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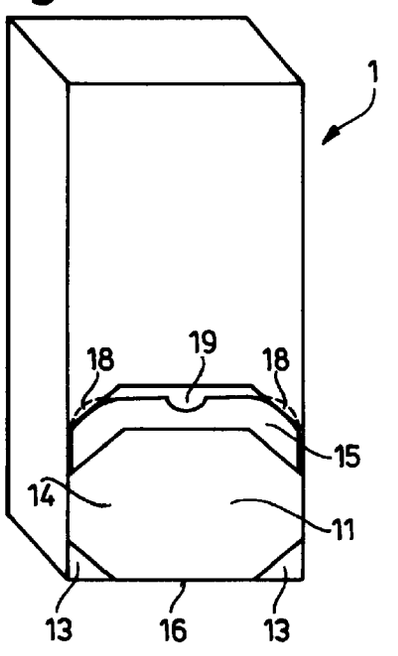
(54) Carton

(57) The present invention is directed to a carton (1) having six substantially rectangular sides which comprises top and bottom sides opposing each other, left and right sides opposing each other, and front and back sides opposing each other, the left and right sides comprising at least two layers so that a space is created in-between, the carton (1) also comprising a drawer door (11) with one or more sliding flaps (10) which are free to move slidably between the layers of the left and right sides, so as to open the drawer door (11) at an angle which is greater than 45°, characterized in that: the greatest height of the drawer door (11), as measured between the top edge and the bottom edge of the door, is greater than the front to back dimension of the carton.

Fig. 1



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Description

Field of the invention

[0001] The present invention relates to a carton container with a drawer door which opens to allow access to the contained product, in particular products such as sweets or tablets.

Background of the invention

[0002] Cartons with a drawer door for automatic dishwashing tablets are representative of the various cartons for consumer products to which the present invention can apply. For example, containers made out of cardboard that have a substantially parallelepipedal shape with six sides and twelve edges, respectively, the top, bottom, back, front, left and right sides. An edge is defined as the intersection of two sides and named so as to clearly mention the two adjacent sides which are linked through this edge, for example: the edge which comprised between the front side and the bottom side will be named as the front/bottom edge. For definition purposes as well, we will consider that in normal upright position, the top and bottom sides are in the horizontal plane, the four other sides being vertical. If the front side is facing an observer, the left side of the carton is on the left of the observer, the right is on the right of the observer, and the back side is invisible to the observer.

[0003] Such cartons are usually folded and glued from a die cut, or blank, which is the corresponding flat structure. The die cut is preferably made out of one single piece for cost reasons. Cardboard is not isotropic material and so, it has a grain direction, which is the preferred direction along which the die cut is more resistant. In the case of corrugated cardboard, the grain direction corresponds to the direction of the corrugations.

[0004] Such cartons typically comprise a drawer door which is hingeably attached to the rest of the carton by its bottom edge, and comprises two sliding flaps that are slidably positioned into the left and right sides of the carton. These sliding flaps normally comprise a stopping means, for example a hook that stops the drawer door in the open position at a given angle.

[0005] Cartons as described above have a number of disadvantages. For a given opening angle of the drawer door, the height of the drawer door is usually linked to the dimensions of the sliding flaps: while it is possible to have a drawer door height which is greater than the front to back dimension, this is only possible in the case the opening angle of the drawer door is 45° as a maximum. This causes a limitation in the drawer door functionality, opening angle, and product accessibility. Moreover, for a given volume, the front to back dimensions are such that the overall proportions of the carton limit the height and width of the box, and thus, the shelf impression and impact (i.e. the facing) of the package on the consumer.

[0006] It is therefore an object of the present invention is to provide the user with a carton which comprises a drawer door, the drawer door having two sliding flaps with reduced height, so that the drawer door height dimensions can be greater than the front to back dimensions of the carton for a given opening angle, thus increasing visibility and accessibility of the product.

[0007] It is a further object of the present invention to provide the consumer with a carton with drawer door, the drawer door comprising inclinations on its top portion that provide increased accessibility to the product from the beginning of use until the end.

[0008] It is another object of the present invention to provide a carton with narrower front to back dimensions that deliver, for a given volume, a better shelf impression, as well as reduced packaging material consumption, and increased robustness.

[0009] It is another preferred object of the present invention to provide a carton that, for stiffness reasons is constructed so that the carton grain direction is vertical during stacking and transportation of the carton, that is to say, the direction of the gravity should be the grain direction when the carton is stacked or transported.

[0010] It is then another preferred object of the present invention to provide a carton that is made out of a single die cut, that is folded and glued so as to be delivered flat to erecting machines, formed, filled and glued, such as standard normal erectable cartons, and so that the sliding flaps are kept free of glue.

[0011] It is a further preferred object of the present invention to provide the consumer with a carton that features a tear strip, as a tamper-evidence means, that breaks when the drawer is first inclined, and thus, indicates if the carton has already been opened.

Summary of the invention

[0012] The present invention is directed to a carton having six substantially rectangular sides which comprises top and bottom sides opposing each other, left and right sides opposing each other, and front and back sides opposing each other, the left and right sides comprising at least two layers so that a space is created in-between, the carton also comprising a drawer door with two sliding flaps which are free to move slidably between the layers of the left and right sides, characterized in that: the greatest height of the drawer door, as measured between the top edge and the bottom edge of the door, is greater than the front to back dimension of the carton while the opening angle is greater than 45°.

[0013] Another further aspect of the present invention is related to the die cut embodiments corresponding to the above described carton.

Brief description of the drawings

[0014] The invention will now be explained in detail with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of the carton in closed position
- Figure 2 is a profile view of the carton showing the drawer door with sliding flaps, in open position
- Figure 3 is a profile view of the carton showing the drawer door with sliding flaps, in the closed position
- Figure 4 is a perspective view of the carton showing the front side with the extension of the front panel, the two portions of the tear strip, and the drawer door in the close position.
- Figure 5 is a perspective view of the carton showing he front side with the tear strips portions that have been removed, and the extension of the front panel in the lifted position.
- Figure 6 is a perspective view of the carton with the removed tear strip portions, the lifted extension of the front panel, and the drawer door in the open position.
- Figure 7 is a plan view showing the external side of a one-piece die cut corresponding to a carton with drawer height inferior or equal to the front to back dimension.
- Figure 8 is a plan view showing the external side of two separate pieces of a die cut, corresponding to a carton with drawer height which is greater than the front to back dimension
- Figure 9 is a plan view showing the internal side of a two-piece die cut with the internal drawer panel glued onto the external drawer panel.
- Figure 10.a is an enlarged view of the internal side of the external drawer panel showing the cut lines that delimit the internal layer of the tear strip
- Figure 10.b is an enlarged view of the external side of the external drawer panel showing the cut lines that delimit the external layer of the tear strip

Detailed description of the invention

[0015] As shown in figure 1, the carton (1) has a substantially parallelepipedic shape and so, comprises six sides opposing each other in pairs, and defined as the top and bottom, back and front, left and right sides. The top side is on the top of the carton (1) when it is standing upright, the front side being visible by an observer, while the back side is hidden. Each side can have various shapes but preferably has a rectangular shape. The overall proportions of the carton (1) may vary in order to adapt to different volumes of contents.

[0016] The carton (1) is made out of plain or corrugated cardboard (such as mini, micro, B-fluting...) or any other suitable material, for example plastic. It can be entirely made out of cardboard or plastic, or several materials can be used in a combination. Moreover in the case the carton (1) is made out of plain or corrugated cardboard, one can add a moisture protective barrier, for example a coating can be applied to the carton (1), or a barrier film can be wrapped around the box, once it has been formed, filled and closed.

[0017] Each side of the carton (1) is made out of at least one layer of material. If a layer covers the entire surface of one side, it is called a panel. If it covers only a portion of the side, it is then called a flap. Moreover, a flap may be extended up to the whole surface of one panel, thus being defined as a long flap. Long flaps are particularly used for contributing to the rigidity of the structure. The carton (1) described in the present invention further comprises two sliding flaps (10) (see figures 2, 3, 7) that are used to guide and maintain a drawer door (11) during the operations of opening and closing, as well as to define a specific opening angle at which the drawer door (11) is to be stopped. In a preferred embodiment of the present invention, the left and right sides of the carton (1) are made out of at least two layers (a panel and/or a flap). At least one portion of the space which is defined between these layers is free of glue, so that an additional layer, for example a sliding flap, can be inserted herebetween so as to be free to slide. Panels, flaps, sliding flaps (10) and long flaps may feature inclinations or cut outs so as to use a minimum amount of material. All along the present description, the flaps and panels will have the denomination of the side they cover (i.e. the front panel corresponds to the front side), once the carton (1) has been formed. Moreover for clarity purposes, all along the description, the side containing the drawer door will be defined as the front panel.

[0018] The carton (1) as described in the present application is formed out of a corresponding die cut which is folded and glued. The glue can be applied in different ways, for instance, cold glue can be applied by rollers, or hot melt glue can be applied by glue guns, nozzles or pattern plates. Depending on the shape of the die cut, the forming and filling process can vary: in a first embodiment of a process, the die cut is made out of separate elements (see fig. 8) which are glued together, then the folding operation is done at the same time as the filling operation, on the production line. In a second embodiment of a forming/filling process, which is a standard process known by those skilled in the art, the die cut is made out of a single piece in which the drawer door (11) panel is folded and glued on the panel which comprises the precut opening. On the filling line, the preformed carton (1) is fed as a flat element, it is then erected in standard forming machines, a first side is formed and glued, it is then filled with the box contents, and the opposite side is then formed and glued so as to close the box. Both above mentioned folding, gluing, and filling processes of a die cut so as to form the corresponding carton (1), are well known by people skilled in the art.

[0019] The carton (1) comprises an opening (12) so that the user can access the contents. The opening (12) is preferably positioned at the bottom portion of the front side. While its shape is preferably the same as the shape of the reclosable drawer door (11), it necessarily comprises inclinations (12) at its bottom part, so as to

allow the bottom portion of the left and right panels to be attached to the front side, and so, not to be loose.

[0020] The carton (1) as disclosed in the present invention comprises a reclosable drawer door (11), as shown in figure 1, which is located on any of he six sides of the carton (1). This drawer door (11) is composed of, at least two layers: firstly, an external drawer panel (14) which is attached to the bottom side of the carton (1) through the bottom/front edge, said edge being used as a hinge, and secondly an internal drawer panel (15) to which the sliding flaps (10) are attached (see figures 4 and 5). The internal and external drawer panel (14)s are glued together, so as to form the drawer door (11) which is rotateably attached to the rest of the carton (1) by its bottom edge (16)(see figure 2) and which comprises two sliding flaps (10) slidably positioned into the left and right sides of the carton (1).

[0021] The overall shape and dimensions of the drawer door (11) are the same as for the carton (1) opening. However, this shape may feature all types of inclinations or curved corners so as to reduce the proportions of the sliding flaps (10) while keeping the functionality of the opening. Moreover and preferably, the bottom edge of the internal drawer panel (15) which hingedly links the drawer door (11) to the rest of the package, does not comprise inclinations at its bottom part. The top edge of the drawer door (11) features inclinations or curved corners (17), as shown in figure 1, so that the extremities of the top edge of the drawer door (11) correspond to the upper extremity of the edge between a sliding flap and the drawer door (11). The reduction of height of the left and right edges of the drawer panel allows to reduce the size of the sliding flaps (10), while keeping the functionality of the hook (20) of the sliding flaps (10) that stop the drawer door (11) at a given opening angle which is greater than 45°.

[0022] In the preferred case the top edge of the drawer door (11) comprises curved corners, since the corresponding shape of the carton (1) opening features inclinations, overlaps (18) are created (see Fig 1) so that a sound effect is created, at the opening and closing operations, but especially at the closing operation.

[0023] The drawer door (11) features a facilitating opening means which is located so as to improve the ease of opening by the user. For example, at least one opening notch (19) is positioned along at least one edge of the drawer, preferably the upper edge of the drawer door (11), as shown in figure 1.

[0024] Optionally, one or more side of the carton (1) comprises at least one portion which is made out of a full-transparent semi-rigid material so as to create a transparent window through which the contents of the carton (1) is visible from the outside when the drawer door (11) is in the closed position. The window can be of any shape. For technical reasons, it is preferably located into a side which comprises a single layer.

[0025] The carton (1) further comprises at least one, preferably two sliding flaps (10) that are attached to the left and/or right edges of the drawer panel (see Figs. 2, 6, 7). Each of these sliding flaps (10) is designed in a substantially arcuate shape and preferably comprises at least one stopping means, for example a hook (20), so that the drawer door (11) is stopped in the open position at a defined opening angle. The length of a sliding flap is defined as the distance between, firstly the edge which links the front panel and the sliding flap, and secondly the opposite outer edge of said sliding flap. Moreover, each sliding flap is slidably positioned into the corresponding side of the carton (1): the right side of the carton (1) is made out of 2 layers (each layer can be a panel or a flap), and the space between these layers is free of glue, so that the sliding flap which is positioned hereinto is free to move slidably. Furthermore, for a given volume of the carton (1), and since the dimension of the edge between one sliding flap and the drawer door (11) is reduced, the overall size of this sliding flap, and more specifically its length can be reduced, so as to be less than the drawer door (11) height. Furthermore, the sliding flaps (10) feature inclinations (21), as shown in figures 2, 3, 7, 8, so that the two layers constitutive of the right and left sides are glued together, especially in the bottom portions of said left and right sides, while the front to back dimension is preferably equal to the length of a sliding flap. Then, the length of the sliding flaps (10) is the sole limiting factor to define the front top back dimension of the carton (1), this front to back dimension can be reduced down to less than the height of the drawer door (11), thus giving increased accessibility and visibility to the contents throughout the use of the carton (1).

[0026] Additionally, the carton (1) preferably features a tamper-evidence means. A tamper evidence means is a seal-like means that allows a consumer to see immediately if the carton (1) has already been opened, while she/he is looking for the product on the shelf of the store. The way the tamper evidence means indicates if the box as already been opened must be immediate and obvious, moreover it must be designed so that it cannot be replaced after the first opening of the carton (1). Several possibilities for tamper evidence means are applicable to the present invention. For example, a tear strip (22) is located in, at least, the front side of the carton (1), and connected to the upper edge of the drawer door (11), so as to follow the inclinations or curves (17) of the drawer door (11). In one preferred embodiment of the present invention, the tear strip (22) is a part of the carton (1), that is to say, it has been precut in the front panel, as an integral part of the die cut. In another embodiment, to the cardboard tear strip (22) as described above is fixed a separate element, for example it is a band of polyethylene terephthalate (PET), or any other suitable plastic material, which is fixed in the inside of the horizontal portion of the tear strip (22). In this way, the horizontal portion of the tear strip (22) is reinforced.

[0027] Additionally and preferably, the front panel

includes a child-proof means, for example an extension (23) as shown in figures 4, 5, 6 and 7, that overlaps the upper part of the drawer panel, so that after the first opening and the removal of the tear strip (22), the use of both hands is required to open the drawer door (11): one to pull the extension up, while the other hand pulls the drawer door (11) open. This provides an efficient means to make the opening of the carton (1) less obvious to children, since they will have difficulties to coordinate both movements of pulling the extension and open the drawer, at the same time. A facilitating lifting means, for example a lifting notch (24) is located in the external drawer panel (14) in order to facilitate the lifting operation of the extension. (see fig.4)

[0028] A second aspect of the description of the present invention will now be directed to two die cut embodiments, corresponding to the above described carton (1). It is however to be kept in mind that other possibilities of die cuts can be applied for forming a carton (1) as above-described.

[0029] In a first embodiment as shown in figure 7, all the different elements of the carton (1) (panels, flaps, sliding flaps (10)...) are part of a single die cut which is first partially folded and glued before it can be fed on the production line, filled and closed; this process is well known from the people skilled in the art of making cartons out of die cuts.

[0030] In figure 7, the side which is shown is the surface which will be printed (external side). All the elements of the die cut (panels, flaps, sliding flaps (10)) that are adjacent to each other, are hingeably attached through lines of weakness (25), so as to prepare and facilitate the folding operation of the die cut into an erected carton (1). This die cut comprises a right and left sliding flaps (10), which are hingeably attached to an internal drawer panel (15). The internal drawer panel (15) is hingeably attached to an extension of the internal drawer panel (15) that is hingeably attached to a back panel. Right and left side flaps (26) are hingeably attached to the back panel (27), which is attached to a top panel (28). Right and left top flaps (29) are hingeably attached to the top panel (28), which is attached to a front panel (30). To the front panel (30) are hingeably attached left and right side panels (31) as well as a bottom panel (32). Finally, left and right bottom flaps (33) are hingeably attached to the bottom panel (32).

[0031] Cut lines are made in the front panel so as to delimit the shape of the external drawer panel (14), and the tear strip (22) as well.

[0032] For the external drawer panel (14), the cut lines correspond to the upper and lower inclinations, to the left and right edges, and to the top and bottom edges of the external drawer panel (14). They are preferably cut in a discontinuous way (dotted cut lines) so as to keep the external drawer panel (14) attached to the left and right panels, in the region of the upper inclinations and in the region of the left and right edges, before the first opening of the carton (1). Dotted cut lines also prevent the tear strip (22) from being loose in the region of the inclinations.

[0033] In one embodiment of the present invention, at least one, but preferably two tongues or portions of the cardboard are created by splitting the layer of the carton (1) in the region of the tear strip (22) into two parts, when the tear strip (22) is removed at the first opening. The purpose for this is to improve the tamper evidence means efficiency, and mostly to improve the strength of the carton (1) in this area. This is made by applying cut lines through half the depth of the cardboard layer in areas that are different over the internal and external sides of the external drawer panel (14). Thus, as shown in figures 10.a and 10.b, this delimits first and second overlapping precut areas (34) in the cardboard layer, that are split apart from each other when the tear strip (22) is peeled away. The external layer of these overlapping precut areas (34) is part of the tear strip (22) (see figure 10.a), and thus, is peeled away with it. The internal layer of the first overlapping precut area is part of the front panel (see figure 10.b). The internal layer of the second overlapping precut area is part of the external drawer panel (14) and is glued onto the internal drawer panel (15). First and second overlapping precut areas (34) are split apart from each other in such a way that, once the tear strip (22) has been removed, it is not possible to replace it, and moreover, it is obvious that it has been removed, since the split surfaces show the mid-layer that has no coating.

[0034] Further, in a preferred embodiment of the invention, the carton (1) features a childproof-like extension (see figs 4, 5, 6, 7) this extension (23) is achieved by cutting the front panel down to a portion that overlaps the internal drawer panel (15). In this embodiment of the invention, the tear strip (22) comprises two different parts, left and right tear strip (22) portions that are thrown away after the first opening. Only the bottom half portion of the external drawer panel (14) is glued onto the internal drawer panel (15).

[0035] Finally, a long opening is preferably cut along the line of weakness which links the internal drawer panel (15) and the extension of the internal drawer panel (15) that improves the folding properties of the line of weakness and mostly to allow the hinge of the drawer door (11) to function properly once the internal and external drawer panel (14)s have been glued together.

[0036] In a second embodiment of the present invention, the die cut is made out of at least 2 separate elements: the internal drawer panel (15) has previously been cut separately and then glued on the rest of the die cut. A 2-piece die cut is usually fed on the production line in a totally open position. It is then partially folded and glued, then it is filled with the contents and then closed. This process of entirely folding the carton (1) out of an open die cut, directly on the filling line is also known from the people skilled in the art.

[0037] All different embodiments of the present inven-

tion that are applicable to a single piece die cut are also applicable in this case of a die cut that is composed of multiple parts. However, the extension of the internal drawer panel (15) is replaced by a single connecting flap (35) (see figures 8, 9) that allows to connect the bottom part of the back panel to the rear part of the bottom panel. In this second embodiment of a die cut applicable to the present invention, the internal drawer panel (15) is a separate element whose external surface (which is usually covered with a protective coating) is glued onto the internal side of the external drawer panel (14), as shown in figure 9.

[0038] In the present execution, the die cut is fed on to the filling/folding line in a flat position, however it is already folded since the connecting flap (35) is glued onto the internal surface of the rear portion of the bottom panel. So, on the line, the die cut is erected, one of the sides is closed, the carton (1) is then filled and its other side is finally closed. This process of forming, filling and closing a carton (1) from a flat die cut which is already partially folded is a standard process which is well known by those skilled in the art.

[0039] Finally, as for the embodiment of a single piece die cut, the dimensions of the flaps may vary, as well as the order in which the different panels and flaps are folded and glued, so as to build a functional carton (1) as previously described.

Claims

1. A carton (1) having six substantially rectangular sides, which comprises top and bottom sides opposing each other, left and right sides opposing each other, and front and back sides opposing each other, the left and right sides comprising at least two layers that define a space in-between, the carton (1) also comprising a drawer door (11) with one or more sliding flaps (10) which are free to move slidably between the layers of the left and right sides, so as to open the drawer door (11) at an angle which is greater than 45°, characterized in that: the greatest height of the drawer door (11), measured between the top edge and the bottom edge of the door, is greater than the front to back dimension of the carton (1).

2. A carton (1) according to claim 1, wherein the length of a sliding flap, defined as the distance between, firstly the edge which links the front panel and the sliding flap, and secondly the opposite outer edge of said sliding flap, is equal to the front to back dimension.

3. A carton (1) according to claim 1, which is made out of a one-piece die cut.

4. A carton (1) according to claim 1, which is made out of a die cut comprising multiple pieces glued or adhered together.

5. A carton (1) according to any of the preceding claims, which comprises a means that produces a sound effect at closing/opening of the carton (1).

6. A carton (1) according to any of the preceding claims, which features a tamper-evidence means.

7. A carton (1) according to any of the preceding claims, wherein the tamper evidence means is achieved by using a cardboard tear strip (22) which is a detachable part of the front panel.

8. A carton (1) according to claims 1 to 7, wherein the tamper evidence means is achieved by using a plastic tear strip (22) which is attached to the inside of a horizontal portion of the carton (1) tear strip (22).

9. A carton (1) according to any of the preceding claims, which comprises an extension of the front panel (23) that overlaps the upper portion of the drawer door (11), so that coordinated movements of both hands are required to open the drawer door (11).

10. A carton (1) according to any of the preceding claims, which is composed of cardboard.

11. A die cut for use in the erection of a carton (1) according to the preceding claims.

Fig. 1

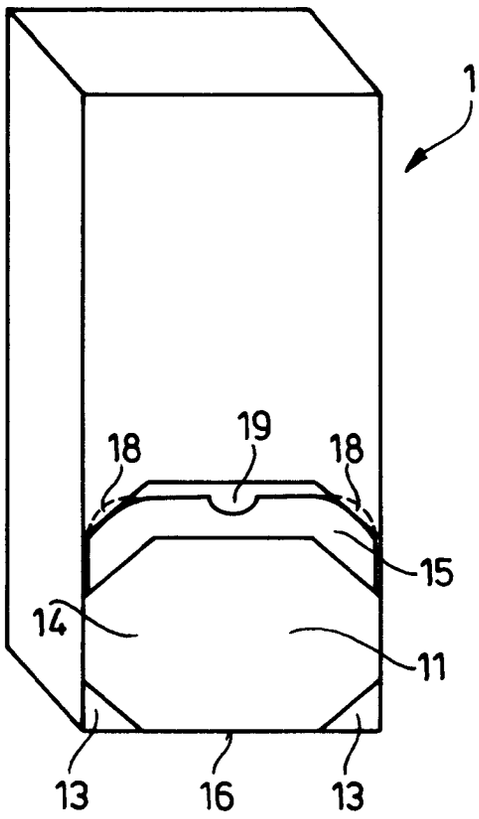

Fig. 2

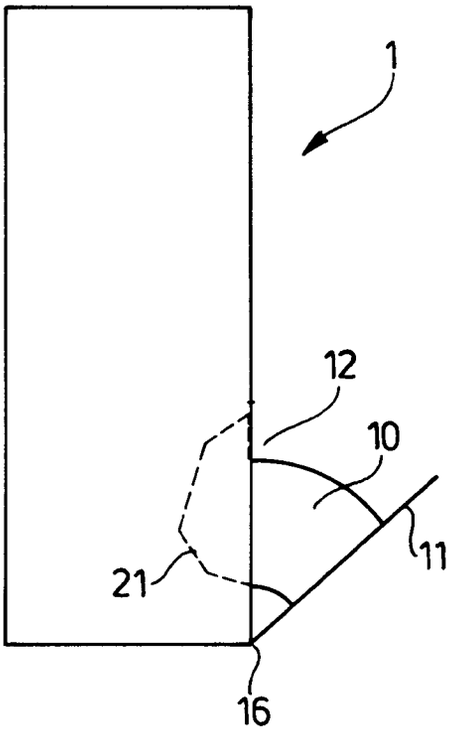

Fig. 3

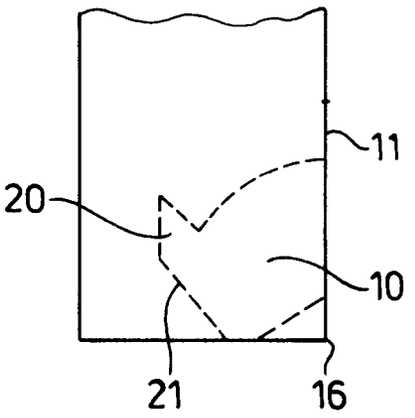

Fig.6

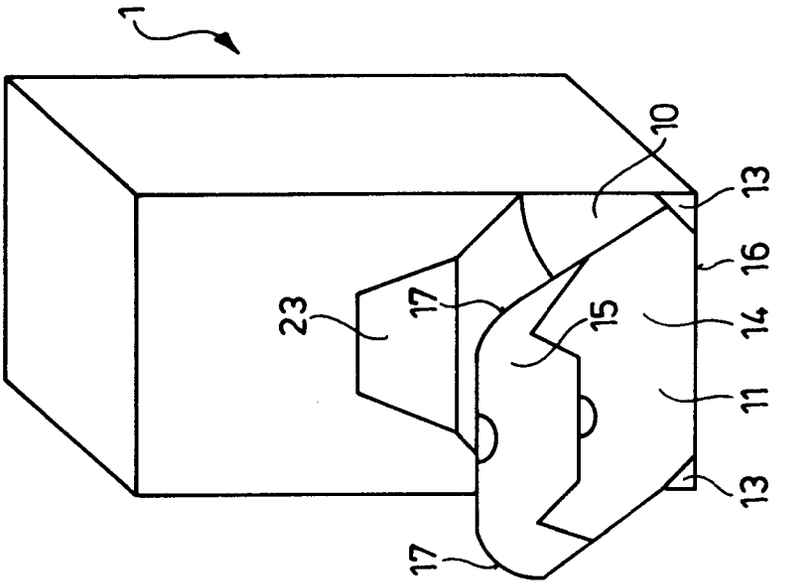

Fig.5

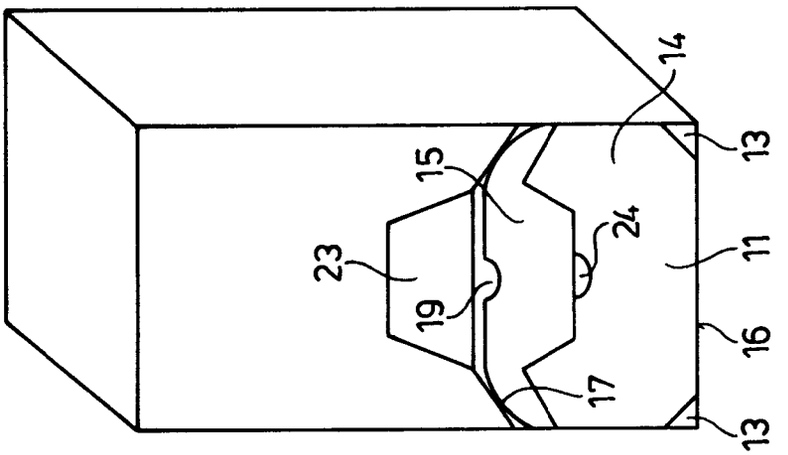

Fig.4

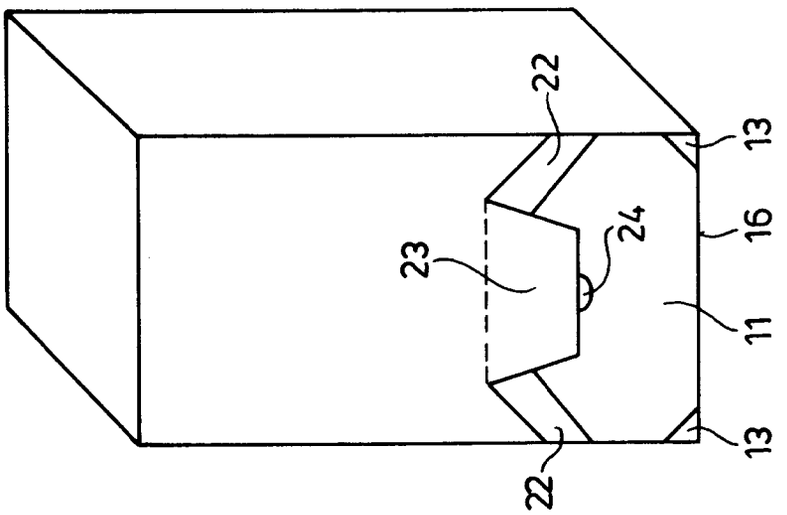

Fig. 7

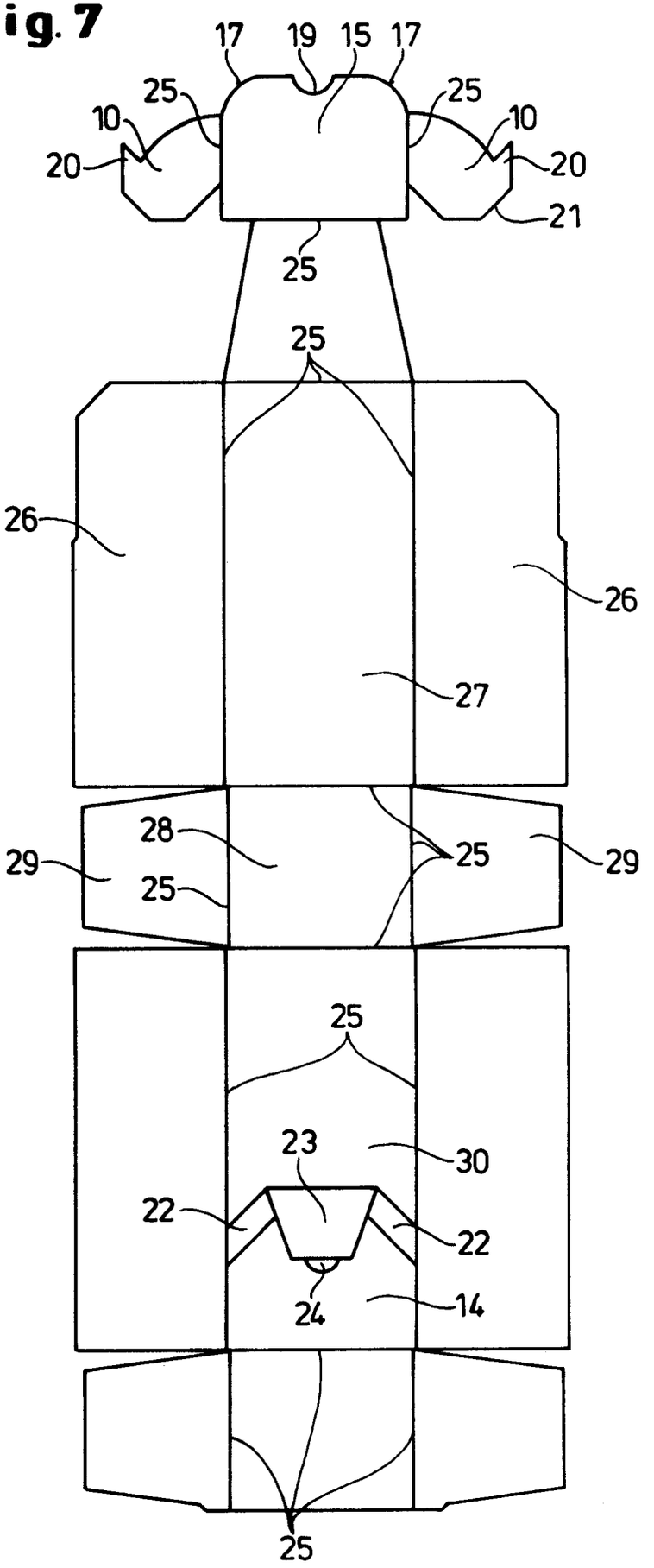
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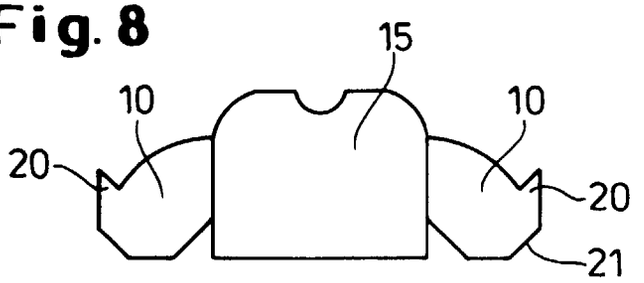
Fig. 8



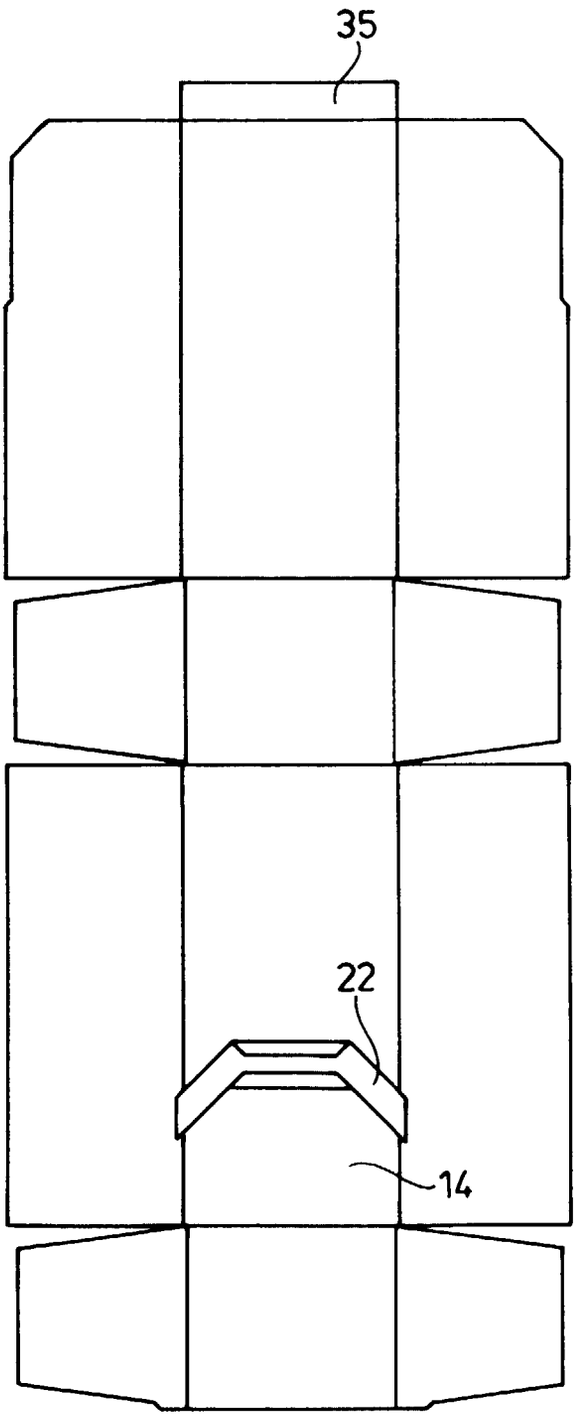


Fig. 9

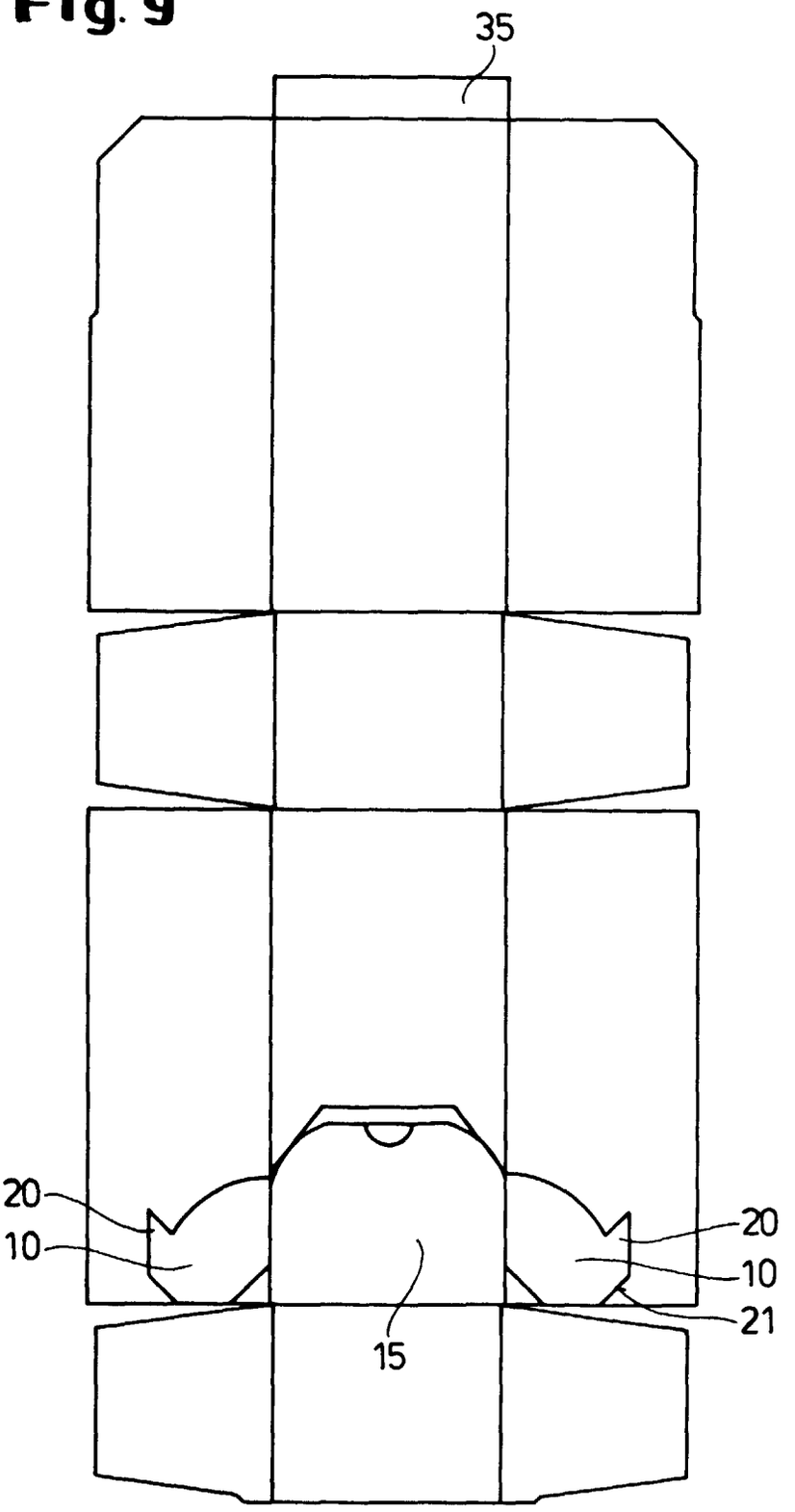


Fig. 10a

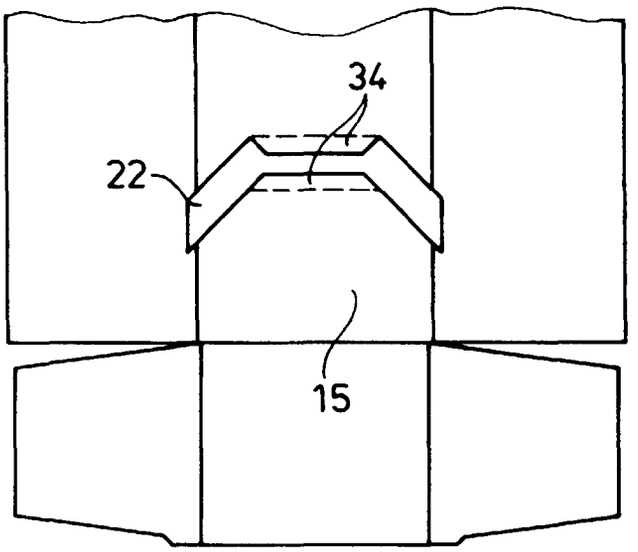
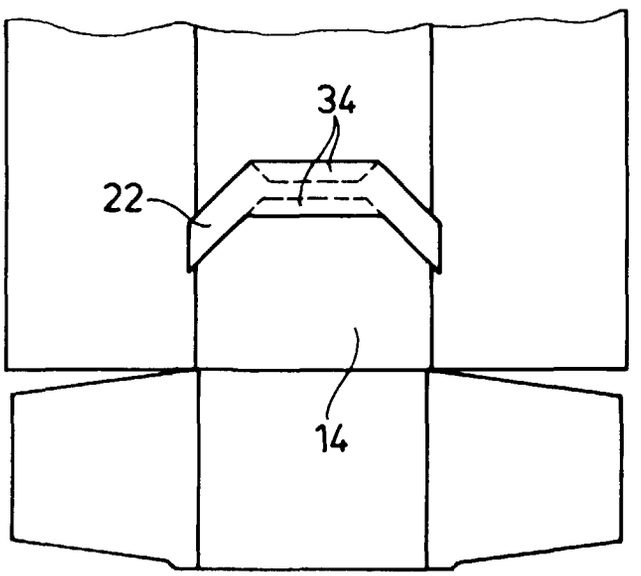


Fig. 10b



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EUROPEAN SEARCH REPORT

Application Number
EP 98 87 0022

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.6)
X Y	DE 44 32 091 A (PRAGER) 14 March 1996 * column 3, line 24 - column 4, line 27; figures 1,3 *	1-3,10, 11 4,6-9	B65D5/72
X	US 2 803 390 A (MACKAY) 20 August 1957 * column 2, line 13 - line 39; figures 1-4,7,8 *	1-3,5, 10,11	
Y	US 5 458 272 A (WARD-WEBER) 17 October 1995 * column 6, line 26 - line 47; figures 4-8 *	4,6,7	
Y	EP 0 291 972 A (BUSCH) 23 November 1988 * column 2, line 42 - column 3, line 41; figures 1-4 *	8	
Y	US 4 186 866 A (ZICKO) 5 February 1980 * column 1, line 25 - column 2, line 21; figures 1-3 *	9	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 5 626 283 A (MELLON) 6 May 1997 * figures 1-4 *	1	B65D
A	DE 86 34 947 U (AARON) 9 July 1987 * figures 1-3 *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23 June 1998	Berrington, N

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