United States Patent [19]

Akkerman

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[45] **Aug. 7, 1973**

[54] **CARTON**

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

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[30] **Foreign Application Priority Data**

May 10, 1971 Canada 112,539

[52] **U.S. Cl.** ..... **229/52 BC,** 220/105, 229/51 TS

[51] **Int. Cl.** **B65d 5/46**

[58] **Field of Search** ..... 229/52 BC, 52 B, 229/40, 51 TS; 220/102, 105

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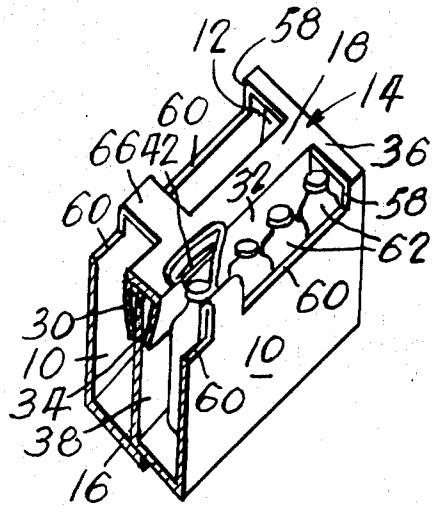
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Primary Examiner—Davis T. Moorhead
Attorney—C. A. Rowley

[57] **ABSTRACT**

A carton is formed having a longitudinally extending reinforcing beam formed by an elongated reinforcing panel defined in the top of the carton and by a central partition panel secured to the elongated reinforcing panel. Flaps are provided on opposite sides of the reinforcing panel to extend across the top of the carton and part-way down the side walls thereby to facilitate opening of the carton and withdrawal of the contents.

9 Claims, 11 Drawing Figures



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SHEET 1 OF 2

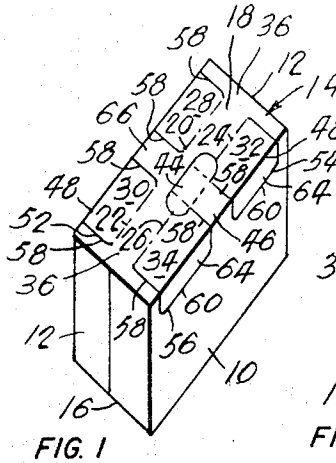


FIG. 1

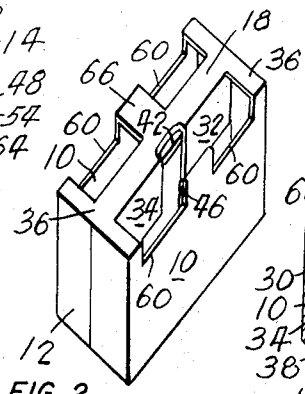


FIG. 2

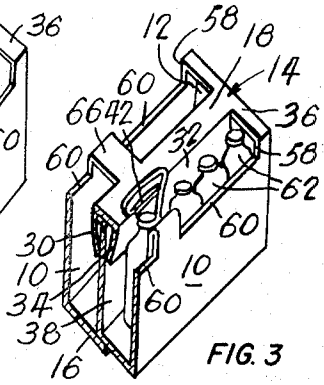


FIG. 3

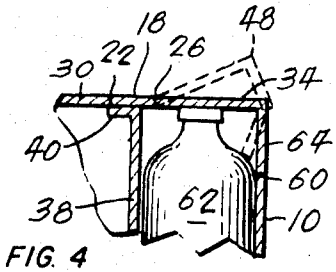


FIG. 4

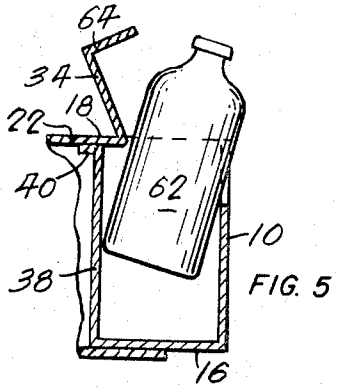


FIG. 5

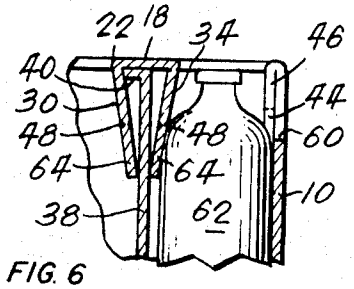


FIG. 6

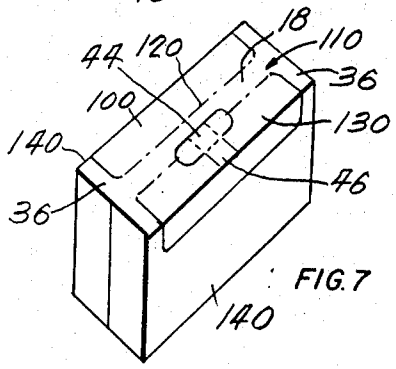


FIG. 7

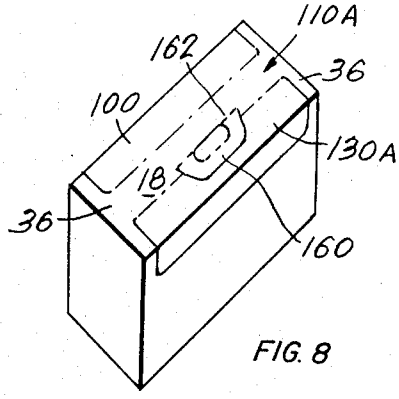


FIG. 8

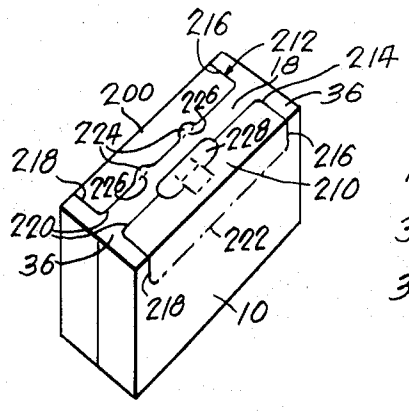


FIG. 9

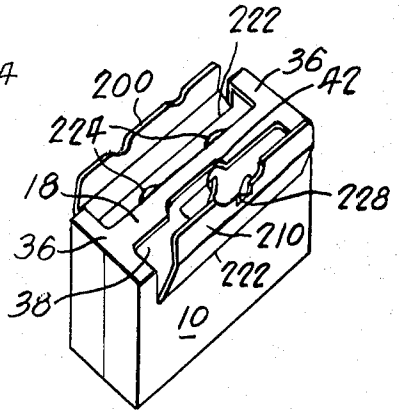


FIG. 10

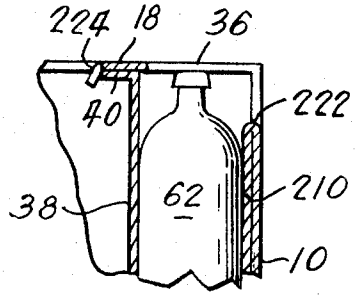


FIG. 11

CARTON

FIELD OF THE INVENTION

The present invention relates to a carton for bottles, more particularly the present invention relates to opening of cartons while maintaining a relatively strong beam reinforcing the carton and the handle and providing a convenient serving tray.

DESCRIPTION OF THE PRIOR ART

With bottled beer it is conventional practice to package the bottles in a carton having a handle to facilitate carrying of the carton in closed or open position, i.e. when the bottles are full or when they are being returned empty. Thus, care must be taken to ensure that opening of the carton does not unduly weaken the carton or the handle and thus make it difficult to return the empty bottles. This has not been a particular problem with respect to top loading cartons, in particular the type wherein the handle is formed within a centrally extending envelope and slides out of the carton into an operative position. It becomes more of a problem with end load cartons that do not have top closure flaps thereby necessitating that the top panel be torn in some manner to permit access through the top of the container.

SUMMARY OF THE INVENTION

It is the object of the present invention to provide an improved opening arrangement for a carton wherein a reinforcing beam is maintained across the centre of the carton after the carton has been opened.

In the majority of end load type cartons, access to the carton contents is obtained by tearing off the top wall and in some cases part of the end walls are also torn. In addition to weakening the carton as above described, this type of opening feature results in an unsightly package after opening.

A further object of the present invention is to provide a carton which when open maintains its neat appearance and provides a convenient server.

Broadly, the present invention compises a carton having a top panel, side panels, a central longitudinally extending panel, a pair of opening panels formed one on each side of said top panel, each said opening panel extending part-way down its adjacent of said side panels and part-way across said top panel, each said opening panel being foldably connected to said top panel by a fold line extending substantially longitudinally of said carton and positioned between its adjacent said side wall and the longitudinally extending reinforcing panel between said fold lines and overlying and secured to said partition panel to form with said partition panel a reinforcing beam extending longitudinally of the carton.

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 when taken in conjunction with the accompanying drawings in which:

FIG. 1 is an isometric view of a carton incorporating the present invention,

FIG. 2 is an isometric view of the carton of FIG. 1 having been opened and emptied,

FIG. 3 is a partial sectional isometric view illustrating the carton partially filled so that it may be used to serve beverages,

FIG. 4 is a partial cross-section of the carton illustrating the steps in opening of the carton,

FIG. 5 is a partial cross-section of the carton showing the withdrawal of a bottle from the carton to illustrate the position of the reinforcing panel and the top edge of the side wall of an opened carton,

FIG. 6 is a partial sectional view illustrating an opened bottle retained in the carton,

FIG. 7 is an isometric illustration of a further embodiment of the present invention,

FIG. 8 is an isometric view showing the present invention applied to a different type of container,

FIG. 9 is an isometric view illustrating a preferred embodiment of the present invention,

FIG. 10 is an isometric view of the carton of FIG. 9 showing same open to permit access to the contents, and

FIG. 11 is a partial cross-section similar to the cross-section shown in FIG. 6 but illustrating the carton of FIGS. 9 and 10.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The carton shown in FIG. 1 is a conventional end load type carton provided with a central partition **38** (see FIGS. **3, 4, 5** or **6**) and having a pair of side walls **10**, a pair of end walls **12**, a top wall **14**, and a bottom wall **16**. The end walls normally are formed by flaps connected to the top, bottom and side walls.

The top wall **14** has an elongated longitudinally extending central reinforcing panel **18** formed therein (see FIGS. **1, 2** and **3**) by longitudinally extending fold lines **20, 22, 24** and **26** which foldably connect the opening flaps **28, 30, 32** and **34** respectively to the top panel **14**. The opposite ends of the elongated panel **18** terminate in transverse reinforcing panels **36**, there being one such panel at each end of the carton. These panels **18** and **36** combine to form a substantially I-beam configuration in the top of the carton with the panel **18** forming the web and the panels **36** the flanges.

Partition panel **38** extends longitudinally of the carton directly beneath the longitudinal panel **18** and is preferably secured to this panel by any suitable means such as flap **40** which may be glued to the underside of the panel **18** (see FIGS. **3, 4, 5** and **6**). Preferably the fold lines **20** and **22** will be parallel to and substantially aligned with the free edge of the glue flap **40**. It will be noted that a substantially T-shaped beam is provided by the partition panel **38** and the elongated longitudinally extending reinforcing panel **18** both in the closed and open positions of the carton (see FIGS. **3** and **6**).

In the FIGS. **1** to **6** embodiment a hand hole **42** is provided in the central partition **38** and access to this hand hole is obtained by pressing the protective panels generally indicated at **44** into the carton to form an access opening to permit one to reach in and engage the hand hole **42**. These protective panels **44** are secured to the remainder of the box through connecting panel **46** which is foldably connected at one end to the protective panel **44** and at its other end to the side wall **10** via the fold line **48** connecting the side panel **10** to the top panel **12**.

With the particular structure of FIG. **1** four separate and distinct opening panels **28, 30, 32** and **34** have

been shown. Each of these opening panels is defined by its fold line connection **20, 22, 24** and **26** respectively and by lines of severance **50, 52, 54** and **56** respectively. Each of these lines of severance **50, 52, 54** and **56** are substantially U-shaped and have the legs **58** of each U extending from the fold line connection for the respective opening flap across the top of the top panel **14** and part-way down the respective side panel **10.** A bridging portion **60** of the line of severance interconnects the legs of each of tbe U-shaped cuts and extends substantially parallel to the top panel but is spaced therefrom by a distance substantially equal to or slightly less than the neck section of the bottle **62** to be packaged (see FIG. **4, 5** or **6**).

This positioning of the edge **60** permits the portion **64** of each flap **28, 30, 32** and **34,** located between the edge **60** and fold line **48,** to be folded inwardly as indicated in dotted lines in FIG. **4** to initiate release of the respective flap from the carton. Thus, to open the carton one grips the top of the carton so that the fingers project down over the side wall **10** in a position overlying the portion **64** and presses the portion **64** in along the shoulder portion of the bottle **62** and then simply lifts the flap to complete opening of the flap (see FIG. **4** full dotted and dot-dash positions respectively).

The position of the line or edge **60** is also of importance in permitting the bottles **62** to be withdrawn from the carton. If this line **60** of severance is not spaced down sufficiently from the top of the carton the bottle will not be able to escape since tilting of the bottle is necessary so that it may clear the longitudinally extending panel **18** (see FIG. **5**).

It will be noted that the left hand side of the carton of FIGS. **1** to **6** inclusive is provided with an L-shaped bridging section **66** that extends from the longitudinal panel **18** to the side wall **10,** this bridging pane **66** is defined by the lines of severance defining tbe adjacent side edges of the two panels **28** and **30** and functions to further reinforce the handle section and reduce bowing of the side wall **10.** Care must be taken to ensure that bridging section **66** is not so wide as to unduly interfere with withdrawal of the bottles.

After the carton has been opened and the bottles removed, the flaps **28, 30, 32** or **34** may be folded down into the carton to lie alongside the partition panel **38** (see FIG. **6**) and the protective flaps **44** together with their connecting flap **46** may be folded into face-to-face relationship with the inside of the side wall **10.** This position of the flaps **28, 30, 32** and **34** permits reinsertion of the bottles between the partition **38** and the adjacent side wall **10** with the flaps **28, 30, 32** or **34** functioning to wedge the bottle **62** against the respective side wall **10** and thereby prevent the bottles from rattling. This wedging action is obtained due to the position of the fold lines **20, 22, 24** and **26** which are spaced from the partition panel a short distance towards the side panels **10.**

The neat appearance of the box after opening and with the flaps **28, 30, 32** and **34** folded into the carton provides a convenient container for serving the drinks. For example, with beer, the bottles could be removed, uncapped and reinserted into the carton to be served directly therefrom (see FIG. **3**).

If the hand hole **42** in the partition **38** is formed by folding a flap from the partition by a fold line substantially parallel to the top panel it may be necessary to provide a further fold line substantially parallel to the top panel extending across the hand hole forming flap to permit same to bend to conform with the inner surface of the flaps **28** and **30** when they are folded into the carton in the position shown in FIGS. **2, 3** and **6.**

In the arrangement shown in FIG. **7** the flaps **28** and **30** have been combined into a single flap **100** which is connected to the top wall **110** by fold line **120.** Similarly, the panels **32** and **34** have been combined into a single panel **130** which incorporates the connecting flap **46** and protective panels **44.** The panels **100** and **130** extend part-way down the side walls **140** of the carton in the same manner as did the panels **28, 30, 32** and **34.** With the arrangement shown in FIG. **7** the whole side of the carton is opened as a unit and the panel **100** or **130** is opened but the mode of opening is essentially the same for these panels **100** and **130** as it was for the panels **28, 30, 32** and **34.** It will be noted in this embodiment the longitudinally extending panel **18** remains as do the end panels **36** to form the I-beam configuration on the top panel. Similarly, the partition panel **38** will be joined to the bottom of the panel **18** to form a T-shaped beam. In this embodiment the bridging panel **66** is omitted.

The FIG. **8** arrangement is essentially the same as the FIG. **7** arrangement with the exception that instead of the hand hole being in the partition panel, hand flap **150** is formed in the top wall **110*a*** and is folded up to an operative position on fold line **160.** The panel **130*a*** is essentially the same as panel **130** with the exception that the handle **160** replaces the panels **44** and **46.** Operation to open and, if desired, insert the flaps **100** or **130*a*** into the carton is essentially the same as the FIG. **1** or **7** embodiment. The FIG. **8** embodiment simply demonstrates that the instant invention could be applied to cartons, for example, of the type shown in Canadian Pat. No. 736,358, issued June 14, 1966 to Richardson, or U.S. Pat. No. 735,744 issued June 7, 1966 to Vesak.

A preferred form of the carton is shown in FIG. **9.** The carton of FIG. **9** is similar to that shown in FIGS. **7** and **8** in that single closure flaps **200** and **210** are provided. In the FIG. **9** embodiment these closure flaps **200** and **210** are defined by U-shaped lines of severance **212** and **214** respectively, each of which has end leg sections **216** and **218** interconnected at one end by a bridging line of severance **220** and by fold lines **222** which interconnect the opposite ends of the leg sections **216** and **218.** The bridging lines of severance **220** extend substantially longitudinally of the top panel and in effect define the opposite sides of the central panel **18,** thus the closure flaps **200** and **210** of the FIG. **9** embodiment are essentially free of foldable connection to the top panel but instead are connected to the side panels **10** by fold lines **222.** In essence, the main difference between the carton of FIG. **7,** for example, and that of FIG. **9** is the fold line connection between the closure flap and the box has been displaced to opposite sides of the closure flap so that in the FIG. **9** embodiment tbe closure flaps are each hinged to the side panels rather than to the top panel.

With the FIG. **9** arrangement, access to the carton is slightly different than with the remaining embodiments. To permit opening of the carton push-out tabs **224** are formed in the panel **200** and are foldably connected to the panel **18** by fold lines **226.** The tabs **224** are folded into the carton by pushing on same with one's fingers so that the undersurface of the flap **200** may be en-

gaged and the flap lifted from the top of the carton to the position such as that shown in FIG. **10.**

To open the panel **210** the hand protective flaps or panels generally indicated at **228** must be folded into the carton to provide an access hole through which the undersurface of the flap **210** may be engaged by the fingers and lifted into the position shown in FIG. **10.**

It will be apparent from FIG. **11** that the flaps **200** and **210** can be folded in to lie in face-to-face relationship with the innersurfaces of the side panels **10** to provide a convenient serving tray similar to the one illustrated in FIGS. **2** or **3.** It will further be apparent that the central partition **38** still combines with a central panel **18** to provide a beam structure extending longitudinally of the carton and reinforcing the handle structure provided by the hand hole extending through the central partition **38.** Again it will be apparent that in FIG. **9** the top panel, after opening of the carton, retains a substantially I-beam configuration to provide a reinforced carton.

In each of the embodiments disclosed herein, the fold lines connecting the opening flaps to the top panels and defining opposite sides of the central panel **18** or the bridging section **220** which define the opposite sides of the central panel **18** are symmetrically spaced with respect to the longitudinal centre line of the carton. If desired, however, such symmetry need not be maintained. For example, fold lines **24** and **26** of the FIG. **1** embodiment could be moved to be aligned with the centre line of the carton so that the panels **18** and **36** would form an L-shaped rather than a T-shaped reinforcing beam when the carton was opened.

Having described the invention, modifications will be evident to those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A carton comprising; a top wall, side walls, end walls, and a bottom wall, a central longitudinally extending partition, a pair of opening flaps one on each side of the longitudinal centre line of said top wall, line means extending substantially parallel to said longitudinal centre line defining the boundary between each of said opening flaps and a longitudinally extending reinforcing panel, said longitudinally extending reinforcing panel overlying and secured to said partition panel to form with said partition panel a reinforcing beam, each said opening flap extending across said top wall and part-way along its adjacent of said side walls.

2. A carton as defined in claim **1** wherein each of said opening flaps is defined by a U-shaped line of severance having a pair of leg sections interconnected by a bridging section, said bridging section forming said line means, said leg sections projecting across said top wall toward the adjacent of said side walls and extending part-way down said side walls, each said pair of leg sections terminating at an opposite end of a fold line spaced from the junction of said top and side walls and connecting each of said flaps to said carton.

3. A carton as defined in claim **2** wherein said leg sections are spaced from said end walls to define at each end of said carton an end reinforcing panel, said longitudinally extending reinforcing panel and said end reinforcing panels combining to form a substantially I-beam shape on said top panel.

4. A carton as defined in claim **3** wherein there are two of said flaps on each side of said longitudinal centre line and wherein one of the leg sections of the line of severance defining each of said two flaps defines a portion of said end reinforcing panel at each end of said carton.

5. A carton as defined in claim **4** further comprising; a hand hole in said partition panel and means for forming an access opening in said top panel to permit engagement of said hand hole.

6. A carton as defined in claim **1** wherein each of said opening flaps is defined by a U-shaped line of severance having a pair of leg sections projecting across the top of said carton one from each end of said line means toward the adjacent of said side walls and extending part-way down said side walls, each said pair of leg sections being interconnected by a bridging portion spaced from the junction of said top and side walls and wherein said line means comprises a fold line connecting said flap to said top panel.

7. A carton as defined in claim **6** wherein said leg sections are spaced from said end walls to define at each end of said carton an end reinforcing panel, said longitudinally extending reinforcing panel and said end reinforcing panels combining to form a substantially I-beam shape on said top panel.

8. A carton as defined in claim **6** wherein said bridging portion is spaced from the junction of said top and side walls by a distance equal to or less than the height of the neck of a bottle to be packaged in said carton to permit a portion of each of said flaps between said junction and said bridging portion to be folded into said carton to facilitate opening of each said flap.

9. A carton as defined in claim **7** further comrising; a hand hole in said partition panel and means for forming an access opening in said top panel to permit engagement of said hand hole, said bridging portion being spaced from the junction of said top and side walls by a distance equal to or less than the height of the neck of a bottle to be packaged in said carton to permit a portion of each of said flaps between said junction and said bridging portion to be folded into said carton to facilitate opening of each said flap, each said fold line and its respective bridging portion defining each of said flaps being separated by a distance sufficient to permit tipping of said bottle so that said bottle may clear the longitudinal reinforcing panel and be withdrawn from the carton when the flaps are in open position.

* * * * *