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Rausing

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[54] **PARALLELLEPIPEDIC PACKAGE**

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[52] **U.S. Cl.**..... **229/7 R,** 229/3.5 MF, 229/14 BL, 229/17 R, 229/51 D

[51] **Int. Cl.**..... **B65d 5/70,** B65d 5/54, B65d 5/56

[58] **Field of Search**.... 229/7 R, 17 R, 51 AS, 51 D, 229/3.5 MF, 14 BL; 206/65 T

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[57] **ABSTRACT**

A parallelepipedic package is produced from a web of packaging material formed into a tube, into which the filling material is introduced, the tube then being pressed flat along transverse, lontitudinally spaced sealing zones so as to divide the filled tube into individual package units which are then shaped into parallelepipedic form. Triangular flaps are formed adjacent the sealed zone at one end of the package during the shaping procedure so as to develop an openable pouring spout, and these flaps are folded downwardly so as to lie against a side wall of the package and retained in place. To facilitate pouring from the spout, the same end of the package is provided with a vent hole covered by a removable protective strip.

5 Claims, 3 Drawing Figures

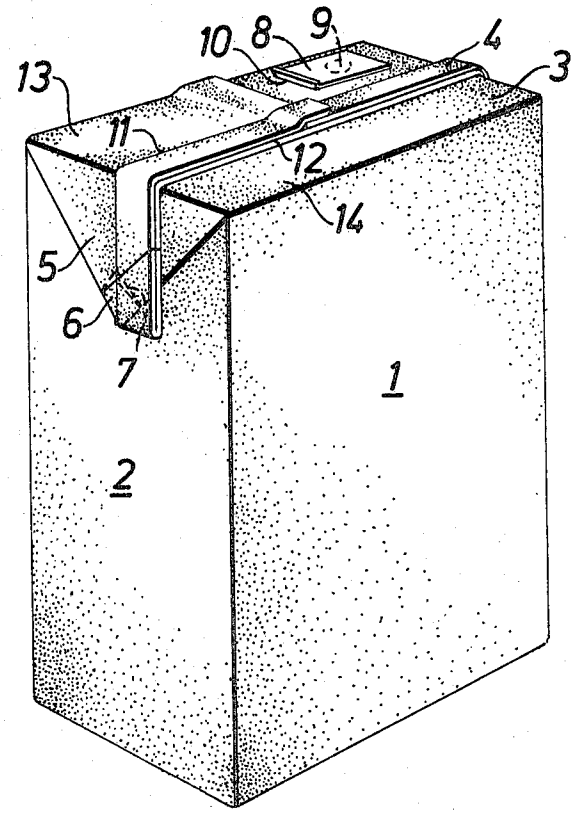


Fig. 1

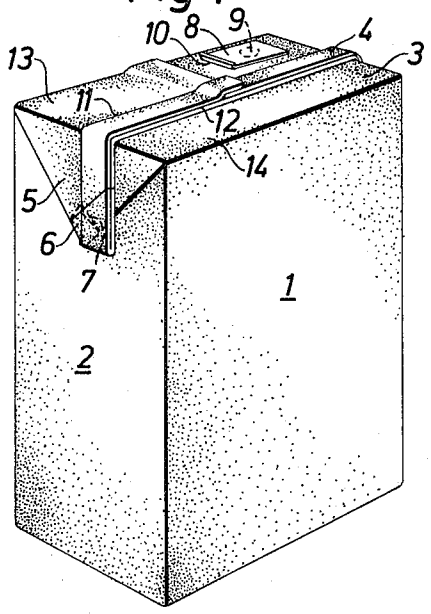


Fig. 2

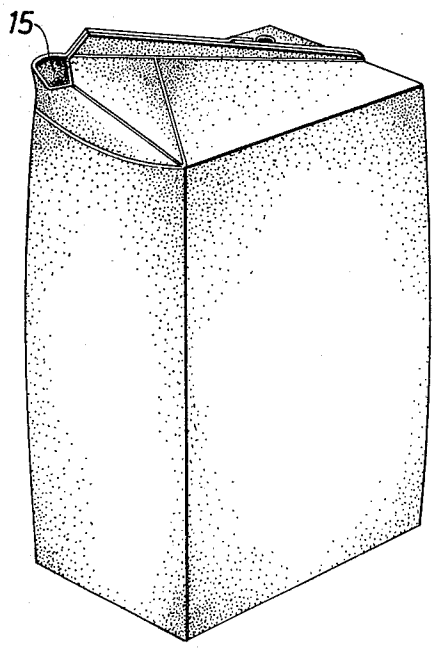
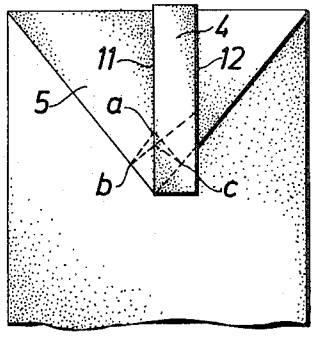


Fig. 3



PARALLELLEPIPEDIC PACKAGE

The present invention relates to a parallelepipedic package consisting of a flexible, relatively stiff carton material of the type produced from a web of such carton material which is formed into a tube and filled with goods and then pressed flat and sealed along relatively narrow spaced sealing zones at right angles to the axis of the tube. At the same time a column of the goods to be filled is subdivided, so that individual package units are filled which are then subjected to a shaping process in the course of which the package units are given a parallelepipedic shape and are provided with twin-walled triangular flaps which are connected with the package at the ends of the four side walls which are formed during shaping. The package units or the shaped packages are separated by cutting through the said sealing zones in such a manner that sealing tabs extending across and beyond the upper and lower end walls of the shaped package and along one side of the said triangular flaps are formed, at least the sealing tab extending across the upper end wall being substantially folded down against the adjacent side wall together with the triangular flaps.

Parallelepipedic packages of this type have been used for a long time for packaging of solid, powdery or granular goods as well as liquid goods. These packages are, in addition, becoming progressively popular since this method of packaging goods and the type of package itself are for many reasons preferable, and have proved to be advantageous and have come to satisfy a requirement which is particularly notable when packaging liquid goods such as flowing dairy products. However it has been shown that the packages of this type hitherto used are not entirely satisfactory as regards opening and also pouring since it has proved difficult to find an opening arrangement which is convenient, can be easily opened up while at the same time making it easy to pour out the contents without causing any spillage, the said opening arrangement at the same time meeting the requirement that it must be air tight prior to opening of the package and can withstand normal stresses during manipulation and transportation without any leakage. Hence there is a requirement for being able to open these packages easily without risk of churning or spillage. The packages in current use are normally opened by removing a strip which is provided on the package wall and can be torn away from the package wall so as to expose a discharge hole or by tearing open a part of the package along a weakened tear line prepared in the packaging material. Since the packages are entirely filled with the packaged goods it has also proved practically impossible to prevent the goods issuing out of the package when the latter is handled with a view to opening it, which must be regarded as disadvantageous, at least from a hygenic point of view.

The package in accordance with the invention has been designed with the aim of retaining the unique properties of this type of package while at the same time bringing about a package which can easily be opened without danger of spilling the goods while manipulating the package with a view to opening it, it being a further aim of the invention to provide for easy and reliable opening and the emptying of the package by pouring its contents in a well concentrated, directly forward stream and without the disadvantages of churning and spillage. From the point of view of production, the package is, in addition, still relatively as simple and functional, bearing in mind the changes in package design due to proposed improvements.

The package in accordance with the invention is characterized herein in that one of the triangular flaps situated at the upper end wall, which is designed to act as the discharge spout of the package has a separable end, and in that an air hole which can be covered with a removable cover strip is provided in the upper end wall of the package at a distance from the triangular flap acting as a discharge spout and in that at least some of the side walls of the package are slightly inward curving but so arranged that when the cover strip is torn off and the package opened they will instead curve slightly outward from the package.

In the following description further characteristics and advantages of the invention will emerge, reference being made to the attached diagrammatic drawings in which

FIG. 1 shows in perspective an unopened parallelepipedic package forming an embodiment of the invention;

FIG. 2 shows from the side the upper part of an opened package in accordance with FIG. 1; and

FIG. 3 shows the opening flap of the package in the position shown in FIG. 1.

A parallelepipedic package of the type here stated is usually produced from a web type base material consisting of paper or paper lined with plastic on both sides or a combination of paper and a metal foil with an intermediate plastic layer. The package is produced by first forming the carton material into a tube, whereupon the tube is subdivided, by pressing flat and transversely sealing along narrow transverse zones, into cushion-like packages which are separated by cutting through the said transverse sealing zones, the contents of a package being located between two transverse seals following on one another. The final parallelepipedic shape can be imparted before or after separation of the packages by cutting through the transverse sealing zones. The excess material, which for geometric reasons cannot be included in the said parallelepipedic package shape a substantially triangular so that, twin-walled corner flaps are formed which project flaps at one end of the package, as a rule the opening end, and are normally sealed against the side wall of the package adjacent the flap concerned, whereas the flaps projecting from the lower end of the package are as a rule sealed against the adjacent lower end wall.

With the package design as described above, the package shown in FIG. 1 is provided with side wall 1 and 2 as well as an upper end wall 3. Above the end walls is located tab 4 which is formed during the sealing stage and which is folded down towards the end wall 3. The tab 4 extends along the two upper twin-walled, triangular flaps 5 formed during the shaping stage, only one of which is shown in the figure. The tab at the other end wall is folded inward against the respective adjacent end wall side walls. The twin-walled flap 5 shown in the figure may therefore be said to have an outer wall and an inner wall, whereby the outer wall is constituted by a part of end wall 3 which is extended because of excess material, whereas the inner wall consists of a part of side wall 2, extended because of excess material.

The flap 5 is designed to constitute a discharge opening of the package, whereby the flap which is preferably folded down towards the side wall 2, may be raised

to form a discharge spout as shown in FIG. 2. The outer part of the flap 5 forms an end 6 so designed that it can be removed from the flap thus forming a discharge opening, the flap being provided with a weakened tear line 7 formed by perforations passing only partly through the carton material. In addition, the end wall 3 with which flap 5 is connected has a cover strip 8 capable of being torn off, which covers a vent hole 9 situated in the end wall.

A parallelepipedic package in accordance with the invention and produced of the said carton material is to a certain extent dimensionally stable, i.e. the 12 edges of the package act as a frame or skeleton on which the side and end walls form diaphragm like elements. By causing the package flaps 5 to lie against the adjacent package walls a further improvement in dimensional stability is achieved without any significant reduction in the diaphragm action of the side walls. If the package in accordance with the invention is kept compressed to a certain extent before and during its sealing, the package will not be filled to its maximum volume. That is to say while the package is being sealed at least some of its side walls which are being formed are subjected to an external inwardly directed pressure the said wall or walls are caused by buckling to limit the internal package volume which is less than the maximum volumetric capacity of the parallelepipedic package which is being formed. In spite of the fact that the material in the package is not particularly resilient, the side walls having been pressed inward obtain the capacity of again resuming a position of equilibrium. Since the sealing tabs 4 formed during the shaping of the package are folded downwardly against the end wall 3 and against the triangular flaps 5 located against the end wall, that part 13 of the end wall 3 from facing away the sealing tab, will, owing to the flexibility of the packaged material, be disposed in a somewhat higher plane of the package configuration than the other part 14 of the end wall. Folding downward of the sealing tab 4 is brought about by folding the flaps 5 down against the adjacent side wall where they are preferably sealed.

The end 6 of flap 5 shown in the figure is provided, with a perforation line 7 which is torn when the package is opened. In this connection it will be noted that the tear lines start from a common point *a* located on the inner side of flap 5 which faces the package and at a distance from the base line 11 of sealing tab 4, and pass through preferably symmetrical points *b* and *c* situated along the free side edges of the flap 5 and end in the section of tab 4 which extends over that flap, near the base line of the tab or the free edge 12 of the tab. The tear line 7 takes a preferably straight course between the said points in the packaged material but it is of course also possible for the tear line to pass along a curved line leading to the said points. The tear line 7 is preferably provided in the package material during its formation, either before or after application of a coating layer to the web of base material. After raising the opening flap 5 and pressing the flap walls together, the tear line; should be inclined to the horizontal plane of top of the package at an angle of at least 20°, thus ensuring that the discharge opening 15 formed after removal of the end 6, will be sufficiently large and will have a proper a position of the pouring edge to ensure even pouring of the contents in a well concentrated, directly forward jet, and will have an opening which is entirely restricted to flap 5. However, in this position the tear line 7 should preferably be at an angle between 45° and 60° to the top of the package in order to ensure satisfactory pouring as intended.

The discharge opening 15 of the package, see FIG. 2, is thus obtained after raising of flap 5 and by removal of the end 6 which is brought about by taking the end 6 of the flap between thumb and finger on the inside of the tear line 7, and tearing off the end 6. By comparison with earlier packages of this type, one advantage of opening the package in accordance with the invention should be specially noted, i.e. that during tearing of the end 6 only a part of the flap itself is removed and that tearing of the carton material is effected over a relatively short distance so that the grip required for removal of the end 6 is simple and tearing itself can be effectd easily. This condition is accentuated if the tear line 7 extends so that tearing the end 6 is along a straight line.

As stated above, the upper end wall of the package is provided with an air hole 9, in order to ensure that the contents of the package may be poured in an uninterrupted, even jet. The air hole is covered with a strip 8, which is sealed against a thermoplastic film covering the air hole 9. The thermoplastic film may consist of an inner liner provided in the package. To provide a package with an inner thermoplastic layer has the advantages that the material as such is impermeable to liquid and results in liquid-proof seals which are formed simply by pressing two adjacent material surfaces having thermoplastic linings against each other while applying heat, as a result of which the adjacent linings are fused together along the heated zones. If it is regarded as more advantageous to glue the sealing joints in the package, this is of course also possible. With such packages it is also customary to provide the outside of the package material with a thermoplastic layer. Of course, the air hole may be covered with both an inner lining and an outer layer whereby the layers of are fused together or by by means of a laminated layer lining the surface of the package material, such as a combined thermoplastic metal foil layer.

The air hole 9 in the package may be provided in the carton material during its formation, already before the lining layer is applied. However, the air hole is preferably provided after formation of the carton material. This may be effected by either punching through the entire thickness of the carton material so that the hole will be closed by thermoplastic lining, or by punching only to such a depth that the lining remains unperforated, whereupon the perforated layer is removed.

The cover strip 8 which may consist e.g. of wear-resistant paper, plastic, metal foil or a combination of these materials may be sealed over the air hole 9 before the web is converted to tubular form. The cover strip may of course also be sealed to the end wall in the area surrounding the air hole. A part of the cover strip maybe not be firmly attached to the package wall in order to provide a gripping flap 10 which can be used for exposing the air hole 9, by pulling strips off when opening the package.

When the package is to be opened, the cover strip 8 provided over the air hole 9 is first removed from the package, whereby any layer or layers covering the air hole are removed simultaneously. As the result, air enters the package and the walls of the package bulge outwardly in FIG. 2. so that the inner volume of the

package is increased, which in turn causes the level of the contents in the package to drop. If the package has been kept in a compressed state during its sealing as noted above the inner volume of the package will be restricted to a value below the maximum capacity of the package, and the level of the contents will of course descend when the air hole is exposed. This is of importance when the package is to be emptied since none of the packaged goods can, as a result, issue from the air hole when the package is handled while it is opened and held at an angle to pour out the packaged goods.

By locating the air hole 9 as far as possible from the discharge opening, it will be more certain that none of the contents issue through the air hole during the handling and pouring operation, see FIG. 1. In this connection it is advantageous to locate the air hole in section 13 of the end wall 3 so that the air hole is located somewhat higher and is thus further removed from the level of the contents than if the air hole is provided in the section 14 of the end wall.

If the air hole 9 and the strip 8 are provided on the carton material during its production, and the package material is then rolled up, a disadvantage arises if the air hole and its cover strip are provided unsymmetrically on the package material web, in relation to its web edges. The thickness of the cover strip in particular causes discontinuities in the roll of carton material, which in turn result in a continuous displacement of the web of carton material by rolling up towards one side of the roll thus forming a slanting, substantially tapering roll. For this reason it may therefore be preferable to provide the air hole 9 and at the same time the cover strip 8 symmetrically on the carton material web. However, it should be stressed in this connection that packages of the present type are normally formed from a carton material web in such a way that if e.g. an air hole is located symmetrically on the package material web, the hole will also be located in a substantially symmetrical position on the finished package.

A further advantage of the present package consists in that it can be reclosed in a relatively satisfactory manner. As stated previously only the end 6 of the flap 5 is removed during opening of the package, thus the package can be reclosed by rolling up or folding the remaining flap material so as to form a sharp edge, preferably parallel to the end wall 3.

Without exceeding the scope of the inventive idea, modifications of the illustrated and described package may be possible. Hence, the invention is not limited by the illustrated and described embodiment but only by the following claims.

I claim:

1. A package composed of a flexible, relatively stiff carton material and having a substantially parallelepiped shape comprising side walls provided with upward extensions, the extensions of the front and back walls being brought together and secured along a zone adjacent their upper edges to form a tab extending across the top of the package and beyond the lateral sides thereof, the lateral ends of said tab being folded down so that the front and back extensions form the top of the package, and so that twin-walled triangular flaps are formed extending laterally and outwardly from the top of the package, said flaps being folded downwardly against the outside of the side walls of the package, one of said twin-walled triangular flaps being provided with weakened tear lines adjacent the outer end thereof to permit the end portion of said flap to be removed after raising said flap upwardly, thus providing a pouring spout when the said flap is raised to open the package said weakened tear lines extending from a central point of the inner wall of said flap symmetrically outward to the outer edges of said flap and then obliquely inwardly along the outer wall of said flap toward said tab, said inwardly extending tear lines terminating near the free edge of that portion of said tab which overlies said flap, a vent hole provided in the top of the package and removable means for covering said vent hole, the side walls of the package being flexibly depressed inwardly when the package was filled and sealed so that the level of contents of the package is higher than if the package had vertical walls, whereby when the covering means is removed from the vent hole at least one of the package walls will flex outwardly and the contents will have a lower level in the package than prior to opening the package and when said flap is raised the end portion thereof may be removed to provide a pouring spout for removing the contents without spillage.

2. A package as claimed in claim 1 wherein said weakened tear lines comprises perforations extending only through a portion of the carton material of the flap.

3. A package as claimed in claim 1 wherein said vent hole is provided in the carton material of the top of the package and wherein said package further comprises at least a partial thermoplastic inner lining which at least covers and seals said vent hole, said removable cover means being secured to said at least partial thermoplastic inner lining in the area of the vent hole for removal thereof when the package is opened.

4. A package as claimed in claim 3 wherein said at least partial thermoplastic inner lining includes a metal foil layer.

5. A package as claimed in claim 3 wherein said package further comprises at least a partial thermoplastic outer lining which is sealed to said at least partial inner lining in the area of the vent hole for sealing said vent hole, said removable cover means being secured to said at least partial outer lining in the area of the vent hole for removal in that area of said at least partial outer lining and said at least partial inner lining when the package is opened.

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