Oct. 15, 1963 W. W. WAGNER, JR 3,107,041

REINFORCED FOLDED BLANK CARTON

Filed Jan. 31, 1961 2 Sheets-Sheet 1

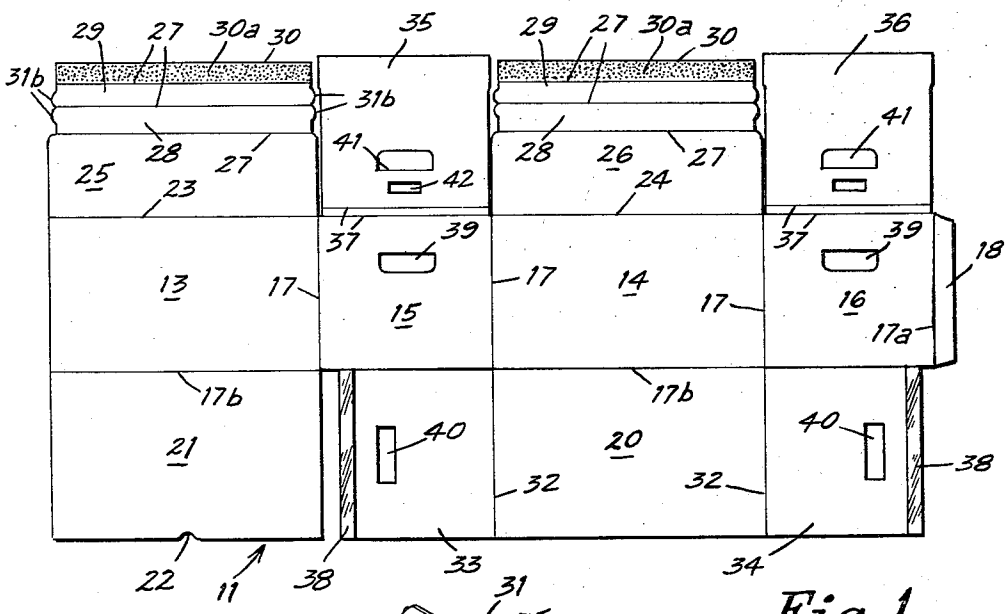


Fig. 1

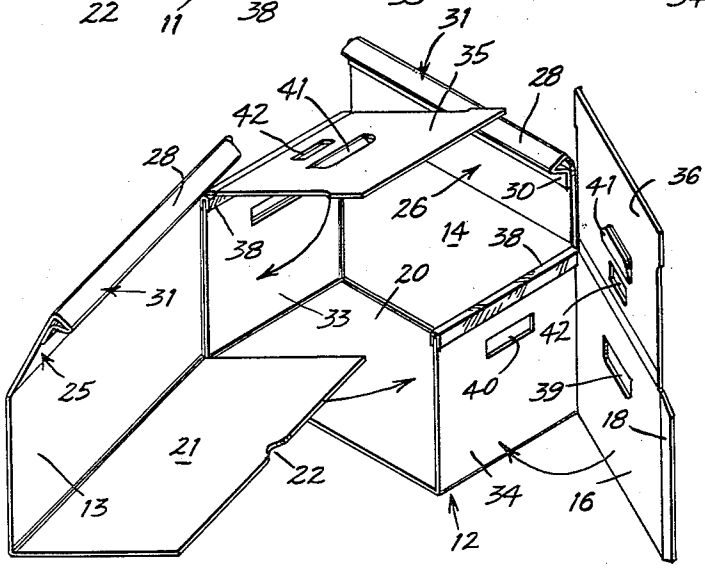


Fig. 2

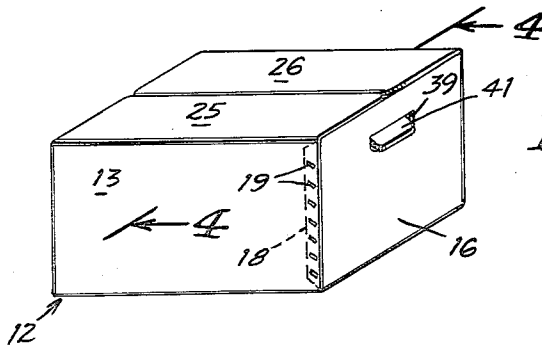


Fig. 3

INVENTOR

Wilmer W. Wagner, Jr.

BY

ATTORNEY

Oct. 15, 1963 W. W. WAGNER, JR 3,107,041

REINFORCED FOLDED BLANK CARTON

Filed Jan. 31, 1961 2 Sheets-Sheet 2

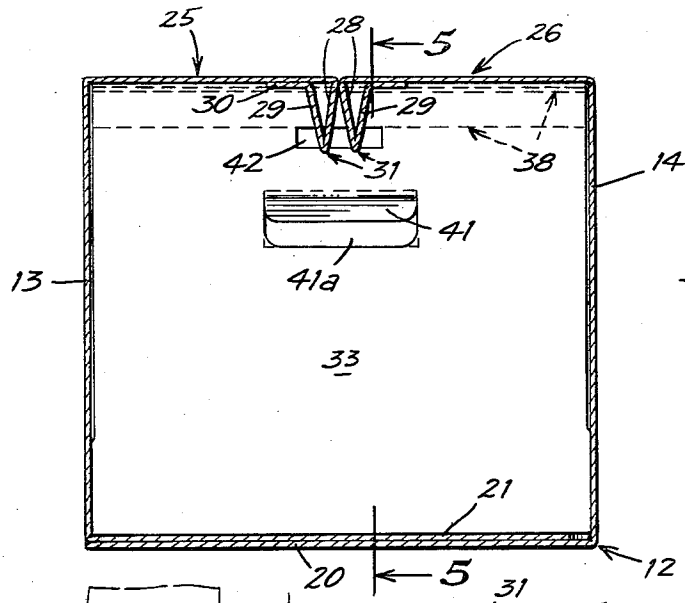


Fig. 4

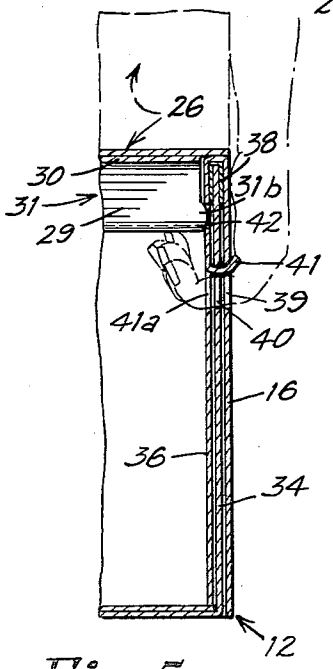


Fig. 5

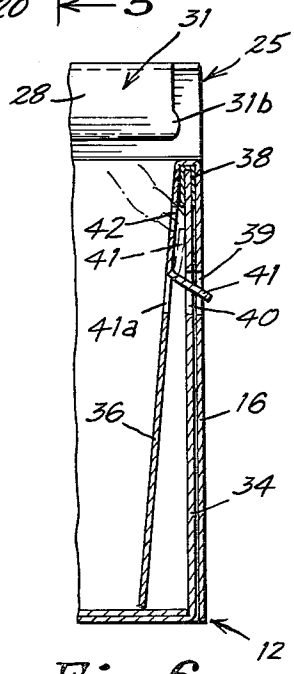


Fig. 6

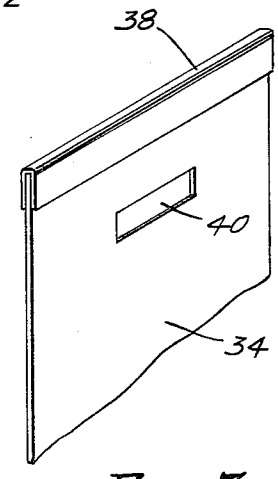


Fig. 7

INVENTOR

Wilmer W. Wagner, Jr.

BY Irwin V. Garman

ATTORNEY

United States Patent Office 3,107,041 Patented Oct. 15, 1963

3,107,041

REINFORCED FOLDED BLANK CARTON

Wilmer W. Wagner, Jr., Baltimore, Md., assignor to The Mead Corporation, Dayton, Ohio, a corporation of Ohio

Filed Jan. 31, 1961, Ser. No. 86,029
2 Claims. (Cl. 229—39)

The present invention relates to a reinforced folded blank carton. Generally, there is provided a single die cut blank of corrugated cardboard or equivalent material having scored fold lines defining panels that fold to form a carton having a two ply bottom and three ply end walls. The intermediate laminae of the end walls are integral extensions of one of the bottom walls and have hand apertures providing lifting handles for the carton.

The inner and outer plies of the end walls are integrally joined where they bend over the upper edges of the intermediate laminae and have hand apertures aligned with those of the intermediate plies. One of the joined plies of each end wall has its aperture formed by a partially cut out tab bendable through the aligned apertures to provide a comfortable handle surface.

The upper edges of the intermediate plies are capped by channel bars of sheet metal or equivalent strong and rigid material for two important reasons, (1) to strengthen the carton walls against collapsing when stacked one upon another, or otherwise stressed, and (2) to distribute the lifting forces so as to prevent tearing out of the handle portions of the end walls.

It is, accordingly, an object of this invention to provide a folded blank carton having aligned handle-forming apertures in multiple ply walls thereof.

It is another object to provide such a carton in which the multiple ply walls each comprises a pair of laminae integrally joined at their upper edges by a fold and an intermediate ply integrally joined to a bottom panel and terminating in the fold.

It is a further object to provide a carton of this type in which the intermediate laminae are capped by rigid channel bars which serve to increase the crush resistance of the carton and/or to strengthen the handle portion thereof by distribution of the lifting forces under and along the folded wall edge.

Other and further objects of the invention will become apparent from a reading of the following specification taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a plan view of the die cut blank from which the carton is formed;

FIGURE 2 is a perspective view of the blank of FIGURE 1 illustrating the manner of folding the panels thereof to form the carton;

FIGURE 3 is a perspective view of the assembled carton;

FIGURE 4 is an enlarged end elevational view in vertical transverse section taken on line 4—4 of FIGURE 3;

FIGURE 5 is a fragmentary elevational view taken on line 5—5 of FIGURE 4;

FIGURE 6 is a view similar to FIGURE 5 but showing an assembling step; and,

FIGURE 7 is a fragmentary, perspective view of the upper portion of the reinforced end wall of the carton.

With reference to the drawings, numeral 11 generally designates the one piece blank from which carton 12 is formed. Blank 11 is formed of corrugated cardboard or other suitable material. The central row of panels 13, 14, 15 and 16 respectively define the front and rear, and the left and right outside end walls of the finished carton. Panels 13–16 are defined by scored lines 17 which facilitate folding of the panels along said lines, the latter serving as hinge-like portions thereof. An end

flap 18 extends from the free edge of panel 16 and is adapted for being fixed to the free edge of panel 13, as by the use of staples 19 (FIGURE 3), to make the side walls of the carton circumferentially continuous in the finished article.

Panel 20 forms the lower or outside lamina and the panel 21, the upper or inside lamina, of the double thickness bottom of carton 12. Panel 21 may be notched at 22 to facilitate engagement of the free edge of panel 21 by a finger in disassembly of the carton.

Side panels 13 and 14 of blank 11 are joined along their upper edges at scored fold lines 23 and 24 to a pair of closure panels 25 and 26. Approximately the upper half of each of the closure panels 25 and 26 is divided by scored fold lines 27 into three narrow hingedly edge-joined strips 28, 29 and 30. The strips are relatively foldable, as shown best in FIGURES 2 and 4, to provide a rigidifying tubular head 31 at each edge of the half closure formed by each of the panels 25 and 26. Strip 30 is coated with an adhesive 30*a* by which it is adhered to the under surface of panel 25 or 26 adjacent the reinforced free edge thereof. Each end of the strips 28 and 29 has formed thereon arcuate bosses 31*b* which form detent fingers for holding the closure panels 25 and 26 in closed positions as will be hereinafter more fully described.

Lower or outside bottom panel 20 is joined at its ends along scored fold lines 32 to panels 33 and 34 which constitute the intermediate laminae of the three ply end walls of the carton. The outer plies of end walls are panels 15 and 16 previously described, while the inner laminae are formed by panels 35 and 36 joined respectively to the upper edges of end panels 15 and 16 along the double scored fold lines 37, so formed for folding down over the upper edges of the intermediate laminae 33 and 34 (as best seen in FIGURES 2, 5 and 6).

An important feature of the present invention resides in the provision of a pair of strengthening and rigidifying channel bars 38 of sheet metal or other sufficiently strong and rigid material crimped on or otherwise fixed to the free upper edges of intermediate end panels 33 and 34. Elements 38 serve two important functions: first, they greatly strengthen the ends of the carton for permitting stacking of cartons one upon another without danger of collapsing thereof, and secondly, channel elements 38 distribute the forces exerted in lifting of the filled cartons so as to prevent tearing or pulling out of the handle portions formed in the end walls, next to be described.

Handle portions, which are strengthened by the above described reinforcing elements 38, are formed by hand-receiving horizontally elongated apertures 39 and 40 die cut respectively in the outer and intermediate end panels 15, 16, 33 and 34, and by grip-forming tongues 41 partially cut out of the inner laminae 35 and 36 and bendable outwardly, as shown in FIGURES 5 and 6, to simultaneously provide aligning hand openings 41*a* and also as to constitute a comfortable grip surface, as shown in FIGURE 5, underlying the upper edges of the three aligned hand openings in the three panels of each end wall.

The smaller rectangular slots 42 cut in panels 35 and 36 serve as detent depressions into which detent bosses 31*b* snap to releasably hold closure panels 25 and 26 in their closed positions as shown in FIGURES 4 and 5. Slots 42 would also permit finger engagement with tongue 41 if the same should become inadvertently displaced into its phantom-shown position of FIGURE 6, whereby said tongue could be easily restored to its proper position of FIGURE 5.

Another feature of the disclosure for facilitating erecting the carton from its flat packing condition following stapling of tab 18 to the free edge of panel 13, resides in

the shape of panels 35 and 36, which are wider in their lower portions to provide binding thereof against side panels 13 and 14 where the binding action is most desired and most effective.

While the foregoing presents a preferred embodiment of the present invention, it is obvious that other modifications and/or equivalents may be employed without departing from the scope of the invention, which is defined in the appended claims.

What is claimed is:

1. A folded blank type carton comprising a plurality of edge-joined panels defining circumferentially continuous wall portions of said carton; a bottom panel joined to one of said edge-joined panels and having upwardly disposed integral extension panels at opposite edges thereof and forming, with an opposed pair of said edge-joined panels, laminated wall portions; a second bottom panel integrally joined to another one of said edge-joined panels and overlying said first-mentioned bottom panel; additional laminating panels integrally joined to the upper margins of said opposed pair of edge-joined panels and foldable downwardly over the upper edges of said extension panels so as to add third plies to said laminated wall portions, said additional laminating panels being foldable to the inside of said carton and being wider adjacent their lower edges to facilitate infolding thereof and to provide binding frictional engagement with adjacent wall areas where most needed and most effective; a pair of closure panels integrally joined along scored hinge fold lines to the upper edges of an opposed pair of said edge-joined panels, said closure panels having their free edges reversely bent upon and anchored to themselves to define edge-rigidifying bead-like tubular portions, there being aligned apertures in the upper portions of the panels of said laminated wall portions for providing wide-surfaced hand grips and tear-resisting handles for said carton, one of the panels of each of said laminated wall portions, other than said extension panel, having the handle opening therein formed by a shallow U-shaped slit defining a grip forming tongue bendable through and under the upper margins of said aligned apertures; said three ply laminated wall portions greatly increasing the strength of said carton against deformation by stacking or other forces; relatively rigid inverted U-shaped channel members capping the upper margins of said extension panels for increasing the resistance of said laminated wall portions against deformation by stacking or other forces and for increasing the tear resistance of the handle portions of said laminated wall portions.

2. Structure according to claim 1, said channel members being formed of sheet metal.

References Cited in the file of this patent

UNITED STATES PATENTS

1,975,240	Verhoven	Oct. 2, 1934
2,167,741	Boh	Aug. 1, 1939
2,359,335	Stuart	Oct. 3, 1944
2,418,963	Anderson	Apr. 15, 1947
2,586,156	Ferguson	Feb. 19, 1952
2,698,126	Belsinger	Dec. 28, 1954
2,783,932	Frankenstein	Mar. 5, 1957
2,954,914	Herlihy	Oct. 4, 1960