A hand hole protector comprising a central and a pair of end panels foldably interconnected and formed in the top wall of a carton. These panels are foldably connected to the remainder of the carton through the central panel whereby said protective panels can be folded into the carton to form an access opening. Folding of the panels to form an access opening causes the end panels to contact the tops of a pair of adjacent bottles and be folded relative to the central panel to protect the access opening on three sides.

6 Claims, 13 Drawing Figures
CARTON HAND HOLE PROTECTION

FIELD OF THE INVENTION

The present invention relates to an end load beer carton, more particularly the present invention relates to handling to protect the fingers on reaching through an access hole to grasp the handle in a central partition of an end load beer carton.

DESCRIPTION OF THE PRIOR ART

Generally, cartons for containing a dozen bottles have been provided with a handle conveniently located to permit the purchaser to easily carry the carton filled or empty. Early handle cartons were conventional cartons with top and bottom closure flaps provided with a central partition having a hand hole therein. Access to the hand hole was provided through the top flaps so that one could reach into the carton and grip the handle. This carton was replaced by a carton having a handle movable from an inoperative position within the confines of the carton to an operative position spaced thereof. With the advent of end loading equipment in the industry, end loading cartons having central partitions and handle members formed by extensions of the central partitions and generally part of the top panel, and wherein the handle is movable to an operative position above the carton have been used. It has further been proposed to provide a hand hole in an outside wall so that one's hand would extend through the outside wall to engage and support the carton through this wall.

In all of the above structures, with the exception of the early ones, care was taken to ensure that one's knuckles did not contact the caps of the bottles, i.e., making the handle retractable or by reaching in through an outside wall wherein the knuckles face outward and do not contact the bottle caps. It has been proposed to provide a handle in the central partition of an end load carton, however, until the present invention there was no means available to safeguard knuckles, and thus the proposal of using a hand hole in the central partition was not readily acceptable to the brewing industry.

SUMMARY OF THE INVENTION

It is thus the main object of the present invention to provide a carton incorporating protecting panels which protect the knuckles when the hand is in carrying position extending through a hand hole in a central partition.

Another problem with such early boxes was to obtain an opening large enough to permit the hand to slide easily into the container and grip the hand hole in the central partition. The proximity of the packed bottles severely limited the size of opening that could be provided while permitting the flap covering the opening to be pushed into the container.

It is thus another object of the present invention to provide an access passage through the container to the hand hole in the central partition that is sufficiently large to easily accommodate the average hand.

Broadly, the present invention relates to a carton blank and a carton having a central partition with a hand hole extending therethrough, a plurality of protecting panels foldably interconnected and foldably connected to the top wall of the carton via an elongated connecting flap, the protecting panels being movable from a position substantially flush with the top wall enclosing an access opening to an open position wherein said panels are forced into said opening. The protecting panels are proportioned so that a central one passes between a pair of adjacent bottles while panels on opposite sides of the central panel contact bottle caps and fold relative to the central panel. A connecting flap preferably connects the central panel to the top wall and is positioned to extend between a pair of adjacent bottles in the carton so that when the protecting panels are moved to their open position the flap pivots down between a pair of adjacent bottles to better position the protecting panels.

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 a plan view of a blank incorporating the present invention,
FIG. 2 illustrates the first folding step in gluing of the blank,
FIG. 3 is a plan view of the glued blank in knocked-down condition,
FIG. 4 is an isometric view illustrating the carton in erected position,
FIG. 5 is a partial isometric view illustrating the knuckle protecting panels and access opening in operative open position,
FIG. 6 is a partial plan view of a carton with the access opening in open position,
FIG. 7 is a view along the line 7—7 of FIG. 5,
FIG. 8 shows a plan view of a modified version of the present invention,
FIG. 9 illustrates yet another modification of the instant invention,
FIG. 10 is a partial sectional view illustrating protecting panels folding into operative position,
FIG. 11 is a view along the line 11—11 of FIG. 10,
FIG. 12 is a partial sectional view of the arrangement of FIG. 9 showing the protection panels folding into operative position,
FIG. 13 is a partial sectional view along the line 13—13 of FIG. 12.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The blank 10 of FIG. 1 is composed of a first bottom panel 12, a first side panel 14, a top panel 16, a second side panel 18, a second bottom panel 20, partition panel 22, and a glue flap 24 arranged in side-by-side relationship and interconnected by means of parallel fold lines 26, 28, 30, 32, 34 and 36 respectively. Suitable end closure flaps 38, 40, 42, 44 and 46 are foldably connected to each end of the panels 12, 14, 16, 18 and 20 respectively by parallel fold lines 48 and 50.

Panels 52, 54 and 56 foldably interconnected by fold lines 58 and 60 are defined in partition panel 22 by a line of severance 62 and fold line 64 which foldably connects the panel 54 to the remainder of the partition panel 22. These panels 52, 54 and 56 are adapted to be folded out of the partition panel 22 by folding along the fold line 64 to form a hand hole 66 (see FIG. 7) in the partition panel 22 as will be described in more detail hereinafter.
Opening panels 68, 70, 72 and 74 are formed in the top panel 16 and the adjacent side panels 14 and 18. These opening panels 68, 70, 72 and 74 in the illustrated embodiment will remain foldably connected to the top panel 16 by fold lines 76, 78, 80 and 82 respectively, while the remaining peripheries of these panels will be freed from their respective panels 16, 14 and 18 when the carton is opened. Thus, these panels 68, 70, 72 and 74 are foldably connected to the top panel by fold lines 76, 78, 80 and 82 and are releasably held to the panels 16, 14 and 18 by lines of severance 84, 86, 88 and 90 respectively. It will be apparent that it is possible to combine the panels 68 and 70 and the panels 72 and 74 so that only one opening panel is provided on each side of the carton. For example, the panels 68 and 70 may be combined by joining the fold lines 76 and 78 and having a single U-shaped line of severance beginning at one end of the combined fold line and terminating at the other. In an alternative arrangement where more stacking strength is desired it would be preferable to locate the fold lines 76, 78, 80 and 82 at the opposite sides of their respective panels 68, 70, 72 and 74 so that the panels after opening would remain connected to the side panels 14 and 18, i.e. the fold lines 76, 78, 80 and 82 would be on the side panels 14 and 18.

In the FIG. 1 arrangement a connecting flap 92 has its sides defined by the lines of severance 88 and 90 and is connected at one end to the side wall panel 18 via fold line 30. The other end of flap 92 is connected to a protecting panel 94 by a fold line 96. This protecting panel 94 is in turn connected to a pair of end protecting panels 98 and 100 by fold lines 102 and 104 respectively. Fold lines 102 and 104 in the illustrated arrangement are substantially parallel to one another and substantially perpendicular to the fold line 96, however, they need not be parallel or extend at exactly 90° to the fold line 96. It is preferred, however, that they be at approximately 90° to the fold line 96 but may slope in towards each other or flare outwardly to some, though minor, extent. The outer periphery of the panels 94, 98 and 100 are defined by a line of severance 106 which extends laterally at about the centre line of the panel 16, each end of line 106 curves away from the centre line toward the fold line 30 and then is directed back toward the other end to terminate adjacent fold line 96 and fold lines 102 or 104 to permit the panels 94, 98 and 100 to be folded to a position substantially perpendicular to the flap 92 along the fold line 96 and relative to each other along lines 102 and 104.

To form a box, adhesive is applied along the end edge of the panel 12 as indicated at 108 and to the flap 24 as indicated at 110. The blank is folded along fold line 32 so that the panels 20 and 22 overlie the panels 18 and 16 with the flap 24 contacting the panel 16 between the fold lines 76 and 80 and 78 and 82 thereby securing the panel 22 along the mid-line of the panel 16 (see FIG. 2). Next, the panels 14 and 12 are folded relative to the remainder of the carton along fold line 28 so that the panel 14 overlies the panels 16 and 22 and the the adhesive 108 on the panel 12 overlaps and secures the panel 12 to the panel 20 (see FIG. 3). As can be seen in FIG. 4, in the resultant box the central partition panel 22 is secured to the top panel 16 by flap 24. This flap extends along substantially the full length of the top panel 16 and positions the partition panel 22 relative to the line of severance 106 to permit the panels 94, 98 and 100 to be folded into the box to an open operative position as will be described hereinbelow. It can further be seen from FIG. 4 that it is a simple matter now to load the carton by sliding the bottles or the like in through the open end of the carton.

To provide access to the hand hole 66 the panels 94, 98 and 100 are pushed into the carton thereby separating them from the top panel 16 along the line of severance 106 and pivoting some relative to connecting flap 92 along fold line 96. The connecting flap 92 is narrower than the spacing between the crowns of adjacent bottles packaged within the carton and is positioned so that it can be moved into the carton between a pair of adjacent bottles. As the panels 94, 98 and 100 are moved into the carton by insertion of the hand the panels 98 and 100 contact adjacent bottles and are folded relative to the panel 94 along fold lines 102 and 104 respectively whereby the panels 98, 94 and 100 provide a protective wall enclosing the access opening 112 on three sides (see FIG. 5). These panels 94, 98 and 100 thus provide a protective wall between one’s hand and the adjacent bottles ensuring that one’s knuckles are not cut by the caps of the bottles in the carton when reaching in or retracting one’s hand from the hand hole 66 (see FIG. 6).

As can be seen from FIG. 7, the hand hole 66 is formed by folding the panel 54 relative to the partition panel 22 along fold line 64. The panels 52 and 56 contact adjacent bottles and are folded along fold lines 58 and 60 which permit the combined panels 52, 54 and 56 to be pivoted along fold line 64 to open the full width of the hand hole 66 and thereby properly accommodate the hand.

Referring now to FIGS. 8 and 9, modifications of the protective panels and their connection to the remainder of the carton have been illustrated.

In the FIG. 8 arrangement, the protection device comprises a central panel 200 and a pair of end panels 202 and 204 connected to the central panel 200 by fold lines 206 and 208 respectively. The panel 200 is in turn connected to the top 210 of the carton by fold line 212. It will be noted that in this FIG. 8 arrangement there is no connecting flap extending between the protection panels and connecting same to the top wall or side wall of the carton.

In the FIG. 9 arrangement, a connecting flap 214 is provided, this flap being foldably connected to the remainder of the box along the corner fold between the top panel and one of the side walls and connected to the central panel 216 by fold line 218. As in the previous embodiments, a pair of end protective panels 220 and 222 are connected to opposite sides of the central panel 216 by fold lines 224 and 226 respectively. In the FIG. 9 arrangement, however, the end protective panels 220 and 222 project beyond the fold line 218 connecting the central panel to the connecting flap 214 so that the panels 220 and 222 are longer laterally of the box than the panel 216 and thus provide further protection and normally will have their top edges above the top of the carton when the panels 216, 220 and 222 are moved into the carton to open the access opening.

FIGS. 8 and 9 show the position of the bottles 228 in dotted lines; it will be seen that the fold lines 206 and 208 and the fold lines 224 and 226 are between the tops 230 of adjacent bottles (the fold lines 102 and 104 of the FIG. 1 embodiment were similarly positioned with respect to bottles).
In opening of the access opening in the FIG. 8 arrangement, pressure is applied to the central panel 200 which pivots this panel relative to the top wall 210 on fold line 212. This pivoting movement of the central panel 200 also moves the end panels 202 and 204 which contact the tops 230 of adjacent bottles 228 and are folded on fold lines 206 and 208 relative to the central panel 200 (see FIGS. 10 and 11).

The FIG. 9 embodiment operates similarly to the FIGS. 1 and 8 embodiments but is closer to the FIG. 1 embodiment. To open the access opening of the FIG. 9 embodiment the panels 216, 220 and 222 are pushed in by folding relative to connecting flap 214 along fold line 218 and whereby connecting flap 214 pivots out of the plane of the top of the carton between a pair of adjacent bottles 228 on the fold line at the top corner of the carton. This movement of the panels 216, 220 and 222 causes the panels 220 and 222 to engage the tops 230 of the adjacent bottles 228 and to be folded relative to the panel 216 on their fold lines 224 and 226 respectively. This construction utilizing the connecting flap 214 permits the edges of panels 216, 220 and 222 to project deeper into the carton and permits these panels to lie at different angles to the central partition than was possible with the FIG. 8 arrangement and thereby provide better protection.

The connecting flap arrangement of FIGS. 1 and 9 is preferred to the arrangement of FIG. 8 as it permits the protective panels to project deeper into the carton and better ensure that one’s knuckles are not caught under the free edge of these protective panels when trying to withdraw the hand from the hand hole in the central partition. Furthermore, it helps to ensure that ample room is available to insert the hand and carry the carton after the closure flaps have been folded in against the partition panel. This is particularly important in the arrangement where one closure flap on each side rather than two is employed.

In each of the embodiments the central and end protective panels combine to form three sides of an access passage when the access opening 112 is formed.

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

1 claim:

1. A carton for necked bottles comprising: side walls, end walls, a top wall, a bottom wall, a longitudinally extending partition, a hand hole in said partition adjacent said top wall, a central protective panel and a pair of end protective panels formed in said top wall, fold lines interconnecting said end protective panels to opposite sides of said central panel, a foldable connecting means connecting said central panel to said carton, said protective panels being positioned on said top wall adjacent said hand hole and arranged in said top wall so that each of said end protective panels overlies the top of one of a pair of adjacent bottles whereby the folding of said central panel relative to said top wall on said foldably connecting means forces said end protective panels into contact with the tops of said pair of adjacent bottles; and folds said end protective panels relative to said central panel on their fold line connections to said central panel.

2. A carton as defined in claim 1 wherein said foldably connecting means comprises; a connecting flap and a fold line connecting said connecting flap to said central panel.

3. A carton as defined in claim 2 wherein said foldable connecting means further comprises a second fold line substantially parallel to said fold line connecting said flap to said central panel connecting said flap to said carton.

4. A carton as defined in claim 2 wherein said fold lines interconnecting said protective panels are substantially perpendicular to said fold line connecting said central panel with said connecting flap.

5. A carton for necked bottles comprising; foldably interconnected bottom, top and side walls, a partition panel connected to said top and bottom walls, means defining a hand hole in said partition panel adjacent said top wall, a central and a pair of end protective panels formed in said top wall adjacent said hand hole, said protective panels being positioned in side-by-side relationship, fold lines interconnecting end protective panels with said central protective panel, a connecting flap defined in said top panel by a pair of spaced substantially parallel lines of severance, said lines of severance being spaced a distance less than the distance between the necks of a pair of adjacent of said bottles in said carton, said flap is positioned to be folded down between necks of a pair of adjacent of said bottles when said carton has been loaded while said end protective panels are positioned to contact the tops of said pair of adjacent bottles and a fold line connecting one end of said connecting flap to said central protective panel.

6. A carton as defined in claim 5 wherein said fold lines interconnecting said protective panels are substantially parallel and are substantially perpendicular to said fold line connecting said central panel with said connecting flap.