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(54) **Carton box with articulated closure**

(57) Carton box (1) with snap-closing articulated closure (13), box-shaped and apt to contain a product dispensable via an access side (14) formed on a face thereof, said closure (13) resting thereat, substantially piece-formed and having, in its three-dimensional shape: a parallelepiped box-shaped structure, with four side walls (4, 5, 6, 7) and two end walls (8, 9), one thereof partially opened to form access side (14) which in turn has, on a respective snap edge (126), a projecting tang (2); and a closure (13), formed by an extension (3) of the monoblock blank (100) at a first edge (16) of the access side (14) adjacent to the snap edge (126), by folding and gluing steps such as to anchor said closure-folded extension (3) at the second edge (17) of the access side (14) opposed to the first one, so as to obtain onto the inside surface of the closure (13) a projecting step (15) apt to serve as grip for said tang (2).

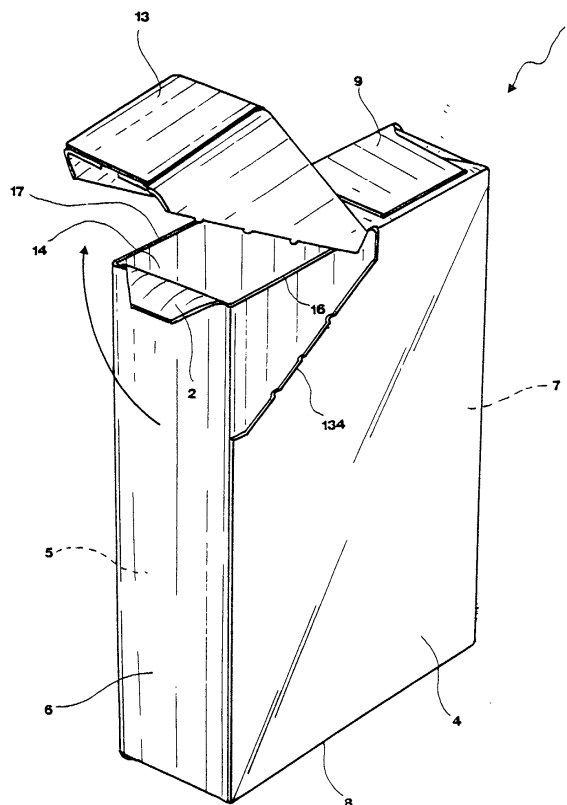


FIG.10

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Description

[0001] The present invention refers to a carton box with snap-closing articulated closure, box-shaped and apt to contain a product dispensable via an access side formed on a face thereof, said closure resting thereat.

[0002] Usually, this type of carton boxes has a tang on an edge of the access side, tang which is covered by the closure and in particular pressed down by the inside face of a closure wall onto which a step is formed.

[0003] With the closure in a completely closed configuration, the projecting end of the tang snaps above the step, preventing the return thereof and emitting a characteristic click indicative of the occurred closing. In order to open said closure it suffices to lightly force the latter, causing the elastic deformation of the tang that, due to its dimensions and consistence, remains unbent.

[0004] The known carton boxes of the abovespecified type, widely employed in packaging, are formed in their three-dimensional shape starting from a monoblock plane blank comprising panels, edges and flaps preset for folding and gluing steps, preferably made of a semi flexible paper material, like triplex carton and the like. The side of the closure whereat it joins the carton box body, i.e. a folding serving as hinge, is formed frontally to the rim of the access side comprising said tang.

[0005] In this case the closure is obtained by folding and gluing an extension of the wall opposed to said tang, to form the closure sides and the inside step.

[0006] This positioning complicates the complex assembling steps, due to the various manoeuvres concerning the carton box being formed. Moreover, said closure lacks a fixed closing having anti-tamper evidence, so that usually these carton boxes are in turn packaged in a wrapping, e.g. of cellophane, provided with a tear-off line.

[0007] In particular, the carton box of the present invention, it also formed in its three-dimensional shape starting from a monoblock flat blank comprising panels, strips and flaps preset for folding and gluing steps, is intended to replace the abovedescribed carton box typology.

[0008] The advantages entailed in the carton box of the present invention with respect to the carton boxes abovementioned with reference to the known art are essentially of a practical nature, as the former facilitate the assembling and the gluing of the initial monoblock plane blank that has a remarkable structural simplicity. Moreover, according to a preferred embodiment, the carton box of the present invention has a closure with means for a first tear-off opening, with anti-tamper evidence.

[0009] The carton box as hereto-specified, in its three-dimensional shape, is substantially one-piece-formed and it is characterised in that it has:

- * a parallelepiped box-shaped structure, with four side walls and two end walls, one of the latter being partially opened to form an access side which in turn

has, on a respective snap edge, a projecting tang; and

- * a closure, formed by an extension of the monoblock blank at a first strip of the access side adjacent to the snap edge, by folding and gluing steps such as to anchor said extension, closure-folded, at the second strip of the access side opposed to the first one, so as to obtain onto the inside surface of the closure a projecting ledge apt to serve as stop for said tang.

[0010] The carton box according to the present invention provides a closure of particularly easy assembling, characterised by a remarkable ease of use and by a high structural simplicity.

[0011] Moreover, the anchoring of the extension forming the closure from one box side to the other is exploitable to insert a tear-off line in order to block the closure until the first opening up thereof, thereby providing it with an anti-tamper device.

[0012] The present invention will hereinafter be better illustrated by the description of a preferred embodiment thereof, given by way of a non-limiting example, with reference to the annexed drawings, wherein:

* Fig. 1 is a plan view of a monoblock flat blank for obtaining a carton box according to an embodiment of the present invention;

* Figs. 2 to 9 are perspective views showing some steps of assembling a carton box obtained from the blank of Fig. 1; and

* Fig. 10 is a perspective view of the carton box, obtained from the blank of Fig. 1.

[0013] The carton box model according to the present invention is obtainable assembling a monoblock flat blank, e.g. of the type made of semi flexible paper material, e.g. of carton.

[0014] With reference to Fig. 1, a blank 100 comprises a first panel 102, a second panel 103, a third panel 104 and a fourth panel 105. These panels 102, 103, 104, 105, all rectangular and of equal length, are arranged in the sequence first, third, second and fourth and are connected at a first, a second and a third side creasing 106, 107, 108, respectively that are all parallel thereamong and of equal extension.

[0015] Moreover, the fourth panel 105 has a fourth side creasing 109, parallel and analogous to the preceding ones, whereat the fourth panel 105 is connected to a first fastening strip 110, apt to be glued, upon assembling the carton box 1, to the first panel 102 at a free edge 111 thereof, that is parallel and corresponding to the preceding side creasing 106, 107, 108 and 109.

[0016] The first panel 102 is connected, at a first end creasing 112, to a first closing strip 113 and, at a second end creasing 114 opposed and parallel to the preceding one, to a second closing strip 115 substantially rectangular and apt to make a bottom wall of the carton box, as it will be apparent hereinafter.

[0017] Likewise, the second panel 103 is connected, at a third end creasing 116, to a third closing strip 117 substantially rectangular and apt to be covered by the corresponding first closing edge 113 and, at a fourth end creasing 118 opposed and parallel to the preceding one, to a fourth closing strip 119 substantially rectangular and apt to be covered by the corresponding second closing strip 115.

[0018] The third panel 104 is connected, at respective fifth and sixth end creasing 120, 121 parallel and opposed therebetween, to a first and to a second closing flap 122, 123, apt to be respectively covered by the corresponding closing strips 113, 115, 117, 119.

[0019] Likewise, the fourth panel 105 is connected, at a seventh end creasing 124, to a third closing flap 125, apt to be covered by the respective second and fourth closing strip 115, 119.

[0020] An eighth end creasing 126 joins said fourth panel 105 to a trapezoid-shaped tang 2.

[0021] The first fastening edge 110 is substantially L-shaped, having a thin section 127, adjacent to the third flap 125, and a widened section 128, adjacent to the tang 2.

[0022] At the first closing strip 113 the blank 100 comprises an extension, generally indicated with 3, that, by folding and assembling steps, provides a closure to the carton box according to the present invention.

[0023] Said extension 3 comprises a base section 129 of said first closing strip 113 adjacent to the free edge 111. This base section 129 extends, in the direction of the free edge 111, in a closure closing edge 130 and, as an extension of the first panel 102, in a substantially trapezoid-shaped first closure side closing strip 131. Said members are joined to the base section 129 by a first closure creasing 132 and by a second closure creasing 133. The first closure creasing 132 forms the extension of the free edge 111.

[0024] Onto the first panel 102 there is made a tear-off line 134, consisting of a sequence of passing indentations, delimiting a second closure side closing edge 135, mirroring the first one. From the side closing edges 131, 135 there extend, in agreement with the closure closing edge 130, respective first and second closure flaps 136, 137, joined to the extension 3 by respective third and fourth closure creasing 138, 139.

[0025] The closure flaps 136 e 137 are trapezoid-shaped, so as to form, folded under the closing edge 130, a V-shaped step.

[0026] With reference to Figs. 2 to 9 the assembling process of the monoblock blank of Fig. 1 will be described.

[0027] This process requires a glue deposition onto the first fastening edge 110 at the widened section 128, that is advantageously coated with a varnish layer 140 limiting the absorption of glue by the blank material. Then, the fastening edge 110 is adhered to the inside face of the first panel 102, with the fourth side creasing 109 overlapped to the free edge 111 (Fig. 4).

[0028] This joining forms respective and pair-opposed first and second side wall and third and fourth side wall 4, 5, 6, 7. Then, the second, fourth closing strip 115, 119, with the first and third closing flap 123 and 125 are collapsed inwards of the carton box being formed, obtaining a bottom wall 8 and allowing the filling of the container thus obtained.

[0029] The filling could be operated with any material or product apt to be packaged with this box, in form of powder or of discrete members (pills, pearls, etc.).

[0030] Apparently, optional glue onto the layer 140 will join the second closure side strip 135 to the fastening strip 110.

[0031] Subsequently, the first closing flap 122 is collapsed inwards of the carton box being formed, and with the same unidirectional motion also the tang 2 is collapsed outwards (Fig. 5). Then, the extension 3 is collapsed, so as to anchor it onto the opposite side of the second side wall 5, together with the first closing strip 113 and to the first closure side strip 131, which will adhere to the second side wall 6 (Fig. 6).

[0032] A glue point 141 is located onto the first closing strip 113 and thereon the third closing strip 117 is folded, determining a top wall 9, whereas the base section 129 will cover the void portion of said wall, i.e. an access side of the carton box being formed.

[0033] Onto the closure first closing strip 130, optionally raised in order to make this position, there is placed a second glue point 142, whereas the closure flaps 136, 137 are adhered to the respective third side wall 6 (Fig. 7).

[0034] The collapsing of the closure closing strip 130 forms the closure front wall 10, onto the third side wall 6, and the respective closure side walls 11, 12 onto the first and second side wall 4, 5.

[0035] The closure walls 10, 11, 12 form a closure 13 of a carton box 1 (Fig. 10), covering an access side 14. The tang 2 will be apt to stop by virtue of the step 15 determined by the folding of the closure flaps 136, 137, forming a snap mechanism.

[0036] The first opening up of the closure 13 could take place by tearing the tear-off line 134 by virtue of the mere forced lifting of the closure 13.

[0037] Hence, overall the carton box 1 will comprise a parallelepiped box structure, with four side walls 4, 5, 6, 7 and two end walls: bottom 8 and top 9, the latter being partially opened to form an access side 14 which in turn has a respective snap edge, represented by the eighth end creasing 126, a projecting tang 2.

[0038] The closure 13 is formed by said extension 3 of the monoblock blank 100 at a first edge 16 of the access side 14, edge 16 onto which there is rested said first end creasing 112 in the section separating the first panel 102 from the base section 129.

[0039] The closure is rotatably connected to the top wall 9 by a hinge which is represented by a ninth end creasing 143 separating the base section 129 from the top wall 9.

[0040] The extension 3 is anchored at the second edge 17 of the access side 14, opposed to the first edge 16, so that onto the inside surface of the closure there be a projecting ledge 15 apt to serve as stop for said tang 2.

[0041] Apparently, due to the different dimensions of the side panels of the blank, the carton box 1 is characteristically brick-shaped, with two narrow faces and two wide faces.

[0042] Moreover, said extension 3 is connected to the edge of a wide panel, so that the closure hinge 9 be parallel to a short-side corner instead of parallel, or better corresponding, to a long-side corner.

[0043] In the assembling of the abovedescribed blank 100 it has to be pointed out that:

- * upon filling, the carton box 1 is formed by motion along a line onto which plow deflectors and other strips and flap folding and pressing members operate;
- * to close up the entire carton box 1 and to form the closure four applications of glue or of other adhesive suffice: onto the fastening strip 110, at the bottom wall 8, at the top wall 9 and at the closure front wall 10;
- * the presence of the limited absorption layer 140 prevents the closure 13 from tearing the carton box 1 during the first opening up thereof, even in case of a glue interposition between the respective closure side wall 11 and the fastening edge 110;
- * the snap closure is formed on a narrow portion of an end wall of the carton box 1, allowing a more controlled dispensing of the contained product; and
- * the overall extension of the monoblock blank is particularly reasonable, besides it being formed at a wide side wall panel, as a different arrangement would not have allowed the closing of the closure onto the short side of the carton box.

[0044] The carton box 1 further comprises anti-tamper means, consisting of the tear-off line 134 whose irreversible tearing is required to open up the closure 13. Otherwise, in order to open up the carton box 1 a likewise irreversible forcing of one of the glue points would be required.

[0045] Besides the abovementioned advantages, the abovedescribed carton boxes enable a controlled dispensing, non-random and yet easily carried out.

[0046] Moreover, while comprising no structural complications, such carton boxes have effective anti-tamper systems.

[0047] The present invention is not limited to the disclosed embodiment, encompassing any variant embodiment thereof.

Claims

1. A carton box (1) with snap-closing articulated closure (13), box-shaped and apt to contain a product dispensable via an access side (14) formed on one face thereof, said closure (13) resting thereat, being substantially one-piece-formed, **characterised in that**, in its three-dimensional shape, it has:

- * a parallelepiped box-shaped structure, with four side walls (4, 5, 6, 7) and two end walls (8, 9), one of the latter being partially opened to form an access side (14) which in turn has, on a respective snap edge (126), a projecting tang (2); and
- * a closure (13), formed by an extension (3) of the monoblock blank (100) at a first edge (16) of the access side (14) adjacent to the snap edge (126), by folding and gluing steps such as to anchor said extension (3), closure-folded, at the second edge (17) of the access side (14) opposed to the first one, so as to obtain onto the inside surface of the closure (13) a projecting ledge (15) apt to serve as stop for said tang (2).

2. The carton box (1) according to claim 1, wherein said extension (3) comprises a base section (129) of a closing strip (113), extending in a closure closing strip (130) and in a first closure side closing strip (131), on a wall panel (102) there being made a tear-off line (134) delimiting a second closure side closing strip (135), mirroring the first one, from the side closing strips (131, 135) there extending respective first and second closure flaps (136, 137) trapezoid-shaped so as to form, folded under the closure closing strip (130), a V-shaped step.

3. The carton box (1) according to claim 1 or 2, comprising anti-tamper means, consisting of a tear-off line (134) whose irreversible tearing is required to open up the closure (13).

4. The carton box (1) according to claim 1, wherein said extension (3) is formed at a wide side wall panel (102), so that the closure (13) may close onto the short side of the carton box (1).

5. The carton box (1) and the monoblock blank (100) thereof as described, exemplified and illustrated in the description and in the attached drawings.

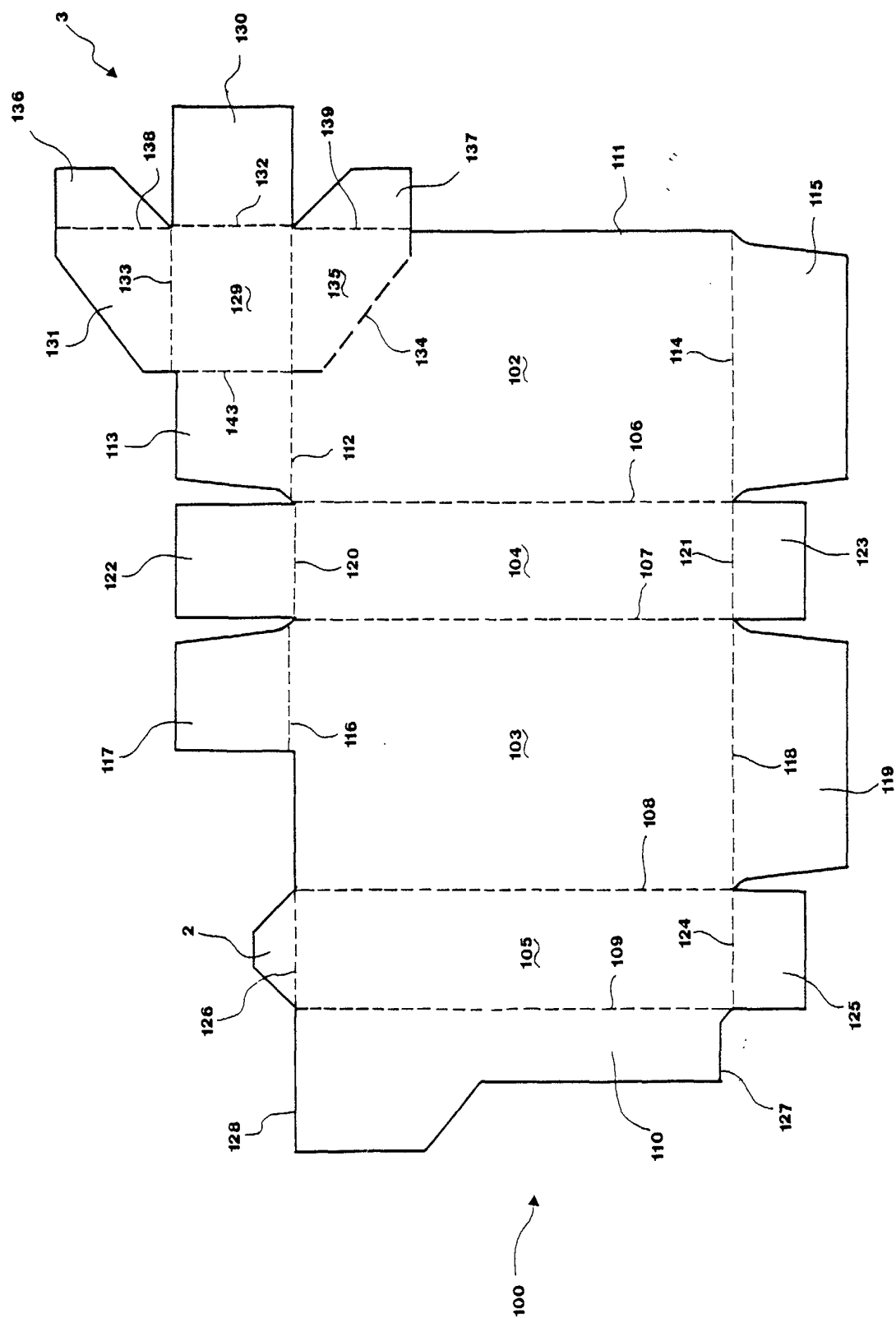


FIG.1

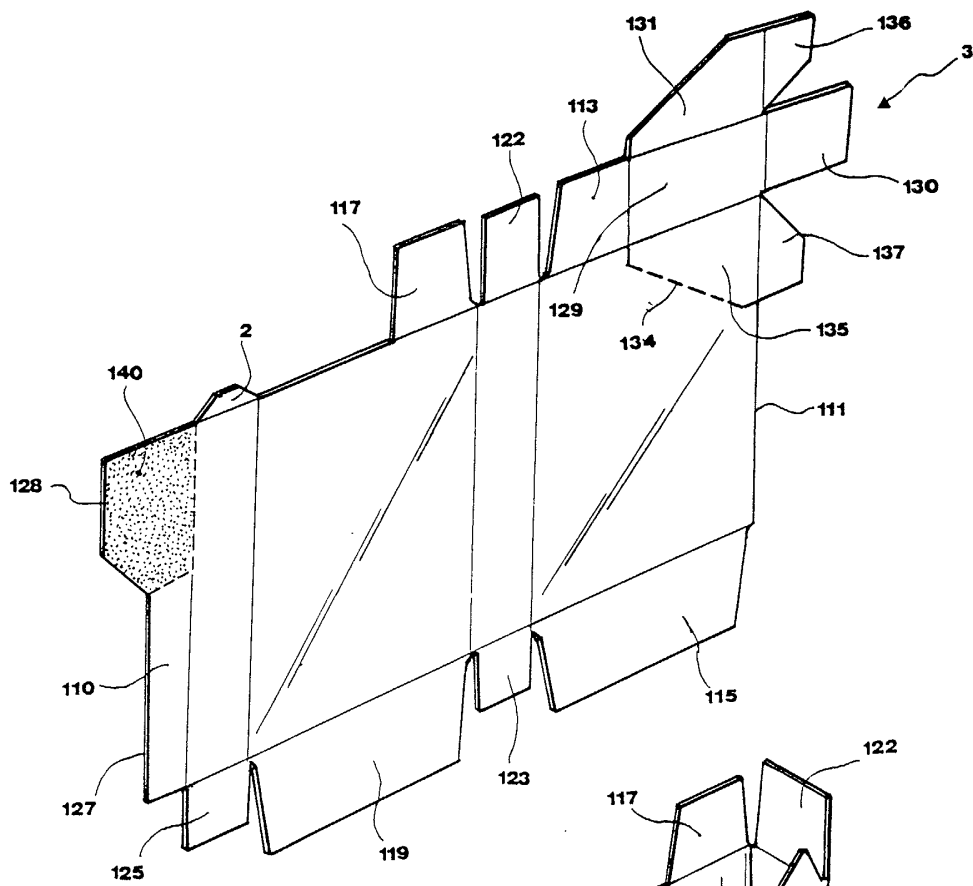


FIG. 2

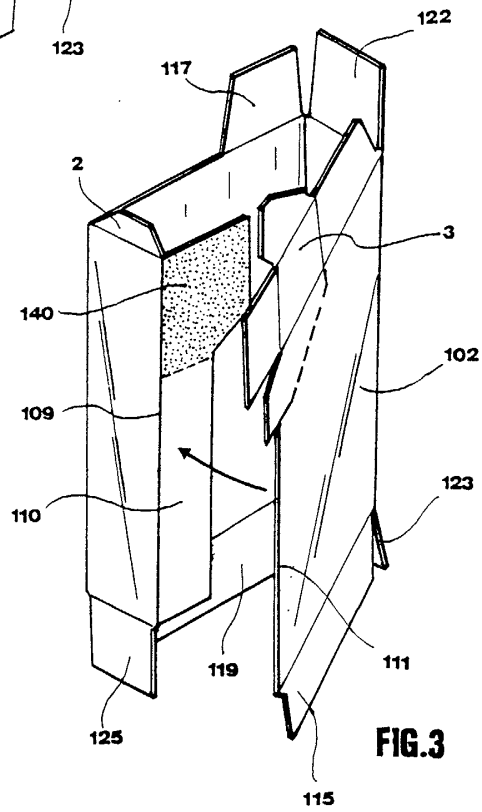


FIG. 3

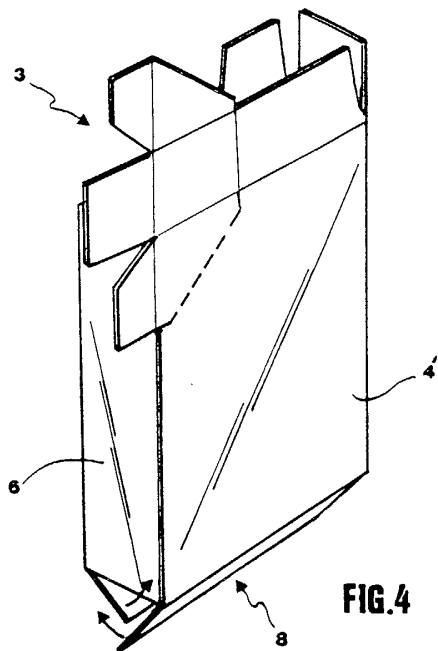
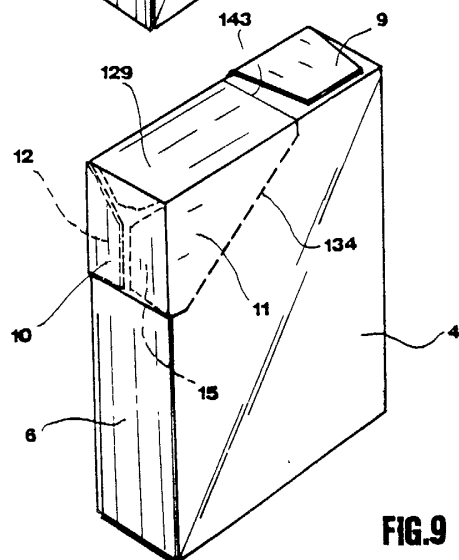
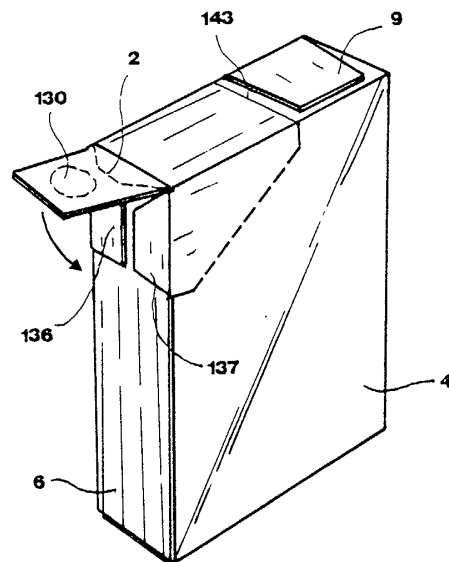
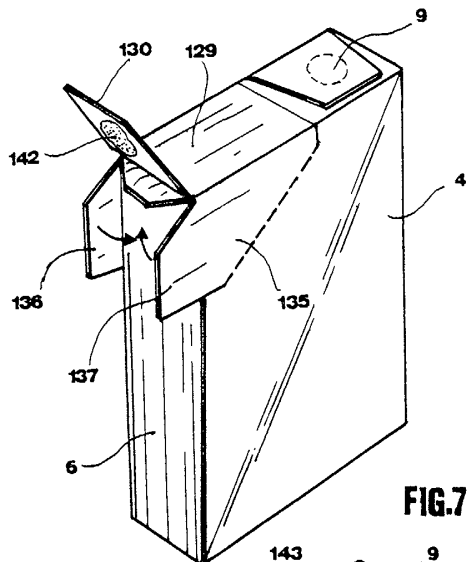
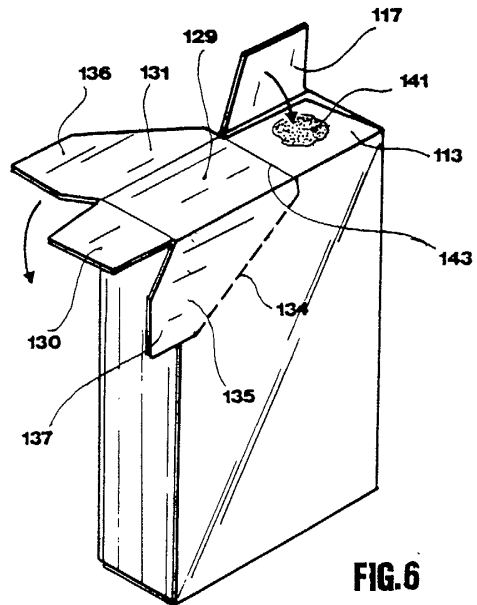
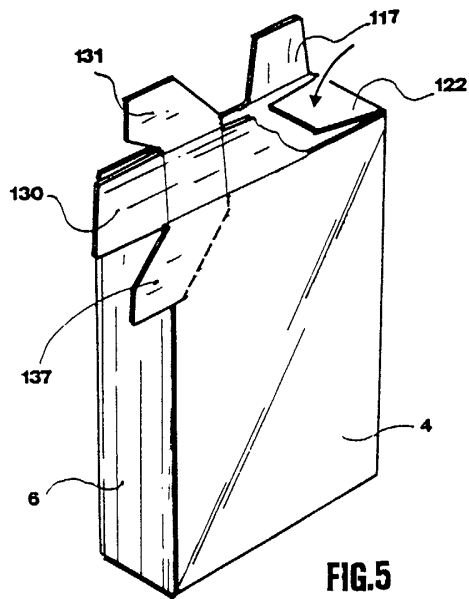


FIG. 4



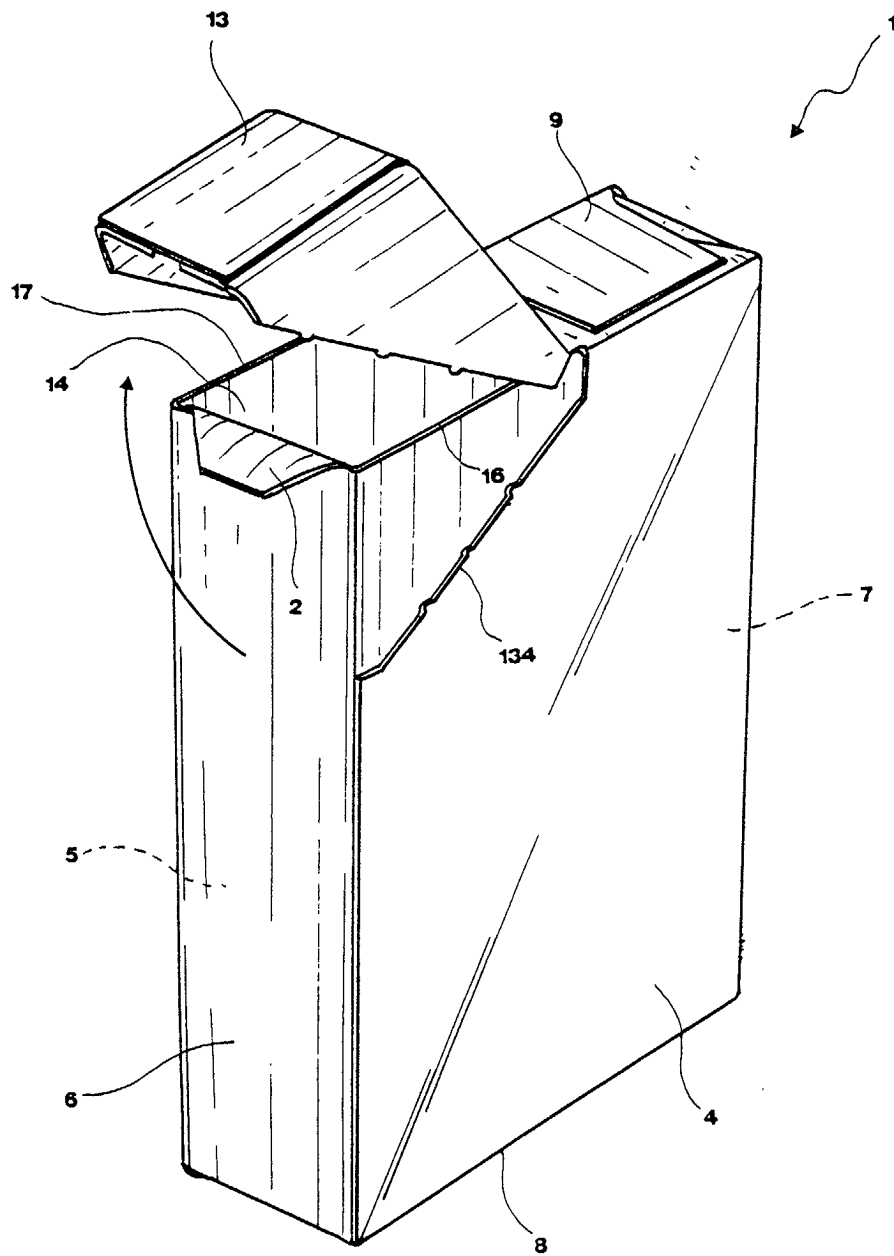


FIG.10



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PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 02 42 5507 shall be considered, for the purposes of subsequent proceedings, as the European search report

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.7)
X	US 5 911 359 A (GNADT DAVID F ET AL) 15 June 1999 (1999-06-15) * column 4, line 26 - column 6, line 6; figures 1-13 *	1,3,4	B65D5/54 B65D5/66
A	GB 1 475 684 A (BACOFIL LTD) 1 June 1977 (1977-06-01) * figures 6,7 *	1	
A	US 4 513 863 A (SCHILLINGER JOSEPH F) 30 April 1985 (1985-04-30) * figures 1-5 *	1	
A	US 6 223 507 B1 (TISMA PETAR) 1 May 2001 (2001-05-01) * figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : 1-4 Claims searched incompletely : Claims not searched : 5 Reason for the limitation of the search: No structural features and reference to description and drawings (Rule 29(6) EPC).			
Place of search		Date of completion of the search	Examiner
MUNICH		27 November 2002	Lawder, M
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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27-11-2002

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