Fig. 2


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(54) Title: ENVELOPE FOR PACKING OF SMALL PIECE GOODS AND FLEXIBLE WRAPPING MATERIAL FOR MANUFACTURE OF IT

(57) Abstract: Envelope (1) for small goods comprised of contact areas of at least single-layer inner and outer laminate structures, in which parts projecting beyond ends of a column of packed goods are shaped as tightly closed butt-end caps (2). A reed flap (3), which is suitable for repeated opening and closing and in which a line of perforation (5) confines the reed (4) is located nearby at least one of said butt-end caps. A flexible wrapping material for the envelope is shaped as a long-length band that is comprised of many prospective uniform envelopes’ blank-segments. Each blank-segment has contact areas of at least single-layer inner and outer laminate structures and a zone meant for formation of a prospective reed flap (4) confined by a line of perforation (5). Each line of perforation is made only in the outer laminate structure, and each prospective reed is placed initially onto the inner laminate structure. This decreases substantially the probability of accidental ruptures of filled envelopes.
ENVELOPE FOR PACKING OF SMALL PIECE GOODS
AND FLEXIBLE WRAPPING MATERIAL FOR MANUFACTURE OF IT

Field of the Invention

This invention relates to a structure of envelopes for packing of columnar sets of uniform small piece goods such as pellets of a chewing gum, replenisher tablets, lozenges, tablets of vitamins and so forth, and to a structure of laminate (at least double-layer) flexible wrapping material for manufacture of such envelopes.

Background Art

Heretofore columnar sets of uniform piece goods (especially confectionery) pack into rigid boxes having flap covers, which consumers can repeatedly turn back in order to extract a packed product and close anew after extraction of it (see, for example, WO/2006/075231 and WO/2004/101375, where boxes, which have correspondingly quadratic and hexagonal cross-section, are showed).

Such boxes prevent effectively accidental spillage of non-extracted pieces. However, these rigid boxes are resource-demanding and very labour-intensive.

Therefore, it is desirable to pack above-mentioned small piece goods into envelopes made from a thin-sheet flexible wrapping materials (further in abbreviated form FWMs) using efficient automatic packing machines.

Each well-known envelope made from traditional FWMs comprises of an inner case and a separate outer case. Said inner case is made from a material that is inert in respect of packed pieces (e.g., from a thin consistent paper). Said outer case is made from a material that is capable to keep a requisite shape (e.g., from a metallic foil or a metallised polymeric film) and serves as a carrier of information about a packed product. Manufacture of each double envelope includes two steps, namely - formation of the inner case, and then formation of the outer case. Each said case fixed in respect of a columnar set of packed pieces by a longitudinal glue (or weld) seam and has end flaps. These flaps can form by folding of the wrapping material projecting beyond said columnar set of packed pieces. Details of each outer flap cohered by gluing or welding. Details of each inner flap are not cohered. Thus, it can easily open for extraction of pieces.

Accordingly, any consumer of packed in this wise small piece goods tears either outer flap, then unfolds the respective inner flap, extracts in turn pieces, and immobilizes residual pieces within said envelope by mashing of empty parts of said inner and outer cases.

Evidently, double-step manufacture of said envelope using two blank-segments of various FWMs complicates and raises the price of packing of said goods. Respectively, it is desirable to form each envelope using single blank-segment of a FWM and to provide a member suitable for repeated opening and closing of a dispensing hole in the envelope.

Prototypes of such envelope and such FWM for manufacture of it have disclosed in the WO/2011/004156. The known envelope for packing of small piece goods based on the known FWM comprises of-

cohered along contact areas at least single-layer inner and at least single-layer outer
laminate structures, in which parts projecting beyond ends of a column of packed pieces are shaped as tightly closed butt-end caps (especially by squashing of said parts and glued connection of their contiguous surfaces), and

a reed flap located nearby at least one of said butt-end caps, which is suitable for repeated opening and closing and in which the reed is confined by a line of perforation.

Such part of the known reed flap, which must be movable in operative position, has confined by two uniform lines of through mechanical perforation of both (i.e. said inner and said outer) laminate structures and these structures cohered in the zone of said lines of perforation by a peelable adhesive.

Accordingly, a FWM for manufacture of said envelopes has shaped as long-length band. This band comprises of many such prospective uniform blank-segments of the envelopes, each of which has cohered (especially glued) along contact areas of at least single-layer inner and at least single-layer outer laminate structures. Each said blank-segment has zone meant for formation of a prospective reed flap. Each such zone confined by two above-mentioned lines of perforation that have mechanically made in both laminate structures, and these structures cohered in the zone of said lines of perforation by a peelable adhesive.

Any consumer of packed in this wise small piece goods can easily break through each envelope in and around of the reed flap, turn the reed out, extract packed pieces one after another through an obtained dispensing hole and close residual pieces by return of the reed onto the site of the tear. Obviously, wrapping of any small piece goods become simple because well-known efficient automatic packing machines are capable to cut a beforehand produced band of a suitable FWM into single blank-segments in order to one-step shape said known envelopes from these segments.

However, through (especially, mechanical) perforation of both (i.e. the inner and outer) laminate structures and their connection along contact surfaces by means of two glues, which have different compositions and properties, create favorable conditions for accidental ruptures of the reed flaps of said known envelopes. Moreover, said constructive features complicate manufacture of any known flexible wrapping material considerably.

**Brief Description of the Invention**

This invention based on the problem - by improvement of the reed flap structure - to create such envelope for packing of small piece goods and such flexible wrapping material for manufacture of it, which would substantially decrease probability of accidental ruptures of each filled envelope.

First part of said problem has solved in this wise. An envelope for packing of small piece goods based on a flexible wrapping material comprises of cohered along contact areas at least single-layer inner and at least single-layer outer laminate structures. The parts of these structures that have projecting beyond ends of a column of packed pieces have shaped as tightly closed butt-end caps. A reed flap that is suitable for repeated opening and
closing has located nearby at least one of said butt-end caps. A line of perforation confines the flap's reed. According to the invention, said line of perforation, which confines the flap's reed, has made only in the outer laminate structure, and the reed has free placed initially onto the inner laminate structure.

Second part of said problem has solved in that a flexible wrapping material for manufacture envelopes of small piece goods shaped as long-length band. This band comprises of many such prospective uniform blank-segments of envelopes, each of which has cohered along contact areas at least single-layer inner and at least single-layer outer laminate structures, and each said blank-segment has such zone meant for formation of a prospective reed flap, which has confined by a line of perforation. According to the invention, each said line of perforation has made only in the outer laminate structure, and each prospective reed has free placed initially onto the inner laminate structure.

This reduces substantially probability of accidental ruptures of proposed envelopes because a consumer must deliberately impose an appreciable effort (i.e., to push by a fingernail) for breakthrough of inner laminate structures in and around of the reed flap. Moreover, any consumer, which will use the proposed envelope, can regulate a size of a dispensing hole according to the dimensions of packed pieces. Finally, the proposed FWM is practically feasible in comparison with the known FWM. In fact, it is considerably simpler to retain free from glue (or other bonding medium) such part of contact areas of inner and outer laminate structures, which are located in the reed flap zone, than to spread in each such zone a narrow and thin strip of a peelable glue.

Brief Description of the Drawings

The invention will now explain by detailed description of an improved envelope and an improved FWM for manufacture of it with references to the accompanying drawings, in which:

Fig. 1 shows such envelope for small piece goods that shaped as a rectangular parallelepiped (in the state «closed»);

Fig. 2 shows the envelope according to the Fig. 1, when a flap's reed is half-opened;

Fig. 3 shows a cylindrical envelope for small piece goods (in the state «closed»);

Fig. 4 shows the envelope according to the Fig. 3, when a flap's reed is half-opened;

Fig. 5 shows a fragment of a band of a proposed FWM (plane view that shows a chamfered delta-shaped flap's reed);

Fig. 6 shows the band similar to the Fig. 5 (plane view that shows a trapeziform flap's reed);

Fig. 7 shows the band similar to the Fig. 5 (plane view that shows a flap's reed confined by a circular arc);

Fig. 8 shows a cross-section of a four-layer FWM (as one of many practicable embodiments of the invention).

Best Embodiments of the Invention

Any proposed envelope (see Figs 1 and 2; 3 and 4) comprises of:
an envelope's box 1 that is made from a FWM described in detail below and embraces closely not showed explicitly a column of some small piece goods,
butt-end caps 2 of the envelope, which are shaped by folding and following gluing and/or welding of the FWM projecting beyond ends of above-mentioned pieces' column, and
a suitable for repeated opening and closing and located nearby at least one of said butt-end caps 2 a reed flap 3, in which the reed 4 confined by line 5 of perforation.
A height of the reed 4 can select with a glance of the height of single small piece (usually as large as two or three values of the piece's height).
In any case, the envelope (see Figs 2 and 4) has at least single-layer inner and at least single-layer outer laminate structures, which have conventionally showed here by white and grey colours. In addition, said figures show obviously, that said line 5 of perforation, which confines the reed 4 of said flap 3, has made only in the outer laminate structure, and the reed 4 has free placed initially onto the inner laminate structure. The rest parts of the laminate structures, which create the envelope's box 1, cohered together on contact surfaces by gluing (or welding).
It is clear for each person skilled in the art, that cross-section of the envelopes' boxes 1 can be not only rectangular or round.
The proposed FWM for manufacture of envelopes showed in detail on the Figs 5-8.
Thus, the Figs 5, 6 and 7 shows that said FWM has shaped as long-length band composed of many uniform blank-segments 6 for making of separate envelopes. Each said blank-segment 6 has on the one hand such zone meant for formation of a prospective reed flap 3, which has confined by a line 5 of (preferably laser) perforation.
Fig.8 shows one sample of such FWM, which has (please, see downward) not enumerated especially:
an outer laminate structure in the form of a single-layer aluminum foil (e.g., having thickness 9 \( \mu \text{m} \)), from which must be formed aforesaid easy-detachable reed 4 of the flap 3 and top surface of which serves as carrier of information about a subject to packed ware and a producer, and
an inner laminate structure composed of three layers of polyethylene terephthalate film (e.g., having thickness 12 \( \mu \text{m} \)). These layers have glued together along all their contact surfaces, whereas this inner laminate structure in whole has cohered (as well, as a rule, by gluing) with the outer laminate structure along their contact surfaces aside from the zones meant for formation of the prospective reed flaps 3.
Each person skilled in the art understands that many other structures of FWMs can use for making of the proposed envelopes. For instance, certain FWMs can have an outer laminate structure composed of two layers of polyethylene terephthalate film, which have glued along their contact surfaces aside from the zones meant for formation of the prospective reed flaps 3. In this case, information about a subject to packed ware and its producer may print in advance (i.e. before gluing) onto reverse side of the external layer of
said outer laminate structure.

Correspondingly, some inner laminate structure can form as a single-layer aluminum foil or, preferably, can be composed of a single-layer polyethylene terephthalate film and a single-layer aluminum foil, which have glued together along all their contact surfaces.

Proposed FWM can be made as numerous combinations of inner and outer laminate structures from available polymers (including ready-made polymeric or metallized polymeric films), metallic (usually aluminic) foil and glues (especially, glues that comprise solvents, or two-component polyurethane glues of the company Henkel) using usual equipment for production of multilayer laminated plastics.

Naturally, the proposed envelopes can form from the proposed FWM using efficient automatic packing machines.

Each envelope comprising a columnar set of any small piece goods can open as follows. A consumer displaces the reed 4 of the flap 3, which easily separates from the inner laminate structure along the line 5 of perforation. Further, he presses by a fingernail along said line 5, breaks through the inner laminate structure until appearance in an obtained dispensing hole of first packed piece, extracts one or a few such pieces and closes said hole.

Industrial Applicability

This invention can be widely used for packing of chewing gums and similar small piece goods (particularly, confectionery and drugs) using usual packing machines. The filled envelopes are resistant to accidental damages of the laminate structures because they may break only by purposeful actions of consumers.
CLAIMS

1. An envelope for packing of small piece goods based on a flexible wrapping material; the envelope comprises of -
cohered along contact areas at least single-layer inner and at least single-layer outer laminate structures, in which parts projecting beyond ends of a column of packed pieces are shaped as tightly closed butt-end caps, and
a located nearby at least one of said butt-end caps reed flap, which is suitable for repeated opening and closing and in which the reed is confined by a line of perforation, characterized in that
said line of perforation that confines the reed of said flap is made only in the outer laminate structure, and the reed has free placed initially onto the inner laminate structure.

2. A flexible wrapping material for manufacture of envelopes of small piece goods that is shaped as long-length band; this band comprises of many such prospective uniform blank-segments of the envelopes, each of which has cohered along contact areas at least single-layer inner and at least single-layer outer laminate structures, and each said blank-segment has such zone meant for formation of a prospective reed flap, which has confined by a line of perforation, characterized in that each said line of perforation is made only in the outer laminate structure, and each prospective reed has free placed initially onto the inner laminate structure.
INTERNATIONAL SEARCH REPORT

International application No
PCT/UA2013/00Q132

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D75/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. MINIMUM CLASSIFICATION

B65D

B. ADD.

INV. B65D75/08

B. CLASSIFICATION OF SUBJECT MATTER

B65D75/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Citation of document, with indication, where appropriate, of the relevant passages

Relevant to claim No.

X

CA 2 479 492 AI (WRIGLEY W M JUN co [US])
28 February 2006 (2006-02-28)
page 8, line 15 - page 10, line 7; claims 1-5-7, 16; figures l-6b

1, 2

X

WO 2011/004156 A2 (CADBURY UK LTD [GB]; WILLEY JASON DENIS [GB]; CHEEMA PARBINDI

[GB]) 13 January 2011 (2011-01-13)
cited in the application on

page 11, line 9 - line 30
page 12, line 6 - page 13, line 19
page 15, line 19 - line 28; claim 1;
figures 1-12

1, 2

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:

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<td>WO 2014/060795 AI (INTERCONTINENTAL GREAT BRANDS LLC [US]; CADBURY UK LTD [GB]) 24 April 2014 (2014-04-24) page 7, paragraph 6 page 9, paragraph 4 page 11, paragraph 5 page 12, paragraph 5; claims 1, 5, 43; figures 1-16</td>
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