United States Patent

Young et al.

[15] **3,680,764**

[45] **Aug. 1, 1972**

[54] **OPENING ARRANGEMENT FOR DRUMHEAD CARTONS**

[72] Inventors: **Chauncey Young; William H. Watson,** both of St. Louis, Mo.

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

[22] Filed: **June 11, 1970**

[21] Appl. No.: **45,506**

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

[51] **Int. Cl.**.....**B65d 5/72,** B65d 5/56

[58] **Field of Search**.....229/17 R, 51 D, 517 S, 37, 229/14 BL, 14 BA

[56] **References Cited**

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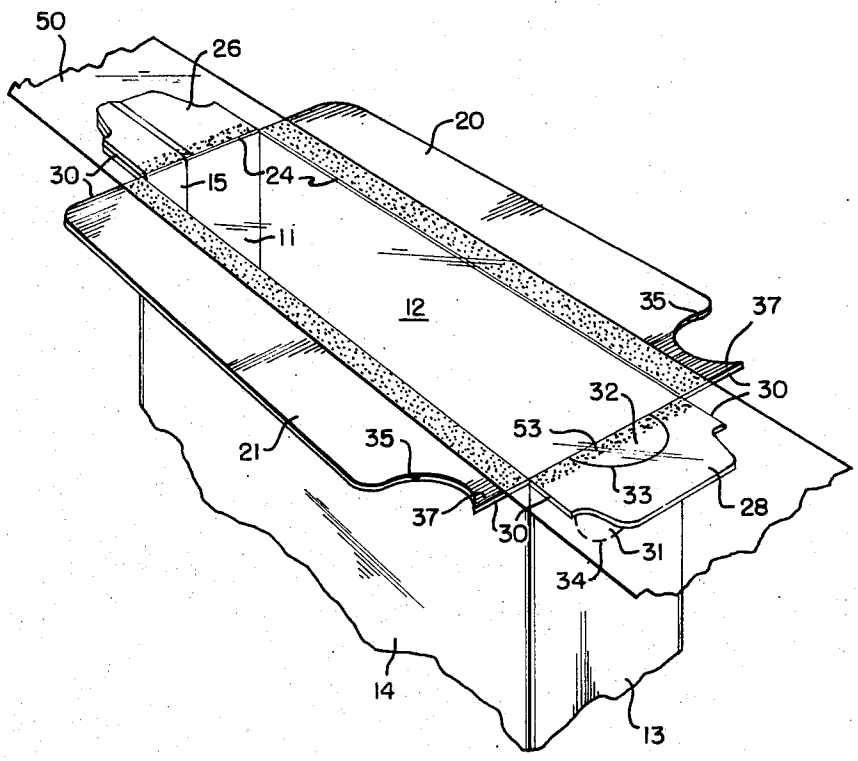
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Primary Examiner—George E. Lowrance
Assistant Examiner—Stephen Marcus
Attorney—Mandeville and Schweitzer

[57] **ABSTRACT**

An improved opening arrangement for dispensing the contents of a hermetically sealed drumhead carton is disclosed herein. A removable opening panel is included in the upper portion of a side wall, and its removal is facilitated by an integral lift tab formed in a contiguous dust flap. The lift tab is arranged and precut so that it may be readily grasped and removed along with the opening panel to provide a dispensing opening in the carton while leaving the drumhead completely intact. Where reclosing of the carton is necessary or desired, the opening panel may be appropriately hinged in the carton side wall, and the carton may be reclosed by tucking the lift tab adjacent the drumhead.

5 Claims, 7 Drawing Figures



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SHEET 1 OF 2

FIG. 1

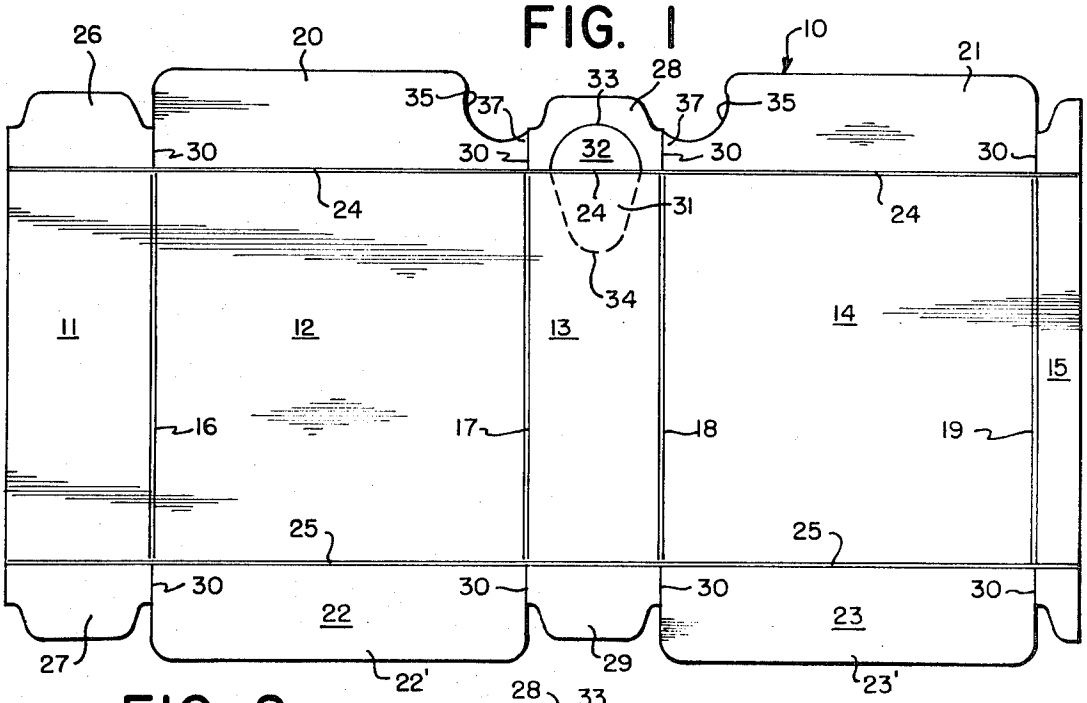
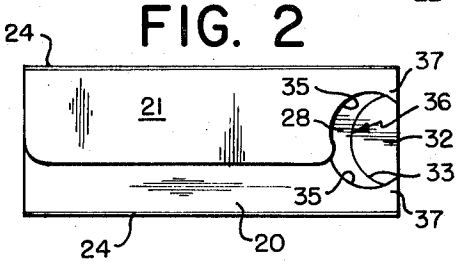


FIG. 2



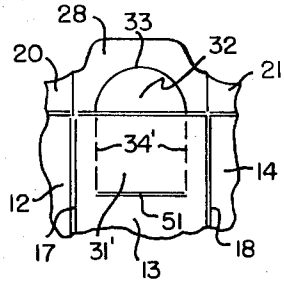


FIG. 4

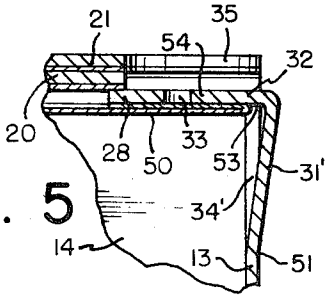
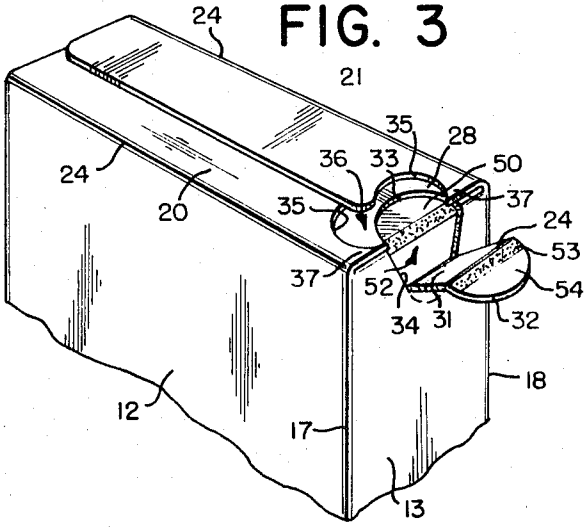


FIG. 5

FIG. 3



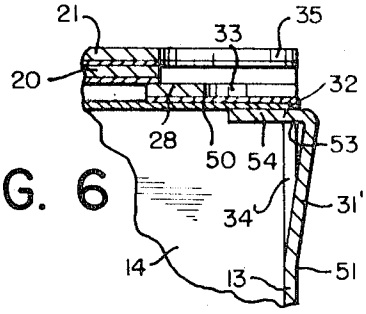


FIG. 6

INVENTOR.
CHAUNCEY YOUNG
WILLIAM H. WATSON

BY

Mandeville & Schweitzer

ATTORNEYS

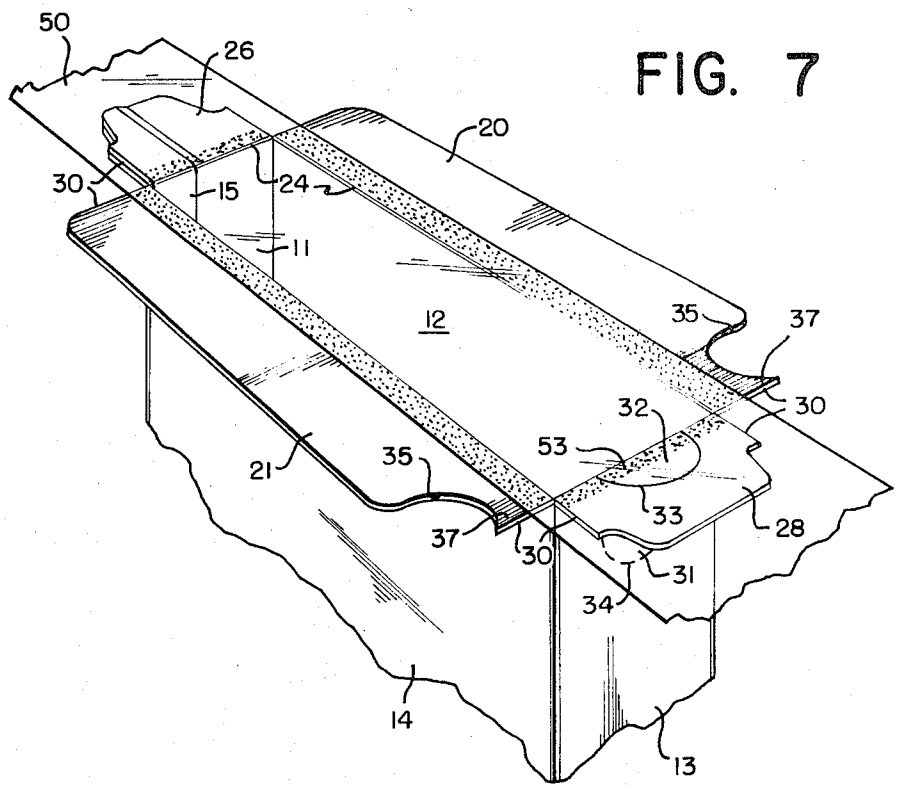


FIG. 7

INVENTORS
CHAUNCEY YOUNG
WILLIAM H. WATSON

BY
Mandeville & Schwartz
ATTORNEYS

OPENING ARRANGEMENT FOR DRUMHEAD CARTONS

BACKGROUND OF THE INVENTION

Many airtight, siftproof, and moistureproof paperboard carton constructions for liquid and pulverulent materials are formed from parallelepiped piped 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 without disturbing or disrupting the membrane. This is accomplished by removing an uppermost pre-scored portion of a side wall. The specific shape and construction of the opening panel is arranged to optimize the facility of its removal. More specifically, an integral pre-cut lift tab is included in the dust flap which is contiguous with the opening panel defined by lines of weakness which do not penetrate carton material and do not effect permeability. In this manner, a hermetically sealed carton may be 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 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 an end elevational view of a sealed carton embodying the principles of the invention;

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

FIG. 4 is a fragmentary representation of a drumhead carton blank similar to that shown in FIG. 1 but having a hinged opening panel for reclosing purposes;

FIGS. 5 and 6 are fragmentary cross-sectional views showing the manner in which a carton erected from the blank of FIG. 4 may be enclosed after opening; and

FIG. 7 is a perspective view of an end of the carton of the present invention showing a membrane applied to the carton 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, 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 principles of the present invention, an opening panel **31** having an integral lift tab **32** hinged thereto 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 panel portion **31** is defined by a generally U-shaped, non-penetrating, line of weakness **34**, the legs of which join the ends of the arcuate cut **33**. In addition, end flaps **20, 21** are appropriately cut back or relieved, as shown at **35**. The shape of the relieved edges **35** of the end flaps **20, 21** is sufficient to define an access opening **36** and reclosure fingers **37** (FIG. 2) when the flaps **20, 21** are subsequently infolded over the dust flap **28** in carton formation. The access opening **36** will expose all but the ends of the cut **33** for easy grasping by a consumer.

In accordance with the invention, an easily openable membrane end sealed carton 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 **22**, **23** are outfolded into a horizontal plane. Thereafter, the sealing or drumhead membrane **50** 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 **22**; and finally, suitably securing by adhesive or otherwise the outboard portion **22'** of the flap **22** to the outboard portion **23'** 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 **50** 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 opening panel **31** from the carton side wall **13** and defining a dispensing opening **52**. Since a portion of the membrane **50** 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 **50**, such delamination will be greatly facilitated and expedited by limiting the area of the lift tab which is heat sealed to the membrane **50**. 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 **50**. In this manner, and as will be appreciated, the lift tab **32** may be easily separated from the dust flap **28** and underlying membrane **50** to start the tear opening of the panel **31** along the score line **34**.

In some cases, it may be desirable to provide for a reclosing of the opening **52** formed by the separation of the opening panel **31** from the side wall **13**. Where such an arrangement is desired, the U-shaped line of weakness **34**, shown in FIG. **1**, is replaced by a modified U-shaped line of weakness defined by parallel lines of weakness **34'** (which do not penetrate the paperboard blank material) and a score line **51** definitive of a hinge line. As shown in FIGS. **5** and **6**, a reclosable opening panel **31'**, which is opened in the same manner as the panel **31** by grasping of the lift tab **32** and upward and outward movement thereof, may be reclosed by hinging the panel **31'** about the hinge line **51** and inserting the lift tab **32** beneath the drumhead membrane **50**, as shown in FIG. **6**, or by inserting the lift tab **32** above the membrane **50**, as shown in FIG. **5**. In either case, the lift tab **32** will be held in its reclosed position by the fingers **37**, as will be understood.

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 end 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 sealing membrane having parallel side edges;

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

f. an opening panel of less than full carton width defined within one of said side wall panels by a U-shaped line of weakness and an intermediate portion of said first hinge line;

g. a pre-cut lift tab contiguous with said opening panel and defined within one of said dust flaps;

h. said lift tab being hinged to said opening panel at an edge of said carton, defined by a score line;

i. said membrane being bonded to said lift tab in a narrow longitudinal zone extending adjacent to said score line; and

j. the portions of said lift tab remote from said score line being unbonded to said membrane;

k. whereby lifting of said tab effects the separation of said tab and said membrane at said narrow zone.

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

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

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

3. The carton of claim **1**, further characterized in that said membrane is sealed to said one of said dust flaps only along inboard portions thereof.

4. The carton of claim **2**, in which

a. said U-shaped line of weakness includes two tearable leg portions and a generally horizontal hinge line therebetween.

5. The carton of claim **4**, in which

a. said relieved portions define fingers in said end flaps;

b. said fingers being adapted to retain said lift tab when the same has been reinserted, after opening, in said carton adjacent said membrane to reclose said carton.

* * * * *