March 4, 1952 E. L. ARNESON 2,587,808

BOTTLE CARRIER

Filed Jan. 10, 1948 2 SHEETS—SHEET 1

Fig. 1.

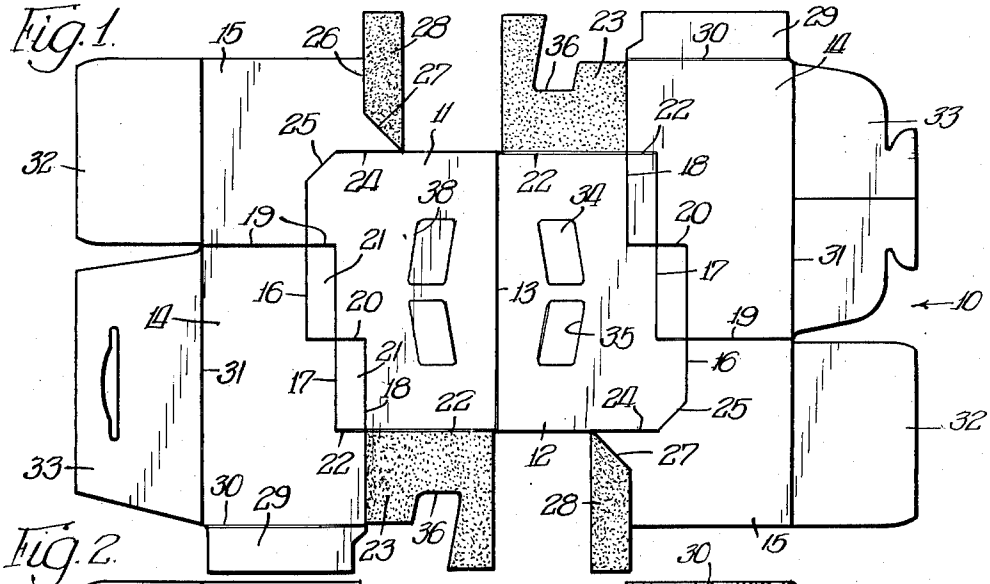
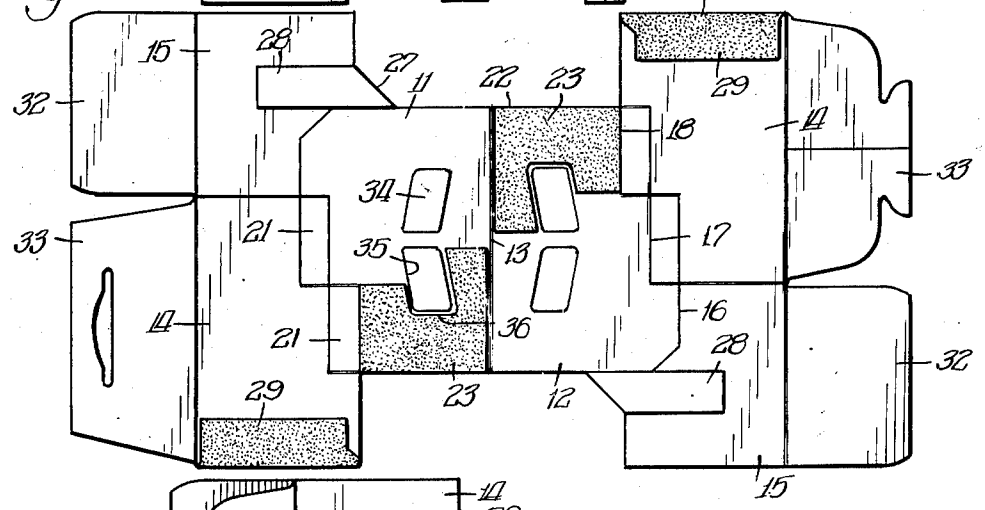


Fig. 2.



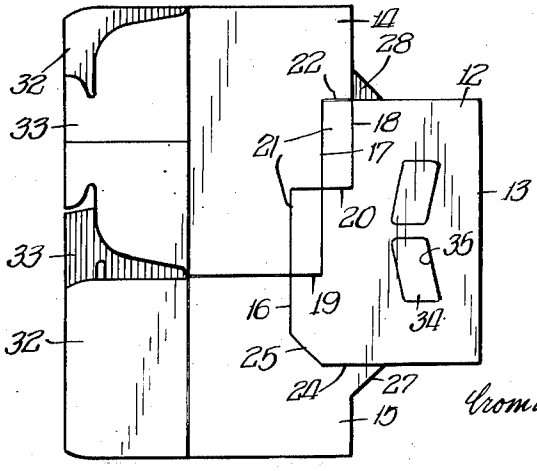


Fig. 3.

INVENTOR.
Edwin L. Arneson,
BY
Cromwell, Greist & Warden
attys.

March 4, 1952 E. L. ARNESON 2,587,808

BOTTLE CARRIER

Filed Jan. 10, 1948 2 SHEETS—SHEET 2

Fig. 4

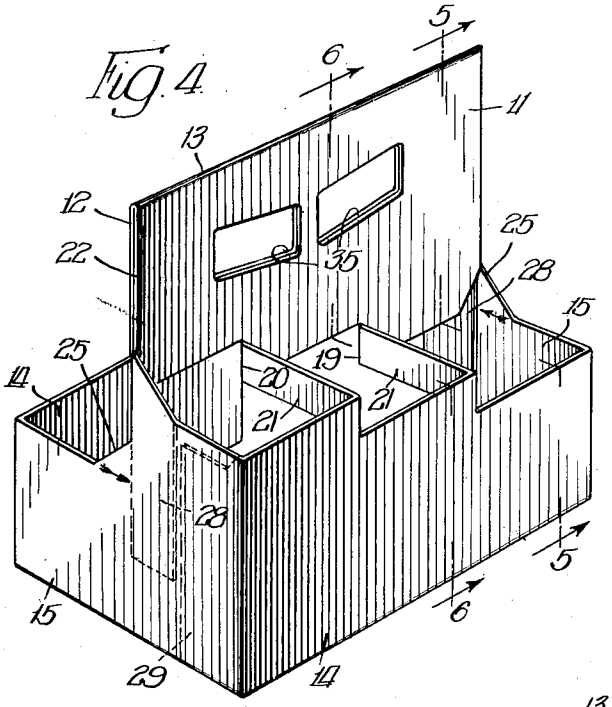


Fig. 5

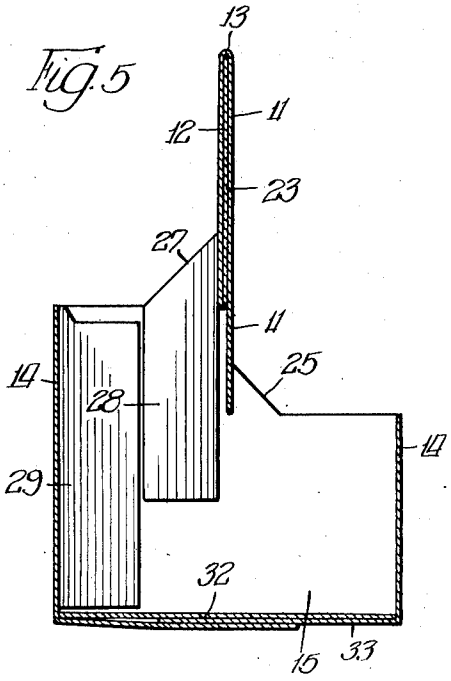
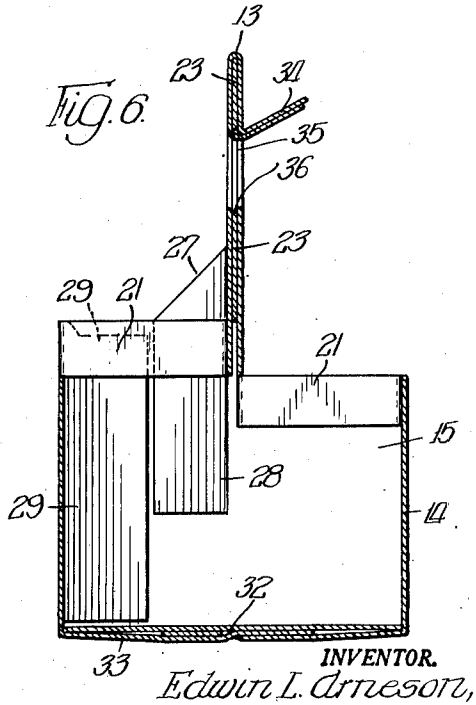


Fig. 6



INVENTOR.
Edwin L. Arneson,
BY
Cromwell, Greist & Warden
Attys.

Patented Mar. 4, 1952

2,587,808

UNITED STATES PATENT OFFICE

2,587,808

BOTTLE CARRIER

Edwin L. Arneson, Morris, Ill., assignor to Morris Paper Mills, Chicago, Ill., a corporation of Illinois

Application January 10, 1948, Serial No. 1,648

9 Claims. (Cl. 229—52)

1

The subject of the present invention is an improved, one piece paperboard carrier for bottles and like elongated articles, which carrier has novel means for reinforcing the same against destructive stresses, particularly in the integral handle of the carrier by which it is suspended and transported when loaded with such articles.

The present invention relates to open top bottle carriers of the general type illustrated and described in the patent Lebold, No. 2,389,318 of November 20, 1945. These carriers are characterized by a body portion which is subdivided into two equal halves by a central, upwardly extending partition and suspending panel. The zones on either side of said panel are each subdivided into a plurality of upwardly opening article receiving cells by means of integral cross partition elements which are hingedly connected to opposite surfaces of said central panel and to the respective opposed side walls of the carrier body which are spaced from either side of said panel. The present carrier structure presents a vertically and longitudinally stepped arrangement of the aforesaid cross partitions, as in the Lebold patent, however, it should be understood that the improved features of the present invention are equally applicable to carriers lacking this stepped nature.

It has been found that not only is the handle of the usual bottle carrier the source of most common failure of these carriers when loaded with filled bottles, but also that a zone of possible damage or failure exists at the point of hinged connection of the central suspending panel to the end walls of a carrier of the Lebold type. This reason for this is that there is a tendency to tear from said panel across the end wall, parallel to the grain of the paperboard stock, when the carrier is loaded and handled roughly, either during or after the loading operation. The present invention overcomes these objections, affording a reinforced, multiple ply handle and a braced end wall for a carrier of the foregoing type, whereby the latter, when loaded, may be lifted, swung, tilted or otherwise handled in a manner to impose severe tearing stresses thereon, without showing any tendency to fail.

Hence, an object of the invention is to provide a carton-like fibrous or paperboard article carrier of the foregoing general type having improved provisions for reinforcing the central suspending or handle panel thereof and at the same time insuring against tearing of the end wall under the above described circumstances.

A more specific object is to provide a carrier

2

and handle therefor in which certain wall and handle reinforcing flaps are provided in novel, alternate or staggered relationship on opposite ends of the blank from which the carrier is fabricated, thereby to provide reinforcing and tear-resisting members which are adapted to be disposed in a novel relationship to the handle and end walls of the completed carrier.

A still more specific object is to provide a bottle carrier of the type described, and a paperboard blank from which the same is fabricated, characterized by a pair of generally rectangular handle sections foldably connected to one another by a central, longitudinally extending crease line, together with inwardly foldable reinforcing and bracing flaps conjoined by diagonal fold lines to opposite ends of the aforesaid sections on opposite sides of said central line, thereby enabling said flaps to be adhesively secured to the respective end walls of the carrier, so as to be disposed transversely of the grain of the latter and to lie across the line at which tearing stress is most pronouncedly applied at the end walls.

The foregoing statements are indicative in a general way of the nature of the invention, but other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and operation of the device.

A single embodiment of the invention is presented herein for the purpose of exemplification, but it will be appreciated that the invention is susceptible of incorporation in other modified forms coming equally within the scope of the appended claims.

In the drawings:

Fig. 1 is a plan view of a died out paperboard blank from which the present carrier is constructed, illustrating the manner in which the same is slitted, creased and glued preparatory to manipulating the parts thereof in assembling the carrier;

Fig. 2 is a plan view of the blank following initial folding and adhering of certain of the glued parts, and also stippled to show a subsequent gluing of certain other parts;

Fig. 3 is a plan view of the carrier in completed flat or knock-down condition following further manipulation thereof;

Fig. 4 is a perspective view illustrating the carrier in erected condition ready to receive bottles or like contents; and

Figs. 5 and 6 are, respectively, views in transverse vertical section taken approximately along lines 5—5 and 6—6 of Fig. 4, illustrating the rela-

tionship of the various reinforcing elements of the invention.

Referring to Figs. 1, 2 and 3 of the drawings, the reference numeral 10 generally designates a blank for the carrier, which is died out from a suitable caliper of inexpensive paperboard stock. This blank is creased and slitted to provide a pair of generally rectangular handle and partition panel members or sections 11, 12 foldably connected to one another by a medial crease line 13 which extends longitudinally across the blank. The handle sections are separated from pairs of side and end wall sections 14, 15 on opposite sides thereof (which are flexibly connected thereto) by a means of the series of parallel, longitudinally extending, transverse and longitudinally staggered slits 16, 17, and 18, in order to permit swinging movement of said walls in erecting the carrier.

The side and end walls 14, 15 are flexibly connected to one another by the crease hinge 19 which transversely intersects slit 16 and terminates at slit 17. A further transverse creased hinge 20 intersects the slit 17 and joins the slits 16, 18 at its opposite ends. The effect of this slitting and creasing, as described in the Lebold patent, is to define sets of staggered, or vertically and longitudinally stepped, cross partition elements or straps 21 which extend normal to and between the handle panel, constituted by sections 11, 12, and the side walls 14 when the carrier is erected.

The panel sections 11, 12 are marginally creased at 22 to set off a foldable handle reinforcing flap 23 at one end of each thereof. This crease 22 intersects slit 18 and terminates at slit 17 so as to afford a hinge about which the endmost partition strap 21 is swingable relative to the side wall 14.

The opposite ends of the respective panel sections 11, 12 are each hingedly connected to end wall sections 15 by a crease 24 disposed in alignment with the margin of the section, and an inclined slit 25 intersects the end of this crease and the outer end of slit 16. Sets of angularly arranged slits 26 and creases 27 in the end walls 15, the former paralleling the medial crease 13 and the latter disposed at an angle of approximately 45 degrees thereto, extend from the inner terminus of crease 24 to the outer margin of the blank. They provide a pair of bendable tabs 28 which are adapted to be bent inwardly and downwardly about crease 27 and disposed in downwardly straddling or overlapping relation to the outer end of the slit 25, in the fashion illustrated in Figs. 2, 4, 5 and 6. When adhesively secured to the end walls 15, the tabs 28 afford a stop which resists tendency of the carton stock to tear outwardly along an extension of the slit 25.

In assembling the carrier the flaps 23 and tabs 28 are first coated with adhesive, as indicated by stippling in Fig. 1. They are then folded inwardly around crease lines 22 and 27 respectively and adhered to panel sections 11, 12 and to end walls 15 respectively, to the position of Fig. 2. Glue laps 29 are next folded onto side walls 14 and given a coating of glue as shown in Fig. 2, the infolded flaps 23 being glued; and the opposed halves of the blank are then brought together about medial fold line 13 and adhered by said glued flaps and laps. The carrier is shown in this final position in Fig. 3.

When the carrier is erected to operative condition, as in Figs. 4, 5 and 6, with the bottom members 33 latched and holding the parts in said condition, the depending tabs 28, which are adhesively secured to the respective end walls 15, reinforce and stiffen the latter to some extent; however, their primary purpose is to overlie the zone of the end wall adjacent its connection to the handle 12, at which the most severe tearing stress on the stock normally exists. The direction of normal tearing stress is indicated by arrows in Fig. 4. Inasmuch as the grain of the paperboard stock of the walls is horizontal, the folding and adhering of tabs 28 results in their lying across said grain, so as to furnish a bar to tearing. The inclination of the slits 25 by which the handle is partially separated from the end walls produces a margin on the latter angled to the direction of the grain which also contributes to a minimization of the tearing tendency.

The handle reinforcing flaps 23 substantially rigidify the handle panel, a function which is still further assisted by the adhesive securing these flaps and panels to one another following folding on line 13. Tearing of the handle when the carrier and contents are lifted, swung, twisted or otherwise roughly handled is practically impossible.

Moreover, considerable difficulty is usually experienced, in the operation of high speed gluing machines, in obtaining a proper adherence to one another of superposed glued panels traversing such machine when said panels vary in ply thickness at different areas thereof. Thus, if the handle sections 11, 12 were adhered directly to one another, they would produce a double-ply thickness immediately adjoining the zones of triple-ply thickness which are represented by the tabs 28 lying between an end wall panel 15 and the opposite side wall panel 14 (in the condition of the article represented by Fig. 3). This variation in thickness tends to non-uniformity of application of pressure by the compressive sealing rollers of the gluing machine, with resultant possible failure of the two-ply thickness to be adhered together properly.

However, by providing the inwardly folded handle flaps 23 as shown, the strength of the handle is not only increased by more than 50, but its sectional thickness is made equal to that of the adjacent glued zones at which tabs 28 are disposed, with the result that the parts are unfailingly secured together in the most uniform and efficient manner.

I claim:

1. An article carrier comprising pairs of opposed, flexibly connected side and end walls and a bottom, a central panel paralleling and located in a plane between said side walls, and flexibly connected at its ends to midpoints of said end walls, said central panel comprising a pair of sections disposed in parallel, multi-ply relation, a tab bendably connected to each of said end walls outwardly of the opposite end margins of said respective panel sections, said tabs each being disposed in flat, side-by-side relation to an end wall in adjacent, vertically straddling relation to the flexible connection of said panel to said end wall, and means securing said tabs in said relation.

2. An article carrier comprising pairs of opposed, flexibly connected side and end walls and a bottom, a central panel paralleling and located in a plane between said side walls, and flexibly connected at its ends to midpoints of said end walls, said central panel comprising a pair of sections disposed in parallel, a multi-ply relation, a reinforcing flap conjoined to an end mar-

gin of each of sections, which flaps are folded to position paralleling and between said sections, and a tab bendably connected to each of said end walls outwardly of the opposite end margins of said respective panel sections, said tabs each being disposed in flat, side-by-side relation to an end wall in adjacent, vertically straddling relation to the flexible connection of said panel to said end wall, and means securing said tabs in said relation.

3. An article carrier comprising pairs of opposed, flexibly connected side and end walls and a bottom, a central panel paralleling and located in a plane between said side walls, and flexibly connected at its ends to midpoints of said end walls, said central panel comprising a pair of sections connected to one another along an upper fold line and disposed in parallel, multi-ply relation, a reinforcing flap conjoined to an end margin of each of sections on opposite sides of said fold line, which flaps are folded to position paralleling and between said sections, and a tab bendably connected to each of said end walls outwardly of the opposite end margins of said respective panel sections, said tabs each being disposed in flat, side-by-side relation to an end wall in adjacent, vertically straddling relation to the flexible connection of said panel to said end wall, and means securing said tabs in said relation.

4. A carrier of the type defined in claim 1, in which only one of said tabs is provided on each of said panel sections, being located at opposite ends of the respective sections.

5. A carrier of the type defined in claim 2, in which said panel sections each have but one tab and one flap, located at respective opposite ends thereof with the respective tabs and the respective flaps in staggered relation to one another.

6. A paperboard carrier comprising a bottom, side walls connected to said bottom, a vertically extending panel including a pair of sections disposed parallel to and between said walls and foldably connected to one another along the top margin of said panel, and flexible partition straps cut from the material of said respective side walls and panel sections and hinged thereto on vertical hinges to subdivide the space on opposite sides of said panel into at least three article receiving cells, the portion of each of the side walls defining an intermediate cell being vertically stepped in height relative to the side wall portions defining cells on either side of said intermediate cell, said panel sections each having a flap of substantial area hinged to a side margain thereof and said flaps being folded on and adhesively secured between said panel sections in the zone of the latter adjacent said partition straps, said panel sections and interposed flaps being disposed in flat, planar condition throughout substantially the entire area thereof.

7. An article carrier comprising a bottom, side walls connected to said bottom, end walls extending between said side walls, a vertically extending multi-ply panel disposed parallel to and between said side walls, and flexible partition strips extending between said respective side walls and panel to subdivide the space on opposite sides thereof, said panel being flexibly connected to said end walls, and at least one of the latter being provided with a flap flexibly conjoined to an upper margin thereof, by a hinge enabling said flap to be folded downwardly, said flap being adhesively secured to said end wall and in said last named position substantially over-extending the lowermost margin of said panel at its flexible connection to said end wall.

8. A carrier of the type defined in claim 7, in which both end walls are provided with a tab in the relation thereto defined in claim 7.

9. A paperboard carrier comprising a bottom, side walls connected to said bottom, a vertically extending panel including a pair of sections disposed parallel to and between said walls and foldably connected to one another along the top margin of said panel, and flexible partition straps cut from the material of said respective side walls and panel sections and hinged thereto on vertical hinges to subdivide the space on opposite sides of said panel into at least three article receiving cells, the portion of each of the side walls defining an intermediate cell being vertically stepped in height relative to the side wall portions defining cells on either side of said intermediate cell, at least one of said panel sections having a flap of substantial area integrally hinged to a side margin thereof and said flap being folded on and adhesively secured between said panel sections in the zone of the latter adjacent said partition straps, said panel sections and interposed flap being disposed in flat, planar condition throughout substantially the entire area thereof.

EDWIN L. ARNESON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,273,266	Himes	Feb. 17, 1942
2,322,396	Slevin, Jr.	June 22, 1943
2,368,203	Crane	Jan. 30, 1945
2,371,471	Rothstein	Mar. 13, 1945
2,372,351	Arneson	Mar. 27, 1945
2,458,281	Lupton	Jan. 4, 1949
2,460,229	Lebold	Jan. 25, 1949