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(54) Container for blister packs

(57) A container for the packaging of blister packs is disclosed, of the type comprising a tray-like base (1), equipped with a set of slits (F) wherein the edges of said blister packs are introduced and supported, and a closing cover (100) tall enough to house said blister packs, wherein the base (1) is integrally moulded and has perimeter walls (3, 4, 5, 6) equipped, on the outer surface thereof, with a plurality of wedge members (C) which become progressively taller in the direction of the bottom side (2) of the base and in that said cover (100) correspondingly has a plurality of apertures (101) with which said wedge members (C) are intended to engage.

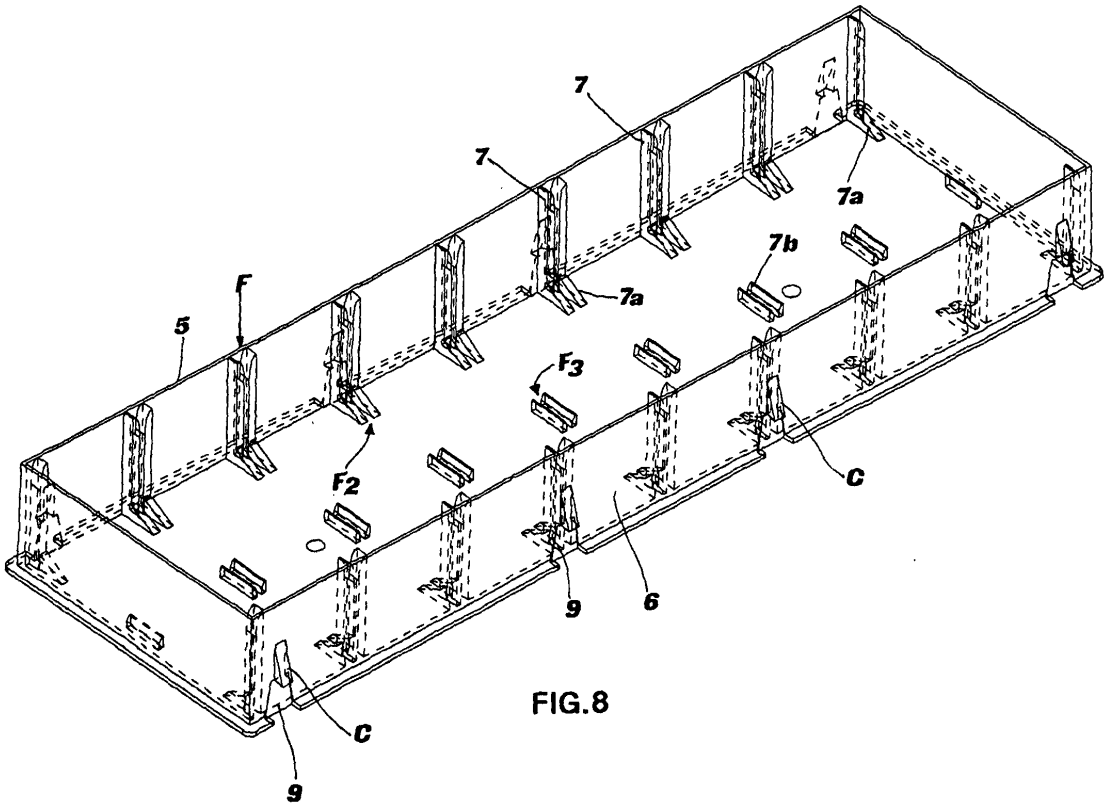

FIG.8

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Description

[0001] The present invention concerns a container for blister packs, particularly suitable for use in highly-automated packaging plants. In particular, it concerns a container for the packaging and subsequent display of a series of blister packs for toothbrushes.

[0002] As known, the packaging of small objects intended for large-scale retail trade employs almost entirely blister packs, which have the advantage of being able to later be displayed at the retail point without undergoing further processing.

[0003] A blister pack usually consists of two half-portions (one of the two, or both, being clear) between which the object to be purchased lies. Due to packaging standards and packaging bulk, the majority of blister packs have a substantially rectangular plan shape or at least one having two opposite parallel edges.

[0004] In the present context, reference will be made by way of a non-limiting example to a toothbrush package. These packages typically consist of a suitably thick, rectangular cardboard sheet, with which a clear plastic material cover is coupled, which allows to see the toothbrush contained therein; the perimeter edge of this packaging is consequently rectangular. Furthermore, along the perimeter region, where coupling of the cardboard sheet with the clear cover occurs, said packaging has a substantially even and rather limited thickness, for example of 1.5 mm.

[0005] In general, the industrial process which allows to obtain the product fully packaged in a blister pack, starting from the corresponding raw materials, may be automated with no particular problems. By means of automatic handlers and other conveying systems, nowadays it is possible to obtain the packaged product with no human intervention; returning to the reference example, at the end of the automatic chain of production it is possible to obtain a toothbrush already contained in its blister pack.

[0006] Before being able to be delivered from the manufacturer to the distributor in an economically convenient manner, however, the blister pack must be packaged in larger containers suitable for transport. In order to do that, it may be sufficient to jumble the blister packs into large boxes arranged at the end of the chain of production. However, doing so, in addition to not being efficient in terms of bulk, is positively unacceptable for the distributor. Consequently, it is necessary to orderly arrange the blister packs in the box, necessarily resorting to the intervention of an operator.

[0007] A final packaging mode, which meets with market approval, is that of orderly arranging the blister packs in suitable boxes (of a moderate capacity, for example of a dozen blister packs) which are also suitable for subsequent display of the product at the retail point.

[0008] These known-type boxes are entirely made of cardboard or paper material and obtained by punching. They consist of a base part, wherein the blister packs are arranged in an upright position (i.e. in the same position they are to appear in at the retail point), and of a cover part (normally fully closed and bearing the manufacturer's or distributor's specifications and trademarks on the outside). The base substantially consists of an open-top tray, wherein a rather complex structure is inserted, obtained from a punched blank folded according to multiple folding lines, which determines a series of slits into which the opposite edges of the blister packs are inserted and supported. Thereby the packaging units can be kept steadily upright, one next to the other engaged on the base. The cover is coupled with the base and provisionally fastened by sticky tape or removable fastening means.

[0009] When the box thus assembled arrives at the retail point, the cover is removed and the blister packs are displayed engaged with the base.

[0010] This known-art solution, however, despite being appreciated for its practicality, has two serious disadvantages.

[0011] The first inconvenience concerns the manufacturing process of the base. Said base is in fact obtained by ready-made cardboard packing techniques which provide complex carving and folding operations, resulting in significant costs which greatly affect the entire economy of this container.

[0012] Moreover, precisely because the base is obtained by ready-made cardboard packing, it cannot be obtained with limited tolerances and it has no smooth joining surfaces: in particular the slits for introducing the blister packs have shoulders with sharp corners, due to folding lines, which do not facilitate at all blister pack introduction. For these reasons, even to this day introduction of blister packs in these known containers is performed entirely by hand, because it would be inconceivable to implement an automatic system capable of working productively in this context.

[0013] It is evident that, in a process wherein - as was mentioned earlier - it is possible to obtain a blister-packaged product in a fully automated way, this latter packaging step, to be carried out manually, negatively affects the costs of the entire production.

[0014] An object of the present invention is hence that of providing a container for the packaging and display of blister packs which is extremely inexpensive and which has features which make it suitable for an automatable packaging process.

[0015] Such object is achieved by means of a container as described in its essential features in the accompanying main claim.

[0016] Other inventive aspects of the container are described in the dependent claims.

[0017] Further features and advantages of the container according to the invention will in any case be more evident from the following detailed description of some preferred embodiments of the same, given by way of example and illustrated in the accompanying drawings, wherein:

fig. 1 is a perspective view of an embodiment of the base according to the invention;
figs. 2 and 3 are a top plan view and a side elevation view, respectively, of the base of fig. 1;
fig. 4 is a perspective view of a cover according to the invention;
figs. 5, 6 and 7 are similar views to figs. 1-3 of a base according to another embodiment of the invention;
figs. 8 and 9 are perspective and side elevation views, respectively, of another preferred embodiment of the invention;
figs. 10A-10C are side elevation, top plan, and front elevation views, respectively, of a variant of the base of figs. 8 and 9; and
fig. 10D is an enlarged partial view of the detail enclosed in circle D of fig. 10C.

[0018] A container or box for the orderly packaging of blister packs consists, in a way known per se, of a base 1, in which the packs are introduced, and of a closing cover 100.

[0019] According to the invention, base 1 is integrally moulded, preferably in plastic material.

[0020] It has a rectangular lower side 2 from which four perimeter walls rise, two end walls 3 and 4 and two side walls 5 and 6, so as to define a sort of open-top rectangular tray. The lower side 2 goes slightly over, for example by 2 mm, the plan print of the perimeter walls 3-6, defining a peculiar perimeter flange 2a, the usefulness of which will be clear from the following.

[0021] On the outer surface of the perimeter walls a plurality of wedge members C is provided, the height of which progressively increases towards the lower side 2 and which end in a step at a certain distance from the same. The wedge members C are arranged at least on the side walls, preferably in opposing positions.

[0022] The two side walls 5 and 6 further have, on the inner side, a plurality of slits F which are perpendicular to the wall itself, which are respectively opposed and which are apt to house and support the two opposing edges of blister packs (not shown).

[0023] In figs. 1-3 a base having bottom plan dimensions 248x68 mm is shown as an example, wherein a set of 13 slits F is obtained (12 usable slits, apt to house an equal number of blister packs) with a pitch of 20 mm.

[0024] Since the blister packs are intended to be introduced in the slits from above (in fig. 1), according to the invention, advantageously slits F are radiussed or bevelled in their top portion, which facilitates introduction of the pack even if, during the approaching step, alignment with base 1 is not perfect.

[0025] In order to provide the blisters with a certain degree of retention and support, engagement slits F must be sufficiently deep, for example 4 mm.

[0026] According to a preferred embodiment, in order not to have to provide excessively thick side walls (which would result in waste of material), for the purpose of ensuring sufficient depth of such slits, they consist of a plurality of small arches placed side by side, the vertical columns 7 of which are apt to define the two opposing sides of slits F (figs. 1 and 3). As can be clearly seen in the drawings, each slit (except those adjacent to end walls 3 and 4) is defined by the small columns 7 of two small adjacent arches, upwardly closed by respective horizontal vaults 8.

[0027] The various small arches are then mutually reinforced by thin filling walls 5a and 6a.

[0028] In figs. 5-7 another embodiment of the invention is shown. In this case the base has a double set of slits F, the two sets being aligned in a parallel manner - partly on side walls 5 and 6 and partly on a partition 10. In the illustrated exemplary case, the base has perimeter dimensions of about 130x200 mm and a double set of 7 slits (of which 6+6 are usable, totalling 12) with a pitch of 32.5 mm.

[0029] In figs. 8 and 9 still another similar, preferred, single-tray embodiment is shown. In this case, continuous side walls 5 and 6 are provided, of a small thickness, on the inner side of which pairs of columns 7 are obtained - integrally moulded - standing side by side to define individual slits F.

[0030] At the upper end, columns 7 are advantageously rounded off, so as to define a smooth bevel for each slit F.

[0031] In the junction point with base 2, columns 7 preferably have extension feet 7a which define a short length of horizontal slit F2.

[0032] On base 2, substantially in an intermediate position between two opposing slits F, pairs of lips 7b are provided, apt to define further horizontal slits F3 between them. The latter are useful to secure also in a central position the lower edge of the blister packs, so as to provide the package with further stability, whenever that is useful.

[0033] According to this variant, wedge members C are provided only along side walls 5 and 6.

[0034] Closing cover 100 has a shape corresponding to that of base 1 and is sufficiently tall to house the blister packs.

[0035] In particular, it has four sides which define a perimeter coinciding with that determined by the walls of base 1. Therefore, the sides of cover 100 are intended to match with the base wall on the outside of the same wall.

[0036] The cover can be made of cardboard or other sufficiently deformable thin material.

[0037] According to the invention, cover 100 further has a plurality of apertures 101 obtained on its side walls in the proximity of the open mouth. Apertures 101 are arranged so as to correspond to wedge members C of base 1 when the cover is engaged with the latter.

[0038] Fig. 4 shows a cover suitable for the base according to the embodiment shown in fig. 8, as a result apertures 101 are provided only along the longer sides; nevertheless, similar apertures or cut-outs can be provided, if necessary, on the short sides too.

[0039] Since, as is understandable, wedge members C protrude from the perimeter of the walls of the base, they represent an obstacle to the engagement of the cover with the base. Due to the wedge-like shape sloping towards the open side of the base, in any case wedge members C allow fitting of the cover to the base, provided sufficient force is imparted to temporarily deform the sides thereof.

[0040] Once fitting has been completed, flange 2a of base 1 abuts with the mouth edge of cover 100 and as a result further deepening of the fitting movement is prevented. On the other hand, since wedge members C protrude from apertures 101, step C_1 of the wedges abuts with the edge of apertures 101 and consequently prevents disengagement of the cover from the base.

[0041] To prevent natural deformations of the cover from causing accidental disengagement of apertures 101 from wedge members C, the latter must be sufficiently high at step C_1, but not too much so in order to avoid permanent cover deformations during the coupling step. For example, they can have a height ranging between 2 and 3 mm, preferably of 2.8 mm.

[0042] Since the cover has an extending capability which is more pronounced in the direction of its longer side, any wedge member C arranged on end sides 3 and 4 can have a greater height than those arranged on side walls 5 and 6, for example of 3.3 mm.

[0043] A preferable shape of the wedge members, which further hinders disengagement of apertures 101, is that shown in fig. 3. In this case, wedge members C of end walls 3 and 4 have one side of step C_1 which is even sloping inwards. Since this shape results in a slight undercut, in order to be able in any case to obtain the moulded base in a single piece, it is preferable for the continuity of flange 2a to be interrupted at least in this area. This can be detected from the presence of flares 9 which originate from the print left by a male tool arranged in that position, during the moulding step, to obtain the undercut of step C_1.

[0044] Preferably, at each wedge member C on a base wall, there is a corresponding wedge member C on the opposing wall. This means that along the line connecting the two wedge members, maximum cover deformation is imparted during fitting on to the base and, conversely, cover removal requires a correspondingly great effort, which makes accidental disengagement very unlikely.

[0045] According to a further alternative embodiment (figs. 10A-10D), at least on flanges 2a of the longer sides, the base has a pair of opposing flaps 11, rising perpendicularly to the base at the outer edge of flange 2a (fig. 10D).

[0046] Flaps 11 serve the function of preventing the side of cover 100 from diverging from the side wall of base 1, so that the likelihood is further reduced that apertures 101 disengage from the corresponding wedge members C.

[0047] Due to the coupling between wedge members C and apertures 101, a perfect and stable engagement is obtained between cover 100 and base 1, without the need to resort to other joining means, such as sticky tape.

[0048] In operation, base 1 is made to translate with respect to a conveying line of blister packs, until the first free slit F lies at the point of introduction of the first available blister pack. By this technique, all the slits of base 1 are filled with corresponding blister packs. After which, a cover 100 is simply fitted above the base, until wedge members C are securely engaged with corresponding apertures 101. At this point the container is ready to be sent to the warehouse for subsequent delivery.

[0049] Furthermore, according to a preferred embodiment of the invention, cardboard cover 100 is provided with a predetermined breaking line 102, such as a tear-off line or a tear strip, which allows to easily separate a disposable portion 100a from a display portion 100b intended to remain joined to base 1 at the retail point. Advantageously, the display portion 100b can have a coloured outer surface or one marked as desired, so as to stand out more in the retail point and contribute to display unit attractiveness.

[0050] Preferably, in order to ease division of cover 100, in correspondence of the predetermined breaking line 102 there is provided a cut-out 103, into which a finger can be inserted to force disposable portion 100a of cover 100.

[0051] As can be appreciated, the objects set forth in the preamble have been perfectly achieved. In particular, the packaging container according to the invention consists of only two members, a cardboard cover, of an extremely simple shape which makes it inexpensive, and an integrally moulded base which is mass-produced, and consequently very cost-effective.

[0052] Furthermore, since the base is obtained by integral moulding, it is possible not only to observe limited tolerances, but also to obtain the shape most suitable to automate blister pack introduction. In particular, the bevelled or flared shape of the mouth of the slits (clearly visible in figs. 3, 7 and 8) greatly facilitates the introduction of blister packs also by automatic mechanisms. Thanks to this bevelled shape, it may even be assumed that the blister packs simply fall from above along a slide on the underlying base.

[0053] Also the subsequent coupling between the base and the cover occurs by simply introducing the one into the other and consequently no special handling or addition of further joining means is needed.

[0054] In addition to making the container according to the invention extremely inexpensive, all this also makes it suitable for fully automating the final packaging step of a blister-packed product, with remarkable advantages in terms of manufacturing process and cost-effectiveness.

[0055] Finally, also due to the specific cover construction, the box according to the invention is ideally suited to become an effective and attractive display unit at the retail point.

[0056] It is understood, however, that the invention is

not limited to the particular embodiments illustrated above, which represent only non-limiting examples of the scope of the invention, but that a number of variants are possible, all within the reach of a person skilled in the field, without departing from the scope of the invention.

[0057] For example, although reference has always been made to a rectangular base, due to the fact that it may be moulded in plastic, it can also have different shapes, dictated for example by aesthetic or other requirements.

[0058] Moreover, the cover can be made of materials other than cardboard, such as plastic or other man-made materials, provided it is sufficiently elastic to be engaged with the base overcoming the resistance offered by the wedge members.

[0059] Again, to provide increased stability to the coupling between the blister pack and the base, on the base bottom side grooves or slits carved in the base thickness can be provided, instead of relief lips, which grooves or slits can be more or less pronounced and deep according to the shape of the blister pack that is to be packaged.

[0060] Although in the preferred embodiment of the invention it is provided to constrain the cover, in one direction, to the step of the wedge members and, in the other direction, to the base flange, it is evident that the main teaching of the invention is still observed, should the perimeter flange not be provided and, possibly, should wedge members be provided extending along the entire height of the perimeter walls of the base.

[0061] Finally, it is not ruled out that - for convenience sake, or in specific applications - the cardboard cover is in the shape of a tubular casing open at the two ends: in such case it would be closed both at the bottom and at the top by a moulded base as illustrated above.

Claims

1. A container for the packaging of blister packs, of the type comprising a tray-shaped base (1), provided with a set of slits (F) into which the edges of said blister packs are introduced and supported, and a closing cover (100) which is sufficiently tall to house said blister packs, **characterised in that** the base (1) is obtained by integral moulding and has perimeter walls (3, 4, 5, 6) which are provided, on their outer surface, with a plurality of wedge members (C) progressively taller in the direction of the bottom side (2) of the base and **in that** said cover (100) correspondingly has a plurality of apertures (101) with which said wedge members (C) are intended to engage.

2. The container as in claim 1), wherein the perimeter dimension of the cover is such that the sides thereof are intended to strictly adhere to the perimeter walls (3, 4, 5, 6) of the base (1).

3. The container as in claim 1) or 2), wherein said wedge members (C) end in a step (C_1) at a certain distance from the bottom side (2) of the base.

4. The container as in claim 3), wherein said step (C_1) has an end surface sloping inwards.

5. The container as in claim 3) or 4), wherein said bottom side (2) goes slightly over the perimeter walls (3, 4, 5 and 6) defining a short flange (2a) on at least part of the perimeter of the base (1).

6. The container as in claim 5), wherein said flange (2a) is interrupted at least in correspondence of said wedge members (C).

7. The container as in any one of the previous claims, wherein said slits (F) are obtained at least partly on the inner side of the side walls of said base and have, in correspondence of their mouth, bevelled portions to ease introduction of the blister pack edges.

8. The container as in claim 7), wherein said slits are defined by columns or ribs (7) adjacent in pairs, obtained on the inner side of the side walls (5, 6) of the base (1), the adjacent columns or ribs (7) being rounded off or mutually diverging in the mouth area to define said bevel.

9. The container as in claim 8), wherein said columns or ribs (7) are connected at the mouth end, the non-adjacent ones in pairs, by a connecting crosspiece (8).

10. The container as in claim 9), wherein said columns (7) represent the leg portions of adjacent arches, of which said crosspiece (8) represents the vault.

11. The container as in any one of the claims from 7) to 10), wherein said base (1) has inside at least one partition (10) parallel to the side walls (5, 6), equipped with slits (F) on both of its sides.

12. The container as in any one of the previous claims, further comprising at least one horizontal slit portion (F2, F3) between each pair of opposing side slits (F).

13. The container as in claim 12), wherein said horizontal slit portion (F2, F3) is defined by opposing relief members (7a, 7b) which rise from the bottom plane (2) of said base.

14. The container as in claim 5) or in any one of claims 6) to 13) when depending from 5), wherein the base further comprises one or more flaps (11) rising perpendicularly to the bottom plane (2) from the peripheral edge of said flange (2a).

15. The container as in any one of the preceding claims, wherein the closing cover (100) has a predetermined breaking line along which it is apt to be easily divided into a disposable portion (100a), intended to be removed, and into a display unit portion (100b) intended to remain attached to the base at the retail point.

16. Packaging box for blister packs of the type comprising a tray, equipped with a set of slits into which at least the edges of the blister packs are introduced and supported, and of a closure casing, which defines at least the longer sides of the box and tall enough to house inside said blister packs, **characterised in that** said tray is integrally moulded in one piece and has perimeter walls equipped, on the outer surface thereof, with a plurality of wedge members of a progressively increasing height in the direction of the bottom side of the tray and **in that** said casing correspondingly has a plurality of apertures with which said wedge members are intended to engage.

17. The box as in claim 16), wherein said casing has two opposing open mouths wherein two corresponding end trays are engaged.

18. The box as in claim 16) or 17), wherein said tray is the base defined in claims 7) to 15).

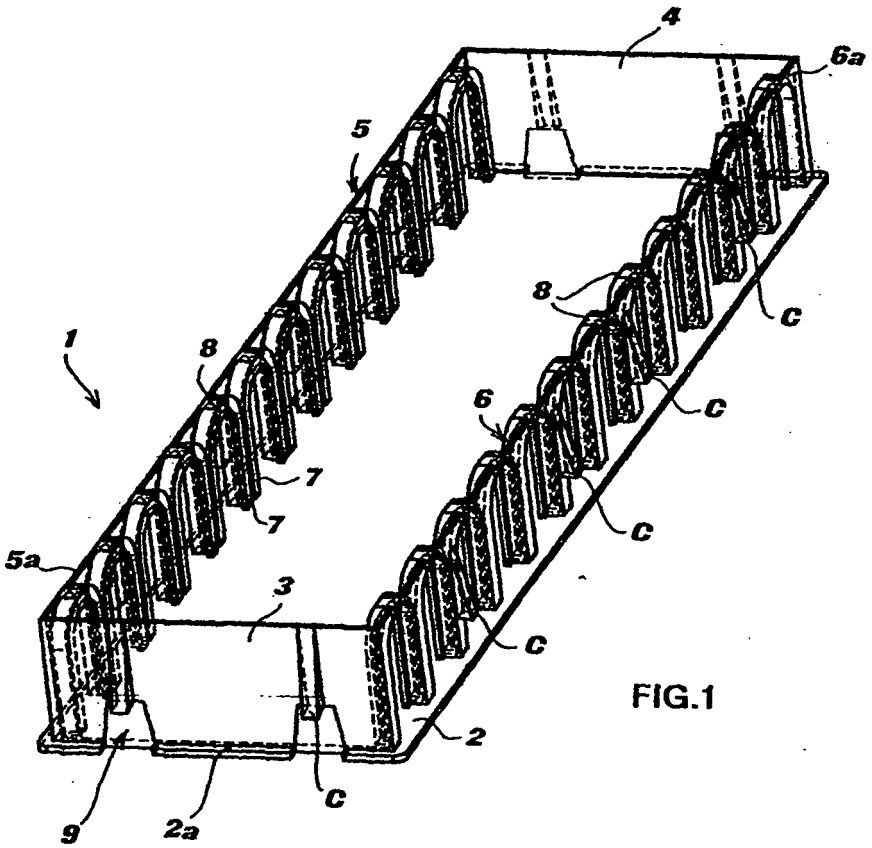

FIG.1

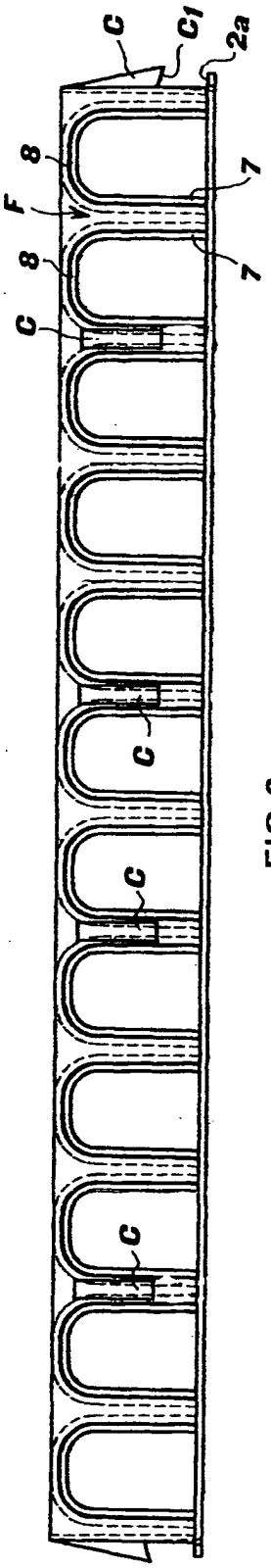

FIG.3

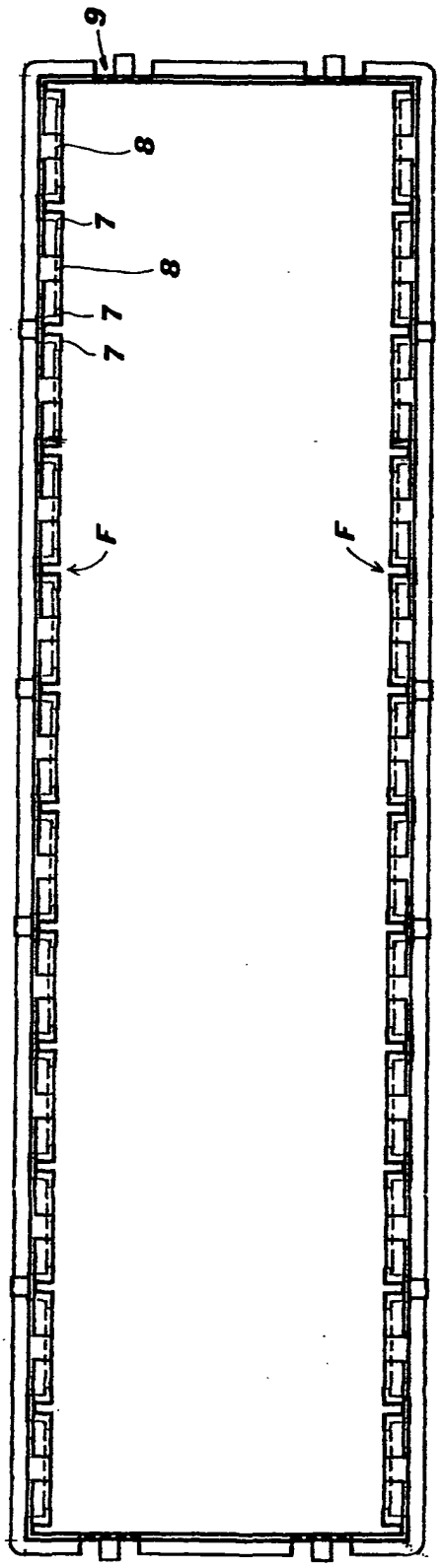

FIG.2

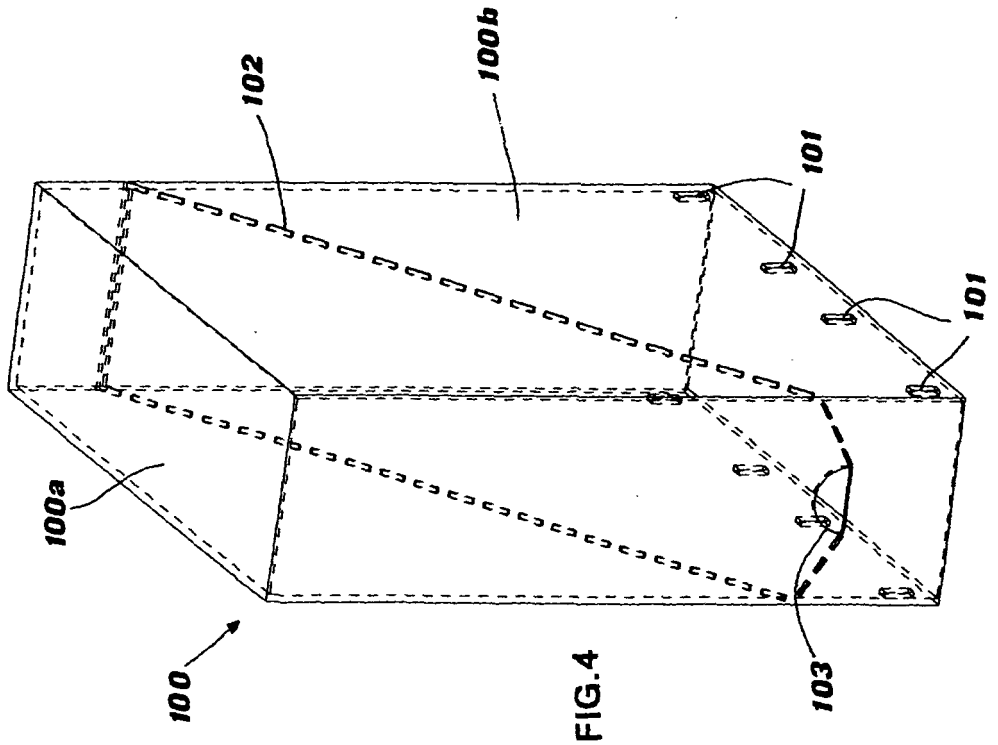

FIG.4

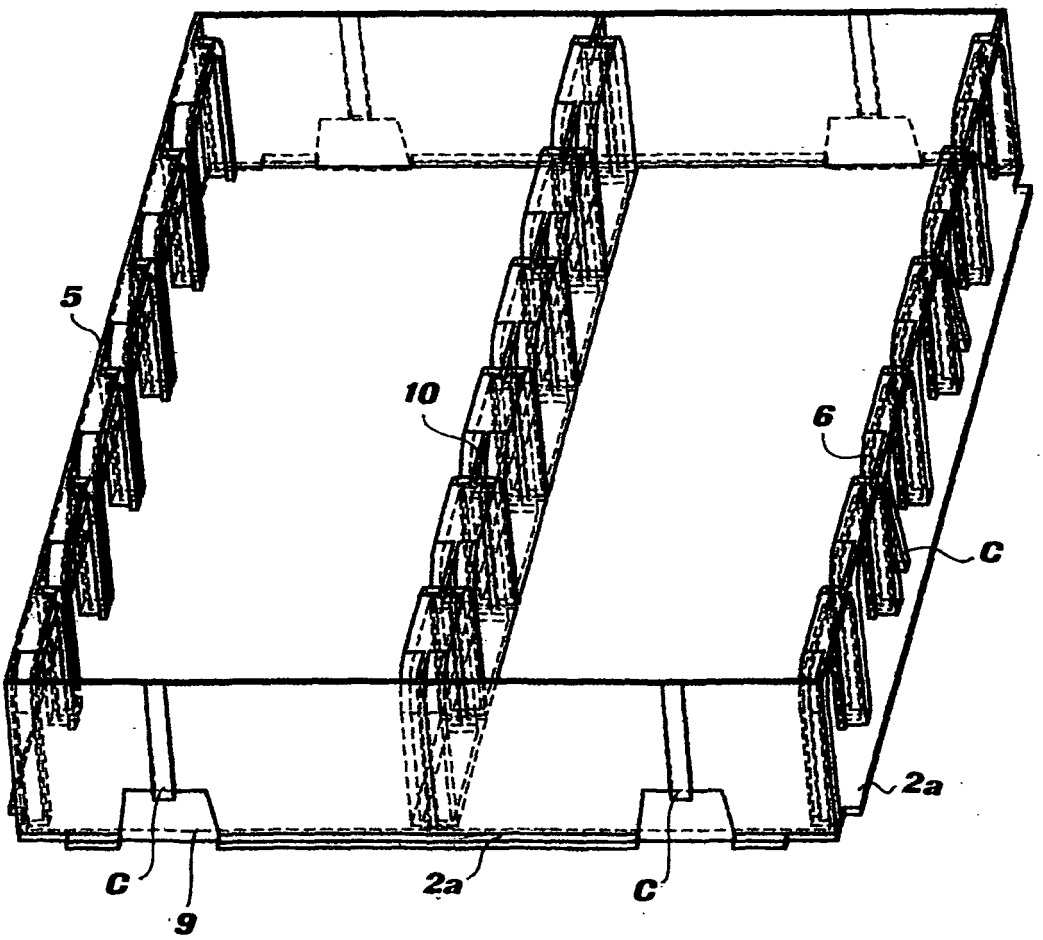

FIG.5

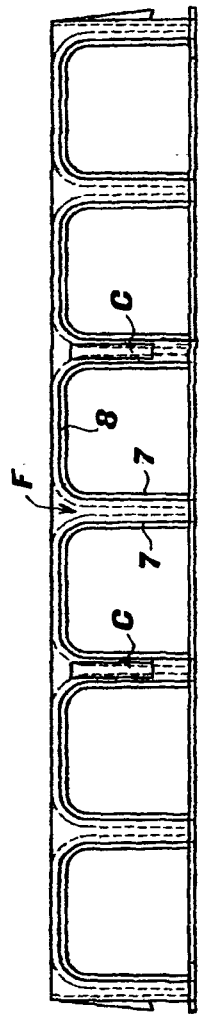

FIG.7

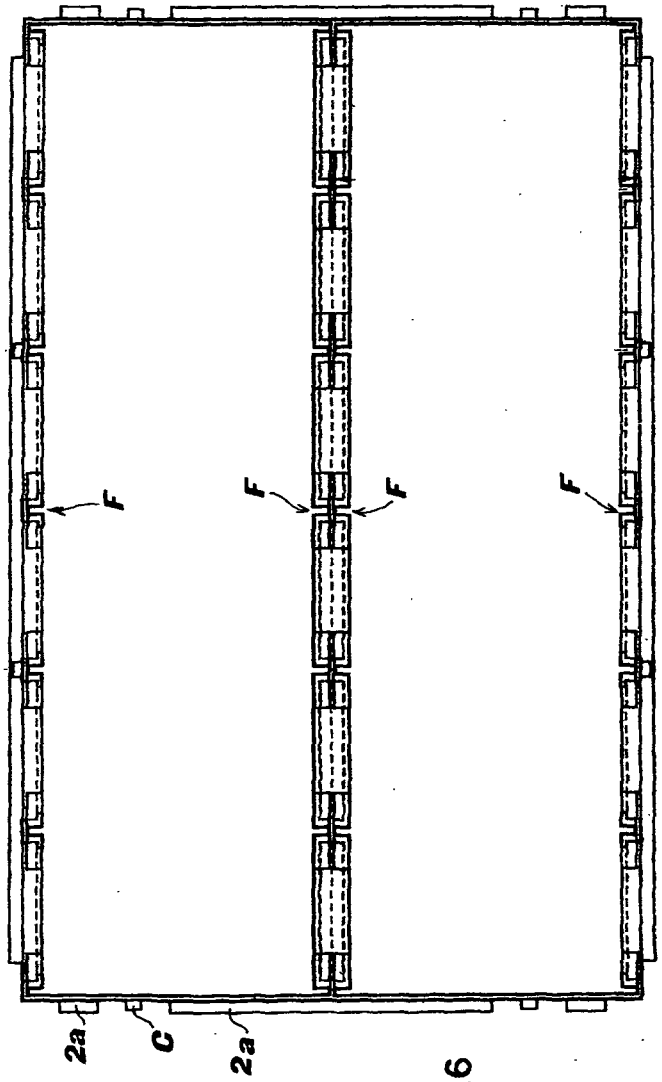

FIG.6

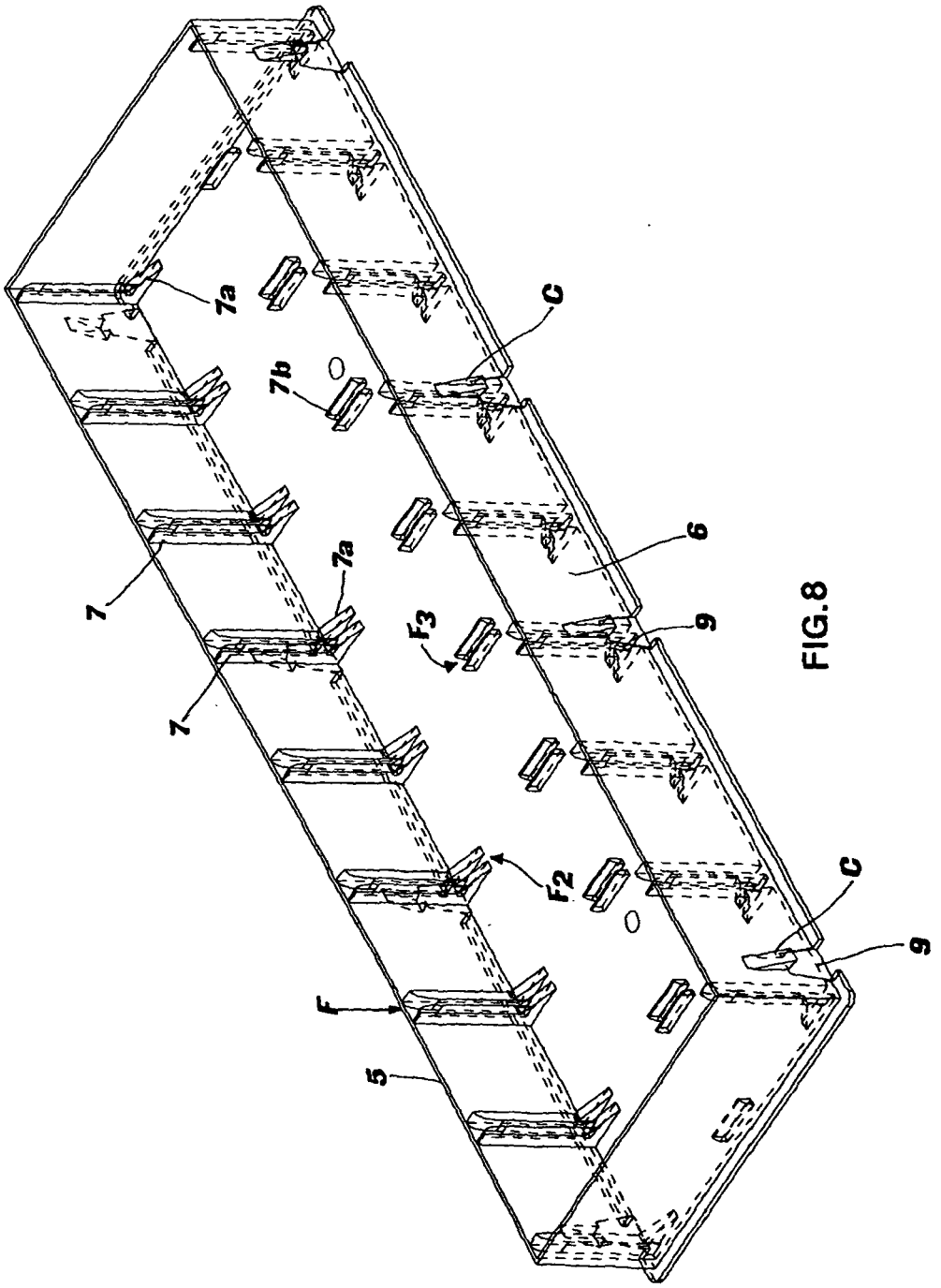

FIG.8

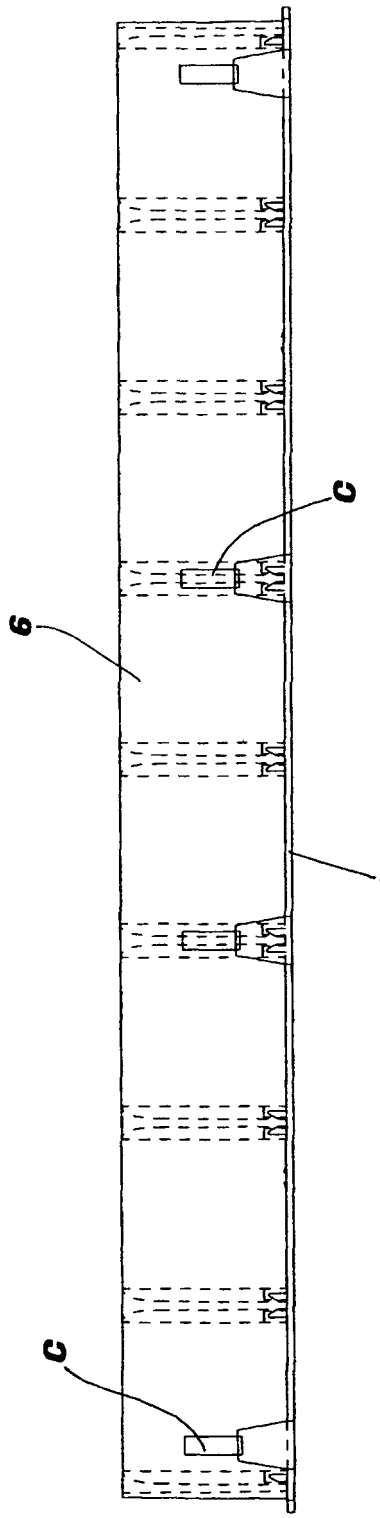

FIG.9

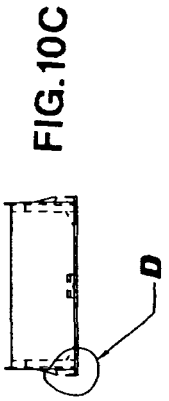

FIG.10C

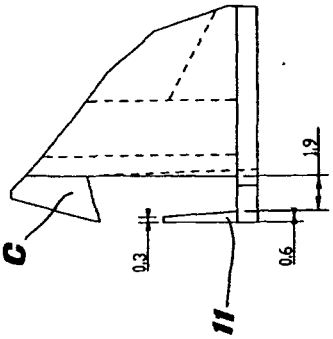

FIG.10D

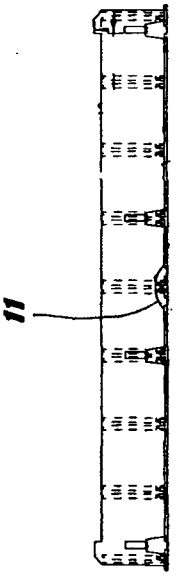

FIG.10A

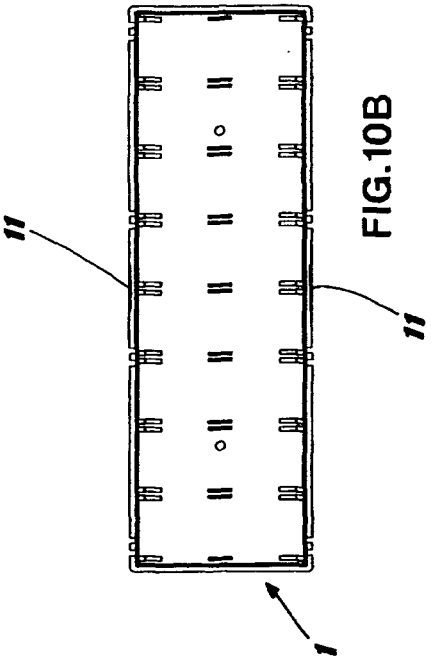

FIG.10B

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 6855

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2002/088736 A1 (LIU SAMSON) 11 July 2002 (2002-07-11) * abstract; figures *	1,12,13, 16,18	B65D25/10 B65D1/34 B65D1/36 B65D43/02
A	FR 2 831 526 A (PLASTIQUES RG) 2 May 2003 (2003-05-02) * abstract; figures *	1-3,5,6, 16	
A	US 5 775 508 A (BONGARD ET AL) 7 July 1998 (1998-07-07) * abstract; figures *	1-3,12, 13,16,18	
A	US 3 856 137 A (BRINDLEY R,US) 24 December 1974 (1974-12-24) * abstract; figure 1 *	1,8,12, 13,16	
A	DE 14 86 201 A1 (ADE,WILLY) 3 April 1969 (1969-04-03) * claim 1; figures *	1-6,16	
A	GB 2 229 705 A (* HUNTINGDON FASTENER CO LTD) 3 October 1990 (1990-10-03) * abstract; figures *	1-4,16	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 November 2005	SERRANO GALARRAGA, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

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