United States Patent [19]

Desmond et al.

[11] **3,899,124**

[45] **Aug. 12, 1975**

[54] **REINFORCED AUTOMATIC BOTTOM CLOSURE**

[75] Inventors: **John D. Desmond, Joseph J. Hart,** both of Philadelphia, Pa.

[73] Assignee: **Container Corporation of America,** Chicago, Ill.

[22] Filed: **Nov. 8, 1974**

[21] Appl. No.: **522,020**

[52] **U.S. Cl.** ..... **229/41 B;** 229/39 R

[51] **Int. Cl.**[2] **B65D 5/36**

[58] **Field of Search** ..... 229/41 R, 41 B, 39 R

[56] **References Cited**

UNITED STATES PATENTS

291,805	1/1884	Tatum	229/39 R
764,154	7/1904	Shotts	229/39 R X
1,808,772	6/1931	Ethridge	229/39 R
2,011,232	8/1935	Parks et al.	229/41 B X
2,659,526	11/1953	Buttery	229/39 R
2,666,566	1/1954	Mulnix	229/41 B X

FOREIGN PATENTS OR APPLICATIONS

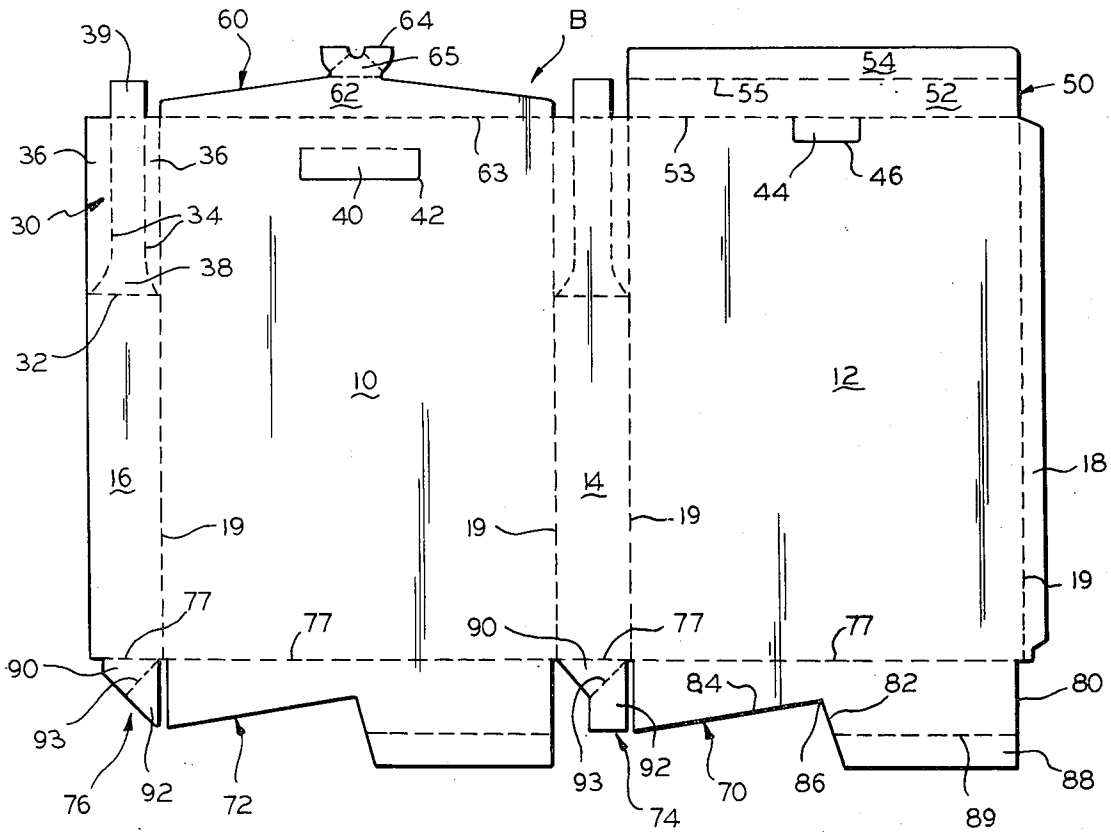
731,708	6/1955	United Kingdom	229/41 B

Primary Examiner—Davis T. Moorhead
Attorney, Agent, or Firm—Carpenter, Ostis & Lindberg

[57] **ABSTRACT**

A heavy-duty, collapsible carrying carton including an integral handle arrangement and an automatic self-erecting bottom closure arrangement with integral reinforcing means.

4 Claims, 2 Drawing Figures



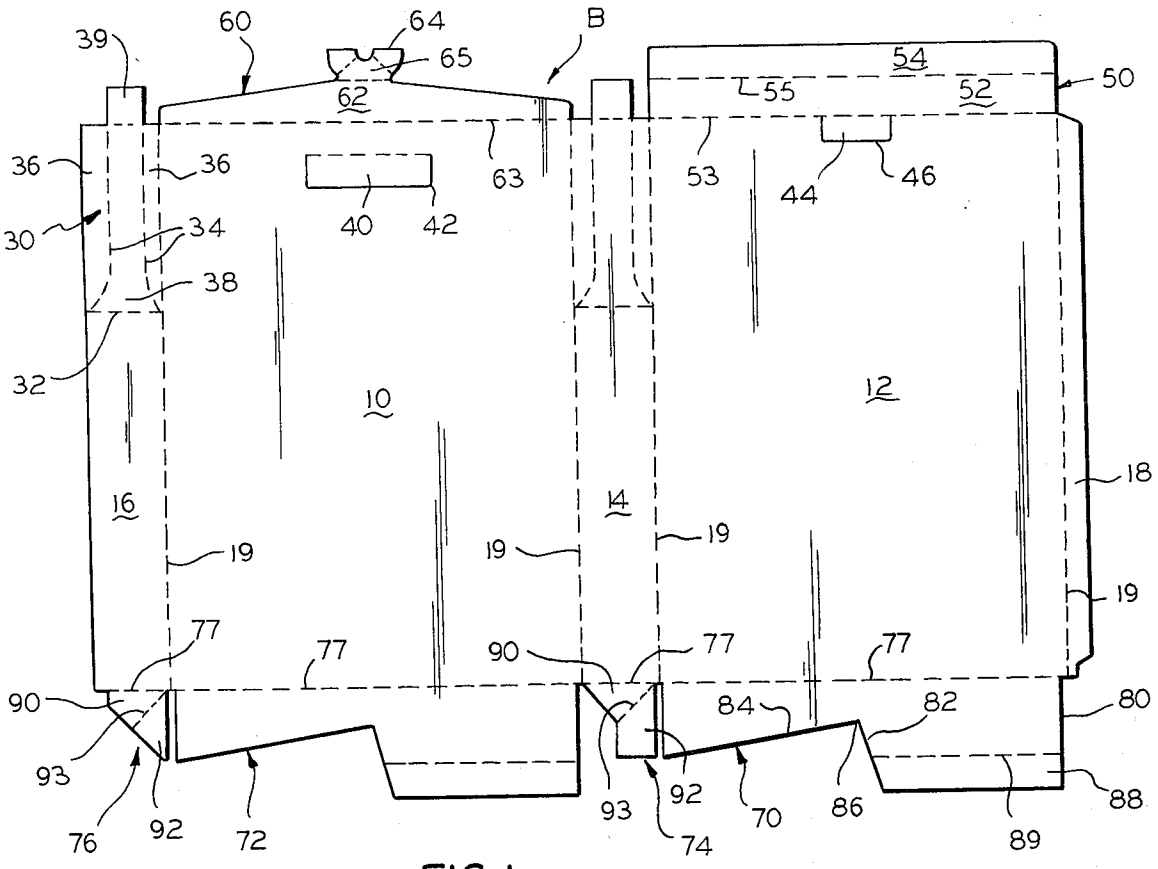

39
60
64
65
B
62
54
55
52
50
36
36
63
53
44
46
30
34
40
42
38
32
10
12
18
16
14
19
19
19
19
77
77
90
77
77
90
84
82
80
93
76
92
72
93
92
74
70
86
89
88

FIG. 1

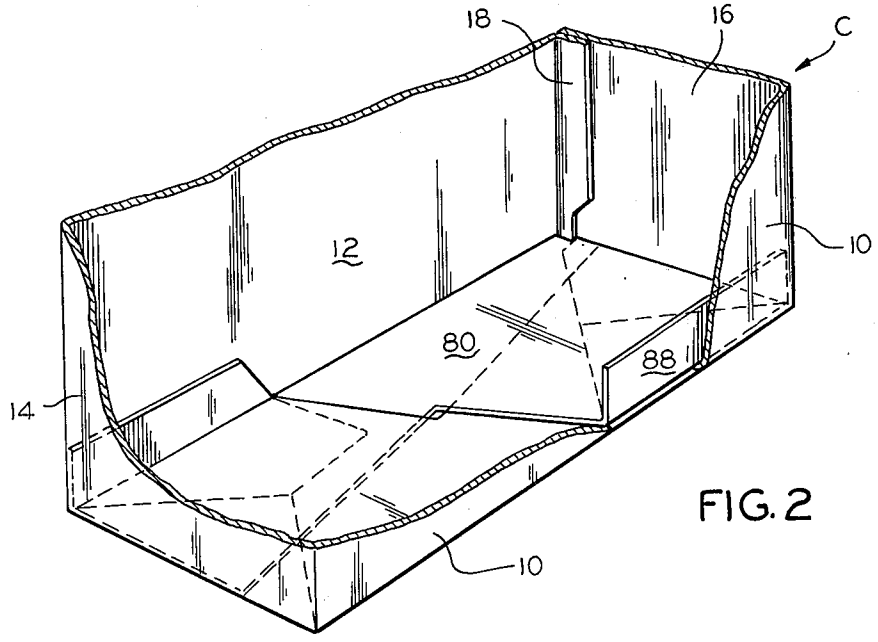

18
16
C
12
10
80
88
14
10

FIG. 2

REINFORCED AUTOMATIC BOTTOM CLOSURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to retail packages used for the same purpose as "shopping bags" which are available in retail department stores. The present invention is in the form of a heavy-duty folding carton, as distinguished from a conventional, flexible bag, and is provided with a reinforced automatic bottom.

2. The Prior Art

The prior art is exemplified in the following U.S. patents which were developed in a search:

Tatum	291,805	January 8, 1884
Ethridge	1,808,772	June 9, 1931
Parks et al	2,011,232	August 13, 1935
Neumann	2,017,724	October 15, 1935
Buttery	2,659,526	November 17, 1953
Bolding	3,283,950	November 8, 1966
Gadiel	3,455,498	July 15, 1969
Zeitter	3,690,543	September 12, 1972

SUMMARY OF THE INVENTION

The invention is directed to a collapsible, heavy-duty retail package-type of carton formed from a one-piece blank of foldable paperboard which has an integral handle structure at the top and a reinforced, self-erecting or automatic bottom closure arrangement.

THE DRAWING

FIG. 1 is a plan view of the blank from which a carton embodying features of the invention may be formed; and

FIG. 2 is a perspective view, with portions of the structure broken away, of the lower portion of the carton shown in an erected condition and illustrating the bottom closure arrangement which contains the essential features of the invention.

It will be understood that for purposes of clarity certain elements may have been intentionally omitted from certain views where they are believed to be illustrated to better advantage in other views.

Turning now to the drawing for a better understanding of the invention, and particularly to FIG. 1, it will be seen that the carton, indicated generally at C, is of a generally tubular construction with a top closure arrangement which includes handle means for carrying the carton and with a bottom closure arrangement which permits the carton to be erected automatically by the application of pressure against opposite corners of the carton. The essential features of invention reside in the bottom closure arrangement which represents an improvement over conventional, automatic bottom closures commonly found in the art of folding cartons.

The carton C, illustrated in FIG. 2, may be formed from a unitary blank of foldable paperboard, indicated generally at B in FIG. 1 of the drawing. The main portion or body of the carton includes a pair of opposed front and rear side walls **10** and **12**, a pair of opposed first and second end walls **14** and **16**, respectively, and a glue panel **18**, all of which are hingedly interconnected along parallel, vertical score lines **19** to form a tubular structure open at the top and bottom.

The upper portion of each of the end walls may be provided with a gusset section, indicated generally at **30**, and defined by a transverse score line **32** and a pair of vertical score lines **34** which flare outwardly at their lower ends where they join with the ends of horizontal score line **32** at the point where the latter meet related vertical score lines **19**. The horizontal and vertical score lines form a pair of side gusset panels **36** and a center gusset panel **38** which permit the gusset section **30** to be depressed when the carton is erected and closed to reduce the cross-sectional area at the upper end of the carton. If desired, center portions **38** may be provided with upwardly extending tabs **39** which assist in forming and closing the top of the carton as they are folded inwardly under the top closure panels.

Still referring to FIG. 1, it will be seen that front and rear side panels **10** and **12** may be provided with hand hold openings **40** and **44** which are defined by generally U-shaped cut lines **42** and **46**, respectively.

The top closure arrangement, which is described in greater detail in a copending application, Ser. No. 527,021, filed the same date as this application and by the same inventors, includes a pair of inner and outer top closure flaps indicated generally at at and **60**, which are hingedly attached of the upper edges of rear and front side walls **12** and **10**, respectively.

Top closure inner flap **50** includes a first section **52** hingedly attached to one edge to the upper edge and rear side wall **12** along a score line **53** and a second section **54** hingedly attached to the opposite edge of first section **52** along a score line **55**.

Top closure outer flap **60** includes a primary section **62** hingedly attached at one edge along score line **63** to the upper edge of front side wall **10** and having a lock tab **64** hingedly attached to its opposite edge along a score line **65**.

The bottom closure arrangement of the carton as seen in both FIGS. 1 and 2 includes a plurality of bottom closure flaps **70** **72**, **74** and **76** which are hingedly attached to the lower edges of front side wall **10**, rear side wall **12**, first end wall **14**, and second end wall **16**, respectively, along horizontal score lines **77**.

Bottom closure flaps **70** and **72** are preferably of similar construction and each includes a bottom panel **80** hinged at one edge to the lower edge of a related side wall on score line **77**. Each bottom panel **80** includes, at one end, a primary section **82**, which has a width equal to the width of the related end wall, and, at the other end, a secondary section **84** which decreases in width as it approaches the primary section at the center portion of the bottom panel where the primary section and secondary section join to form a preferably angular notch **86** adapted to meet with a corresponding notch in the bottom panel of the flap on the other side wall to provide interlocking engagement therebetween.

Bottom closure flaps **70** and **72**, also, each include a relatively narrow reinforcing panel **88** which is hingedly attached along score line **89** to the edge of the primary section **82** of the bottom panel which is opposite from and parallel to the edge attached to the related side wall. The purpose of the reinforcing panel is described later in the application.

Bottom closure flaps **74** and **76**, which are hingedly attached to first and second end walls **14** and **16**, respectively, each include a first panel **90** attached to the related end wall on score line **77** and a second panel **92** which is hingedly attached to the first portion along a score line **93** extending at an acute angle with respect to score line **77**.

When the carton is manufactured, the side walls, ends walls, and glue panel are folded into position and

glued to form a tubular structure open at the top. At the same time, the bottom closure flaps are each folded inwardly 180° in face-to-face relation with their respective side and end walls, with the second panels of each of the end wall bottom closure flaps being reverse folded on score lines **93** so as to lie in face-to-face contact with the first panels between said first panels and related bottom panels until the carton is erected. The second panels are adhesively secured to adjacent end portions of related side wall bottom closure flap bottom panels. Thus, although the carton may be shipped in a collapsed position, it may be easily erected by exerting pressure against diagonally opposed corners of the carton whereby the bottom closure flaps are pressed into a horizontal position with the side wall bottom closure flap bottom panel being interlocked by the interengagement of the respective notches **86.** It will be noted that when the carton is in erected position, the reinforcing flaps **88** are disposed to lie against the inner surfaces of the related side walls so as to reinforce the bottom panels, providing rigid bottom corners between the reinforcing panels **88** and the bottom panels **80.** The rigid corners so formed prevent or reduce the possibility of the bottom panels bowing outwardly or downwardly when the carton is filled thereby reinforcing the bottom closure arrangement and permitting the carton to be made from a lighter caliber of board than would be possible without the use of the reinforcing flaps.

After the carton has been set up and filled, the top of the carton may be closed by first folding in the tabs **39,** then folding the inner closure flap over the top of the carton with the second section being tucked in behind the front side wall, and then the outer closure flap folded over the inner closure flap with lock tab **64** being inserted into opening **50** which serves the dual purpose of a hand hold and opening for the lock tab.

We claim:

1. In a heavy-duty, collapsible carrying carton adapted to be brought from a collapsed condition to an erected condition by the application of pressure against two diagonally opposed corners thereof and being formed from a unitary blank of foldable paperboard, the combination of:

a. opposed pairs of major and minor side walls hingedly interconnected to form a tubular structure open at the top and bottom;

b. at least one of said major side walls including handle means for grasping and carrying the carton;

c. top and bottom closure means for closing the top and bottom of the carton;

d. said bottom closure means including opposed first and second pairs of closure flaps associated with said pairs of major and minor side walls, respectively;

e. said closure flaps of said first pair each including:

i. a flat, unscored, bottom panel hingedly attached at one edge to a lower edge of a related major side wall and presenting in a medial area thereof a recess adapted to interlock with a corresponding recess in the bottom panel of the other closure flap of said first pair when the carton is in erected condition;

ii. a reinforcing side panel hingedly attached to said bottom panel, at an edge parallel to and opposite from the edge of the bottom panel which is hinged to a major side wall, and disposed to lie against the inner surface of the opposed major side wall when the carton is in an erected condition;

f. said closure flaps of said second pair each including:

i. a first panel section hingedly attached at one edge to a lower edge of a related minor side wall;

ii. a second panel section hingedly attached to said first panel section and in fold-back relation therewith, when said carton is in a collapsed condition;

iii. said second panel section being secured to an adjacent bottom panel and interposed between said first panel section and said bottom panel when the carton is in a collapsed condition.

2. In a heavy-duty, collapsible carton adapted to be brought from a collapsed condition to an erected condition by the application of pressure against two diagonally opposed corners thereof and being formed from a unitary blank of foldable paperboard, the combination of:

a. opposed pairs of major and minor side walls hingedly interconnected to form a tubular structure open at the top and bottom;

b. top and bottom closure means for closing the top and bottom of the carton;

c. said bottom closure means including opposed first and second pairs of closure flaps associated with said pairs of major and minor side walls, respectively;

d. said closure flaps of said first pair each including:

i. a flat, unscored, bottom panel hingedly attached at one edge to a lower edge of a related major side wall and presenting in a medial area thereof a recess adapted to interlock with a corresponding recess in the bottom panel of the other closure flap of said first pair when the carton is in erected condition;

ii. a reinforcing side panel hingedly attached to said bottom panel at an edge parallel to and opposite from the edge of the bottom panel which is hinged to a major side wall, and disposed to lie against the inner surface of the opposed major side wall when the carton is in an erected condition;

e. said closure flaps of said second pair each including:

i. a first panel section hingedly attached at one edge to a lower edge of a related minor side wall;

ii. a second panel section hingedly attached to said first panel section and in fold-back relation therewith, when said carton is in a collapsed condition;

iii. said second panel section being secured to an adjacent bottom panel and interposed between said first panel section and said bottom panel when the carton is in a collapsed condition.

3. In a heavy-duty, collapsible carrying carton adapted to be brought from a collapsed condition to an erected condition by the application of pressure against two diagonally opposed corners thereof and being formed from a unitary blank of foldable paperboard, the combination of:

a. opposed pairs of major and minor side walls hingedly interconnected to form a tubular structure open at the top and bottom;

b. top and bottom closure means for closing the top and bottom of the carton;

c. said bottom closure means including opposed first and second pairs of closure flaps associated with said pairs of major and minor side walls, respectively;

d. said closure flaps of said first pair each including:

i. a bottom panel hingedly attached at one edge to a lower edge of a related major side wall and presenting in a medial area thereof a recess adapted to interlock with a corresponding recess in the bottom panel of the other closure flap of said first pair when the carton is in erected condition;

ii. a reinforcing side panel hingedly attached to said bottom panel, at an edge parallel to and opposite from the edge of the bottom panel which is hinged to a major side wall, and disposed to lie against the inner surface of the opposed major side wall when the carton is in an erected condition;

e. said closure flaps of said second pair each including a panel hingedly attached at one edge to a lower edge of a related minor side wall and secured to an adjacent bottom panel.

4. In a heavy-duty, collapsible carrying carton adapted to be brought from a collapsed condition to an erected condition by the application of pressure against two diagonally opposed corners thereof and being formed from a unitary blank of foldable paperboard, the combination of:

a. opposed pairs of major and minor side walls hingedly interconnected to form a tubular structure open at the top and bottom;

b. top and bottom closure means for closing the top and bottom of the carton;

c. said bottom closure means including opposed first and second pairs of closure flaps associated with said pairs of major and minor side walls, respectively;

d. said closure flaps of said first pair each including:

i. a bottom panel hingedly attached at one edge to a lower edge of a related major side wall and presenting in a medial area thereof a recess adapted to interlock with a corresponding recess in the bottom panel of the other closure flap of said first pair when the carton is in erected condition;

ii. a reinforcing side panel hingedly attached to said bottom panel, at an edge parallel to and opposite from the edge of the bottom panel which is hinged to a major side wall, and disposed to lie against the inner surface of the opposed major side wall when the carton is in an erected condition;

e. said closure flaps of said second pair each including a side panel hingedly attached at one edge to a lower edge of a related minor side wall;

f. a pair of panel sections each of which is hingedly attached to one of related side panel and bottom panel and being secured to the other of said panels and interposed between said related panels when the carton is in a collapsed condition.

* * * * *