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(54) PACKING BOX

(57) The box is characterized in that the flaps which overlap at the common edges of the side walls have, in each pair of opposed flaps, a device comprising opposed recesses and projections which can fit into one another in order to retain each pair of side walls which define the adjacent sides of the box, and in that the comer reinforcements adopt a dihedral structure with rear fins extending from the edges of the faces of the dihedral and directed inwardly, defining a slot for the insertion of the overlapping flaps of each edge.

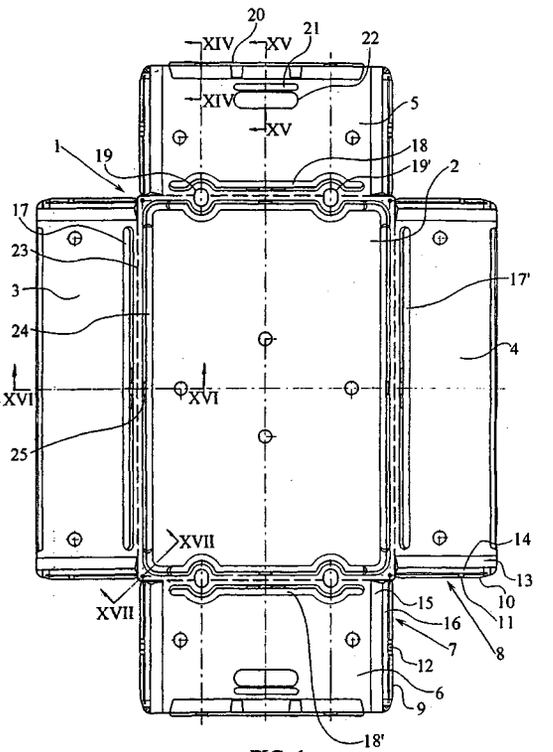


FIG. 1

EP 1 279 610 A1

Description

[0001] The present invention relates to packaging boxes provided with comer reinforcements which afford considerable advantages over those currently known in the field, possessing appreciable characteristics of novelty and inventive activity.

[0002] The packaging boxes with comer reinforcements to which the present invention relates are for general use, although a particular field of use is that of fruit, vegetables and the like, for the marketing of the said products.

[0003] The present invention applies to boxes produced by means of a thermoformed laminar element which, owing to its particular structure, can be assembled quickly and easily, so as to be very practical for storage and transportation because of its flatness in the opened-out condition, but which, on the other hand, can quickly form a firm and stable box for holding the desired products.

[0004] The present invention extends to the general configuration of the box and, in particular, to the specific configuration of the edges which have to overlap when the box is in the assembled condition, providing a simple and practical solution for the joining of the said edges.

[0005] The present invention also extends to the particular comer reinforcements of the boxes, which comer reinforcements are produced in the form of dihedral or tubular profiles, with or without internal fins for guiding lateral flaps of the various side walls of the box.

[0006] The present invention also extends to the configuration of means for the stacking of the box by means of injected flanges on the upper edges of the side walls of the box, with small projecting fins which can coincide with the openings in the lower side edges of the appropriate smaller side walls, enabling easy stacking to be achieved.

[0007] The present invention also extends to the particular configuration of the lower portions of the larger and smaller side walls of the box by the provision of ribs which are formed by deep drawing and which considerably reinforce the articulations of the side walls.

[0008] For a better understanding, some drawings showing the boxes of the present invention are appended by way of non-limiting example.

Figure 1 shows a plan view of a blank for a stackable box with corner reinforcements.

Figure 2 is a detail showing, in plan, the relative arrangement of two edges of side walls which are to overlap.

Figure 3 shows a detail in a cross-section taken in the section plane indicated.

Figures 4 and 5 are a plan view and an elevational view of a particular profile of one of the side walls, respectively.

Figure 6 is a cross-section taken in the section plane shown in Figure 5.

Figure 7 is a perspective view.

Figures 8 and 9 are a side elevational view and a front elevational view of a flap of one of the side walls to be coupled with the flaps shown in Figures 4 to 7.

Figure 10 shows a detail, sectioned in the section plane indicated in Figure 8.

Figures 11 and 12 show the relative positions of two flaps of side walls, prior to their coupling and after their coupling.

Figure 13 is a perspective view of a box after its assembly.

Figures 14 to 17 show respective details, sectioned in the section planes indicated.

Figures 20 to 29 are respective perspective views of alternative embodiments of corner reinforcements according to the present invention.

[0009] As shown in the appended drawings, the present invention relates to the configuration of boxes, a blank for which is generally indicated 1 in the plan view of Figure 1. The blank is composed of a base panel 2, two panels 3 and 4 which correspond to the longer side walls, and a further two panels 5 and 6 corresponding to the shorter side walls.

[0010] According to one of the characteristics of the present invention, opposed lateral flaps of the side walls, which are to be joined together during the assembly of the box, have particular characteristics of shape which enable them to be coupled and retained very easily and effectively. Although the flaps corresponding to all of the side walls have been shown in the drawings, in the detailed explanation given below, reference will be made in particular to the flaps 7 and 8 of the side walls 6 and 4, respectively, which flaps are to overlap. The so-called edge portions, indicated 9 and 10, have as a characteristic the formation of recesses, such as 11 and 12, of complementary shape such that, when the said walls are turned up about the corresponding edges by which they are joined to the base 2, each edge portion is retained with a complementary edge portion. This can be seen in greater detail in Figures 4 to 7, corresponding to the flap 8, and in Figures 8 to 10, which correspond to the flap 7. In fact, as can be appreciated from these drawings, the recess 12 is intended to fit inside the recess 11 of the opposed flap, as shown in Figures 11 and 12 which show the assembly, in a manner such that, when the side walls are turned up, they are fastened together by the overlapping edge portions, simply by the pressing of some profiles into others. This considerably simplifies the assembly of the box.

[0011] As can be appreciated from Figures 3, 6 and 10, the flaps of the edges of the side walls will preferably have a dihedral structure with flat faces of different lengths such as those indicated 13 and 14 in Figure 6 and 15 and 16 in Figure 10.

[0012] As indicated, the present invention also extends to the configuration of deep-drawn reinforcing el-

ements in the vicinity of the lower edges of the side walls of the box. These deep-drawn elements in the form of longitudinal or curved ribs are shown, for example, in Figure 1, those corresponding to the longer side walls being indicated 17 and 17', and those corresponding to the shorter side walls 18 and 18'. They have a curved shape to permit the formation of openings in the edges of the smaller walls, such as the openings indicated 19 and 19' in the walls 5 and 6.

[0013] The present invention also extends to the formation of stacking flanges on the upper edges of the smaller sides; for example, the stacking profile, indicated 20 in Figure 13, has an arrangement complementary with that of the lower edge of the box itself to permit stacking.

[0014] The present invention also extends to the provision of a reinforcing rib 21 in the upper edge of each lateral handle opening, such as the opening 22 shown in Figure 15.

[0015] As shown in Figures 16 and 17, the base 2 is articulated to the side walls, for example, to the side wall 3, by means of a bending line 23; the above-described reinforcing rib 17, as well as an internal reinforcing rib 24 provided with openings 25, can be seen. In the comer regions, the profile 17 has a somewhat flattened structure, as shown in Figure 17.

[0016] The present invention also extends to the so-called comer reinforcements, which are constituted substantially by a dihedral structure 26, Figure 18, with flat faces 27 and 28 from which fins 29 and 30 extend inwardly in order to hold fast the edges 31 and 32 of the adjacent side walls, for example, those indicated 33 and 34. In the embodiment of Figure 18, the fins 29 and 30 terminate in inwardly-directed inner flanges 35 and 36.

[0017] In the embodiment shown in Figure 19, the comer reinforcement 37 has internal fins 38 and 39 which terminate internally in curved flanges 40 and 41.

[0018] The internal fins may also extend from the inner sides of the faces of the dihedral figure, as can be seen in Figures 20 and 21, in which the comer reinforcements have respective dihedrals 42 and 43 from the inner sides of which flat fins 44 and 45 extend perpendicular to the plane of symmetry of the dihedral. In the case of the corner reinforcement 43, the internal fins 46 and 47 have a structure similar to those of Figure 20 although, in this embodiment, no fitting of the inner sides of the edges of the side walls takes place.

[0019] As can be appreciated from Figure 22, the corner reinforcement may also be formed by means of a dihedral 48 from which respective fins 49 and 50 extend inwardly at an inclination in order to pinch the overlapping edges of the side walls.

[0020] Figure 23 shows a comer reinforcement constituted by a dihedral 51 which is extended by internal fins 52 and 53 arranged substantially parallel to the faces of the dihedral 51.

[0021] Figures 24 to 26 show substantially circular or non-circular cylindrical comer-reinforcement embodiments; Figure 24 shows the cylindrical body of a comer reinforcement 54 which has an opening 55 along one of its inner generatrices so as to be able to coincide with the narrowest region of the overlapping edges of two side walls.

[0022] In Figure 25, the cylindrical corner reinforcement 56 has a structure similar to that of Figure 24, but has its internal fins 57 and 58 extending radially inwards.

[0023] Figure 26 shows the arrangement of a cylindrical comer reinforcement 59 with characteristics similar to those of Figure 24, clasping flat regions 60 and 61 of two side walls of a box.

[0024] Figures 27 to 29 show embodiments of comer reinforcements which are also dihedral but with the front comer rounded. Thus, for example, Figure 27 shows a substantially dihedral corner reinforcement 62 the comer 63 of which is rounded and which has curved inner flanges 64 and 65.

[0025] The configuration of the comer reinforcement of Figure 28 is similar to that of Figure 27, clasping the overlapping edges of the two side walls 66 and 67 which have regions partially enveloping inner loops formed by the curved fins 68 and 69.

[0026] Figure 29 shows a dihedral comer reinforcement 70 also with a rounded corner 71, with a structure similar to that of Figure 27 and 28, in which the side walls 72 and 73 of the box are fitted in the curved regions 74 and 75 partially enveloping the curved loops of the inner fins.

Claims

1. Packaging box of the type which comprises a single, thermoformed, laminar element constituted by a central base element and lateral extensions, which extensions can be turned up along their edges to constitute the side walls of the box, and are joined at their overlapping edges by detachable, slidable comer reinforcements, **characterized in that** flaps which overlap at the common edges of the side walls have, in each pair of opposed flaps, a device comprising opposed recesses and projections which can fit into one another in order to retain each pair of side walls which define two adjacent sides of the box.

2. Packaging box according to Claim 1, **characterized in that** the complementary recesses and projections are constituted by deep-drawn elements which have shapes such that they can be coupled with one another, and which are formed in the flaps that are joined together at each of the lateral corners of the box.

3. Packaging box according to Claim 1, **characterized in that** the shorter side walls have, in the vicinity of the lower edges, reinforcing ribs, which ribs extend

around pairs of openings in the edge and are intended for stacking.

4. Packaging box according to Claim 1, **characterized in that** the side walls have ribs formed by deep-drawing adjacent the upper edges of handle openings.

5. Packaging box according to Claim 1, **characterized in that** each of the shorter side walls has, in its upper edge, an outwardly directed deep-drawn element which extends for most of the length of the wall and which has intermediate cut-outs for defining stacking fins.

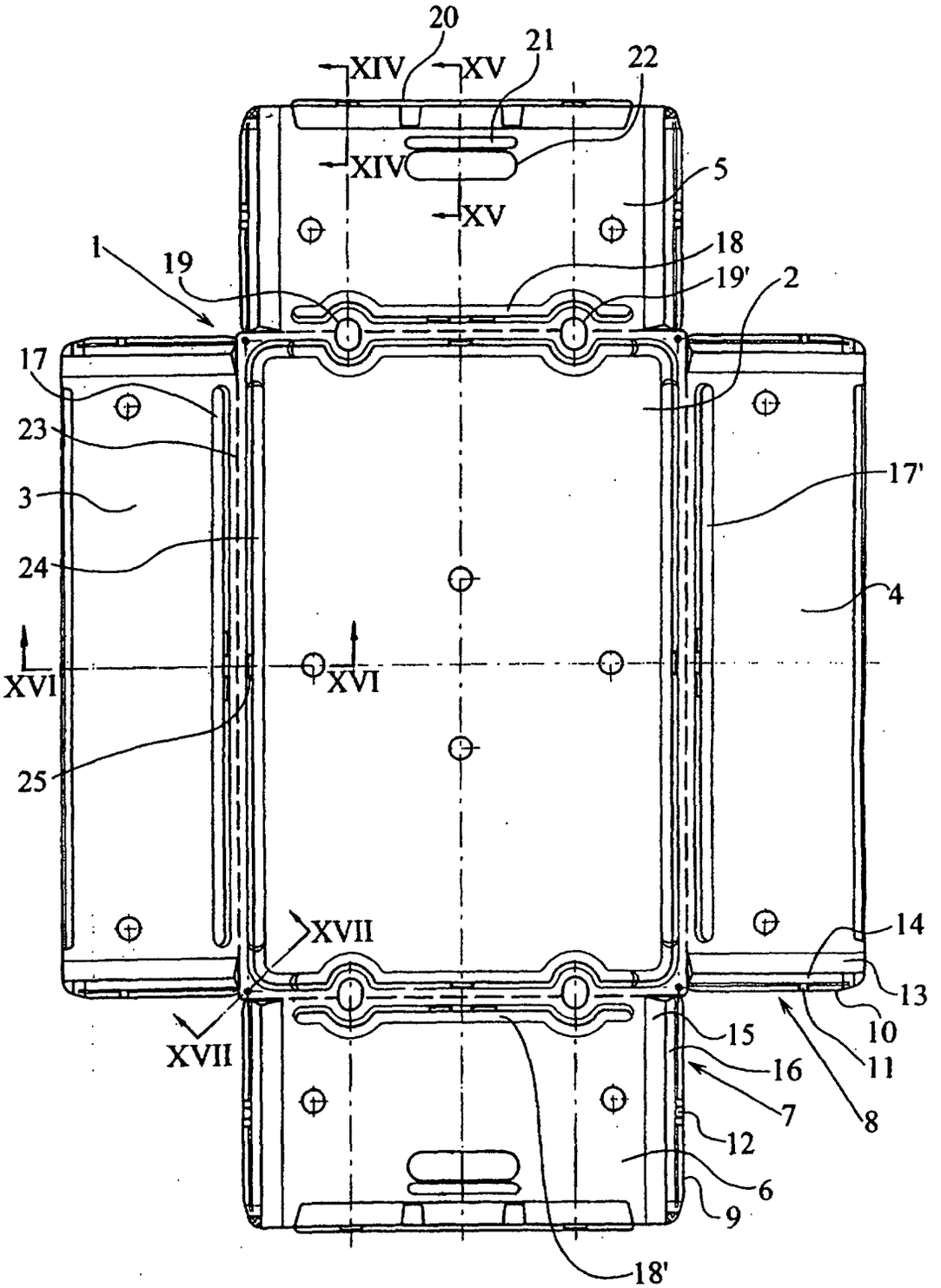
6. Packaging box according to Claim 1, **characterized in that** the comer reinforcements adopt a dihedral structure with inwardly-directed rear fins extending from the edges of the faces of the dihedral defining a slot for the insertion of the overlapping flaps of each comer.

7. Packaging box according to Claim 6, **characterized in that** the fins extending from the side faces of the dihedral profile extend from the central inner portions of the said faces of the dihedral.

8. Packaging box according to Claim 6, **characterized in that** the fins extending from the edges of the faces of the dihedral adopt a structure which is inclined towards the interior of the dihedral.

9. Packaging box according to Claim 6, **characterized in that** the rear fins extending from the side edges of the faces of the dihedral make up, together therewith, a prismatic profile having an opening in its inner corner for the penetration of the overlapping flaps in each of the lateral comers of the box.

10. Packaging box according to Claim 1, **characterized in that** the comer reinforcement is substantially cylindrical with a longitudinal slot for receiving the edges of the side walls which overlap in a corner of the box.


20
21
22
XIV
XV
XIV
XV
5
1
19
18
19'
2
17
23
17'
3
24
4
XVI
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13
XVII
15
10
16
11
7
8
12
6
9
18'

FIG. 1

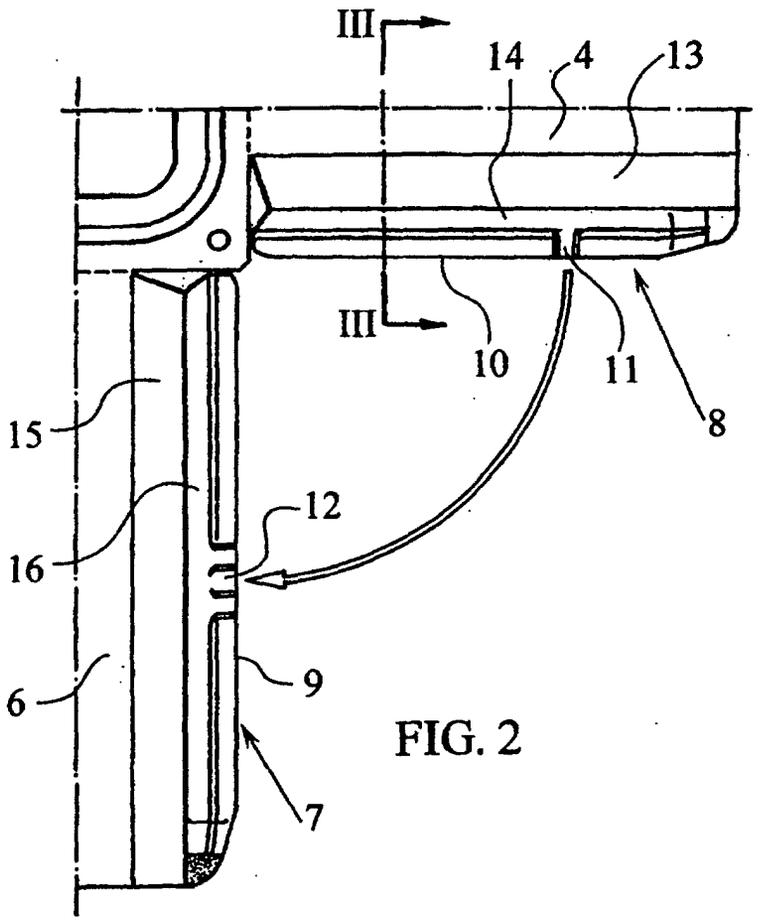

FIG. 2

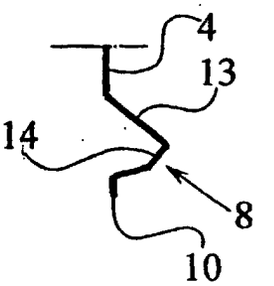

FIG. 3

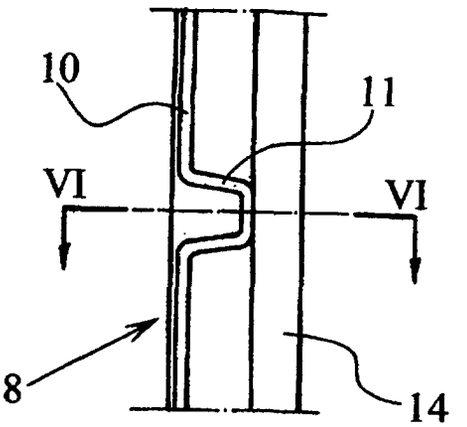

FIG. 5

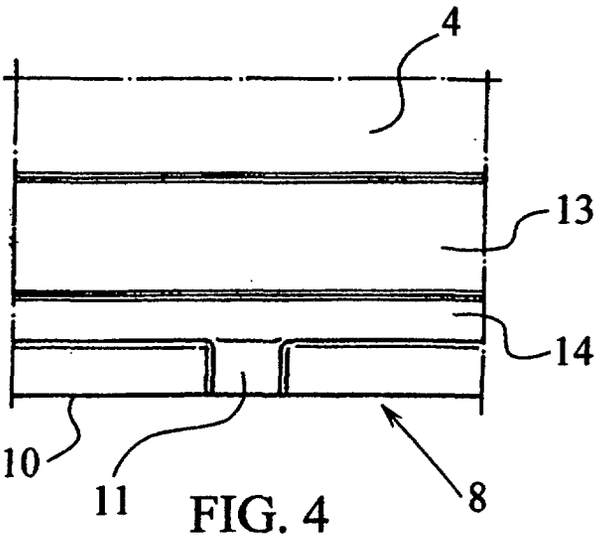

FIG. 4

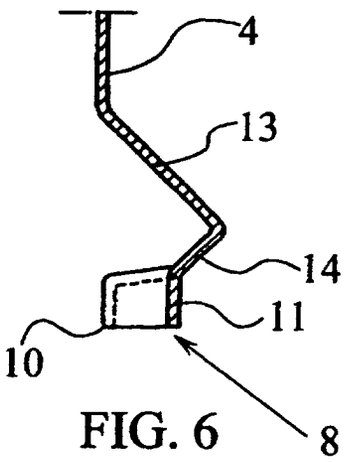

FIG. 6

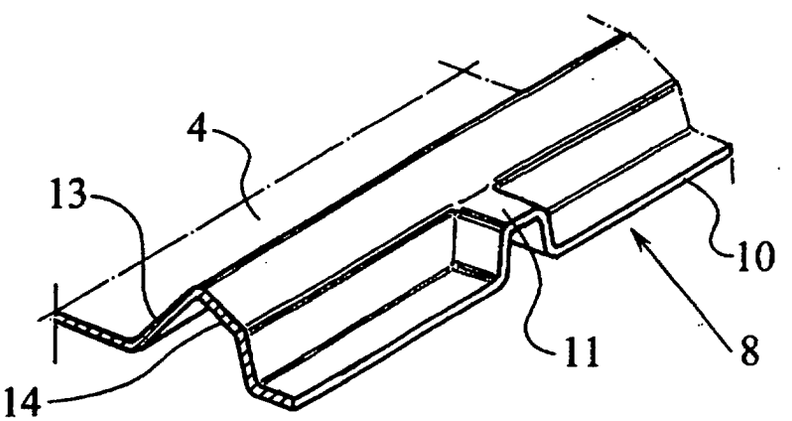

FIG. 7

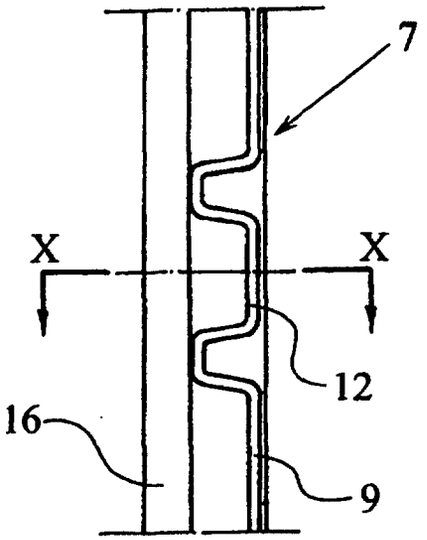

FIG. 8

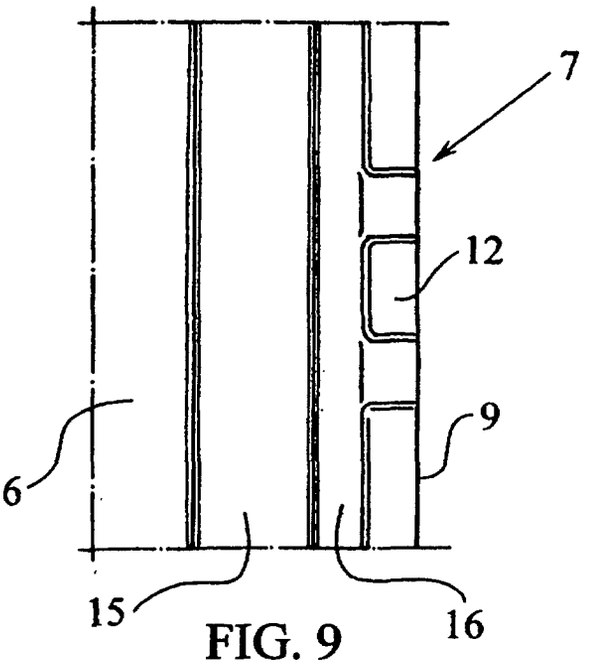

FIG. 9

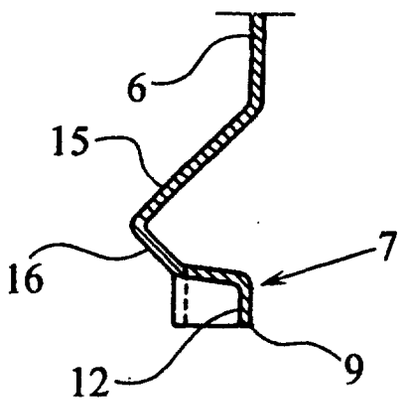

FIG. 10

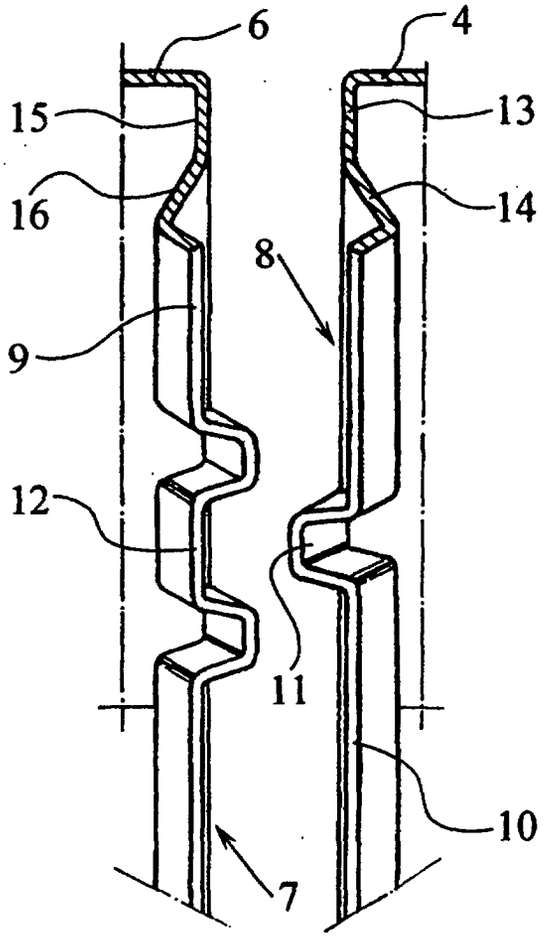

FIG. 11

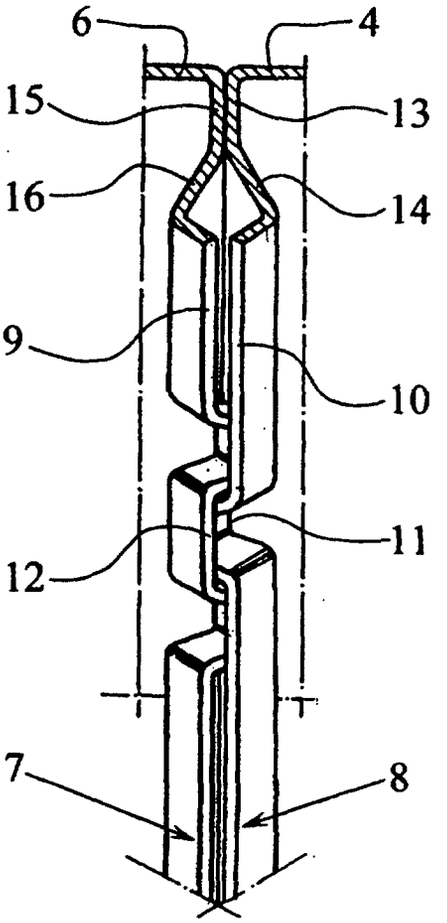

FIG. 12

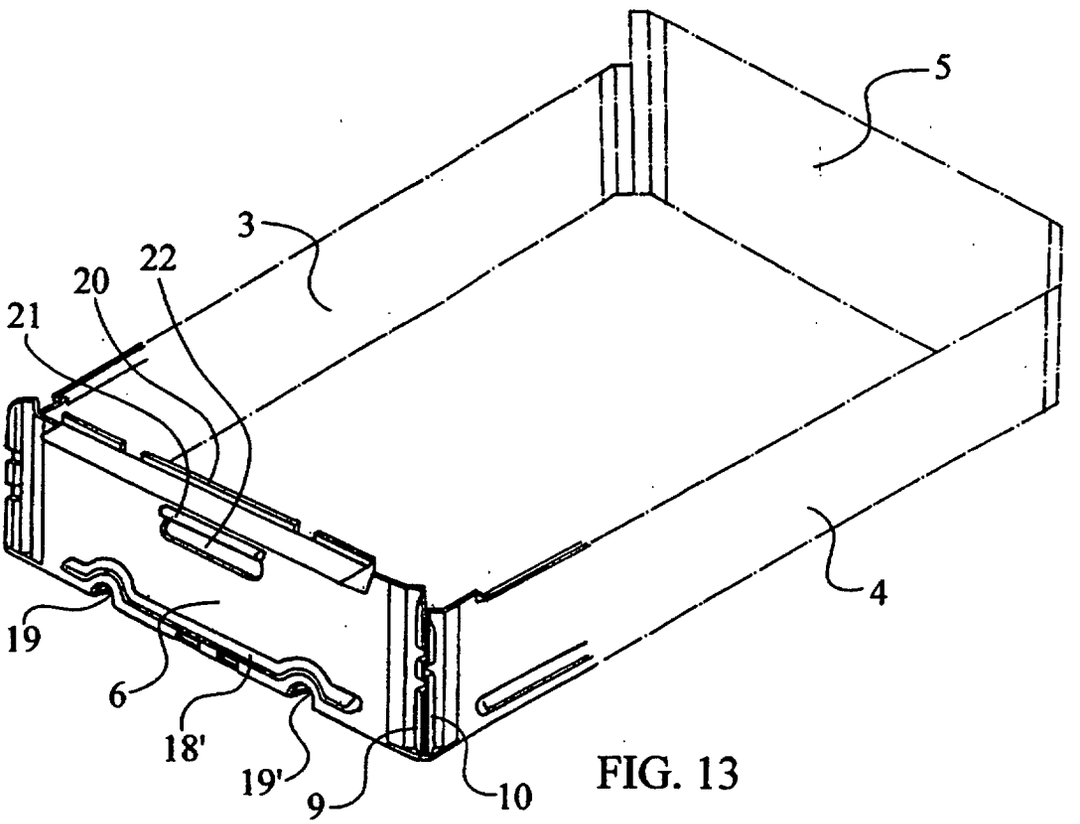

FIG. 13

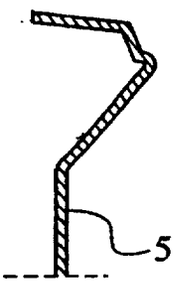

FIG. 14

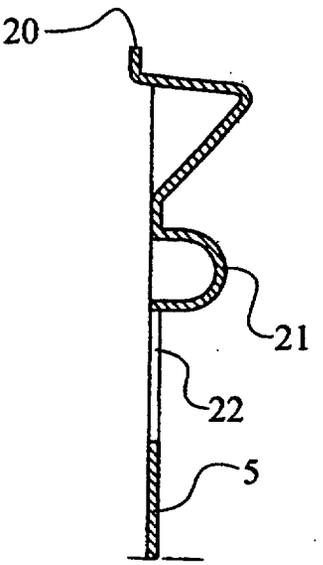

FIG. 15

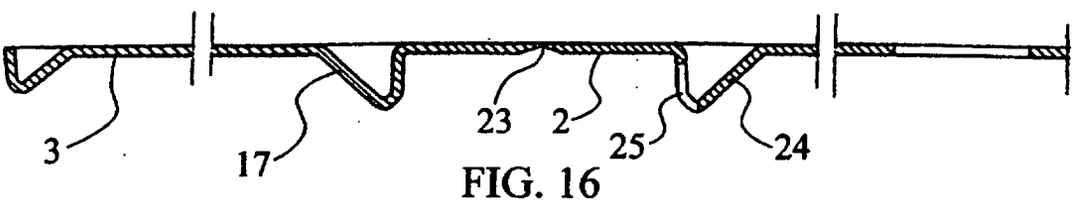

FIG. 16

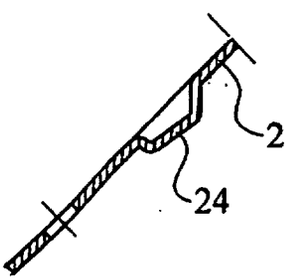

FIG. 17

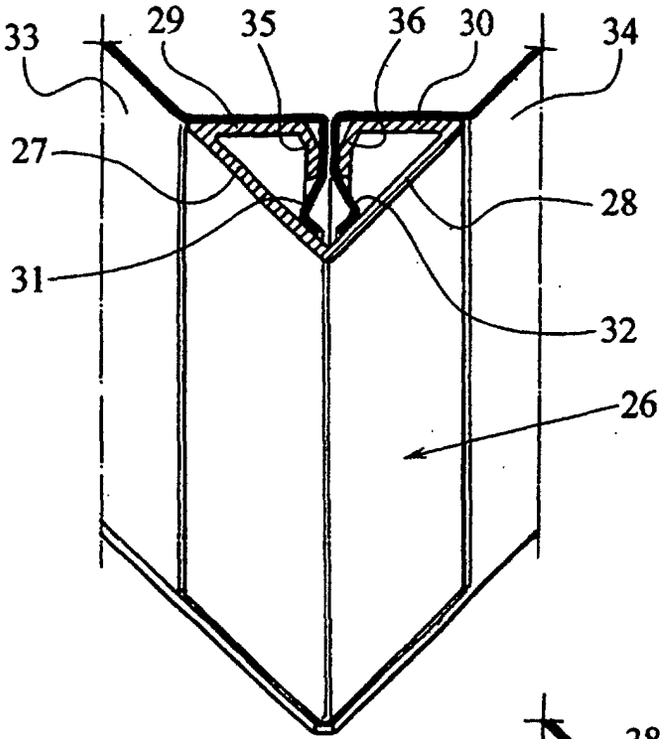

FIG. 18

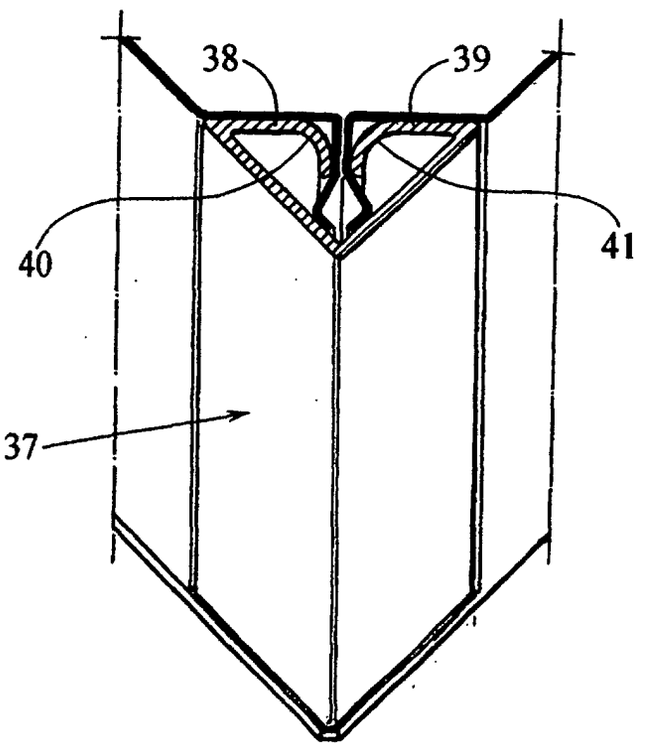

FIG. 19

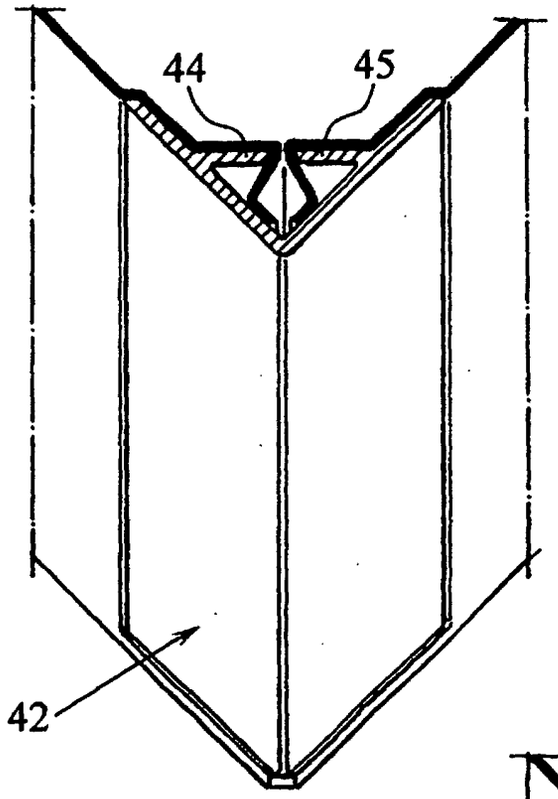

FIG. 20

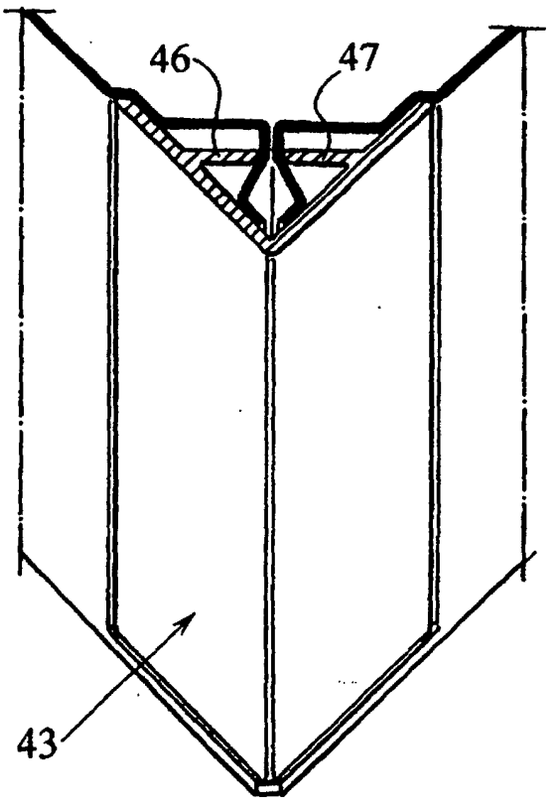

FIG. 21

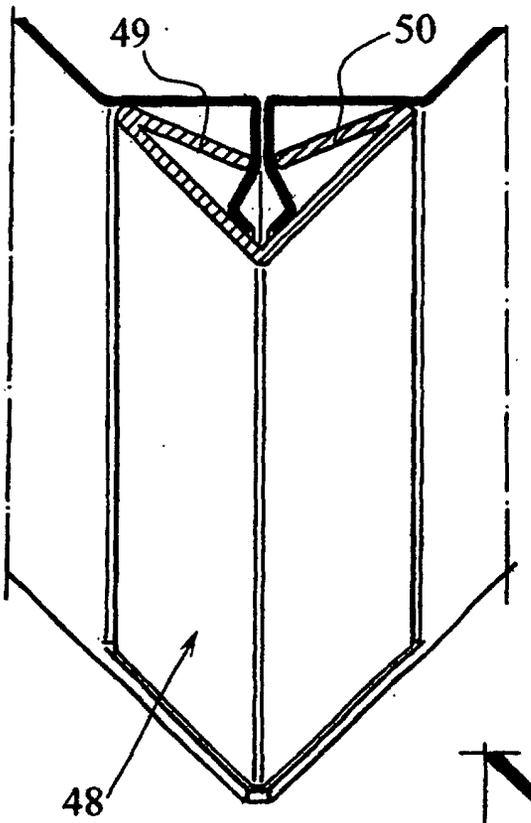

FIG. 22

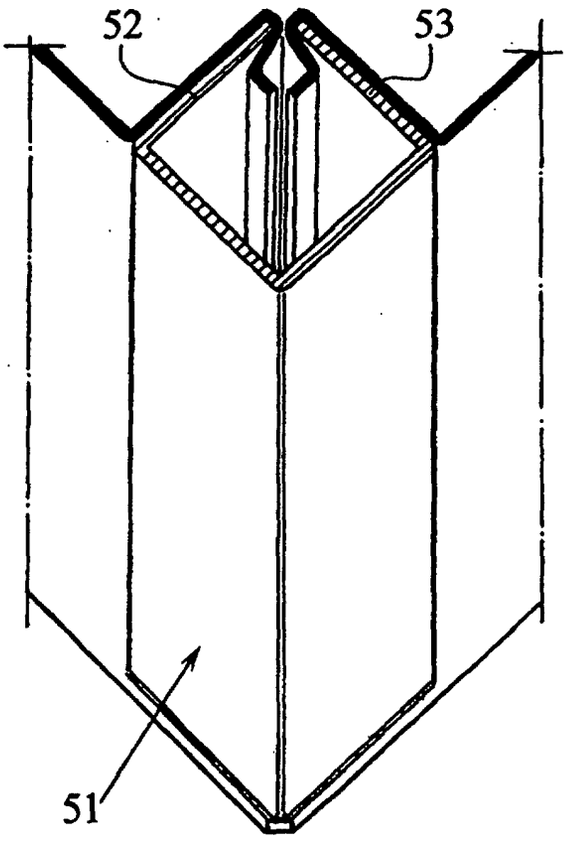

FIG. 23

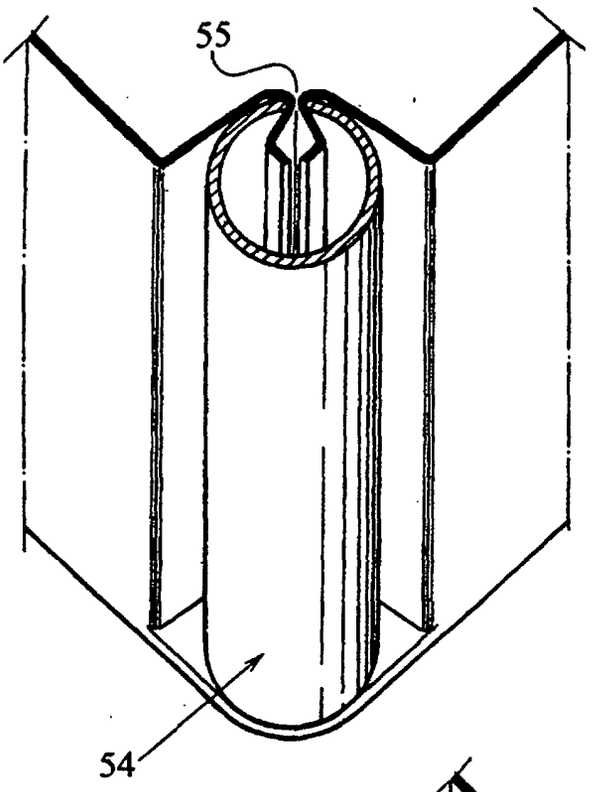

FIG. 24

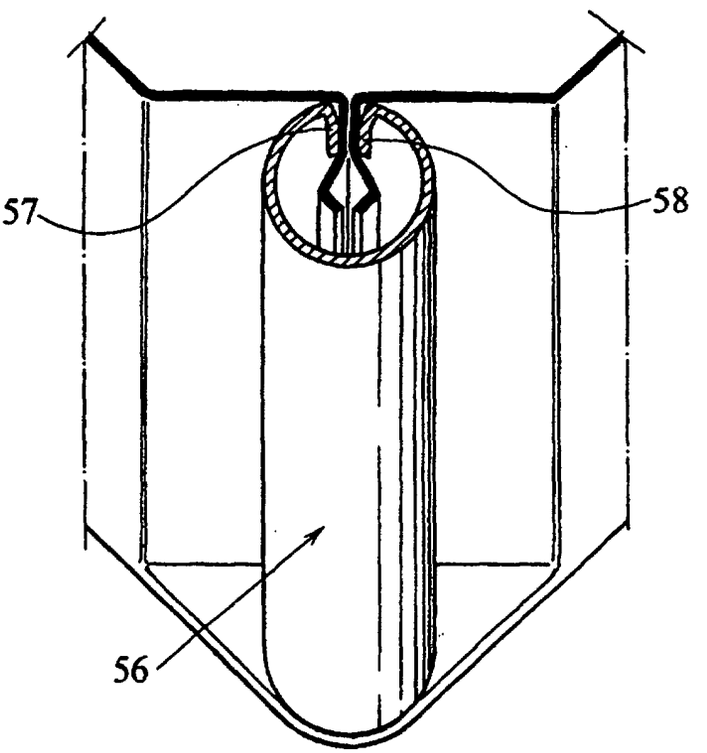

FIG. 25

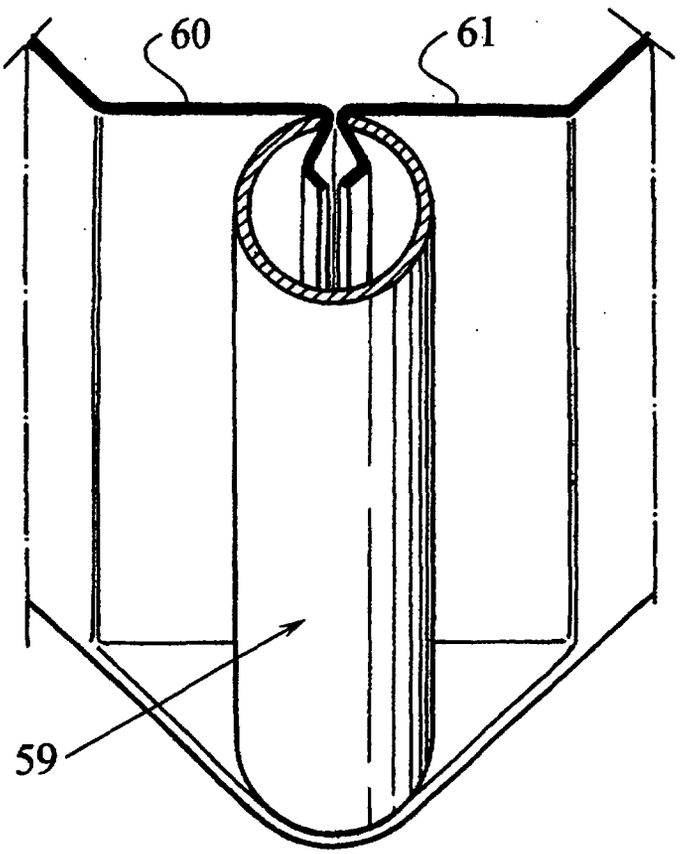

FIG. 26

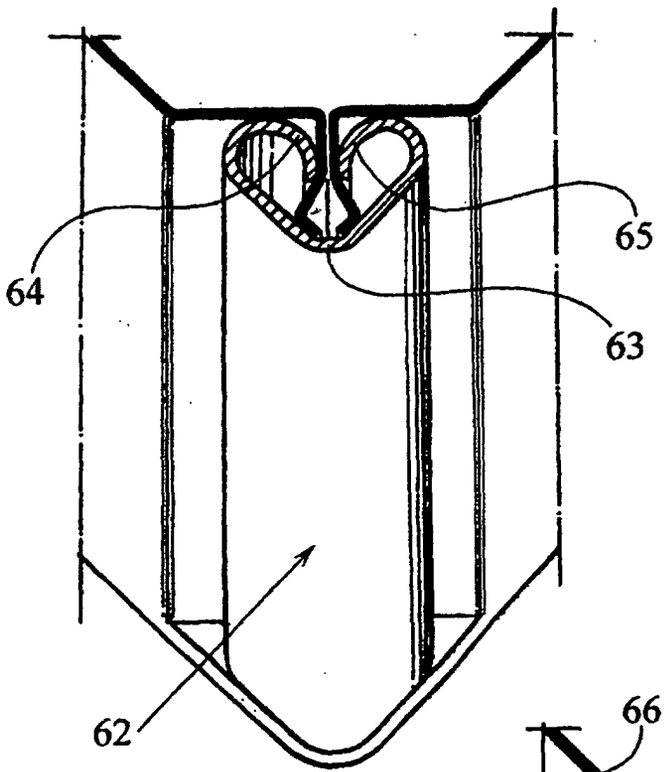

FIG. 27

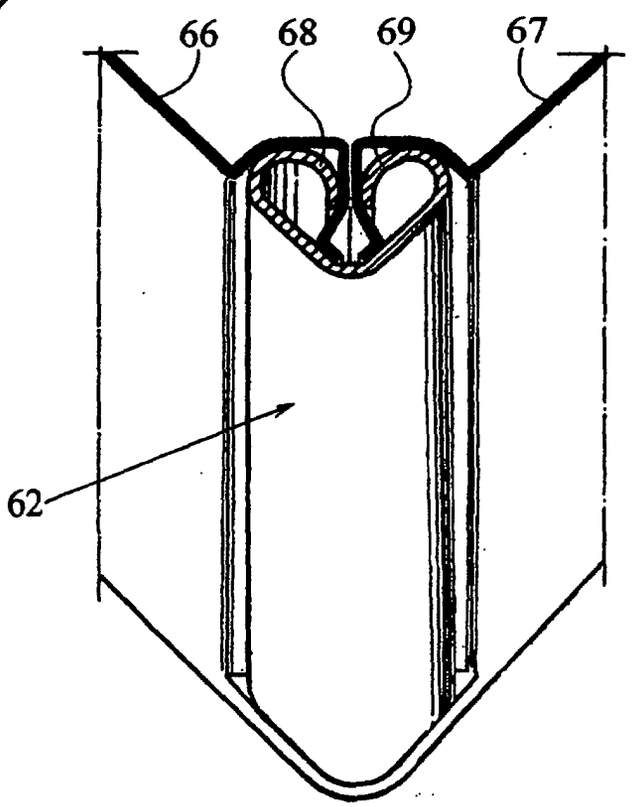

FIG. 28

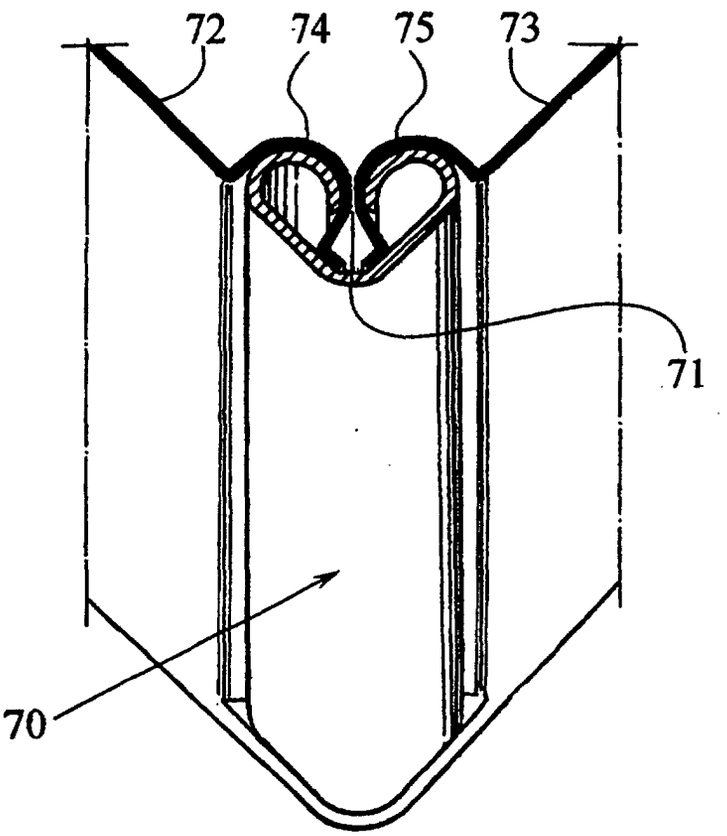

FIG. 29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 01/00169

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 :B65D 6/18, B65D 5/20
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 :B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

ES

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CIBEPAT, EPODOC, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2194611 A (LIURETTE) 01 March 1974 (01.03.74) page 3, line 28 – page 6, line 30; figures	1,2,5,10
A	ES 1041715 U (RIPOLLES) 16 July 1999 (16.07.99) the whole document	1,5,6,9
A	ES 2092082 T3 (CESANO) 16 November 1996 (16.11.96) column 2, line 39 – column 4, line 31; figures	1,2,6
A	ES 1041082 U (RIBAWOOD, S.A.) 16 June 1999 (16.06.99) column 1, line 22 – column 4, line 34; figures	1,2
A	US 3623651 A (MARCAN) 30 November 1971 (30.11.71) column 1,lines 27-60; column 2, lines 63-75; figures 1, 7 and 8	1,2
A	ES 2092011 T3 (CONSTRUZIONE MECCANICHE LUIGI BANDERA S.p.a) 16 November 1996 (16.11.96) column 1, line 47 – column 4, line 8; figures	1,4,6

☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
11 July 2001 (11.07.01)	18 July 2001 (18.07.01)
Name and mailing address of the ISA/ SPTO	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 01/00169

C. (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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