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(54) **Box for containing loose tablets and for enabling their controlled release**

(57) A box formed from a single piece of punched and crease-lined cardboard sheet, to contain loose tablets and enable these tablets to be released from the box one at a time. The box is defined by lateral walls (1-4) and by two end walls (22,41), in one of which an aperture (31) is provided, to correspond with a hole (32) provided in a movable panel (42) which can be manually moved, this latter being slidably positioned below said end panel: both said aperture and hole have greater dimensions than said tablets. The movable panel can be moved with the finger of one hand between a closure position where said aperture with said hole do not register, so preventing the release of tablets from the box, and an opening position where the aperture and the hole are superposed.

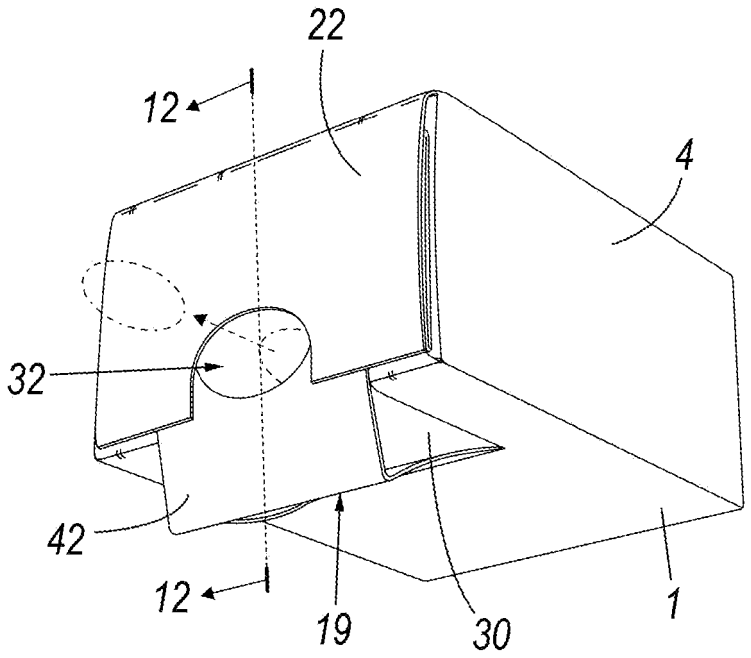

Fig. 10

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Description

[0001] The present invention relates to a box formed from a single piece of punched and crease-lined cardboard sheet for containing loose tablets and the like, and for enabling the release or discharge of only one tablet at a time.

[0002] Loose tablets (the term "tablets" means tablets of any type, having medical or cosmetic properties, sweets, sugar-coated almonds and the like) are often contained and preserved in boxes from which they can be withdrawn by opening a lid of the box, inserting the fingers of a hand into the box and taking one or more tablets therefrom: this system evidently involves inevitably touching a certain number of tablets with the fingers, this being hardly advisable from the hygienic aspect.

[0003] Boxes are also known having a lid or aperture (provided with a closure element) through which several tablets can be made to fall into the palm of a hand and those unused be returned into the box.

[0004] The present invention has several objects.

[0005] One object is to form, from a single piece of punched and crease-lined cardboard sheet (or similar sheet material), a box which is finished in all its component parts, by using automatic machines operating at high speed such that the box production cost is very low.

[0006] Another object is to form a box in which tablets can be contained and protected, to be released in a controlled manner (a single tablet at a time) by simply moving with the finger of one hand a movable panel forming part of the box and having a hole which can be moved and superposed on an aperture provided in an end wall of the box, below which this movable panel can be slid. In this manner those tablets which are not used remain enclosed and protected within the box and are not touched by the user.

[0007] These and other objects are attained by a box formed from a single piece of punched and crease-lined cardboard sheet and defined by main lateral walls and by two end walls, in one of which an aperture having greater dimensions than said tablets is provided, **characterised in that** below and in contact with that end wall in which said aperture is provided there is a first panel provided with a hole also having greater dimensions than the tablets, said panel being bounded laterally by two cuts provided in a cardboard piece which projects from one of the box main panels, these cuts separating two lateral strips, which are glued onto the adjacent surface of the end wall, from a first panel central portion which can be moved between a box closure position, in which the panel hole is covered and closed by the overlying adjacent end wall of the box, and a tablet release position, in which the panel hole and the box end wall aperture are mutually superposed to enable one tablet to leave the box at a time, the lateral cuts bounding the central portion of the movable panel extending into the adjacent lateral wall of the box from which this first panel extends.

[0008] Preferably the first panel lying below said end wall prolongs into the box to form a second and a third panel portion which are successive, the second portion being folded below the first panel and the third portion being folded relative to the second portion such as to be in contact with the inner surface of that box main wall in which the cuts extending from the first panel are provided, in the second portion of the supplementary panel a hole being provided having greater dimensions than the hole provided in the first panel, the movable portion of the first panel and the second portion of the panel being connected and joined together by a central tab bounded laterally by cuts which extend from the cuts bounding the central portion of the first panel.

[0009] Again preferably, the cuts provided in said box lateral wall and extending from the lateral cuts bounding the central portion of the movable panel each consist of at least two consecutive cut portions separated from each other by an easy tear-off portion of said lateral wall to form a guarantee seal.

[0010] Advantageously the longitudinal and transverse dimensions of said first panel are substantially equal to those of the second panel portion adjacent to it on that side inside the box, the hole provided in the first panel being at least partially obstructed by the second panel portion when in those conditions in which the hole in the central portion of the first panel is obstructed by the adjacent end wall of the box, said aperture of said box end wall being bounded by a recess in the free edge of the wall.

[0011] The box structure and characteristics will be more apparent from the ensuing description of a preferred embodiment and a variant thereof, given with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a flat piece of punched and crease-lined cardboard usable as the starting element for forming the box,

Figures from 2 to 4 represent the same piece of cardboard shown in its successive folding steps,

Figure 5 shows the box seen from a completely open end thereof,

Figures from 6 to 8 show the different steps in closing the box end, starting from Figure 5,

Figures 9 and 10 are perspective views of the end of the finished box, shown respectively in its closed position and in the position which said end assumes to enable the release or discharge of one tablet at a time,

Figures 11 and 12 are enlarged partial longitudinal sections through box portions taken on the lines 11-11 and respectively 12-12 of Figures 9 and 10,

Figure 13 is a plan view of a cardboard piece similar to Figure 1, but including a variant of the box,

Figures 14 and 15 show the same cardboard piece as Figure 13 in two successive folding steps for forming the box, of which

Figure 16 is a perspective view of the box, formed and closed.

[0012] Reference will firstly be made to Figure 1 which shows, extended and flat, a piece of punched, crease-lined and knurled cardboard sheet comprising four main paneis1-4 and a lateral wall 5, these being separated from each other by parallel crease-lines 6-9. Flaps 11-13 extend from the lower ends of the walls 1-4 and are separated from the respective main walls by mutually aligned crease-lines 14-17 perpendicular to the lines 6-9. From the upper ends of the walls 1-4 there project an elongated lateral panel 18 (separated from the wall 1 by a crease-line 19), two flaps 20 and 21 and a profiled flap 22 which are separated from the respective main panels 2-4 by mutually aligned crease-lines 23-25 perpendicular to the crease-lines 6-9. The elongated lateral panel 18 is divided by crease-lines 26 and 27 into a first, a second and respectively a third panel portion indicated by the numbers 28, 29 and 30 respectively: the width of the elongated panel 18 is substantially equal to the width of the profiled flap 22 the length of which is substantially equal to that of the first and of the second panel portion 28 and 29.

[0013] From Figure 1 it can be seen that in the profiled flap 22 an aperture 31 is provided bounded by a recess in the free edge of the wall; a hole 32 being provided in the elongated panel first portion 28; a hole 33 of greater dimensions than the hole 32 and of the aperture 31 being provided in the second panel portion 29, these two latter (32, 31) having dimensions greater than the dimensions of the tablets which are to be contained in the finished box and to be released to the outside by passing through these holes and aperture.

[0014] From Figure 1 it can also be seen that between the first and second elongated panel portion 28, 29 two cuts 40 are provided which define in the panel portion 28 two lateral strips 41 and a central portion 42 (in which the hole 32 is provided) and also define (in the second panel portion 29) a central tab 50 the ends of which are separated from the first and respectively from the second panel portion by short crease-lines (for simplicity not numbered in the drawings). The two cuts 40 extend along the adjacent lateral wall 1 where they form two tear-off knurls 60 which terminate at a folding line 61 parallel to the folding line 19.

[0015] It will now be assumed that the cardboard piece (described with reference to Figure 1) is to be used to form the desired box.

[0016] Firstly (using automatic machines operating at high speed) two glue spots 70 are deposited on the two lateral strips 41 (Figure 1), then the elongated panel 18 is rotated about the folding line 26 provided in it (Figure 2), to hence fix the lateral edges of the second panel portion 29 onto the two lateral strips 41, after which the cardboard is folded onto itself about the crease-line 6 (Figure 3) and a glue strip (shown in Figure 3 but without reference numerals) is applied to the upward facing surface of the lateral wall 5, and finally the main panel 4 is folded onto the lateral wall 5, to which it is hence fixed (Figure 4) by the glue previously applied to this wall 5.

[0017] The formation of the box by the cardboard processing firm is hence terminated and stacks of boxes (as shown in Figure 4) are delivered to the box user firms which, using commonly used automatic machines of known type, exert a pressure on the crease-lines 6 and 8 (in the direction indicated by the arrows A in Figure 4), to deform the box, which thus assumes the open tubular state shown in axial view in Figure 5.

[0018] The firm using the boxes then rotates the two flaps 20, 21 towards the box interior (Figure 6), then rotates the lateral panel 18 towards the box interior (about the superposed crease-lines 19 and 27), then applies a glue strip (shown dotted but not identified by reference numerals) to the outer surface of the two lateral strips 41 (Figure 7) of the first portion 28 of the elongated panel 18 and finally folds over (about the folding line 24) the profiled flap 22 (Figure 8) such as to fix it - along its outer edges - onto the lateral strips 41 of the first portion 28 of the panel 18.

[0019] At this point that box end to which the drawings of Figures from 5 to 8 refer is closed, the hole 32 of the central portion 42 of the panel 18 is closed on the outside by the flap 22 (the recess 31 of which is not superposed on the hole 32) and is also partially closed on its inside by the second flap portion 29, then the box user firm - using common machines of known type used for similar purposes - is able to insert the required quantity of loose tablets through the still open end of the box, i.e. the opposite end to that just described; after this the box end is automatically closed by folding the flaps 11-13 towards the box interior and gluing one onto the other.

[0020] The closed box hence assumes the appearance shown in perspective view in Figure 9, a partial longitudinal section through which (taken on the lines 11-11 of Figure 9) is shown in Figure 11.

[0021] It will now be assumed that a tablet (which must have dimensions such as to enable it to pass through the holes 32 and 33 and the passage bounded by the recess 31) is to be withdrawn. A fingernail is inserted into a small cut (for simplicity not numbered, but shown in the drawings) provided to the side of the crease-line 19 at the central portion 42 of the panel 18 and pulled towards the outside of the box: this causes the panel 42 to slide between the flap 22 and the flaps 20, 21, with consequent breakage of the knurl 60 (provided in the wall 1) and outward flexing of that portion of the wall 1 lying between the knurl 60 and the folding line 61 (Figure 12). On termination of the maximum outward oscillation of the central portion 42 of the panel 18, the hole 32 provided in this central portion is positioned below, and corresponding with, the aperture of the recess 31 of the flap 22, while the central tab 50 causes the second portion 29 of the elongated panel 18 to bend inwards: as a result, the second panel portion 29 withdraws from the first panel portion 28, causing the hole 33 to move away and pass below the hole 41 so that, by inclining the box holes downwards, a single tablet can be made to fall out of the box at a time. When the panel portion 42 is returned into its original rest position (which is facilitated by the disposition of the panel

18 folded into the box interior and acting as a return spring) the box returns to its closed position in which the tablets cannot emerge from the box and are protected within it.

[0022] Reference will now be made to Figures from 13 to 16 which show a variant of the aforedescribed box. Figure 13 shows a piece of punched and crease-lined cardboard in which the same reference numerals (followed by the letter A) are used to indicate similar structural parts to those of Figures from 1 to 12: the various folding steps will not be described in detail, as these are obvious in the light of the preceding description.

[0023] The box version of Figures 13-16 differs little from that of the other Figures. It is merely to be noted that two supplementary walls 100, 101 project from the wall 5A (which is wider than the wall 5 of Figure 1) and are divided from each other by crease-lines parallel to those which separate the box walls from1A to 5A. It can be seen that the wall 100 is provided with a semicircular knurl 102 defining a removable portion 103 of the wall 100 in which a window 104 is provided. The elongated flap 18A is firstly folded onto itself (in the aforedescribed manner), then the wall 4A is folded about the crease-line 8A and a glue layer applied to the upwardly facing surface of the wall 4A, then the walls 2A and 3A are rotated about the crease-line 6A, fixing (by the glue applied to it) the wall 4A onto the wall 5A (Figure 14): in this manner a structure is obtained which is totally similar to that initially described in the present text, and will therefore not be further described.

[0024] A glue strip 106 is then applied to the wall 101 and a leaflet 105 illustrating the characteristics of the product to be contained in the box is rested on the upwardly facing surface of the wall 103 (Figure 14).

[0025] Finally, the two walls 100, 101 are rotated about the crease-line 9A, fixing the wall 101 onto the wall 2A by the glue strip 106 as shown in Figure 15, from which it can be seen that a bar code printed on the leaflet 105 is visible through the window 104 of the wall 100. At this point, operating in the already described manner, the end edges of the finished box are pressed together in the direction of the two arrows A, by which the box can be folded and then filled with the product to be contained, and finally closed to assume the appearance shown in perspective view in Figure 16, which differs from Figure 9 only in that the wall 100 defines with the underlying wall 3A a pocket 106 to house the leaflet 105, which can be easily withdrawn and then returned to this pocket.

Claims

1. A box for the controlled release of loose tablets and the like contained in the box, which is formed from a single piece of punched and crease-lined cardboard sheet and defined by four main lateral walls (1-4) and by two end walls(22, 41), in one (22) of which an aperture (31) having greater dimensions than said tablets is provided, **characterised in that** below and in contact with that end wall (22) in which said aperture (31) is provided there is a first panel (42) provided with a hole (32) also having greater dimensions than the tablets, said panel (42) being bounded laterally by two cuts (40) provided in a cardboard piece (18) which projects from one (1) of the box main panels (1-4), these cuts (40) separating two lateral strips (41), which are glued onto the adjacent surface of the end wall (22), from a first panel central portion (42) which can be moved between a box closure position, in which the panel hole (32) is covered and closed by the overlying adjacent end wall (30) of the box, and a tablet release position, in which the panel hole (32) and the box end wall aperture (31) are mutually superposed to enable one tablet to leave the box at a time, the lateral cuts (40) bounding the central portion (42) of the movable panel extending (60) into the adjacent lateral wall (1) of the box from which this first panel (42) extends.

2. A box as claimed in claim 1, **characterised in that** the first panel (18) lying below said end wall (22) prolongs into the box to form a second and a third panel portion (29, 30) which are successive, the second portion (29) being folded below the first panel (41, 42) and the third portion (30) being folded relative to the second portion (29) such as to be in contact with the inner surface of that box main wall (1) in which the cuts (60) extending from the first panel (41, 42) are provided, in the second portion (29) of the supplementary panel a hole (33) being provided having greater dimensions than the hole (32) provided in the first panel (41, 42), the movable portion (42) of the first panel (41, 42) and the second portion (29) of the same panel being connected and joined together by a central tab (50) bounded laterally by cuts (60) which extend from the cuts (40) bounding the central portion (42) of the first panel.

3. A box as claimed in claim 2, **characterised in that** the cuts (60) provided in said box lateral wall (1) and extending from the lateral cuts (40) bounding the central portion (42) of the movable panel each consist of at least two consecutive cut portions separated from each other by an easy tear-off portion of said lateral wall to form a guarantee seal.

4. A box as claimed in claim 3, **characterised in that** the longitudinal and transverse dimensions of said first panel (41, 42) are substantially equal to those of the second panel portion (29) adjacent to it on that side inside the box.

5. A box as claimed in any one of claims from 2 to 4, **characterised in that** the hole (32) provided in the first panel (41, 42) is at least partially obstructed by the second panel portion (29) when in those condi-

tions in which the hole (33) in the central portion (29) of the first panel is obstructed by the adjacent end wall (42) of the box.

6. A box as claimed in any one of claims from 1 to 5, **characterised in that** said aperture (31) of said box end wall (22) is bounded by a recess in the free edge of the wall.

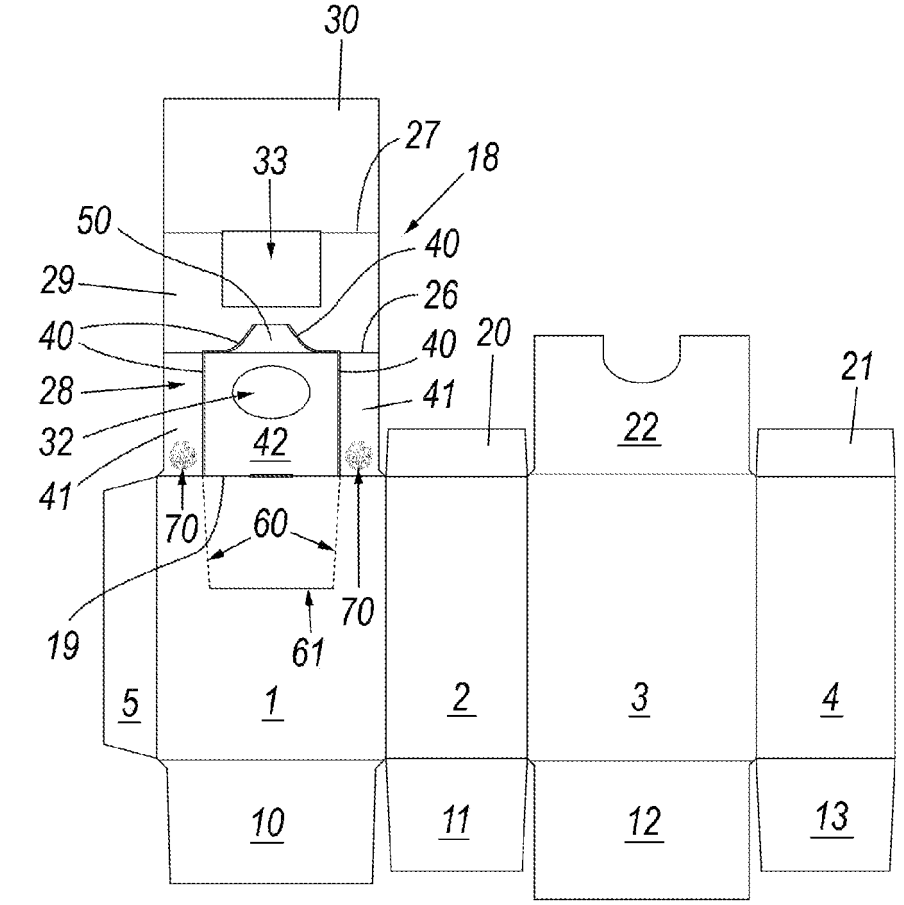
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Fig. 1

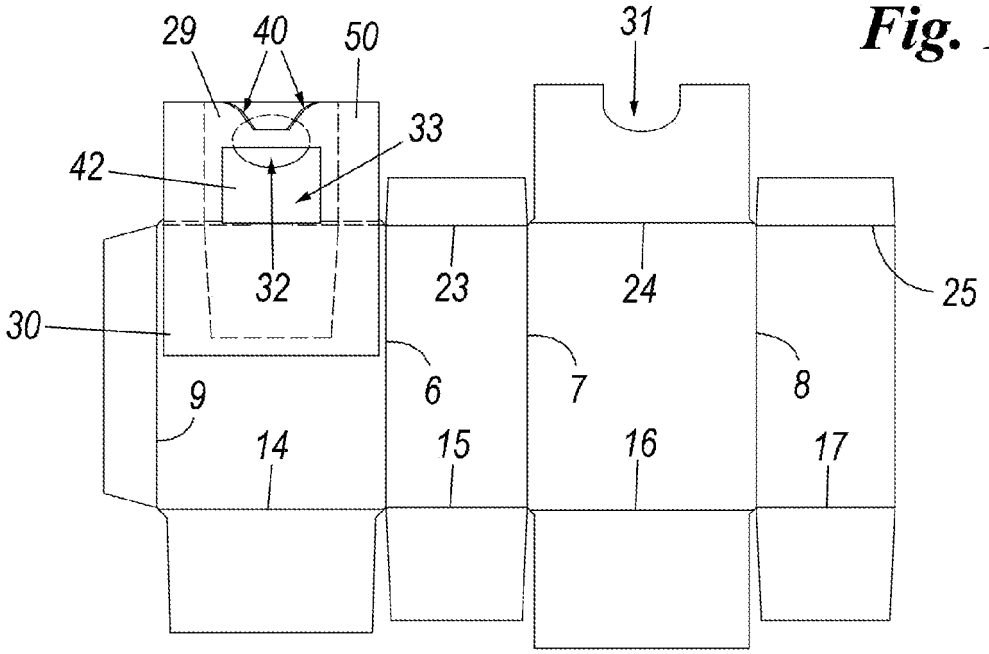
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Fig. 2

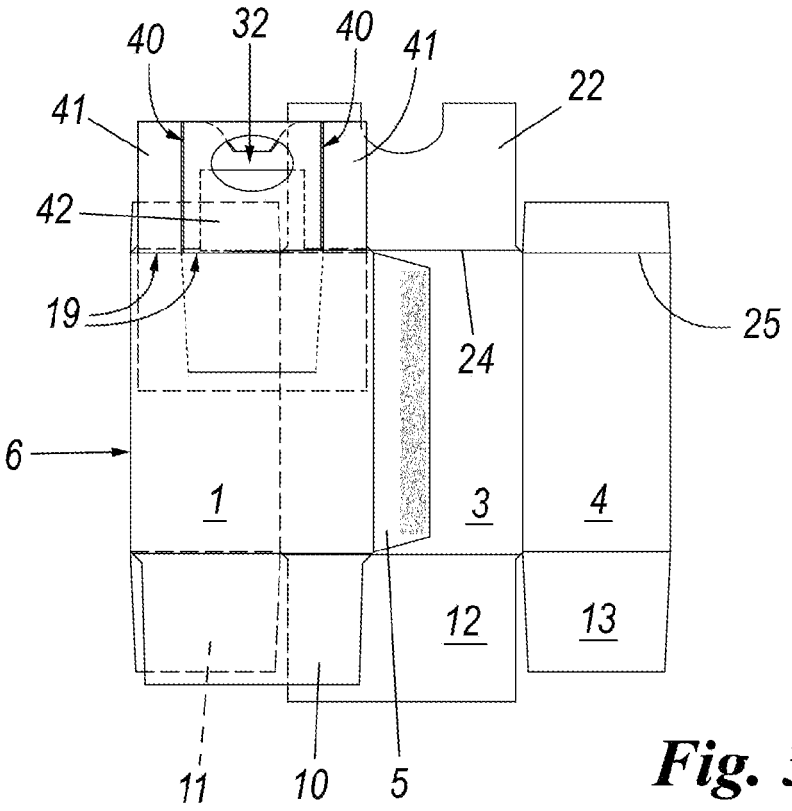
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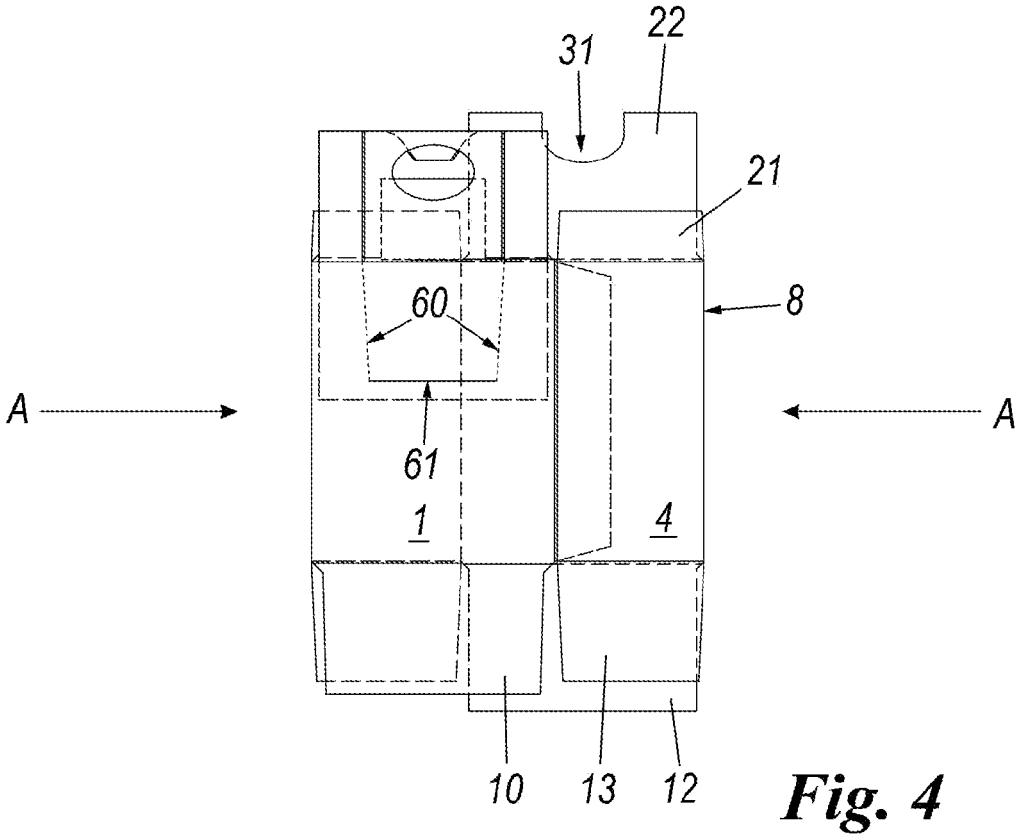
Fig. 3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12

Fig. 4

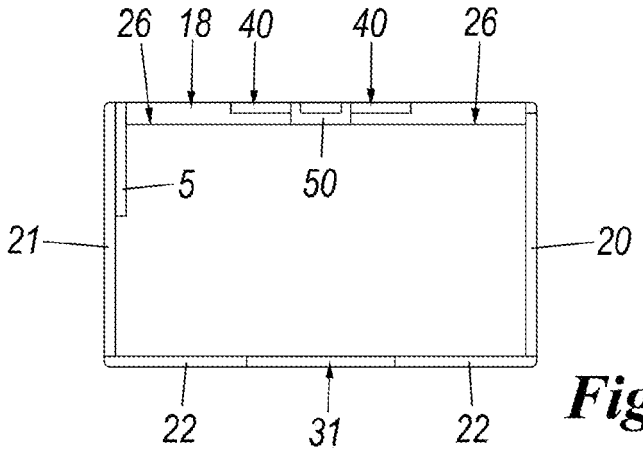

Fig. 5

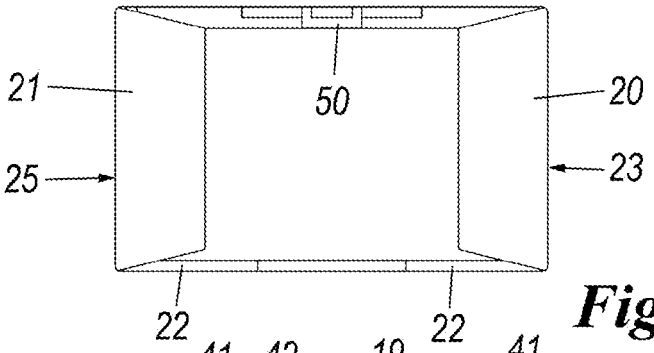

Fig. 6

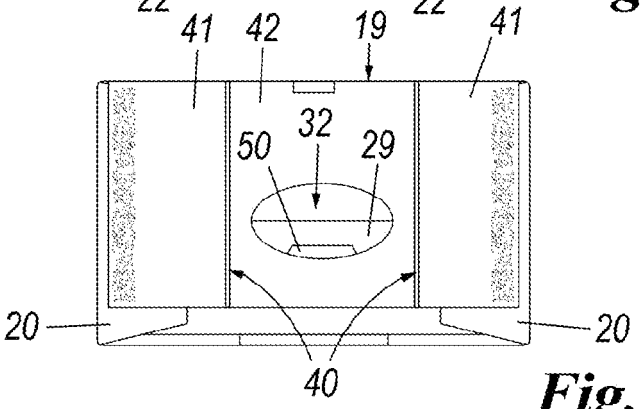

Fig. 7

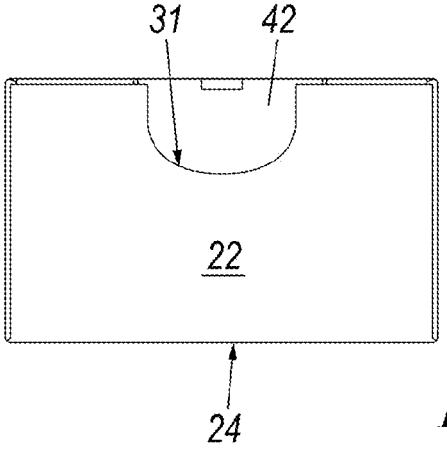

Fig. 8

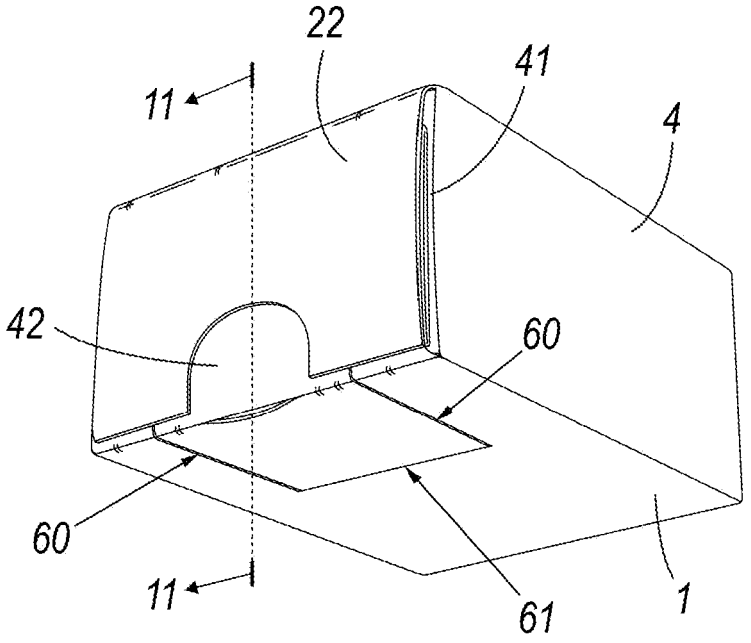

Fig. 9

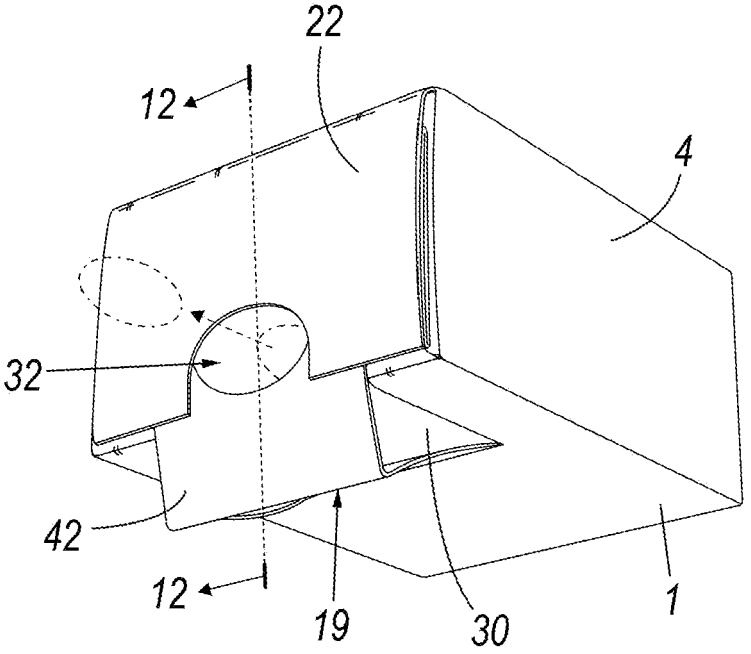

Fig. 10

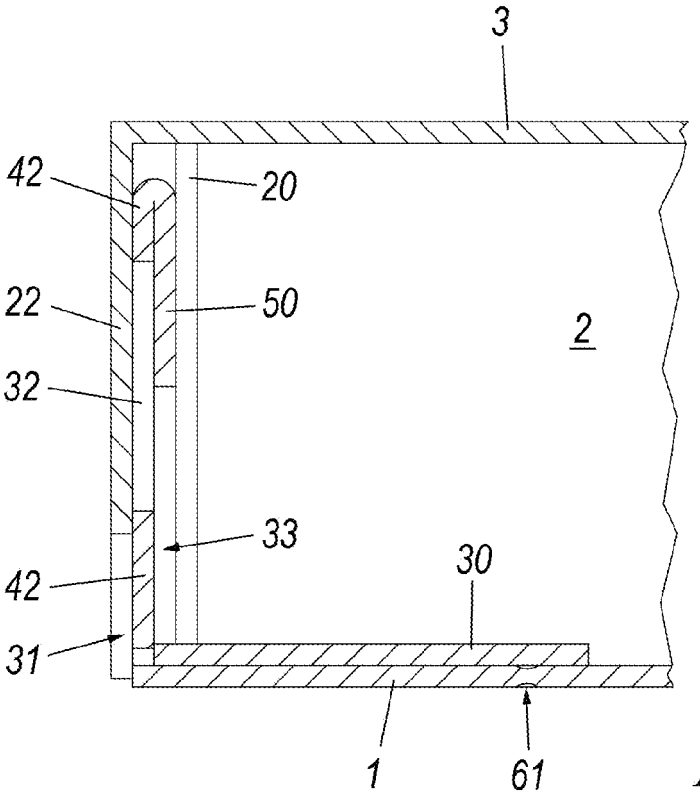
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Fig. 11

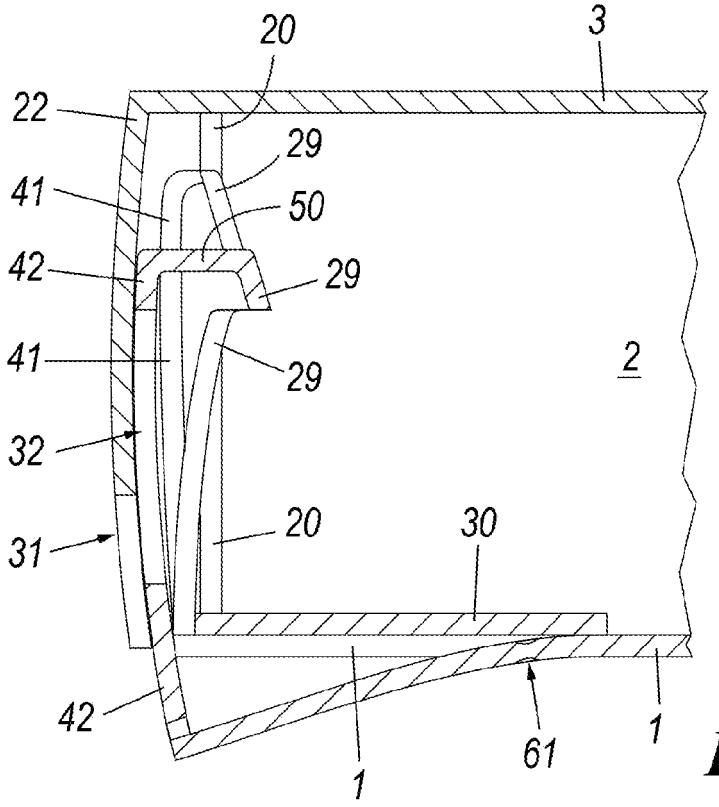
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Fig. 12

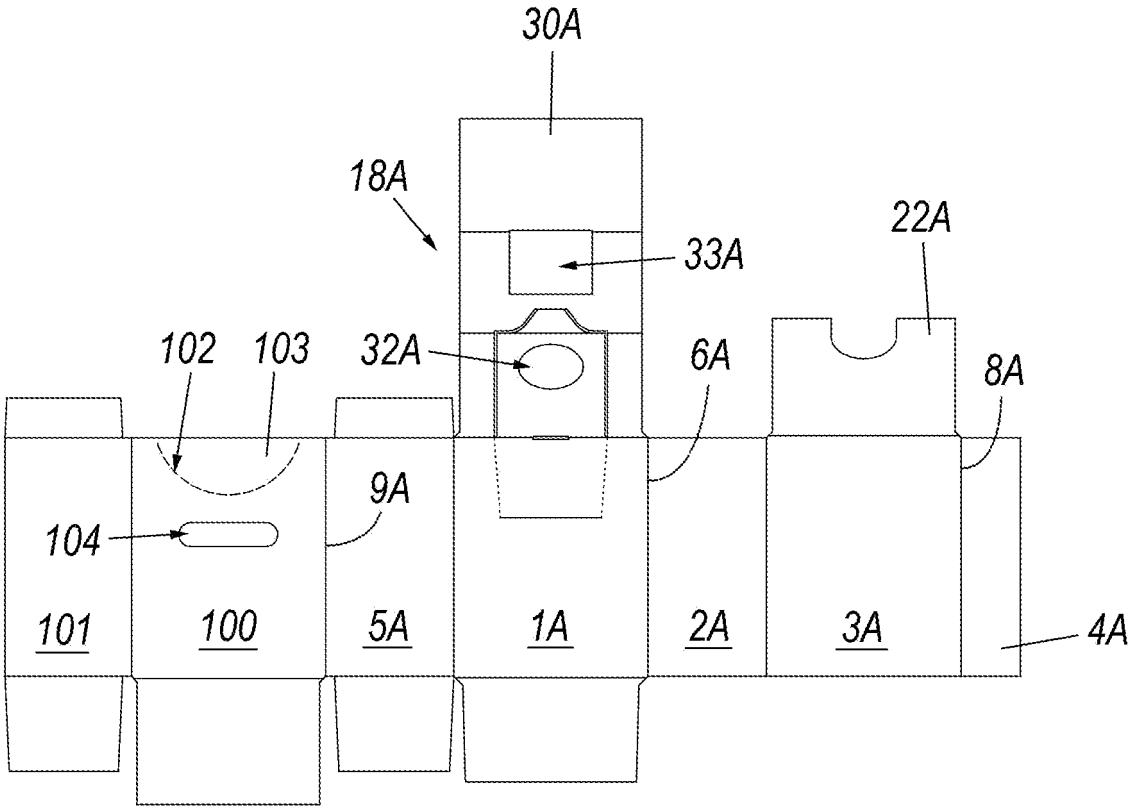
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Fig. 13

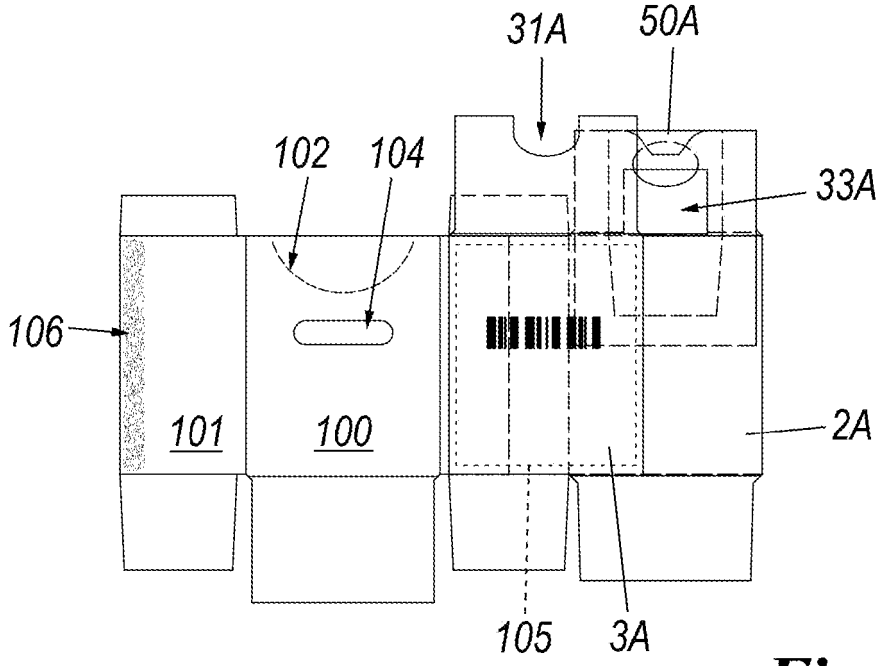
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Fig. 14

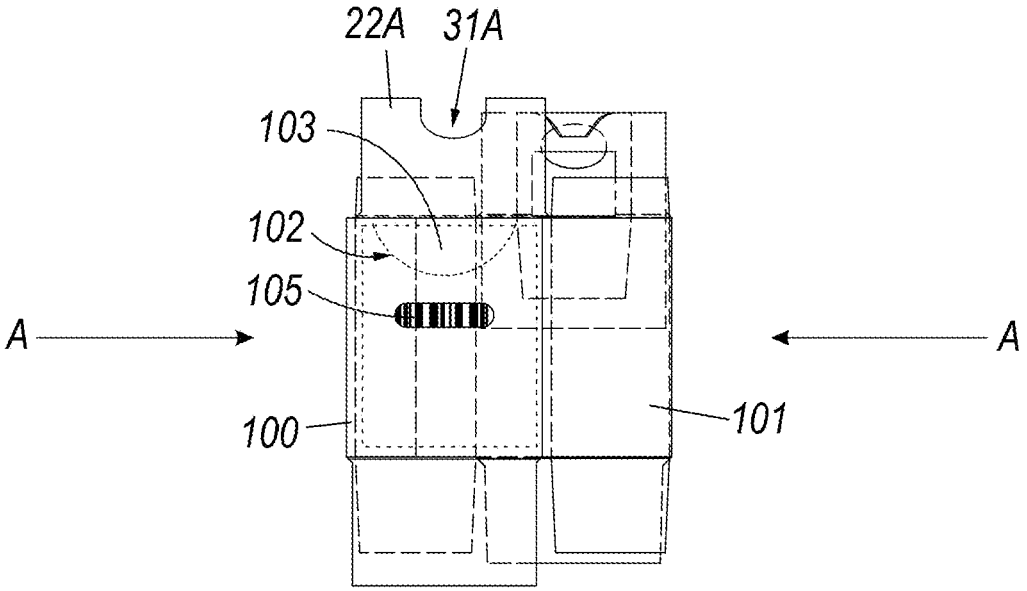
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Fig. 15

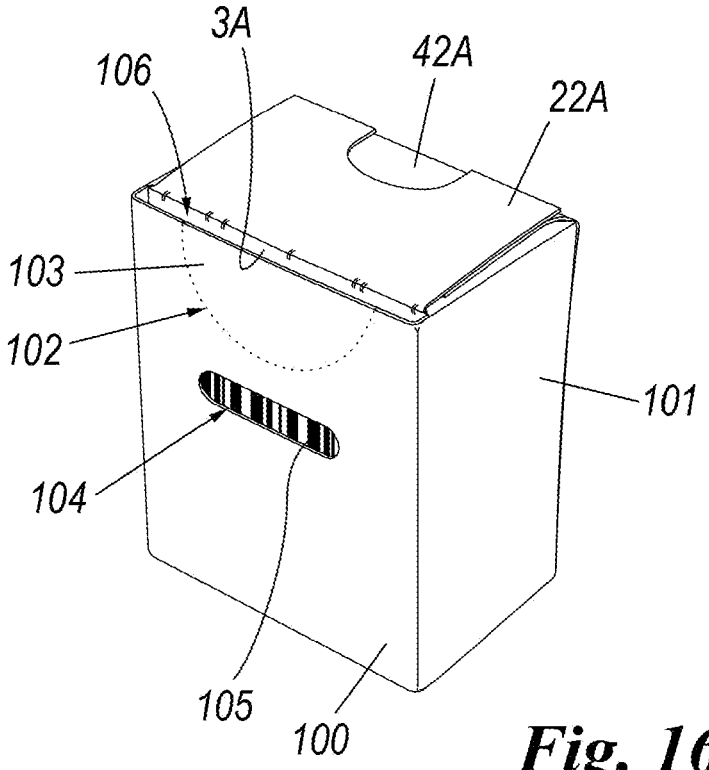
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Fig. 16

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 09 17 7073

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 378 456 A2 (MEADWESTVACO PACKAGING SYSTEMS [US]) 7 January 2004 (2004-01-07) * figures 1,9,16 *	1,6	INV. B65D5/72
Y	CH 412 695 A (LANDERER FA A [DE]) 30 April 1966 (1966-04-30) * figures 2,3 *	1,6	
A	FR 2 799 743 A1 (SCOPIC [FR]) 20 April 2001 (2001-04-20) * figure 4 *	1	

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	2 March 2010	Bridault, Alain

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

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02-03-2010

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