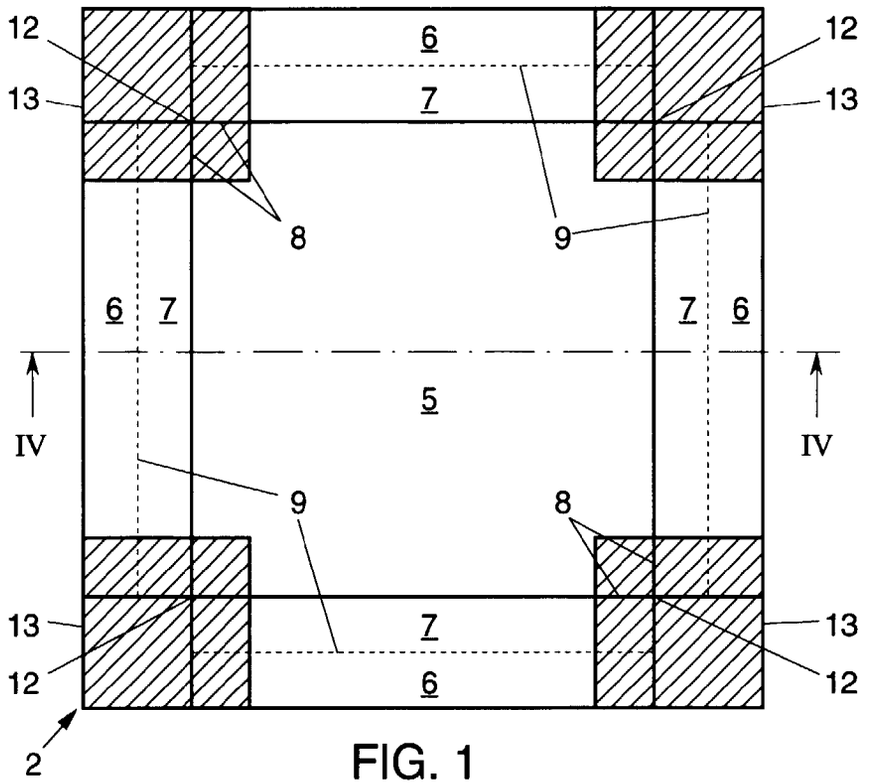
12
13
6
7
12
13
8
9
6
7
7
6
IV
5
IV
9
8
13
7
13
12
6
12
2

FIG. 1

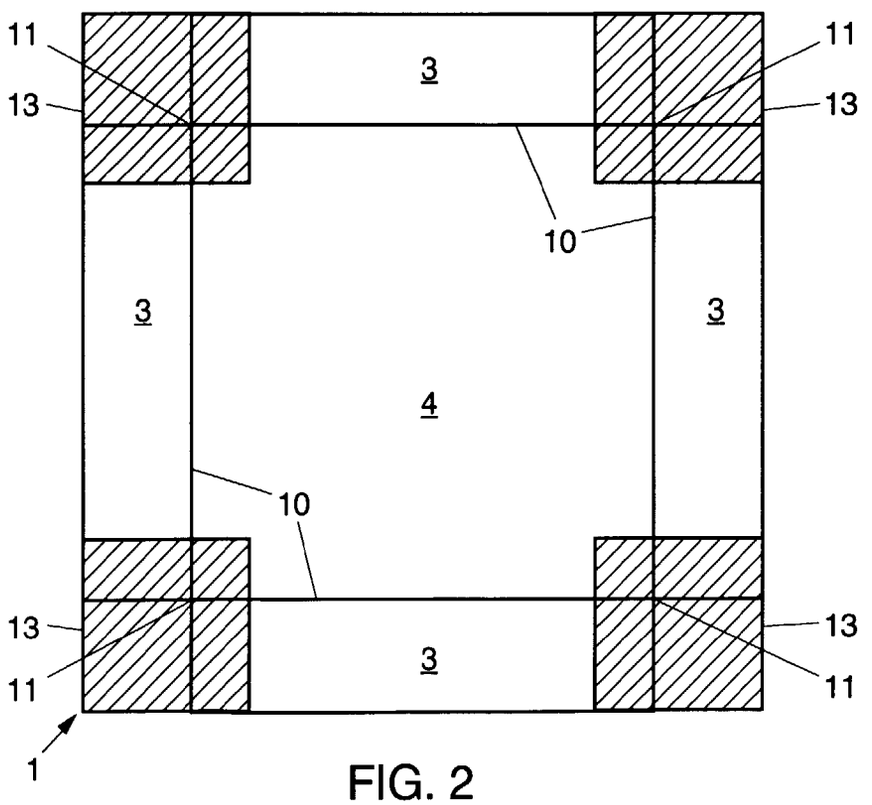
11
13
3
11
13
10
3
3
4
10
13
3
13
11
11
1

FIG. 2

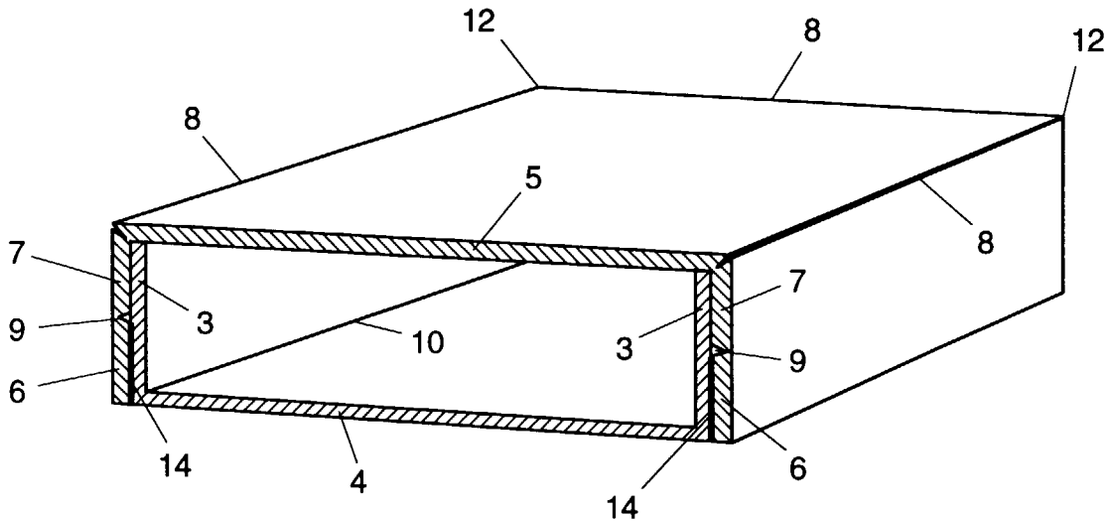

FIG. 3

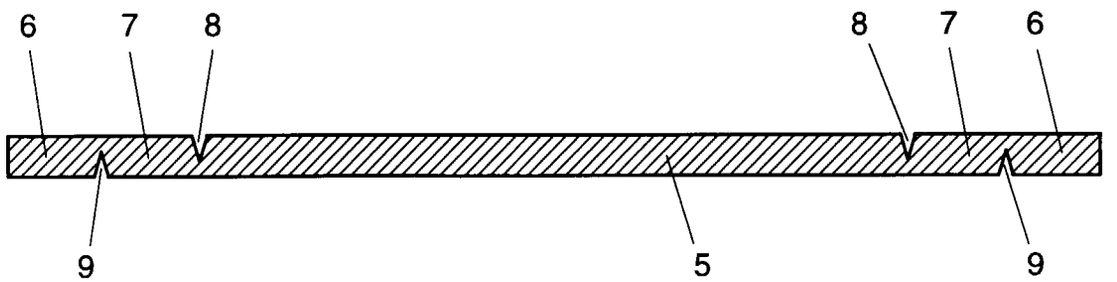

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 1325

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)
A,D	DE-A-31 40 886 (EUROPA CARTON AG) 16 June 1982 * page 9, line 7 - page 10, line 23; figures 1-3 *	1,2,4-6	B65D5/54 B65D5/68 B65D5/56
A	US-A-1 896 400 (GASELTINE) 7 February 1933 * column 2, line 66 - line 76; figures 1-4 *	1-3	
A	DE-A-38 11 542 (CP SCHMIDT VERPACKUNGS-WERK GMBH) 2 November 1989 * column 3, line 46 - line 68; figures 1-10 *	1	
A	FR-A-345 351 (THÉRY) 29 November 1904 * column 1-3; figures 1-4 *	1,2,4	
A	US-A-3 917 155 (BEMISS) 4 November 1975 * column 6, line 48 - line 68; figures 24-27 *	1	
A	US-A-3 547 722 (ANDERSSON) 15 December 1970 * column 2, line 9 - column 3, line 10; figures 1,2 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 August 1996	Vollering, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)