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(54) **Packaging container.**

(57) A packaging container made of paper or card board covered with thermoplastic material by folding and sealing. The container comprises a bottom, four side walls (1, 2, 3, 4), two opposed main top panels (6) at the upper end of said side walls (1, 3), two main sealing panels (8) along the top of said main top panels (6), two opposed folding panels (7_1, 7_2) between the main top panels (6) and foldable sealing panels (9_1, 9_2) at the upper end of said folding panels (7_1, 7_2), each foldable sealing panel (9_1, 9_2) folded about a center fold (18). The height of the foldable sealing panels (9_1, 9_2) being smaller height than said sealing panels (8) and one of said folding top panels (7_1, 7_2) forming a pouring outlet, wherein the foldable sealing panel (9_1) of at least the outlet-forming folding top panel (7_1, 7_2) is cut-off with a reduced height (9h) over part of its width on both sides of the center fold (18).

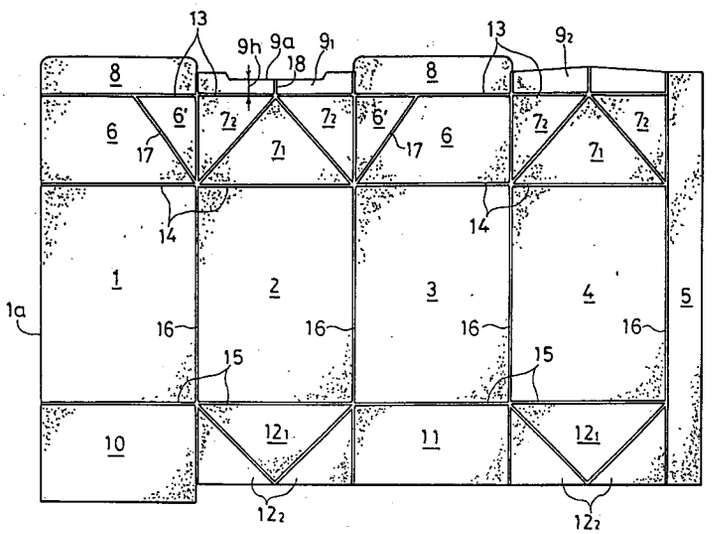

Fig. 1.

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The present invention relates to a paper packaging container for packaging liquid material such as liquid food; more specifically relating to a packaging container of an easily openable pouring outlet, such as a gable-top seal type or the like.

There are many different types of packaging containers for packaging liquid food. Commonly used types are: a quasi rectangular parallelopiped, i.e., a gable-top packaging container, with a rectangular cross section and a raised top equipped with horizontally sealing fin parts, and a flat-top packaging container which is otherwise the same as the gable-top type. These packaging containers are laminated with a liquid-tight plastic layer on the paper material, and are manufactured out of blanked packaging materials provided with necessary folds (aluminium foil-layered depending on a purpose). Said blanks are fed into a packaging machine in a flattened tubular form with the longitudinal edges sealed, and while they are unflattened and their bottoms closed, they are filled with content such as milk, and finally the top part is folded to form packaging containers of either a gable-top or a flat-top.

When a consumer buys a packaging container with a gable-top or a flat-top manufactured out of the above-mentioned packaging material and tries to pour the content by opening one side of the top, in order to form an opening for pouring, for example in the case of a gable-top packaging container, the prescribed pouring side of the triangular folded parts which are folded in between a pair of mutually opposing roof slants that form the gable-top (more specifically, a pair of small, folded triangular parts on both shoulders of an isosceles triangle) is lifted from a side of said roof slants. In this case, after separating the pouring outlet side of the gable-top crest to the left and right, the top of the triangular folds adhered to the crest are torn apart from the back of the crest to form the opening, but this method has a problem of requiring some fingertip force to tear, therefore opening is not very easy. Also, the above-mentioned flat-top packaging container has the same problem because the flattened crest part on the package top must be lifted and opened in the same manner as in the case of the gable-top package.

The present invention has been conceived in light of the above-mentioned considerations, and provides a packaging container of either a gable-top or flat-top of the same folding method, in which the pouring outlet can be opened with much less effort at the fingertips compared to the packaging container of the prior art.

In order to achieve the above-mentioned purpose, the packaging container of the present invention is made of paper or card board covered with thermoplastic material by folding and sealing, comprising a bottom, four side walls two mutually opposed main top panels at the upper end of two side walls for forming a roof-like top and two main sealing panels formed along the top of said main top panels, two mutually opposed folding top panels between the main top panels and having triangular portions to be folded in-between said main top panels, and foldable sealing panels at the upper end of said folding panels, each foldable sealing panel folded about a center fold and sealed between said main folding panels, the height of the foldable sealing panels being smaller height than said main sealing panels, one of said folding top panels forming a pouring outlet when folded outwardly after tearing open the seal between the respective foldable sealing panel and the main sealing panels, and the foldable sealing panel of at least the outlet-forming folding top panel is cut-off with a reduced height over part of its width on both sides of the center fold.

The height of the foldable sealing panels at the above-mentioned cut part is most effectively formed to be at least 8 mm.

When forming an opening by tearing apart the pouring outlet side of the top part of the packaging container as described above, the mutually opposing adhered main folding panels positioned at the top part of the main top panel of the pair of mutually opposing rectangles are first torn apart to the left and right, and then the foldable sealing panels adhered to the back of the main folding panels are torn off to lift the triangular folding top panels and form an opening, when, due to the cut part formed in the center of the foldable sealing panels, the adhesion area between the foldable sealing panels and the back of the main folding panels is small, therefore the effort needed to tear apart the panels can be reduced.

In this case, while conventional packaging containers of this kind are all formed to have a square cross section of approximately 70 mm x 70 mm, it is confirmed that the height of 8 mm at the cut-off part of the foldable sealing panels is efficient and good enough to prevent leakage from the packaging container both in storage and carrying, and at the same time allows the foldable sealing panels to be torn apart at a force of only 1,300 g, which is 65% of the tearing force required by the conventional type with non-cut-off foldable sealing panels, i.e., 2,000 g or more.

The drawings show an ebodiment of the present invention, in which:

Fig. 1 is a plan view of a blank for making a container of the present invention;

Fig. 2 is a diagonal view of a gable-top packaging container manufactured out of the blank of Fig. 1;

Fig. 3 is a diagonal view of the upper part of a

packaging container made out of the blank of Fig. 1;

Fig. 4 is a diagonal view of the upper part of the packaging container of Fig. 3 when the top crest part of the packaging container is opened but the pouring outlet is not yet made;

Fig. 5 is a diagonal view of the packaging container of Fig. 4 when the adhesion on the back of the main folding panel at the contianer top is torn off to make an opening.

Preferred embodiments of this invention are now described by way of accompanying drawings.

Fig. 2 shows a diagonal view of the packaging container manufactured in accordance with the present invention and having a gable-top, and Fig. 1 shows a blank used to make the packaging container of Fig. 2.

The packaging container comprises sheet paper covered with thermoplastic covering material on both sides. Said blank is equipped with four side wall panels (1), (2), (3), (4) that are diveded by longitudinal folds (16), (16), ..., and a narrow longitudinal joining panel (5) on the external side of the rightmost side wall panel (4) via a longitudinal fold (16). On the upper side of the four side wall panels (1), (2), (3), (4), a main top panel (6) and top triangular folding top panels (7_1), (7_2) for forming the top part of the packaging container are provided via an upper horizontal fold (14), and on the lower side, main bottom panels (10), (11) and bottom triangular folding panels (12_1), (12_2) are provided, and on the external side of the main top panel (6) and the top triangular panels (7_1), (7_2), a main folding panel (8) and foldable sealing panels (9_1), (9_2) for forming an upper sealing fin are provided via a top horizontal fold (13). In order to form a tubular body out of a blank, the longitudinal joining panel (5) is welded to panel (1) by matching the longitudinal fold (16) which is on the inner side the joining panel (5) and a side edge (1a) of the side wall panel (1) which is on the opposite side of the joining panel. The bottom of the package is made by folding small panels (12_2) of the bottom triangular folding panel under main bottom panels (10), (11) that face each other at the lower part of the blank which is converted to a tube, placing said main bottom panels (10), (11) externally, with (10) most externally, and mutually opposing large triangle panels (12_1), (12_1) internally, using the lower folds (15) as hinges.

The top lid which is sealed after the liquid content is filled is made by folding small triangular panels (7_2) of the top triangular folding panel under the main top panels (6), (6) that face each other at the upper part of the blank which is converted to a tube, placing said main top panles (6), (6) externally, and mutually opposing large triangular panels (7_1), (7_1) internally, using upper folds (14) as hinges; and further via a top horizontal fold (13), mutually opposing main folding panels (8), (8) and foldable sealing panels (9_1), (9_2) are overlaid and weld-sealed so as to grasp the latter between the former to form a top sealing fin part (see Fig. 3). Of these foldable sealing panels (9_1), (9_2), the foldable sealing panel (9_1) on the pouring outlet side is cut short for a prescribed width on both sides of the center fold (18) so that the height (9h) of said panel at the cut-off part (9a) is 8 mm. This figure 8 mm has been obtained after various tests to determine the shortest possible height that will prevent leakage of the content during long periods of transport, packaging and storage to minimize the adhesion area with the back of the main folding panel (8). On each of the pair of mutually opposing main top panels (6), (6) of the gable-top, a diagonal fold (17) extending diagonally upward from the lower end of the crest edge on the puring outlet side is provided while the package is still in the blank form (Fig. 1); therefore, when tearing apart the top to the left and right from the crest, the triangle part (6')at the edge of said panel is bent for easy opening.

The packaging container is formed as such, so that wehn a consumer wants to form a pouring outlet on the container, the mutually opposing adhered main folding panels (8), (8) at the top of the packaging container are torn apart to the left and right (see Fig. 4), and then the foldable sealing panel (9_1) with minimized adhesion area is torn off said main folding panels (8), (8) with little effort, and finally the top triangular folding panels (7_1), (7_2) are easily lifted to form the pouring outlet (see Fig. 5).

The above embodiment was that of a packaging container with a gable top, but a flat-top packaging container can also be made by making the height of the main top panels (6), (6) of the container blank (Fig. 1) (i.e., the height of the top triangular folding panels (7_1), (7_2)) as low as that of the bottom forming panels and forming the main folding panel (8) and foldable sealing panels (9_1), (9_2) as in the above embodiment, and forcing down the top sealing fin onto the main top panel (6) when forming the top lid.

The present invention is constructed as described above and has the follwing effects.

According to the invention described in claim 1, when a consumer wants to form an opening on a gable-top or a flat-top packaging container by opening the top lid of the package, the upper part of the triangular folding top panel is more easily torn off and lifted up after the container crest is torn apart to the left and right because the adhesion area of the torn-off part is smaller compared to the conventional packaging container of this type.

According to the invention described in claim 2, by limiting the height of the center part of the foldable sealing panel to 8 mm over a prescribed width, the

force required to tear off the panels can be reduced to 65 % of the effort required in the conventional method while preventing leakage stably in packaging, storage and long transport periods.

Claims

1. A packaging container made of paper or card board covered with thermoplastic material by folding and sealing, comprising a bottom, four side walls (1, 2, 3, 4), two mutually opposed main top panels (6) at the upper end of two side walls (1, 3) for forming a roof-like top and two main sealing panels (8) formed along the top of said main top panels (6), two mutually opposed folding top panels (7_1, 7_2) between the main top panels (6) and having triangular portions to be folded in-between said main top panels (6), and foldable sealing panels (9_1, 9_2) at the upper end of said folding panels (7_1, 7_2), each foldable sealing panel (9_1, 9_2) folded about a center fold (18) and sealed between said main folding panels (8), the height of the foldable sealing panels (9_1, 9_2) being smaller height than said main sealing panels (8), one of said folding top panels (7_1, 7_2) forming a pouring outlet when folded outwardly after tearing open the seal between the respective foldable sealing panel (9_1, 9_2) and the main sealing panels (8),
characterized in that the foldable sealing panel (9_1) of at least the outlet-forming folding top panel (7_1, 7_2) is cut-off with a reduced height (9h) over part of its width on both sides of the center fold (18).

2. A packaging container in accordance with claim 1 in which the height (9h) of the foldable sealing panel in the cut-out portion is at least 8 mm.

3. A packaging container in accordance with claim 2 in which the length of the cut out portion on both sides of the center fold (18) is between one third and three fourths of the length of a foldable sealing panels (9_1).

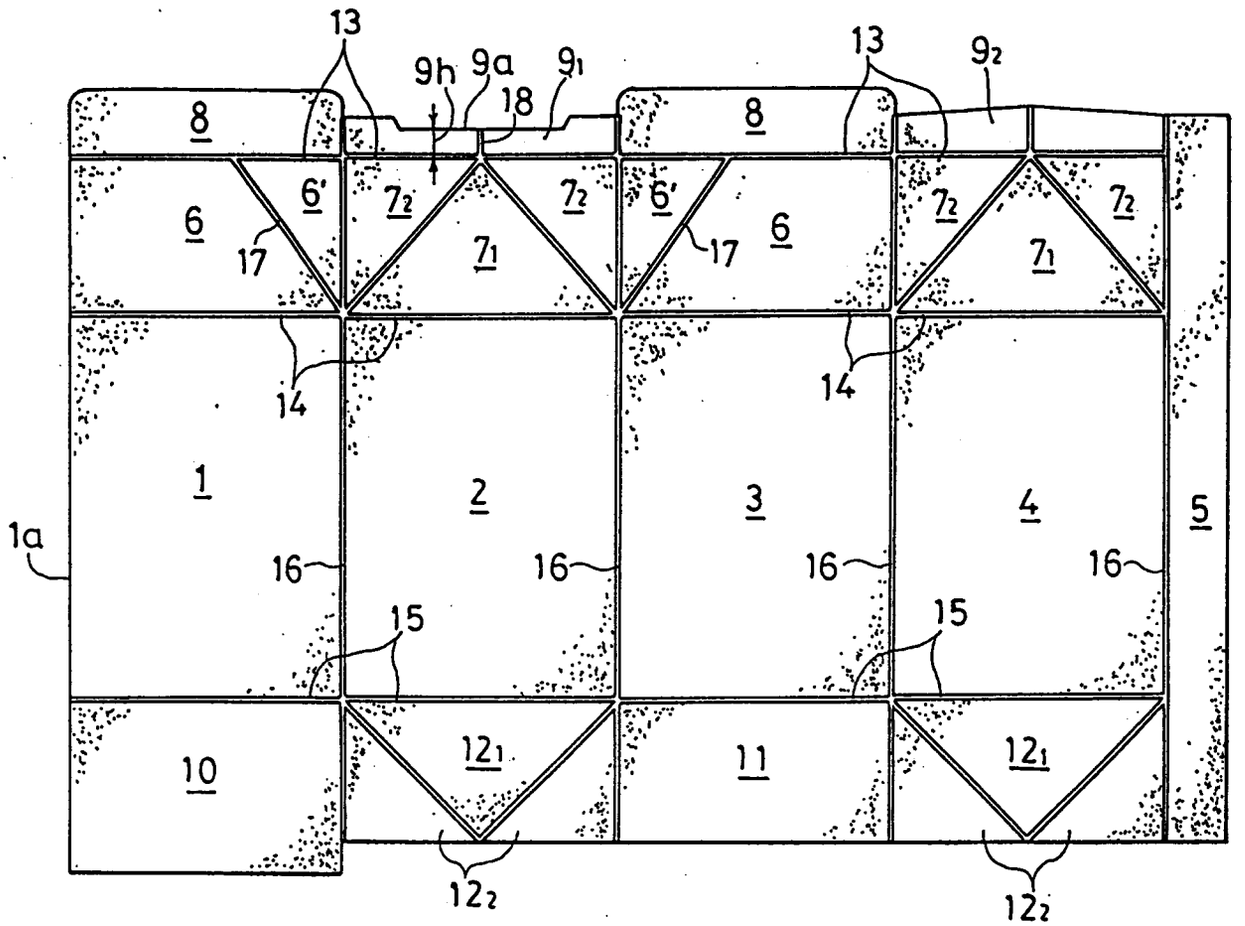
13
9h
9a
9₁
18
13
9₂
8
8
6
6'
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Fig. 1.

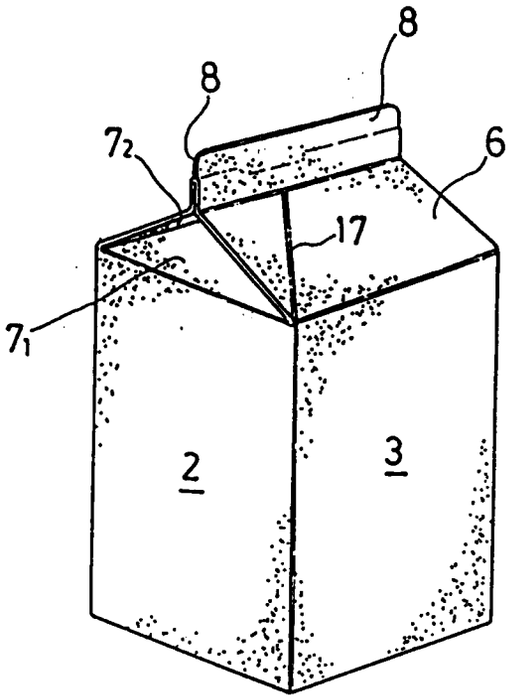

Fig. 2

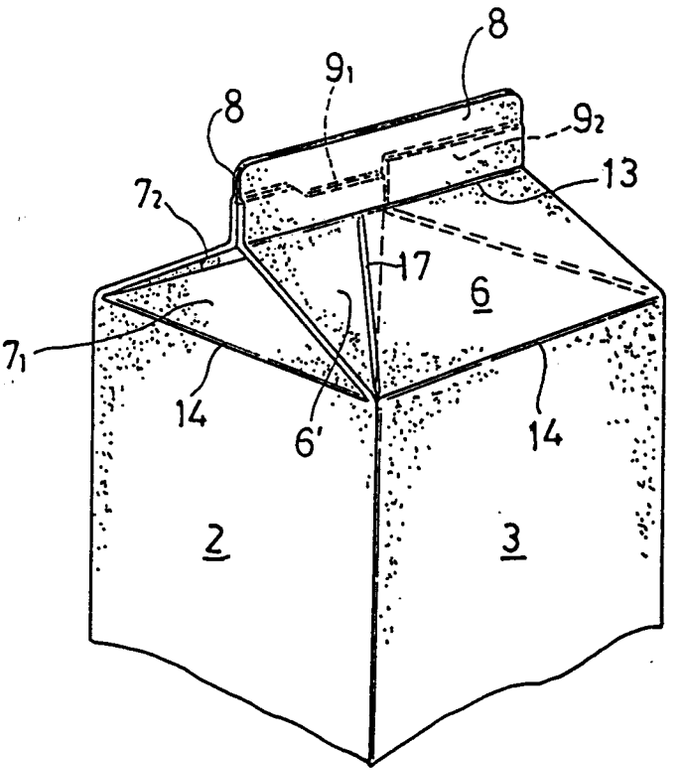

Fig. 3

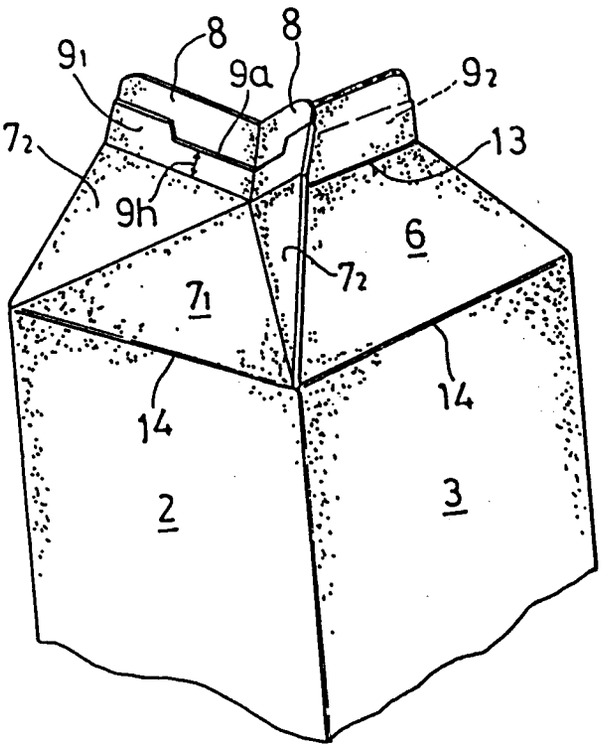

Fig. 4

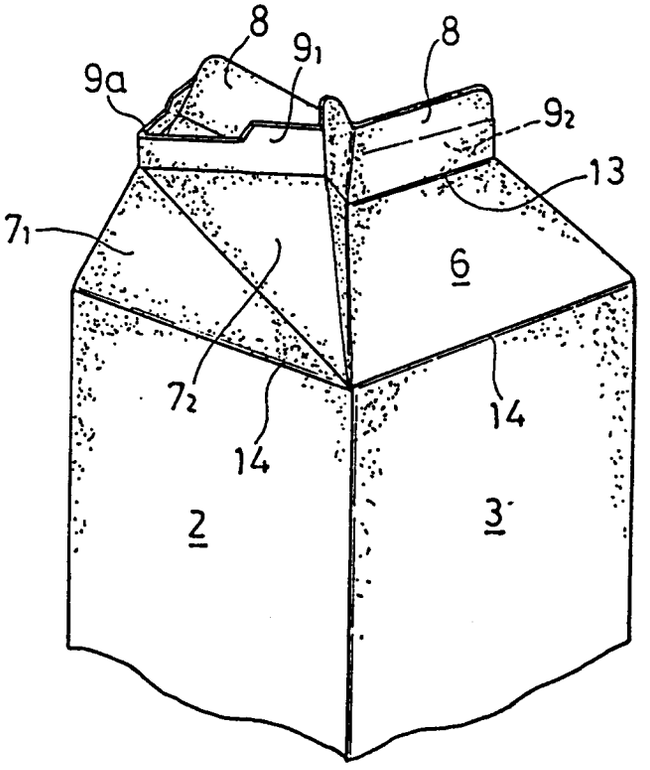

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number

EP 91 11 2823

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.5)
X	US-A-3 189 246 (SELINE) * claim 1; figure 1 * *	1-3	B 65 D 5/06

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	11 November 91	ANDEREGG P-Y.F.

CATEGORY OF CITED DOCUMENTS

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