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(54) **Reinforced carton box**

(57) A reinforced case box (1), of the type obtained by overlapping two monoblock laminated elements (10, 100), is capable of preventing undesired opening up and has an internal element (10) with a first extension (7) and a second extension (8), folded so as to lie interposed between it and an external wrapping (100), said first extension (7) being glued to the cover (5) of the case box and said second extension (8) being glued to the body of the case box (1) so that they, upon having separated the first extension (7) from the internal element (10), reciprocally interfere during the opening up and the closing of the cover (5) (Figure 14).

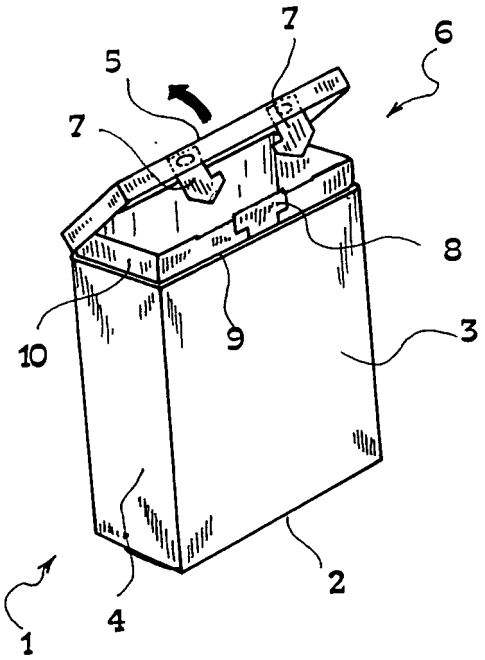


*FIG.14*

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## Description

**[0001]** The present invention relates to a reinforced carton box, of the type obtained by overlapping two monoblock laminated elements, an external one, intended to form the wrapping of the case box and provided with an articulated cover obtained from the same external element, and the other one internal, intended to form a reinforcing element at the walls of the external wrapping.

**[0002]** This kind of case boxes, box-shaped and generally made with carton laminates, is used to package products even quite different thereamong, therefore with variable dimensions.

**[0003]** E.g., the case box may be used to contain a granulated product such as washing powder, even with large volumes and weights of about 3÷5 kg. In a small-sized version, the case box could be used to package cigarettes, sweets, pills, medicines, etc. In these fields, object of the reinforcing element is to strengthen the side walls of the case box, usually parallelepiped-shaped, with the cover occupying an end portion of the case box.

**[0004]** In this type of case boxes, an accidental opening up of the cover, e.g. in case of fall of the case box, may lead to the shedding and therefore the loss of content. Therefore such an opening up should be prevented, yet without overly complicating the assembling of the case box.

**[0005]** Moreover, often the intentional opening up of the cover entails no difficulty and therefore could be carried out by persons, such as children, unaware of content potentially hazardous to health.

**[0006]** The technical problem underlying the present invention is that of providing a case box overcoming the drawbacks mentioned with reference to the known art.

**[0007]** Such a problem is solved by a reinforced case box as above specified, characterised in that the internal element has at least one first extension and at least one second extension, integral to the internal element and articulated thereto at an edge thereof, which are folded so as to lie interposed between the internal element and the external element in correspondence of a line separating, in the external element, a portion intended to make said articulated cover, said first extension being glued to the cover portion and said second extension being glued to the external element or to the internal element so that they, upon having separated the first extension from the internal element, reciprocally interfere during the opening up and the closing of the cover.

**[0008]** The main advantage of the case box according to the present invention lies in allowing an easy assembling and providing a system that prevents the accidental or unknowing opening up of the case box itself.

**[0009]** The present invention will hereinafter be described according to a preferred embodiment thereof, together with some applications thereof, given by way of example and without limitative purposes with reference to the following examples and to the annexed drawings, wherein:

* figure 1 shows a plan view of a monoblock laminated element, intended to form the external element and therefore the wrapping of a case box according to the invention;

* figure 2 shows a plan view of a monoblock laminated element, intended to form the internal reinforcing element of a case box according to the invention;

* figures 3 to 11 illustrate in perspective assembling steps of a case box according to the invention, with the laminated elements of figures 1 and 2;

* figures 12 to 14 show perspective views of an embodiment of reinforced case box according to the invention obtained through the assembling steps of which in figures 3 to 11, illustrating the steps of opening up the case box itself; and

* figure 15 shows a sectional view of a detail of the case box of the preceding figures, illustrating an opening step of the case box itself.

**[0010]** Referring to figure 14, it is preliminarily described the exemplary embodiment of reinforced case box, generally denoted by 1, before illustrating more specifically all of its details.

**[0011]** The case box 1 is parallelepiped-shaped, with an end or bottom wall 2, four side walls of which two greater ones 3, opposite and with a greater width, form the two front portions of the case box, whereas the other two smaller ones 4, opposite and with a lesser width, operate as connections.

**[0012]** In a position opposite to the bottom wall 2, the case box 1 comprises a cover 5 that, in this embodiment, entirely occupies the end portion and is articulated to the body of the case box at an edge of one of the greater walls 3.

**[0013]** In correspondence of the opposite greater wall 3 and the cover 5, the case box 1 comprises interference means 6 comprising a pair of first interfering elements 7, connected to the cover 5 and substantially hook-shaped, and a second interfering element 8, connected to the wall 3 of the case box 1 and operating as stop.

**[0014]** The first interfering elements 7 are intended to be inserted into a slot 9 formed by the approaching of said greater wall 3, as part of the external wrapping of the case box 1, and of an internal reinforcing element 10. The second interfering element 8 is instead interposed between the greater wall 3 and the reinforcing element, it being connected to the greater wall 3.

**[0015]** Therefore, the first and second interfering elements 7, 8 are intended to cooperate for hindering the undesired, accidental or unknowing opening up of the cover 5, when the first interfering elements 7 are completely inserted into said slot 9 in a stopping position with respect to the second element 8.

**[0016]** The walls 2, 3, 4 and the cover 5 of the case

box 1, forming the external wrapping thereof, are made up, by folding and gluing steps, of a plane monoblock laminated element, of paper material and in particular carton with a face suitable for being printed, hereinafter referred to as external element 100, shown in figure 1.

**[0017]** The external element 100 is formed by four rectangular panels, denoted by 101, 102, 103 and 104, respectively, arranged in sequence and separated by respective transversal central creasing 105, 106, 107, corresponding to the drawn-near long side of each panel. They are subdivided into greater 101, 103 and smaller 102, 104 panels, respectively intended to form the greater 3 and smaller 4 walls of the case box 1.

**[0018]** At the bottom edge of the external element 100 there are bottom flaps 108 and bottom tabs 109, respectively articulated to the greater panels 101 and 103 and to the smaller panels 102 and 104 at a longitudinal bottom creasing 110.

**[0019]** The bottom flaps and tabs 108, 109 are intended to form, by folding and adequate gluing, the bottom wall 2.

**[0020]** Likewise, at the top edge of the external element 100 there are top flaps 111 and top tabs 112, respectively articulated to the greater panels 101 and 103 and to the smaller panels 102 and 104 at a longitudinal top creasing 113.

**[0021]** The top flaps and tabs 111, 112 are intended to form, by folding and adequate gluing, the cover 5.

**[0022]** The external element 100 comprises, at a side edge thereof, a fastening flap 114 articulated on a transversal side creasing 115.

**[0023]** Near to the longitudinal top creasing 113, the external element 100 has a separation line 116 extending parallelly thereto.

**[0024]** In this embodiment, the separation line 116 is obtained by associating, e.g. gluing it according to a conventional technology, a thread or a thin strip of resisting material. The thread could also be buried into the thickness of the external element 100. One end of the thread, not shown, is contained into a grip tang 117 arranged at the side edge 118 of the external element 100 opposed to the fastening flap 114.

**[0025]** For convenience's sake, as shown in figure 1, the strip could also be laid continuously and without interruptions, over the entire longitudinal extension of the external element 100.

**[0026]** At the first greater panel 101, the one to which the fastening flap 114 is articulated, said strip, corresponding to the continuous separation line 116, is interrupted with respective notches arranged near the respective transversal creasing 105, 115 delimiting the external element 100. Thus, by pulling the tang 117, the separation of the external element 100 is effected only at the fourth, third and second panel 104, 103, 102 in order of separation, whereas at the first panel 101, at the first opening up of the cover, it is formed a longitudinal central creasing 119 corresponding to the portion of separation strip punched by the notches.

**[0027]** Hence, prior of said deposition, at the laying of said strip it is possible to define a facilitated folder line, always continuously onto the longitudinal extension of the external element 100, which will be active only at said portion.

**[0028]** Said creasing 119 forms the articulation between cover 5 and body of the case box 1.

**[0029]** Said separation line 116 could also be made otherwise, e.g., by a nicking, a notching with total detachment of the portion thus defined and intended to form the cover 5, or a preferential tearing line.

**[0030]** Referring to figure 2, the internal reinforcing element 10 is a plane monoblock laminated element 10, made of carton of a reinforcing type, formed by four rectangular panels, denoted by 11, 12, 13 and 14, respectively, arranged in sequence and separated by respective transversal central creasing 15, corresponding to the drawn-near long side of each panel. They are subdivided into greater 11, 13 and smaller 12 and 14 panels, respectively intended to be overlapped to the greater 3 and smaller 4 walls of the case box 1.

**[0031]** At a side edge thereof, the internal element 10 comprises a fastening flap 16 articulated on a transversal side creasing 17.

**[0032]** The height of the panels 11, 12, 13 and 14 is substantially equal to that of the corresponding panels 101, 102, 103 and 104 of the external element 100. Also the widths of the respective panels are equal, so as to obtain, by overlapping the two elements 10, 100, also an overlapping between the transversal central creasing 105, 15.

**[0033]** A greater panel, denoted by 13, of the internal element 10 has, in correspondence and at the centre of the top edge 18, at least one first extension 7 and at least one second extension 8, integral to the internal element 10 and articulated thereto at said top edge 18.

**[0034]** In the present embodiment, the first extensions are two and correspond to said first interfering elements 7, whereas the second extension corresponds to said second interfering element 8. For this reason, their number references are the same.

**[0035]** The second extension 8 is articulated onto the reinforcing element 10 by a creasing 19 corresponding to said top edge 18. The former is symmetrical with respect to a transversal central axis and has a pair of stopping edges 20 separated by a central extension 27.

**[0036]** The distance between stopping edges 20 and creasing 19 is substantially equal to the distance lying, in the external element 100, between separation line 116 and longitudinal top creasing 113, for the reason that will be explained hereinafter. Optionally, the distance between stopping edges 20 and creasing 19 may be slightly greater than the distance, in the external element 100, between separation line 116 and longitudinal top creasing 113.

**[0037]** The first extensions 7 are substantially hook-shaped, having respective hooking edges 21 corresponding to said stopping edges 20.

**[0038]** The extensions 7 are articulated onto the reinforcing element at additional separation lines 22, parallel to the top edge 18 yet slightly staggered with respect to the creasing 19 of the second extension 8, such as to be traced into the reinforcing element 10.

**[0039]** These additional separation lines 22 operate also as creasing and, in the present embodiment, are formed by preferential tearing lines 22 made by a sequence of through notches.

**[0040]** Referring to figures 3 to 11, hereinafter there will be described the manufacturing steps of the case box 1, starting from the external element 100 and the internal reinforcing element 10.

**[0041]** Onto the face of the external element 100 intended to receive in overlapping the internal element 10, glue depositions are carried out, in particular onto the first greater panel 101, onto the first smaller panel 102 and also on the second greater panel 103, which contains the separation line 116, with glue points arranged above the separation line 116, then onto the portion intended to form the cover 5, and onto the body of the second greater panel 103, below the separation line 116 (figure 3).

**[0042]** The glue depositions are carried out according to conventional modes.

**[0043]** The glue points below the separation line 116 are preferably a single wall glue point 23, whereas the glue points thereabove are a pair of cover glue points 24.

**[0044]** The overlapping will be such that the longitudinal top creasing 113 of the external element 100 overlaps the top edge 18 of the internal element 10, and that the transversal creasing of the two elements overlap therebetween.

**[0045]** Prior of carrying out said overlapping, the extensions 7 and 8 are folded (figure 4) onto the face of the internal element 10 intended to contact the external element 100, so that, once the overlapping is carried out (figure 5) said extensions 7 and 8 lie overlapped between the internal element 10 and the external element 100 at a separation line, i.e. the line separating, in the external element 100, a portion intended to form said articulated cover 5.

**[0046]** The distance between the top edge 18 of the internal element 10 and the separation lines 22 of the first extensions 7 causes, once the folding of the extensions 7, 8 has ended, a spacing between the stopping edge 20 and the hooking edge 21.

**[0047]** As it is apparent from figures 3 to 5, the glue points 23, 24 arranged onto the second greater panel 103 are positioned so that the first and second extensions 7, 8, respectively, overlap thereon.

**[0048]** Thus, said first extensions 7 glue to the portion of the cover 5 and said second extension 8 glues to the body of the external element 100 at the panel intended to form the front wall (figure 5).

**[0049]** Upon carrying out the overlapping, the making up of the case box 1 occurs substantially conventionally: onto the fastening flaps 114 and 16 of the external 100 and internal 10 elements there are carried out adequate glue depositions 25, 26 (figure 6) and then the two elements are folded (figure 7) so that said flaps 116, 14 be adhered to the opposite panels 104, 14 (figure 8) thereby forming the side walls 3, 4 of the case box 1.

**[0050]** Subsequently, the bottom flaps and tabs 108, 109, as well as the top flaps and tabs 111, 112 are selectively provided with glue depositions (figure 9) and folded (figure 10) to form respectively the bottom wall 2 and the cover 5 of the case box 1 (figure 11), that thereby is completely formed.

**[0051]** It is understood that the step of filling the case box 1 is omitted from the illustration; said step will occur entirely conventionally thanks to an intermediate step.

**[0052]** Having disclosed the making up of the case box 1, it may be observed that the extensions 7 and 8 are respectively glued to the external element 100 so that they, upon having separated the first extension 7 from the internal element 10, reciprocally interfere during the opening up and the closing of the cover 5 of the case box 1.

**[0053]** In fact, to open up the case box 1 it suffices to act onto the separation line 116; this will cause the physical separation of the cover 5 from the body of the case box 1 (figure 12). However, the opening up of the cover 5 will be prevented by the interference between the extensions 7, 8, thereby preventing undesired opening up.

**[0054]** In order to carry out the opening up, it will suffice to press onto the front wall of the case box 1 where the extensions are positioned: thus the stopping edges 20 are pushed inwards, freeing the hooking edges of the first extensions 7. The distance between stopping edges 20 and hooking edges 21 facilitates this reciprocal displacement that otherwise could be hindered by their interference.

**[0055]** Moreover, on occasion of the first opening up, this pressing will allow, by acting on the separation lines 22, to detach the first extensions 7 from the internal element 10.

**[0056]** All this will allow to open up the cover 5. To close it again, it will suffice to insert the first extensions 7 into the slot 9 made by the approaching of internal element 10 and external element 100 therebetween: the hooking edges 21 will reposition below the stopping edges 20, remaining blocked. To open it up again, it will suffice to operate as disclosed in the foregoing.

**[0057]** It is understood that the shape and number of the extensions linked to the cover and/or body of the case box are variable. Moreover, the second extension 8 could be glued also to the internal element 10, by suitably positioning a glue point on the sense of the second extension 8.

**[0058]** In addition, with respect to the depiction in figure 2, the extensions 7, 8 could also be both positioned below the top edge 18, so as to glue the element 8 onto the cover 5 without folding it and therefore without folding the two additional elements 7, so that the blocking system works in the same manner, albeit mirror-like, and with a

reduced carton consumption, the two interfering elements being comprised in the height of the reinforcing element 10.

**[0059]** Finally, it is understood that the present invention could be made with a case box even different from the parallelepiped-shaped one. Moreover, the cover could only partially occupy one wall of the case box, or even be transversal to two or three of them.

**[0060]** To the above-described reinforced case box a person skilled in the art, in order to satisfy further and contingent needs, could effect several further modifications and variants, all however encompassed within the protective scope of the present invention, as defined by the appended claims.

## Claims

1. A reinforced case box (1), of the type obtained by overlapping two monoblock laminated elements (10, 100), an external one (100), intended to form the wrapping of the case box (1) and provided with an articulated cover (5) obtained from the same external element (100), and the other one (10) internal, intended to form a reinforcing element at the walls (3, 4) of the external wrapping, **characterised in that** the internal element (10) has at least one first extension (7) and at least one second extension (8), integral to the internal element (10) and articulated thereto at an edge (18) thereof, which are folded so as to lie interposed between the internal element (10) and the external element (100) in correspondence of a line (116) separating, in the external element (100), a portion intended to make said articulated cover (5), said first extension (7) being glued to the portion of the cover (5) and said second extension (8) being glued to the external element (100) or to the internal element (10) so that they, upon having separated the first extension (7) from the internal element (10), reciprocally interfere during the opening up and the closing of the cover (5).

2. The case box (1) according to claim 1, which is parallelepiped-shaped.

3. The case box (1) according to claim 2, wherein the cover (5) entirely occupies an end portion of the case box (1).

4. The case box (1) according to any one of the preceding claims, wherein the first extension (7) is intended to be inserted into a slot (9) formed by the approaching of the internal and external elements (10, 100).

5. The case box (1) according to any one of the preceding claims, wherein the line separating the cover (5) is a separation line (116).

6. The case box (1) according to any one of the preceding claims, wherein the separation line (116) comprises a thread or a strip longitudinally associated to the external element (100).

7. The case box (1) according to any one of the preceding claims, wherein the height and the widths of the panels (11, 12, 13, 14) forming the internal element (10) are substantially equal to those of the corresponding panels (101, 102, 103, 104) of the external element (100).

8. The case box (1) according to any one of the preceding claims, wherein the first extensions (7) are a pair, with the second extension (8) centrally therebetween.

9. The case box (1) according to any one of the preceding claims, wherein the first and the second extension (7, 8) are articulated onto the internal element (10) at lines staggered therebetween.

10. The case box (1) according to any one of the preceding claims, wherein the first extension (7) is hook-shaped and has a hooking edge (21) and wherein the second extension has a respective stopping edge (20).

11. The case box (1) according to claims 9 and 10, wherein the distance between the stopping edge (20) and the line onto which the second extension (8) is articulated is substantially equal to or slightly greater than the distance, in the external element (100), between the separation line (116) separating the cover (5) and a longitudinal top creasing (113) delimiting the side walls (3) of the case box (1).

12. The case box (1) according to any one of the preceding claims, wherein the first extension (7) is articulated at a separation line that is formed by a preferential tearing line (22).

13. The case box (1) according to any one of the preceding claims, wherein the second extension (8) is glued to the external element (100).

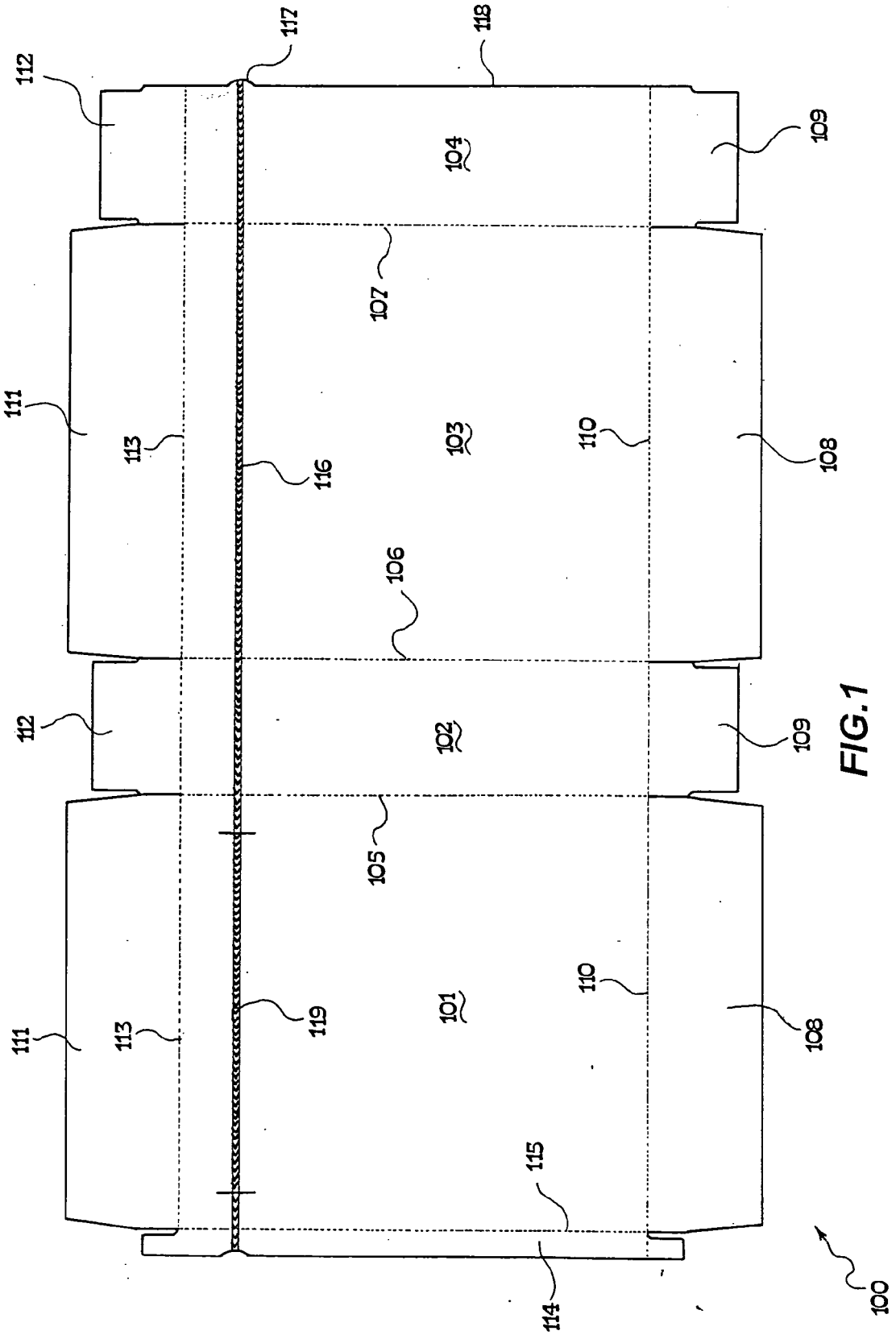
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FIG.1

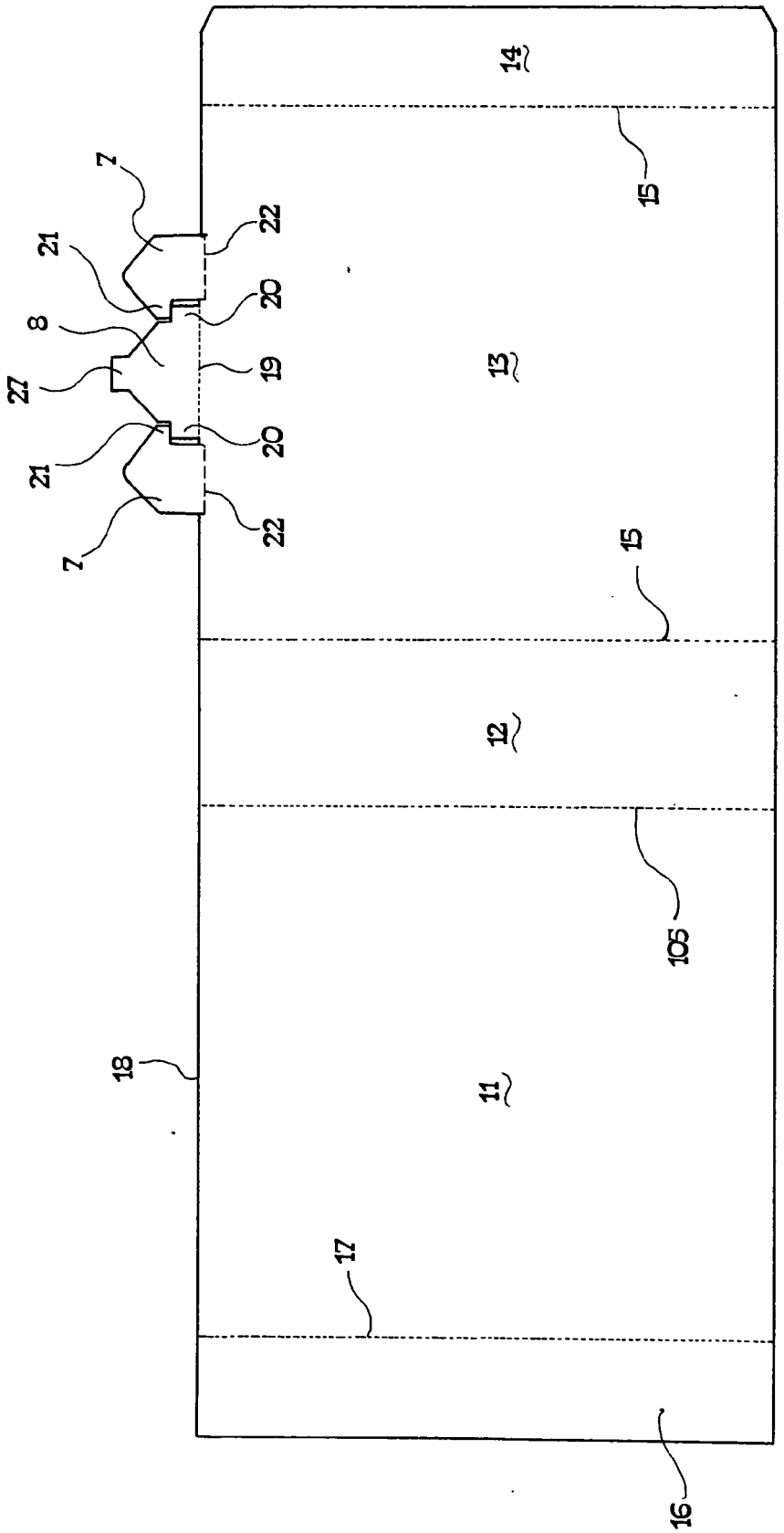


FIG.2

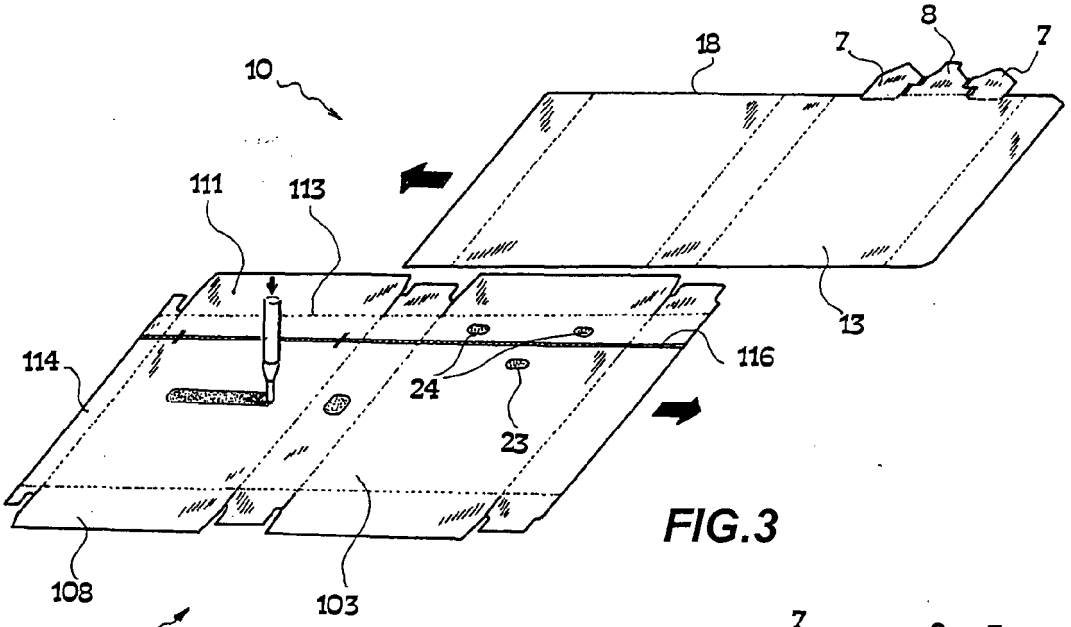


FIG.3

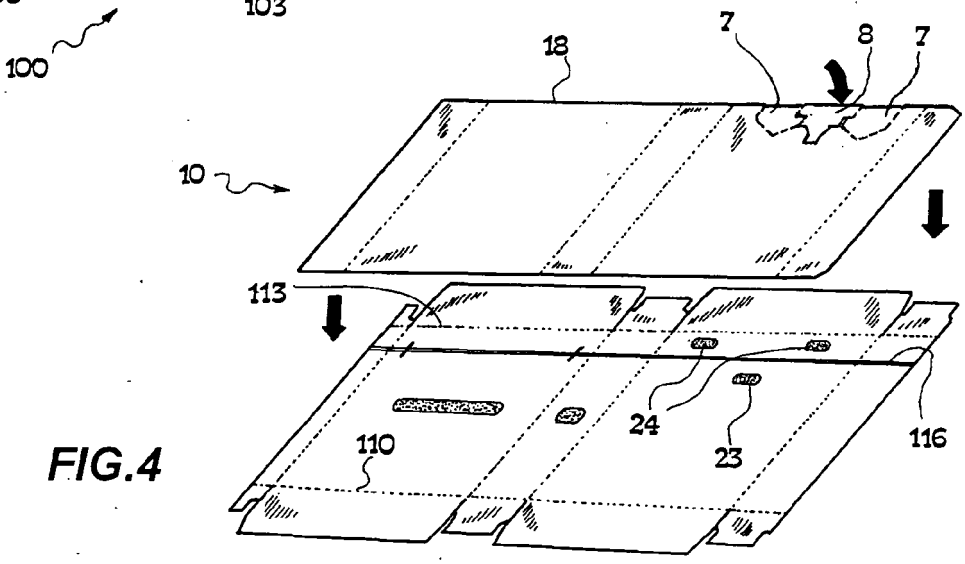


FIG.4

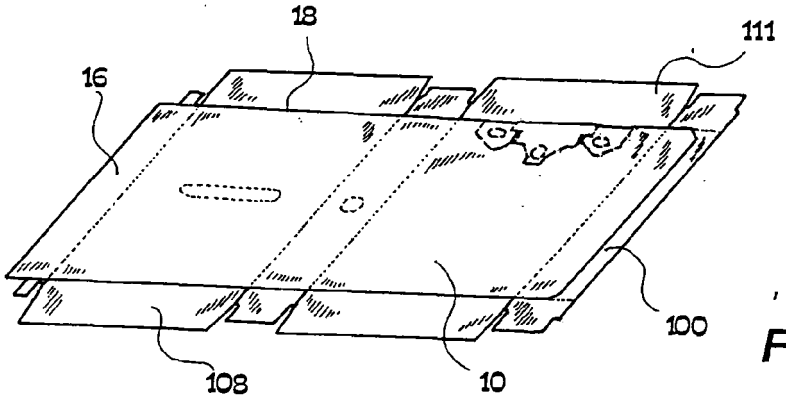


FIG.5

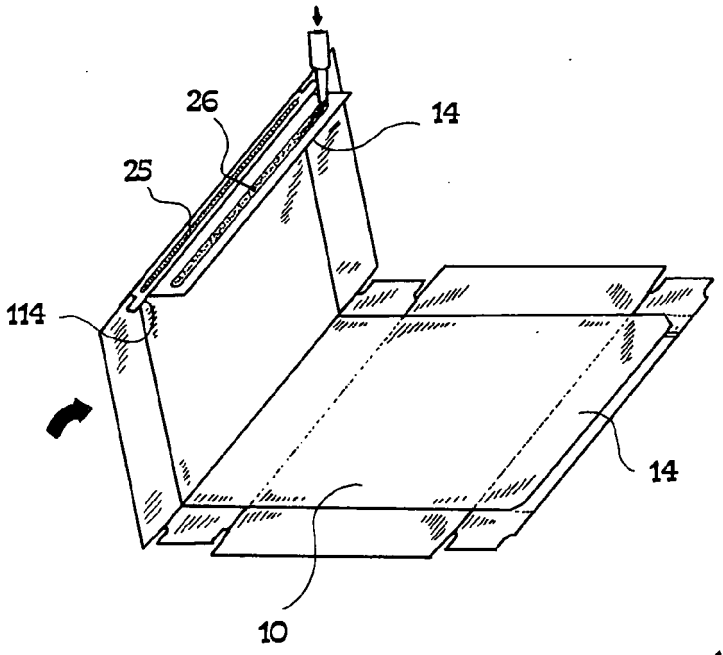


FIG.6

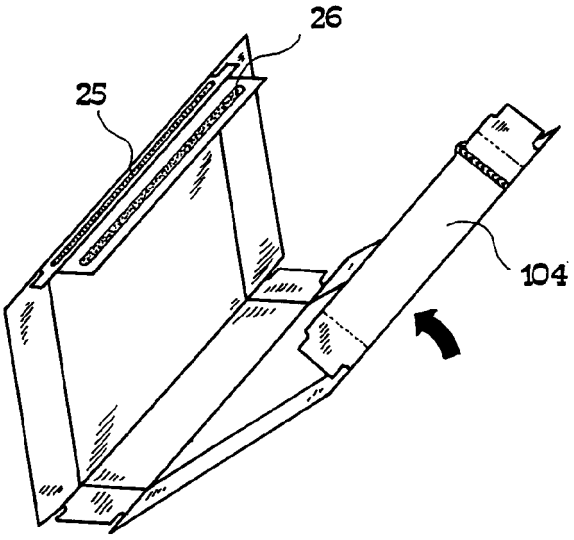


FIG.7

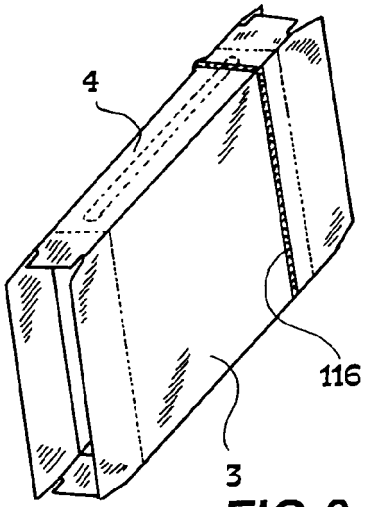


FIG.8

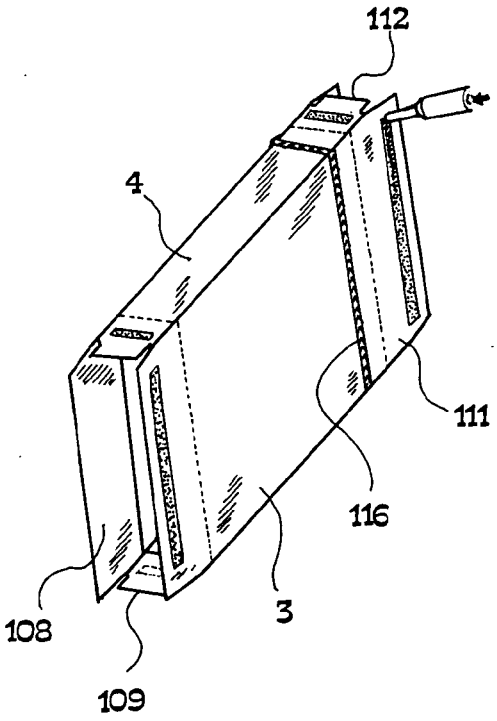


FIG.9

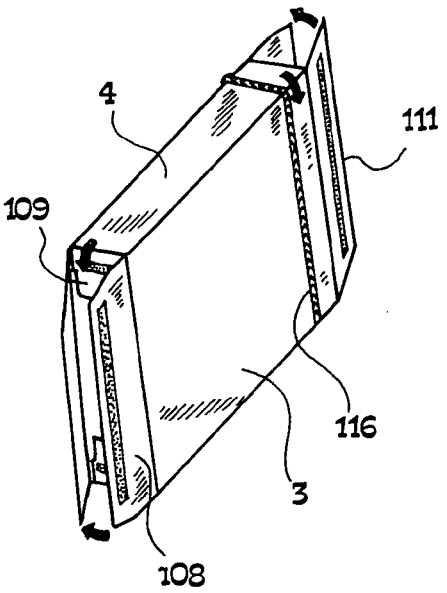


FIG.10

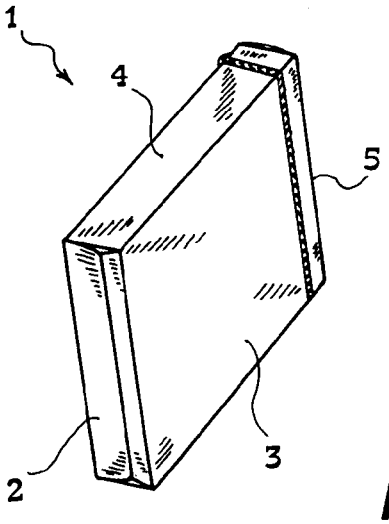


FIG.11

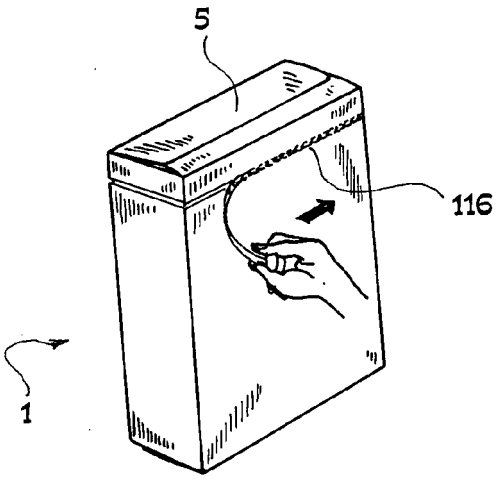


FIG.12

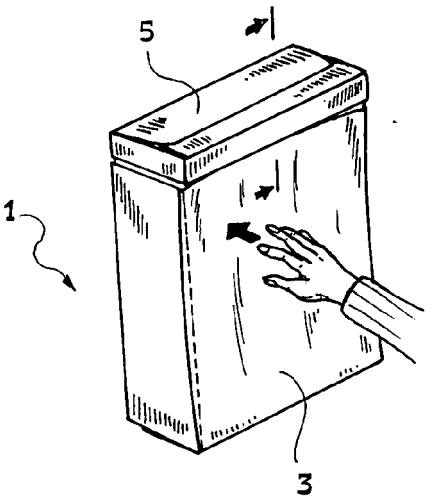


FIG.13

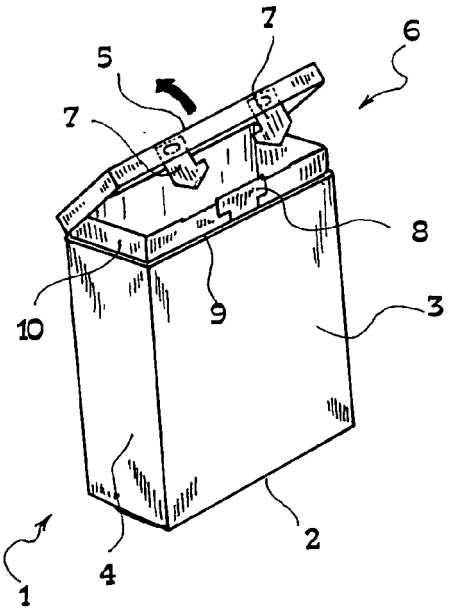


FIG.14

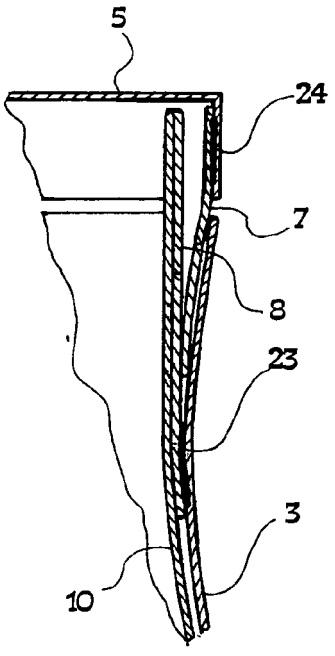


FIG.15

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5255

## 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 | DE 10 2005 005500 B3 (HENKEL KGAA [DE]) 16 March 2006 (2006-03-16) * paragraphs [0019] - [0026]; figures 1,3 * | 1-13 | INV. B65D5/54 |
| A | FR 2 796 043 A1 (SMURFIT SOCAR SA [FR]) 12 January 2001 (2001-01-12) * column 5, line 9 - column 7, line 14; figures 2,4a,4b * | 1-13 | |

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 |
|---|---|---|
| Munich | 24 January 2007 | Cazacu, Corneliu |

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 06 42 5255

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82