

June 4, 1963

C. S. HASSELHOFF

3,092,299

EXPANDABLE BOTTOM FOLDED BLANK CARTON

Filed Feb. 23, 1961

3 Sheets-Sheet 1

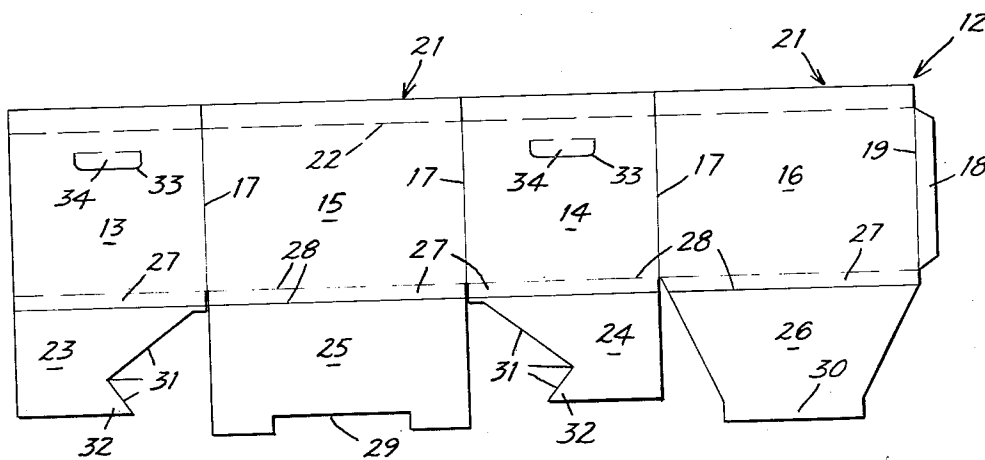


Fig. 2

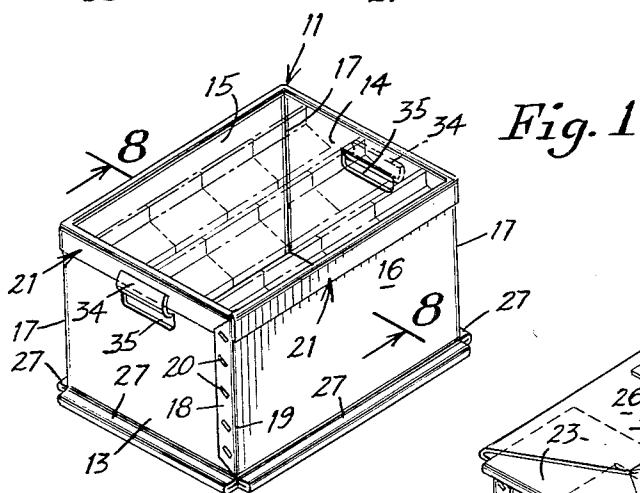


Fig. 1

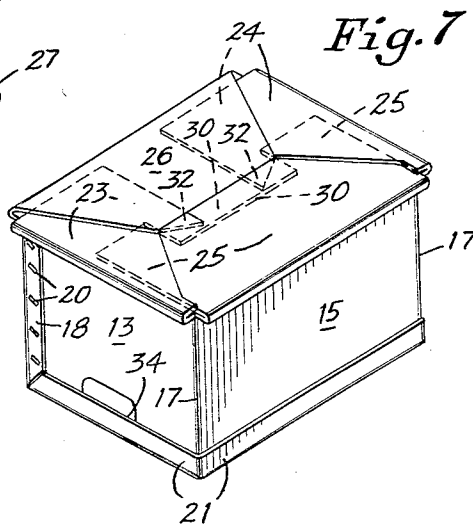


Fig. 7

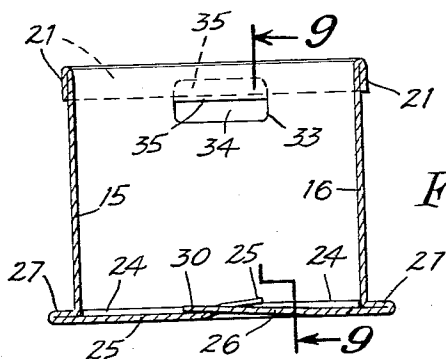


Fig. 8

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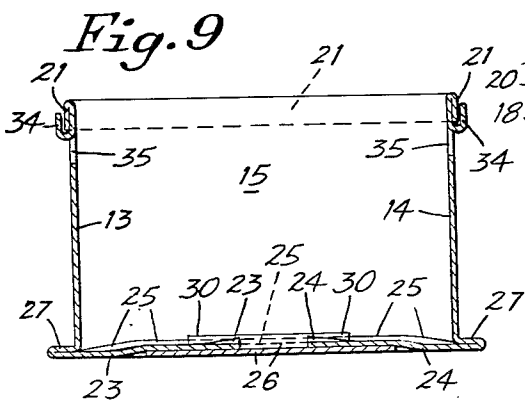
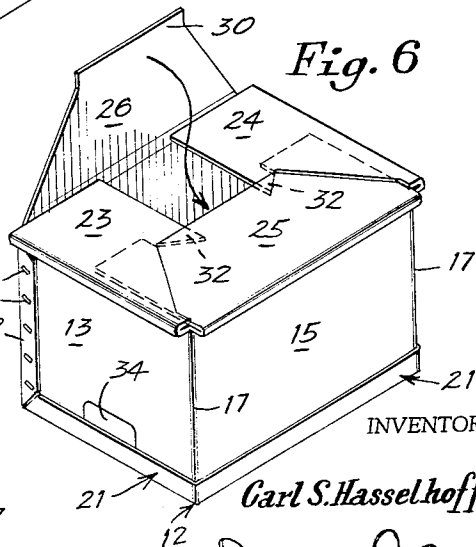
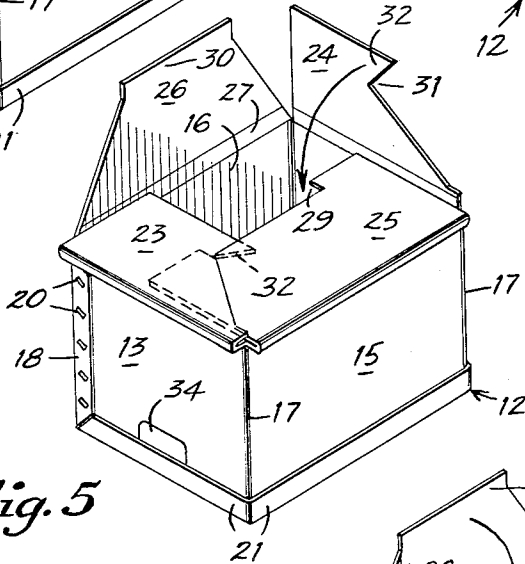
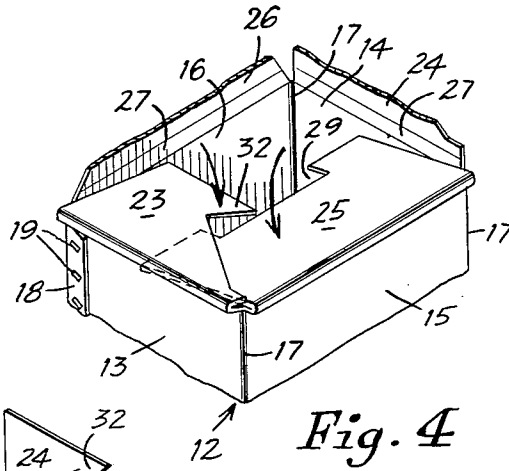
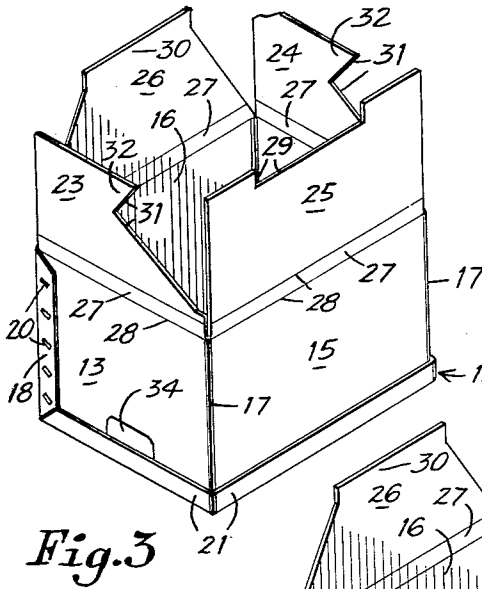
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EXPANDABLE BOTTOM FOLDED BLANK CARTON

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3 Sheets-Sheet 2



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EXPANDABLE BOTTOM FOLDED BLANK CARTON

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3 Sheets-Sheet 3

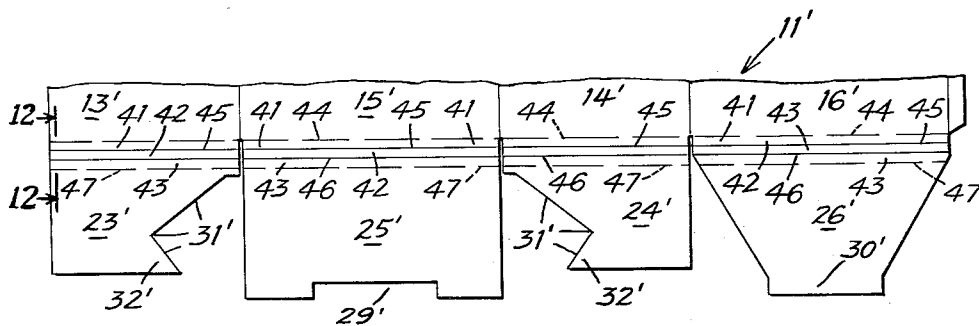


Fig. 10

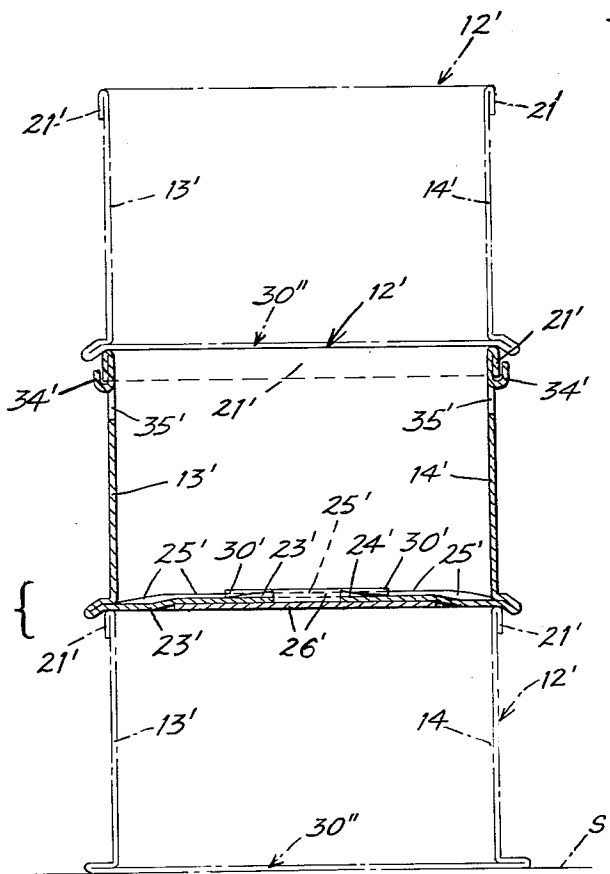


Fig. 11

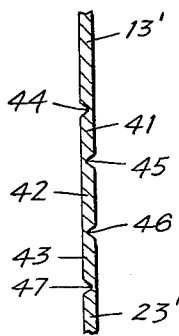


Fig. 12

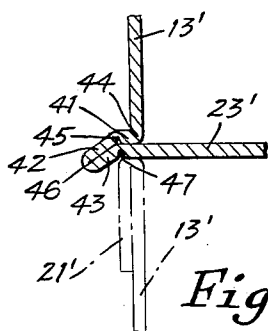


Fig. 13

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**EXPANDABLE BOTTOM FOLDED
BLANK CARTON**

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12 Claims. (Cl. 229-39)

The present invention relates to expandable bottom folded blank cartons which are particularly adapted as tote boxes for transporting milk in containers and the like.

Generally, there is provided a single die-cut and simultaneously scored blank of corrugated paperboard or equivalent carton material. The walls of the carton comprise a row of four edge-joined panels articulated about scored fold lines and made circumferentially continuous by a tab at one end of the row of panels and connected to the other end thereof by stapling and/or gluing, etc. The upper rim of the carton is reinforced by downturning the upper edge of the panels. Handles are formed in the upper portions of the end (or side) walls by shallow U-shaped slits defining hand holes and also handle tabs bendable through said hand holes immediately below the downturned carton rim.

The carton bottom is formed by four self-interlocking panels integrally joined to the lower edges of the wall panels by one or a plurality of narrow strips which permit the bottom to extend outwardly (and, optionally, also downwardly) over the rim of a similar carton in stacking said cartons. The bottom panels are so proportioned that their mating tongues and notches tend to force the outer edges of said panels outwardly beyond the lower edges of the wall panels, thus expanding the bottoms to overlie the upper rims of cartons palletized below them. The tongues and notches of the bottom panels interlace or "snap" into their interlocking relative positions.

It is, accordingly, an object of the invention to provide a folded blank carton having a bottom expandable outwardly beyond the lower edges of the wall panels to facilitate stacking or palletizing of the carton with similar cartons.

It is another object to provide such a carton in which the expandable bottom also is constructed to bend downwardly at its outer margin to provide a retaining flange for preventing displacement of one carton from proper aligned stacked position over another carton.

It is a further object to provide such a carton having interlocking bottom panels so proportioned as to automatically expand the bottom formed thereby beyond the sides of the carton.

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

FIGURE 1 is a perspective view of a preferred embodiment of the invention;

FIGURE 2 is a plan view of the die-cut blank from which the carton of FIGURE 1 is formed;

FIGURE 3 is a perspective view of the inverted carton prior to folding of the bottom flaps into interlocking positions;

FIGURES 4 through 7 are perspective views showing in sequence the bottom-forming folding operations;

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FIGURE 8 is an end elevational view of the carton of FIGURE 1 in section, taken on line 8-8 of FIGURE 1;

FIGURE 9 is a side elevational view in section, taken on line 9-9 of FIGURE 8;

FIGURE 10 is a fragmentary plan view of a modified form of a carton blank;

FIGURE 11 is a side elevational view in vertical medial section (similar to FIGURE 9) illustrating the easy stackability of cartons formed from the blank of FIGURE 10;

FIGURE 12 is an enlarged fragmentary end view of the blank of FIGURE 10, in section, taken on line 12-12 of FIGURE 10; and,

FIGURE 13 is an enlarged fragmentary elevational view of the bracketed portion of the disclosure of FIGURE 11.

With reference now to FIGURES 1 through 9 of the drawings, numeral 11 generally designates the completed carton and number 12 the diecut blank from which the carton is formed. Blank 12 is cut from a single piece of corrugated cardboard in the general shape shown in FIGURE 2 and is preferably simultaneously scored or indented to produce a plurality of fold or hinge lines dividing blank 12 into panels foldable about said fold lines. End panels 13 and 14 and side panels 15 and 16 are integrally joined at their contiguous edges along the scored fold lines 17. Side panel 16 has an integrally connected flap 18 foldable about scored line 19 for overlapping the free edge of end panel 13 to which it is fastened, as by staples 20, FIGURE 1, or other suitable fastening means, to form a circumferentially continuous side and end wall of carton 11.

A relatively narrow strip or band generally designated 21 extends across the top of blank 12, FIGURE 2, being defined and separated from panels 13 through 16 by scored fold line 22. Band or strip 21 is adapted to be folded down over the upper marginal portions of the outer surfaces of said panels, to which it is fixed by adhesive material or otherwise to constitute reinforcing means for the rim of the carton.

The interlocking bottom panels 23 through 26 are integrally connected to the lower edges of wall panels 13 through 16, respectively, by relatively narrow strips 27 defined by parallel scored lines 28. The strips or bands 27 provide connecting webs between the outer edges of the bottom panels and the lower edges of the wall panels to make possible the expanding or flaring of the bottom of the carton beyond the vertical outer faces of the carton walls, as best shown in FIGURES 1, 8 and 9.

The largest bottom panel 25 is rectangular and has a shallow rectangular notch 29 in its free edge. The opposed bottom panel 26 is of trapezoidal shape and its shorter free edge has a rectangular tongue 30 closely approximating notch 29, into which it fits snugly in shape and dimensions. Bottom panels 23 and 24, which are integral extensions of end walls 13 and 14, respectively, are deeply notched or cut away at 31 along their side edges nearer the bottom panel 25, the notches being shaped to define pointed tabs 32 which aid in erecting the carton as will hereinafter be described.

Lifting handles for carton 11 are provided by shallow U-shaped slits 33 cut in the upper medial portions of end wall panels 13 and 14 immediately below the lower edge of the downturned reinforcing strips 21. Slits 33 define

the tabs 34 and also provide hand openings 35 when tabs 34 are bent outwardly through openings 35 and upwardly under and over the lower edges of and margins of strips 21, as shown in FIGURES 1, 8 and 9.

In a modification of this invention as illustrated by FIGURES 10 and 11, primed numerals designate the parts thereof numerically corresponding to identical or equivalent (unprimed) parts of the species of FIGURES 1 through 9. However, the species of FIGURES 10 and 11 differ therefrom in the following important structural and functional feature.

The portions of blank 11' that connect wall panels 13' through 16' to bottom panels 23' through 26' instead of being single narrow strip like elements 27 previously described, comprises three somewhat narrower strips 41, 42 and 43 defined by scored fold lines 44, 45, 46 and 47. Scored fold lines 44 and 47 are on the outside surface of blank 11' and the other fold lines are on the inside, as shown in FIGURE 12, to facilitate the folding, best seen in FIGURE 13. While strips 42 and 43 naturally assume the downwardly angled position shown in full lines in FIGURE 13, they automatically will straighten out to lie flat against a supporting flat surface S, FIGURE 11, upon which the lowermost carton of the stack of cartons rests. It should here be noted that the widths of strips 41, 42 and 43 can be varied and the depths of the scored fold lines defining them can be varied, as desired, to alter the sizes and orientation of the parts of the expandable bottom margins.

The steps of erecting the carton of FIGURES 1-9 are illustrated in FIGURES 3-9. The flat packed carton is first inverted and then the walls are separated into the rectangular relative positions of FIGURE 3. Next, panel 25 is folded down to approximately horizontal position. Then panels 23 and 24 are folded down, FIGURES 3-6, until the tips of tabs 32 catch under panel 25. Finally, panel 26 is pressed down, FIGURE 7, until tab 30 slips past the edge of panel 25 and locks thereunder. These operations, due to the dimensioning of the closure panels and their notches and tabs, automatically cause the expansion of the bottom closure beyond the adjacent edges of the carton walls, FIGURES 8 and 9.

The erection of the modified carton of FIGURES 10-13 is basically the same, except that in this species the bottom extensions terminate in downwardly disposed flange-like portions 42-43, which it should be noted, will flatten out against a supporting flat surface S, as shown for the bottom carton in FIGURE 11. The bottoms of the phantom cartons of FIGURE 11 are generally designated 30'.

While the foregoing presents preferred embodiments 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. An expandable bottom carton comprising a plurality of edge-joined wall panels disposed in a row and joined to define circumferentially continuous front, rear and end walls of said carton, a first closure panel hingedly connected marginally to one of said wall panels, a second closure panel hingedly connected marginally to the opposite wall panel, one of said first and second closure panels having a narrow tab along its free edge and the other closure panel having a tab-receiving shallow notch in its free edge, a pair of similarly shaped closure panels each one thereof being hingedly connected marginally to one of the remaining two of said wall panels and being deeply notched in one side thereof to define a pointed tab at the free edge of each of said similarly shaped closure panels, and relatively narrow hinge strips connecting the margins of said wall panels to the adjacent edges of said closure panels and otherwise unattached thereto, the dimensions of said closure panels and the locations of their notches and tabs being such that, when said tabs and

notches are interengaged as said closure panels are substantially coplanarly interleaved centrally of the expanded closure formed thereby the margins of said closure are automatically expanded peripherally beyond the walls of said carton by distances approximating the width of said hinge strips to provide a wider base for secure stacking of said carton on the upper rim of a similar carton.

2. Structure according to claim 1, said first closure panel being generally rectangular and having an area approximating half that of said closure, and said second closure panel being generally trapezoidal with the tab thereon being substantially coextensive with the shorter base of the trapezoid.

3. Structure according to claim 1, said hinge strips having a plurality of substantially parallel scored lines so located relative to the two surfaces of the blank forming said carton that the extended margins of said closure tend to curve downwardly to provide flange-like means for positive positioning of a stacked carton on the rim of a similar carton thereunder.

4. Structure according to claim 1, the upper margins of said wall panels being downturned over and fixed to said panels to reinforce the upper rims of said carton.

5. Structure according to claim 4, opposite ones of said wall panels having U-shaped notches cut therein to define handle apertures and handle tabs bendable through said apertures and under said downturned margins to provide strengthened handles and large-area hand grips for more comfortable gripping.

6. Structure according to claim 1, said carton being adapted for flat-packing in the storing and shipping condition thereof, with the panels thereof lying substantially in two closely spaced and parallel planes.

7. An expandable bottom carton comprising a single blank of sheet material divided by slits and scored lines into a plurality of edge-joined wall panels and closure panels, certain of said edge-joined panels being in a row and having the free edges of said row joined to make circumferentially continuous the front, rear and end walls of said carton, a first closure panel hingedly connected marginally to one of said wall panels, a second closure panel hingedly connected marginally to the opposite wall panel, one of said first and second closure panels having a narrow tab along its free edge and the other closure panel having a tab-receiving shallow notch in its free edge, a pair of similarly shaped closure panels each one thereof being hingedly connected marginally to one of the remaining two of said wall panels and being deeply notched in one side thereof to define a pointed tab at the free edge of each of said similarly shaped closure panels, and relatively narrow hinge strips connecting the margins of said wall panels to the adjacent edges of said closure panels and otherwise unattached thereto, the dimensions of said closure panels and the locations of their notches and tabs being such that when said tabs and notches are interengaged as said closure panels are substantially coplanarly interleaved centrally of the expanded closure formed thereby the margins of said closure are automatically expanded beyond the walls of said carton by distances approximating the width of said hinge strips to provide a wider base for secure stacking of said carton on the upper rim of a similar carton.

8. Structure according to claim 7, said first closure panel being generally rectangular and having an area approximating half that of said closure, and said second closure panel being generally trapezoidal with the tab thereon being substantially coextensive with the shorter base of the trapezoid.

9. Structure according to claim 7, said hinge strips having a plurality of substantially parallel scored lines so located relative to the two surfaces of the blank forming said carton that the extended margins of said closure tend to curve downwardly to provide flange-like means for positive positioning of a stacked carton on the rim of a similar carton thereunder.

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10. Structure according to claim 7, the upper margins of said wall panels being downturned over and fixed to said panels to reinforce the upper rims of said carton.

11. Structure according to claim 10, opposite ones of said wall panels having U-shaped notches cut therein to define handle apertures and handle tabs bendable through said apertures and under said downturned margins to provide strengthened handles and large-area hand grips for more comfortable gripping.

12. Structure according to claim 7, said carton being adapted for flat-packing in the storing and shipping condi-

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tion thereof, with the panels thereof lying substantially in two closely spaced and parallel planes.

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