United States Patent

Young et al.

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[45] **Sept. 19, 1972**

[54] **REMOVABLE SIDE WALL FOR TIGHTLY SEALED DRUMHEAD CARTONS**

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[73] Assignee: **Riegel Paper Corporation,** New York, N.Y.

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[21] Appl. No.: **45,507**

[52] **U.S. Cl.**.....**229/17 R,** 229/14 BA, 209/37 R, 229/51 D, 229/51 TS

[51] **Int. Cl.**.....**B65d 5/54,** B65d 5/08

[58] **Field of Search**.....229/17 R, 7, 37, 51 TS, 51 R, 229/51 D, 51 C, 14 BA, 14 BL

[56] **References Cited**

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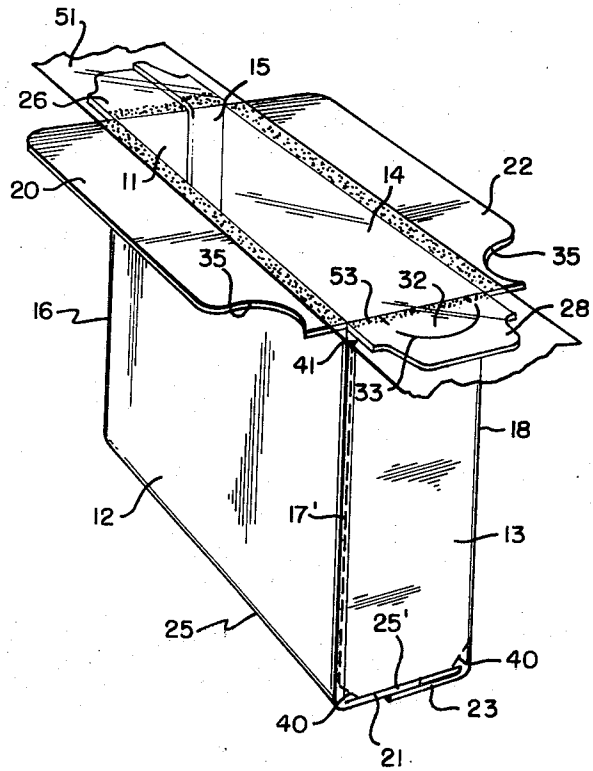
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[57] **ABSTRACT**

An improved opening arrangement for dispensing the contents of a hermetically sealed drumhead carton is disclosed herein. A totally removable side wall panel is included in the carton, and its removal is facilitated by an integral lift tab formed in a contiguous dust flap in the end closing structure. The lift tab is arranged and pre-cut so that it may be readily grasped and removed along with the side wall panel to provide an open sided carton, without disturbing either of the drumheads, for "eat-from-box;" "mix-in-box;" "grow-in-box;" "heat-in-box" product applications.

6 Claims, 5 Drawing Figures



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SHEET 1 OF 2

FIG. 1

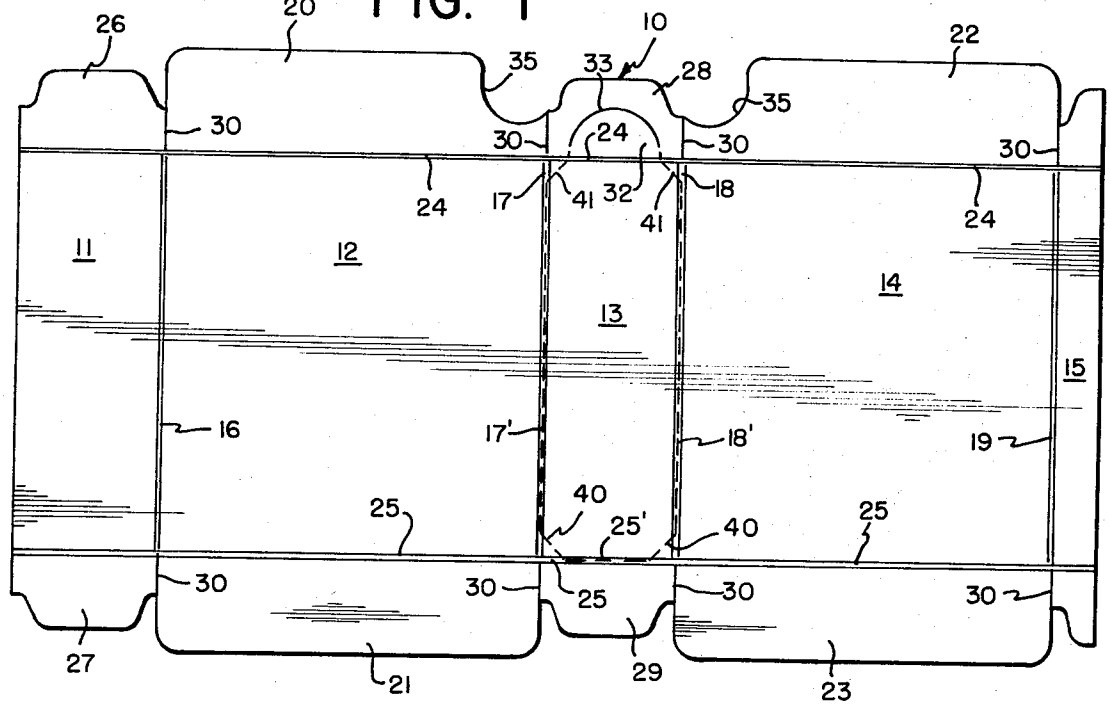


FIG. 2

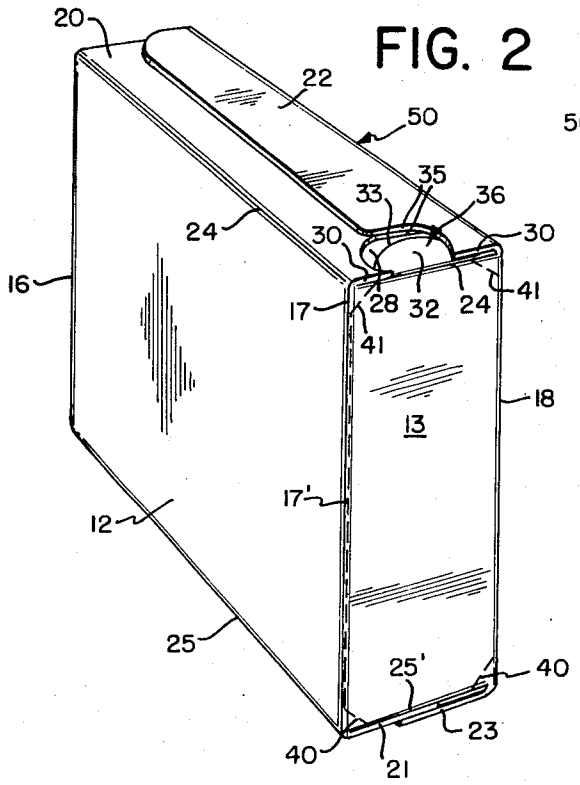
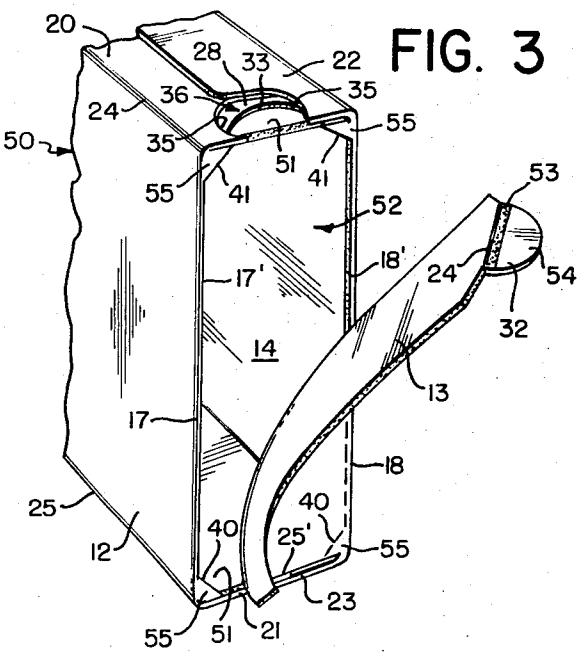


FIG. 3



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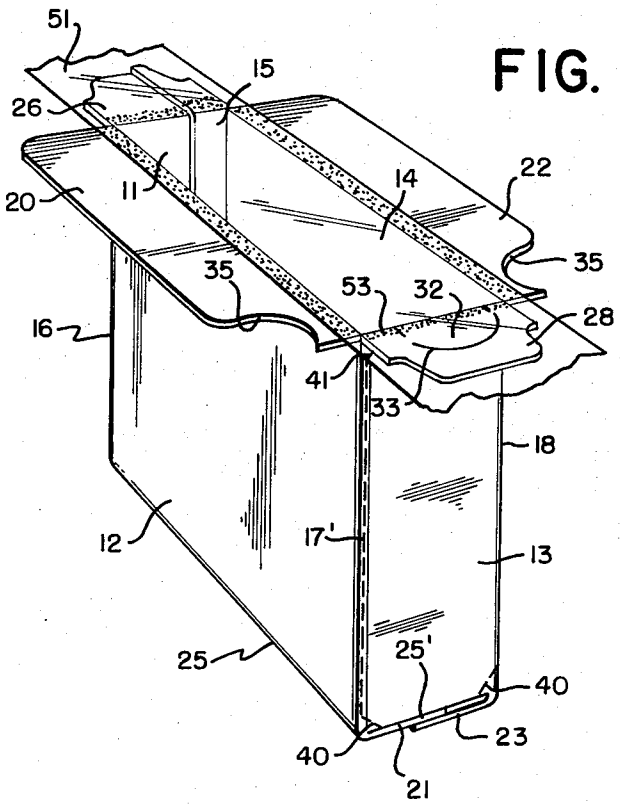

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17'
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25'
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FIG. 4

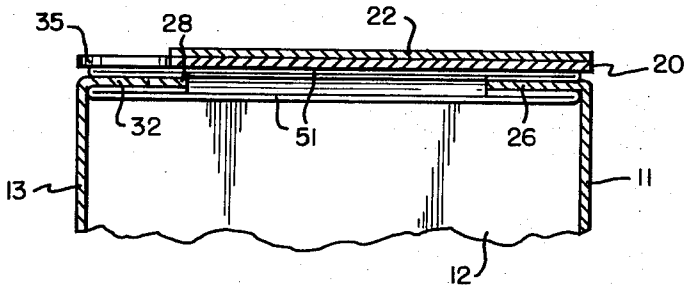

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12

FIG. 5

REMOVABLE SIDE WALL FOR TIGHTLY SEALED DRUMHEAD CARTONS

BACKGROUND OF THE INVENTION

Many airtight, siftproof, and moistureproof paperboard carton constructions for liquid and pulverulent materials are formed from parallelpiped cartons and have their opposite ends tightly sealed by "safety shield" members or "drumhead" membranes adhered to the carton end flaps and side flaps (dust flaps). Presently, in commercially useful drumhead cartons, the membrane material and/or the inner surfaces of the flaps to which the membranes are adhered are thermoplastic. For example, a resin, wax or other material which may be easily heat sealed may be coated on the membrane or flaps. The strength of these drumhead cartons is often custom tailored to meet packaging requirements by the choice of laminated materials used to construct the blanks. Moreover, with the development of improved coated and laminated paperboard materials and improved thermoplastic films, the tightness and imperviousness of membrane sealed cartons of the aforementioned type have been greatly improved, and these cartons have continued to find ever increasing acceptance and widespread use in diverse packaging applications. Ironically, however, the vastly improved strengths of the heat seal bonds of the thermoplastic membranes to the carton flaps, while offering increased packaging protection, have often introduced serious opening problems for the ultimate consumer. Accordingly, it is to one solution of these opening problems that the present invention is directed.

SUMMARY OF THE INVENTION

In membrane sealed cartons erected from laminated or plastic coated paperboard blanks, the cartons may, of course, be opened and access to the contents may be had by puncturing the membrane or by peeling it from the carton body. However, this is extremely difficult and often impossible due to the integrity and high strength of the heat seal bond between the membrane material and the flaps. Where the carton is a thermoplastic coated foil laminate, for example, peeling removal of the entire thermoplastic or thermoplastic coated membrane is strenuously resisted by the strong and hard bonding of the membrane to the flaps. Accordingly, effecting a delamination of the entire membrane is extremely difficult.

In accordance with the principles of the present invention, access to the contents of the drumhead carton is obtained through an entire side of the carton without disturbing or disrupting the membrane. This is accomplished by removing the entire side wall along prescored lines of severance. The corners of the opening side wall are beveled to optimize the facility of its removal. Moreover, an integral pre-cut lift tab is included in the dust flap which is contiguous with the opening side wall panel, which, as previously mentioned, is defined by lines of weakness or severance which do not penetrate carton material and do not effect permeability. In this manner, a hermetically sealed carton or the like may be economically constructed, since the cuts in the dust flap which define the lift tab will be sealed by the drumhead membrane. Moreover, to provide a consumer with easy access to the starting lift tab defined in the dust flap, those portions of the carton end flaps which tend to overlie the starting tab are cut back or relieved to expose the starting tab.

For a better understanding of the present invention and its attendant advantages, reference should be made to the following detailed description taken in conjunction with the accompanying drawings.

DESCRIPTION OF DRAWINGS

FIG. 1 is a plan elevational view of a drumhead carton blank from which a carton embodying the principles of the invention may be fabricated;

FIG. 2 is a perspective view of a sealed carton embodying the principles of the invention; and

FIG. 3 is a fragmentary, perspective view of the carton of FIG. 2 with the opening panel partially removed.

FIG. 4 is a perspective view of the carton of the invention showing the application of the sealing membrane; and

FIG. 5 is an enlarged, fragmentary, cross-sectional view of the carton of the invention showing the relationship of the membrane to the infolded flaps.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to Fig. 1, a blank **10**, from which the carton of the invention may be erected, is advantageously a paperboard sheet material having a heat sealable coating such as polyethylene on the inner surface (in terms of the erected carton). The blank includes contiguous first side, front, removable second side, and rear wall panels **11–14**, respectively, a glue flap panel **15** consecutively articulated along score lines **16–19**. End flaps **20–23** are articulated to the front and rear wall panels **12, 14** along horizontal score lines **24, 25**, as shown. A pair of dust flaps **26, 27** are articulated to the first side wall panel **11** along the horizontal score lines **24, 25**. A pair of second dust flaps **28, 29** are articulated to the second side wall along the horizontal score lines **24, 25**. As shown, all of the carton flaps are separated from one another by cuts **30**. In accordance with the invention, the side wall **13** is readily severable from the blank by the further weakening of its scored edges by cut scores **17′, 18′** and **25′** which do not fully penetrate the blank.

As an important aspect of the present invention, the removable wall panel **13** has an integral lift tab **32** hinged thereto. The tab **32** is formed at the juncture of the side wall **13** with its dust flap **28**. As shown, the lift tab **32** is completely defined by an arcuate cut **33** and the horizontal score line **24**, while the removable opening wall panel **13** is defined by the non-penetrating lines of weakness **17′, 18′ 25′** and beveling lines of weakness **40** and **41**,as shown. In addition, end flaps **20, 22** are appropriately cut back or relieved, as shown at **35**. The shape of the relieved edges **35** of the end flaps **20, 22** is sufficient to define an access opening **36** when the flaps **20, 22** are subsequently infolded over the dust flap **28** in carton formation. The access opening **36** will expose substantially all of the cut **33** for easy grasping of the lift tab **32** by a consumer.

In accordance with the invention, an easily openable membrane end sealed carton **50** is fabricated from the blank **10** as follows: The blank is first formed into a collapsed carton tube by folding panels **14, 15** about the score line **18**, then folding side wall panel **11** about the

score line 16, and finally gluing or otherwise suitably adhering the underlying glue flap 15 to the overlying side wall panel 11. As will be understood, the flattened tubes may be economically and conveniently shipped from the manufacturer to the packaging plant where they are to be squared and filled.

Preparatory to filling, the carton tube is squared and then the bottom side or dust flaps 27, 29 and bottom end flaps 21, 23 are outfolded into a horizontal plane. Thereafter, the sealing or drumhead membrane 51 is heat sealed to the outfolded flaps. The bottom end closure is then completed by infolding the dust flaps 27, 29 then infolding the end flap 23; infolding the flap 21 and finally, suitably securing by adhesive or otherwise the outboard portion 21 of the flap 21 to the outboard portion of the underlying flap 23. At this stage, the carton may be filled with a liquid, semi-liquid, granular or pulverulent material or the like, through the open top end after which the top end is sealed with another membrane 51 and completed in the identical manner as that described for the bottom end.

Opening of the carton, in accordance with the principles of the invention, may be effected simply and efficiently in the following manner. The lift tab 32, which is exposed through the opening 36, as shown in Fig. 2, is grasped and pulled upwardly and outwardly by the user, thereby separating the removable side panel 13 from the carton and defining a dispensing opening 52 of substantially full carton side wall dimensions. Advantageously, the open corners of the carton are strengthened by triangular webs 55 which are formed by virtue of the beveling lines 40, 41, which themselves facilitate the tearing removal of the panel 13. The webs 55 are particularly advantageous where the opened carton is used with its contents such as in "eat-in-box," "bake-in-box," "mix-in-box," and "grow-in-box" type applications. Since a portion of the membrane 51 will have been sealed to the dust flap 28 during carton formation, the grasping and pulling of the lift tab, during opening, will separate the pre-cut lift tab from the membrane by delamination (either within the strata of the laminated paperboard stock, itself, or along the membrane-flap interface). Regardless of the nature of the delamination of the lift tab 32 from the membrane 51, such delamination will be greatly facilitated and expedited by limiting the area of the lift tab which is heat sealed to the membrane 51. To that end and as an important aspect of the invention, the area of bonding of the membrane to the lift tab is restricted to an inboard portion of the lift tab, advantageously a narrow zone 53 (Fig. 3) immediately adjacent the score line 24 so that the outboard end 54 of the lift tab is unbonded from the membrane 51. In this manner, and as will be appreciated, the lift tab 32 may be easily separated from the dust flap 28 and underlying membrane 51 to start the tear opening of the panel 13 along the score line 34.

It should be understood that the specific carton herein illustrated and described is intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

We claim

1. An end sealed carton fabricated from sheet material including a paperboard layer, comprising

a. a carton body having consecutively articulated first side, front wall, second side, and rear wall panels;

b. first and second dust flaps articulated to the ends of each of said side wall panels along first and second hinge lines;

c. end flaps articulated to the ends of each of said front and rear wall panels along hinge lines;

d. a pair of sealing membranes having parallel side edges;

e. means strongly bonding said membranes to the inner surfaces of all of said flaps to close off the ends of said carton;

f. major portions of the side edges of said second side wall being defined by vertical lines of severance;

g. a pre-cut tab contiguous with said opening panel and defined within said second dust flap;

h. beveling lines of severance connecting the ends of said lift tab with said vertical lines of severance.

2. The carton of claim 1, further characterized in that

a. said end flaps have relieved portions adjacent said second dust flap;

b. said relieved portions are sufficient to provide access to said lift tab when said second dust flap is infolded and said end flaps are infolded over said infolded second dust flap.

3. The carton of claim 1, further characterized in that

a. a membrane is sealed to said second dust flap only along inboard portions thereof.

4 The carton of claim 1, in which

a. a major portion of the bottom edge of said second side wall is defined by a horizontal line of severance.

5. A one-piece paperboard blank for an end-fillable carton adapted to be end sealed with a membrane of predetermined width, comprising

a. first side wall, front wall, second side wall, rear wall, and glue flap panels consecutively articulated along parallel. vertical score lines;

b. first and second dust flaps articulated to the ends of said side wall panels along first and second horizontal fold lines;

c. first and second end flaps articulated to the ends of said front and rear wall panels along horizontal score lines;

d. major portions of the side edges of said second side wall being defined by vertical lines of severance;

e. a pre-cut lift tab of less than full carton depth contiguous with said opening panel and defined within said second dust flap;

f. beveling lines of severance connecting the ends of said lift tab with said vertical lines of severance;

g. said end flaps having relieved portions adjacent said second dust flap; and

h. said relieved portions being sufficient to provide access to said lift tab when said second dust flap is infolded and said end flaps are infolded over said infolded second dust flap.

6. The blank of claim 5, further characterized in that

a. a major portion of said bottom edge of said second side wall is defined by a horizontal line of severance.

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