United States Patent [19]

Burgess et al.

[11] **3,820,710**

[45] **June 28, 1974**

[54] **BREAK-AWAY HANDLE**

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[73] Assignee: **Domtar Limited,** West Montreal, Canada

[22] Filed: **Sept. 18, 1972**

[21] Appl. No.: **290,251**

[52] **U.S. Cl.** ..... **229/52 B,** 206/166

[51] **Int. Cl.** **B65d 5/46,** B65d 25/28

[58] **Field of Search** ..... 229/52 B, 52 BC, 52 A; 220/104, 105

[56] **References Cited**

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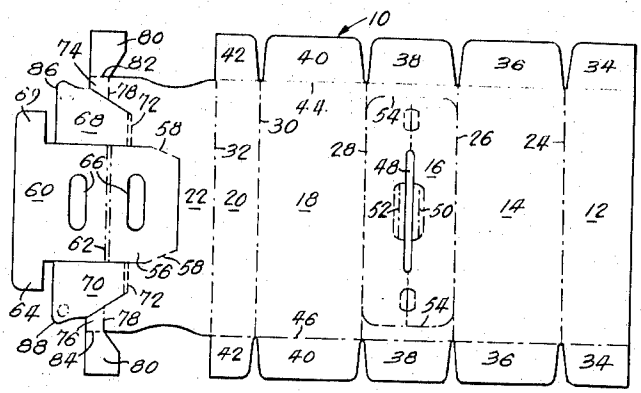
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Primary Examiner—William I. Price
Assistant Examiner—Stephen P. Garbe
Attorney, Agent, or Firm—Cecil A. Rowley

[57] **ABSTRACT**

A one piece carton is described having a central divider with a handle formed of two foldably interconnected parts. The handle is detachably connected to the partition by frangible lines of weakness and is retained in position by a pair of flaps integrally, foldably connected to the partition and overlying lateral flanges of the handle to trap the handle between the flaps and the partition.

7 Claims, 11 Drawing Figures



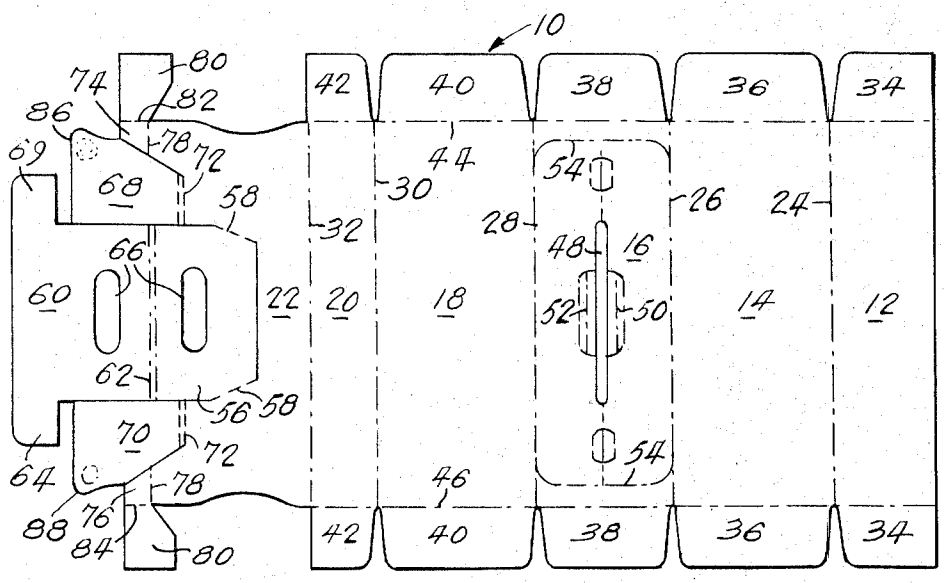


FIG. 1

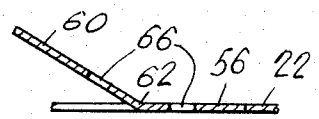


FIG. 2

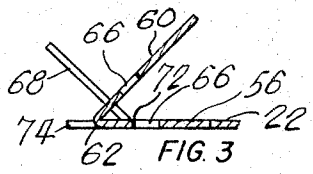


FIG. 3

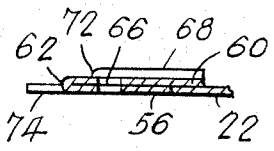


FIG. 4

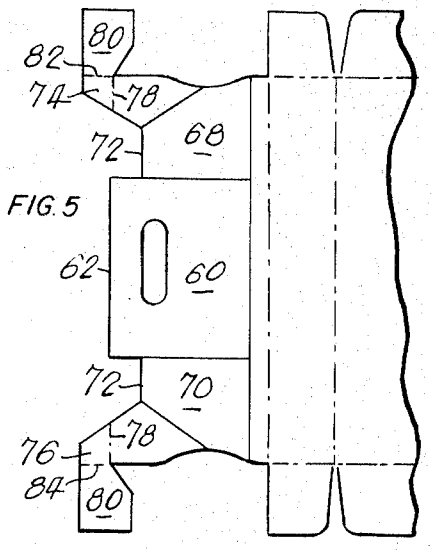


FIG. 5

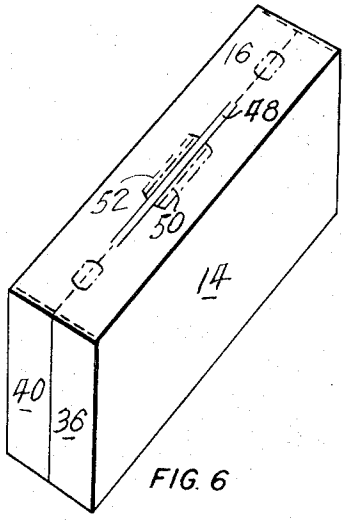


FIG. 6

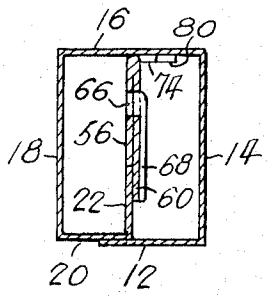


FIG. 7

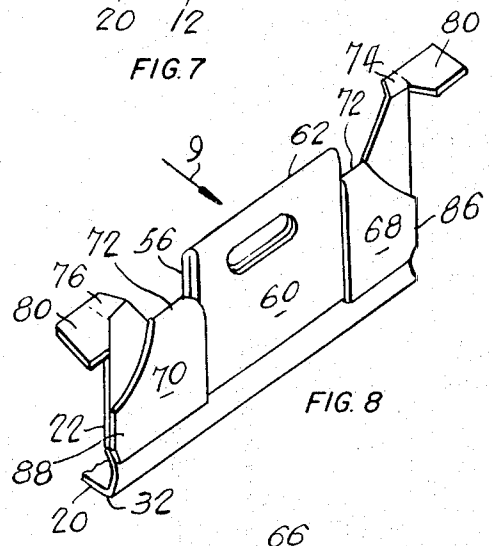


FIG. 8

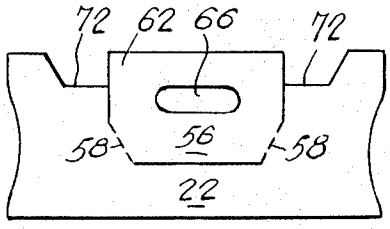


FIG. 9

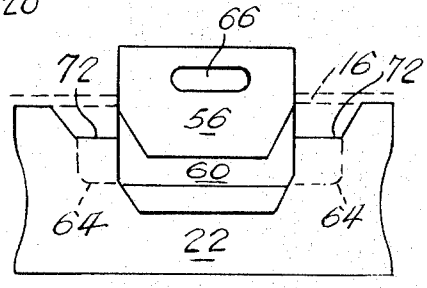


FIG. 10

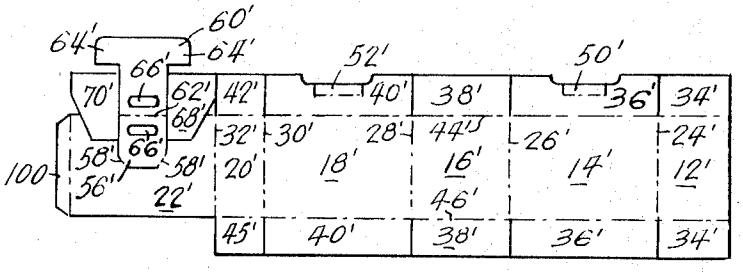


FIG. 11

BREAK-AWAY HANDLE

FIELD OF THE INVENTION

The present invention relates to a carton, more specifically the present invention relates to a carton formed from a single blank and incorporating a slide-up handle.

DESCRIPTION OF THE PRIOR ART

There are many end-load cartons on the market and many of these cartons incorporate handle features to facilitate carrying of the carton whether full or empty. Some of the commercial cartons incorporate handles that are torn from the top of the carton and others simply provide hand holes in the side of the carton together with extra reinforcing to strengthen the carton in the area of the hand hole and permit carrying both before and after the carton has been opened.

It has also been proposed to provide end-load partition cartons incorporating sliding handles. One such carton is shown, for example in Canadian Pat. No. 872,656, issued June 8, 1971 to Bathurst Paper Limited. Another carton is shown in Canadian Pat. No. 737,787, issued July 5, 1966 to MacMillan Bloedel and Powell River Limited, each of these cartons, however, incorporate essentially a double partition panel with a handle secured therebetween. Each of these cartons requires a considerable amount of board and thus would be relatively expensive to manufacture.

SUMMARY OF THE INVENTION

It is thus the object of the present invention to provide a carton construction providing a sliding-type handle while requiring relatively little extra board.

Broadly, the present invention comprises a carton incorporating a partition panel extending between the top and bottom panels and having a handle reinforcing member formed therein by lines of severance and frangible lines of weakness, a handle is integrally, foldably connected to the top edge of the handle reinforcing member by a fold line and a pair of retaining flaps foldably connected to the partition by a pair of fold lines located one on each side of the handle reinforcing member and spaced from the top edge of the handle reinforcing member toward said bottom.

BRIEF DESCRIPTION OF THE DRAWING

Further features, objects and advantages will be evident from the following detailed description of a preferred embodiment of the present invention taken in conjunction with the accompanying drawings in which:

FIG. **1** is a plan view of the preferred blank forming the present invention,

FIG. **2** is a sectional view indicating the first step in folding to form the handle,

FIG. **3** is a view similar to FIG. **2** but showing the second step in the folding sequence,

FIG. **4** shows the handle formed and secured in position relative to the partition,

FIG. **5** is a plan view of the blank folded to the stage indicated in FIG. **4**,

FIG. **6** is an isometric view of a closed carton constructed in accordance with the present invention,

FIG. **7** is a sectional view through the carton of FIG. **6**,

FIG. **8** is an isolated view of the partition with the handle formed thereon,

FIG. **9** is a view of the partition in isolation looking in the direction of the arrow **9** in FIG. **8**,

FIG. **10** is a view similar to FIG. **9** but showing the handle and handle reinforcing member in extended operative position, and

FIG. **11** is a plan view of a modified blank for forming a top-load carton incorporating the handle structure of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The blank **10** is, for the most part, a conventional end-load carton blank for forming a partition carton of a figure eight configuration. The blank comprises in seriatim, from right to left on the blank, a first partial bottom panel **12**, a first side wall panel **14**, a top wall panel **16**, a second side wall panel **18**, a second partial bottom wall panel **20**, and a partition panel **22** foldably interconnected by a set of fold lines **24, 26, 28, 30** and **32** respectively. End closure flaps **34, 36, 38, 40** and **42** are connected to opposite ends of the panels **12, 14, 16, 18** and **20** respectively by parallel fold lines **44** and **46.**

The top panel **16** is provided with an access opening **48** to permit the top part of the handle to slide therethrough. On each side of the access opening **48** are a pair of flaps **50** and **52** foldably connected to the top panel and bendable inwardly to permit gripping of the top of the handle for withdrawing same to operative position. The top panel **16** is also provided with frangible lines of weakness as indicated at **54**, for example to permit opening of the carton and access to its contents. Any suitable opening features may be incorporated into the box as long as movement of the handle to its operative position is permitted and the box is compatible with filling and decasing equipment.

The box as described hereinabove is essentially a conventional box structure as used in partitioned end-load boxes of the figure eight design. The main features of the invention will now be described.

The partition panel **22** has a handle reinforcing member **56** formed therein and connected thereto by a pair of opposed lines of weakness **58**, there being one such line of weakness extending along at least a portion of each side of the reinforcing member **56.** These frangible lines of weakness **58** preferably extend at a large angle to the set of fold lines **24, 26, 28, 30** and **32,** rather than parallel to these fold lines, to facilitate separation of the reinforcing member from the partition **22,** i.e., so that the interconnections will fail in shear as opposed to tension.

A handle member **60** is foldably connected to the end of the reinforcing member **56** remote from the fold line **32** by means of fold lines **62** substantially parallel to the fold line **32.** This handle member **60** is provided with lateral flanges **64** to limit the movement of the reinforced handle relative to the partition in a manner to be described hereinbelow.

The reinforcing member **56** and handle member **60** are each provided with hand holes **66** which align in the folded carton to provide a gripping handle.

Retaining flaps **68** and **70** are foldably connected to the partition panel **22** and a pair of fold lines **72.** These retaining flaps **68** and **70** are located one on each side of the handle reinforcing member **56** and handle **60**

and are adapted to be folded over the lateral flanges **64** to retain the handle in position between the partition **22** and the retaining flaps **68** and **70** as will be described hereinbelow.

Glue flaps **74** and **76** are foldably connected to the partition panel **22** along a fold line **78.** These glue flaps **74** and **76** are positioned laterally of the retaining flaps **68** and **70.** Glue tab **80** is foldably connected to each of the flaps **74** and **76** by fold lines **82** and **84** respectively. These glue tabs may, if desired, be omitted.

It will be noted that the fold lines **24, 26, 28, 30, 32, 62, 72** and **78** are all substantially parallel. It is to be further noted that the fold line **72** foldably connecting the retaining flaps **68** and **70** to the partition panel **22** is located between the fold line **62** connecting the handle **60** to the handle reinforcing member **56** and the fold line **32** connecting the partition **22** to the bottom panel **20.** This positioning of the fold line **72** relative to the fold lines **62** and **32** is important to the operation of the invention.

The distance between the fold line **62** and the adjacent edges of the flanges **64,** and the distance between the fold lines **72** and the free edges of the flaps **68** and **70** remote from the fold line **72,** together with the distance between the fold lines **62** and **72,** must be coordinated so that on folding the blank at least a portion of each of the flaps **68** and **70** overlies at least a portion of the lateral flanges **64** on the handle **60** to ensure that the handle **60** is trapped in position between the partition **22** and the flaps **68** and **70** while providing no obstruction to prevent the sliding of the flanges **64** between the flaps **68** and **70** and the partition **22** except the limiting stop formed by the fold line **72** as will be described hereinbelow.

The carton is formed from the blank **10** in the following manner. First, the handle **60** is folded on the fold lines **62** as shown in FIG. **2.** Next, the flaps **68** and **70** are folded relative to the partition **22** on fold lines **72** as shown in FIG. **3.** The folding of the flaps **68** and **70** may be iniatiated before the completion of the folding of the handle member **60.** The handle member **60** is folded into face-to-face relationship with the handle reinforcing member **56** and preferably is secured to the handle reinforcing member by suitable patches of adhesive applied either to the handle **62** or to the handle reinforcing member **56** in their areas of contact. The flaps **68** and **70** are folded into overlying relationship with respect to the flanges **64** and the lateral ends **86** and **88** which extend beyond the ends of the flanges **64** are secured by suitable adhesive means to the partition **22** (see FIGS. **4** and **8**).

Folding the handle **60** and the flaps **68** and **70** as described above places the handle **60** in face-to-face contact with the partition panel **22** and traps the handle **60** in position relative to the partition **22** by the overlap of the flaps **68** and **70** with the lateral flanges **64.**

After the handle member **60** has been trapped in position between the flaps **68** and **70** and the partition panel **22,** the remainder of the box may be manufactured using the conventional folding techniques as used in the manufacture of any conventional figure eight type end-load container, namely by folding along fold line **30** to position the flaps **74** and **76** and the glue tabs **80** in contact with the top panel **16** and the top end flaps **38** respectively thereby to secure the partition in position relative to the top panel, followed by folding along fold line **26** so that the end of the panel **12** remote from fold line **24** overlaps the bottom panel **20** and is adhesively secured thereto. The fold lines **82** and **84** are positioned relative to the fold lines **44** and **46** respectively so that the flaps **38** with the tabs **80** adhesively secured thereto can be folded into a position substantially perpendicular to the top panel **16.**

To operate the present invention, the flaps **50** and **52** are folded inwardly by inserting the fingers and the thumb to grip the top edge of the handle **60** and handle reinforcing member **56** and then these members are pulled out through the top of the carton. This pulling action severes the frangible lines of connection **58** to free the handle **60** and handle reinforcing member **56** which are secured together to form a handle for sliding movement relative to the partition (see FIGS. **9** and **10**). After the frangible lines of connection **58** have been broken, the combined handle member **60** and handle reinforcing member **56** are free to slide until the top edges of the flanges **64** engage the fold line **72** which prevents any further movement of the handle. In this position the hand hole **66** is above the top panel **16** (shown in dotted lines in FIG. **10**) so that one may insert the hand through the hand hole **66** and carry the carton.

Referring now to FIG. **11,** a top load carton incorporating a similar handle structure to that shown hereinabove with respect to FIGS. **1** to **10** inclusive is shown. In the FIG. **11** embodiment similar elements to those in the FIGS. **1** to **10** embodiment have been designated by the same reference numeral followed by *a'*. The main difference between the FIG. **11** and FIG. **1** embodiments is that the flaps **34', 36', 38', 40'** and **42'** form the top and bottom of the carton and the handle reinforcing member **56'** and handle member **60',** together with the fold line **72'** are positioned on the partition panel **22'** turned through 90° relative to the arrangement shown in FIG. **1.** Also, the partition panel **22'** is provided with a glue flap **100** which replaces the glue flaps **74** and **76** and the tabs **80** of the FIG. **1** embodiment.

The carton of FIG. **11** embodiment is set-up in substantially the same manner as the blank of FIG. **1** except that some of the folds are made perpendicular to the others. First the handle **60'** is folded over on the fold line **62'** to a position overlying the handle reinforcing member **56'** and the partition panel **22'** followed by folding over of the flaps **68'** and **70'** on the fold line **72'** in the same manner as the flaps **68** and **70** were folded relative to the handle **60** in the previous embodiment. When the flaps **68'** and **70'** are secured in position on the partition panel **22',** the remainder of the box is formed in the conventional manner by folding along fold line **30'** so that the glue flap **100** overlies the panel **16'** and is secured thereto followed by folding along the fold line **26'** so that the panel **12'** overlies the panel **20'** and is secured thereto. In this manner a knocked-down box having a longitudinal partition but being provided with top closure flaps instead of end closure flaps is provided.

It will be noted that in the FIG. **11** embodiment, the flaps **36'** and **40',** forming the top of the carton, are provided with cut-out areas **48'** and flaps **50'** and **52'** respectively to facilitate engagement of the handle **60'** so that it may be torn from the partition panel **22'** to its extended position in the same manner as the handle **60** is operated in the FIGS. **1** to **10** embodiment. In the final structure, a partition panel with its attached han-

dle reinforcing member and retaining flaps will be essentially the same whether a top-load carton or an end-load carton is produced.

Modifications may be made while not departing from the spirit of the invention as defined in the appended claims.

We claim:

1. A carton blank comprising in seriatim, a first partial wall forming panel, a side panel, a wall panel, a second side panel, a second partial wall forming panel, and a partition panel foldably interconnected by a set of substantially parallel fold lines, a handle reinforcing member integral with and secured to said partition panel by frangible lines of weakness, a handle member foldably connected to said handle reinforcing member by a fold line connection substantially parallel to said set of said fold lines, said handle member having a pair of laterally projecting flanges, a pair of retaining flaps foldably connected to said partition panel and positioned one on each side of said handle reinforcing member, the foldable connections between said pair of flaps and said partition panel being substantially parallel to said set of fold lines and being positioned relatively between said foldable connection between said handle reinforcing member and said handle member and the end of said partial panel remote from said handle member.

2. A carton blank as defined in claim **1** wherein said frangible lines of weakness extend substantially perpendicular to said set of parallel fold lines.

3. A carton blank as defined in claim **1** wherein said flaps extend laterally of said reinforcing handle member and said handle member by a distance greater than the lateral extent of said flanges.

4. A carton blank as defined in claim **1** wherein said flaps extend from their foldable connections to their free end remote from said foldable connections a distance that is correlated with the length of said handle member from said fold line connection to its free end remote from said fold line connections and the spacing between said fold line connection and said foldable connection so that the distance between the free ends of said flaps and the adjacent edge of said lateral flanges is less than the spacing between said fold line connection and said foldable connection.

5. A carton comprising a bottom wall, top wall, side walls, end walls and a partition panel extending between said top and bottom walls, said partition panel having a handle reinforcing member defined therein by lines of severance and frangible lines of weakness, "said lines of weakness extending substantially perpendicular to said bottom wall," a handle member integrally foldably connected to the top edge of said handle reinforcing member and secured in face-to-face relationship with said handle reinforcing member, said handle member having a pair of laterally projecting flanges, a pair of retaining flaps foldably integrally connected to said partition by a pair of fold lines located one on each side of said handle reinforcing member and spaced from the top edge of said handle reinforcing member towards said bottom wall, each of said flaps overlying one of said flanges and being secured to said partition panel to trap said flanges between said partition panel and said flaps while permitting relative sliding movement between said handle member and said partition panel when said frangible lines of weakness are broken.

6. A carton as defined in claim **5** wherein said partition panel is integrally foldably connected to a panel forming part of one of said end walls and is secured by a flap means to the other of said end walls wherein said top wall is formed by closure flaps connected to said side and end walls.

7. A carton as defined in claim **5** wherein said partition panel is integrally, foldably connected to a panel forming a portion of said bottom wall, flap means on the end of said partition panel remote from said integral foldable connection, said flap means being secured to said top wall.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,820,710 Dated June 28, 1974

Inventor(s) Norman E. Burgess et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 5, line 26, "partial" should read
-- partition --.

Column 6, lines 11 and 12, cancel the quotation marks before "said" and after "wall,".

Signed and sealed this 17th day of December 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents