Dec. 4, 1956 E. L. ARNESON 2,772,810

ARTICLE CARRIER

Filed Feb. 20, 1952 2 Sheets-Sheet 1

Fig. 1.

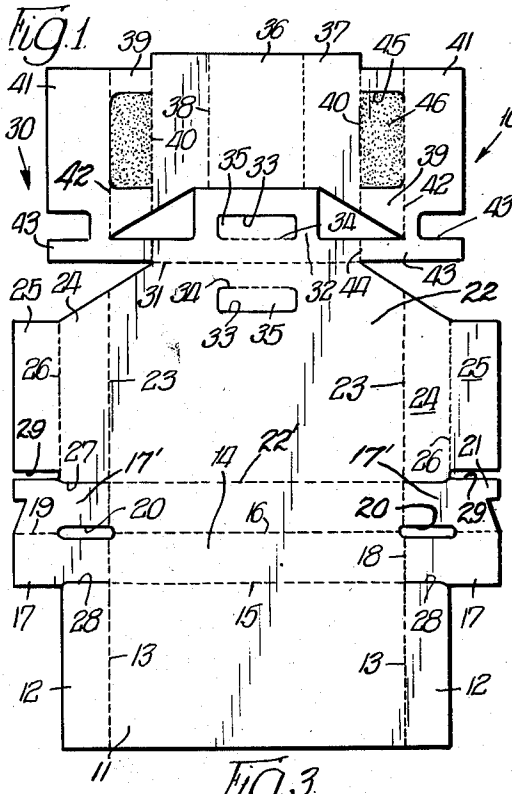

Fig. 2.

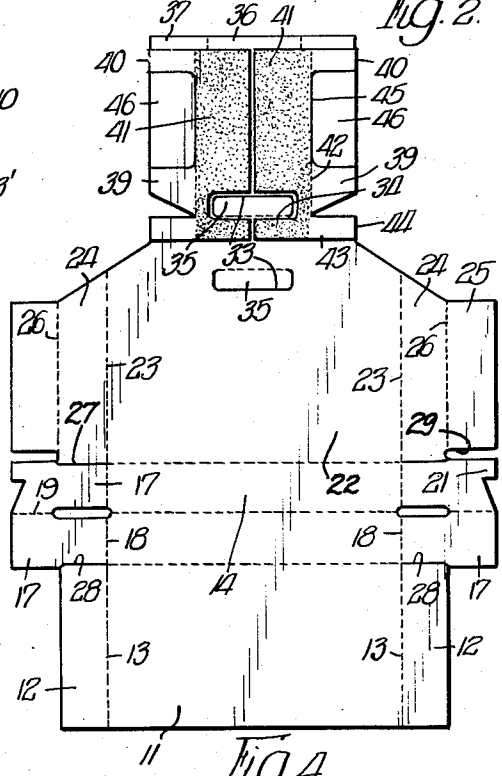

Fig. 3.

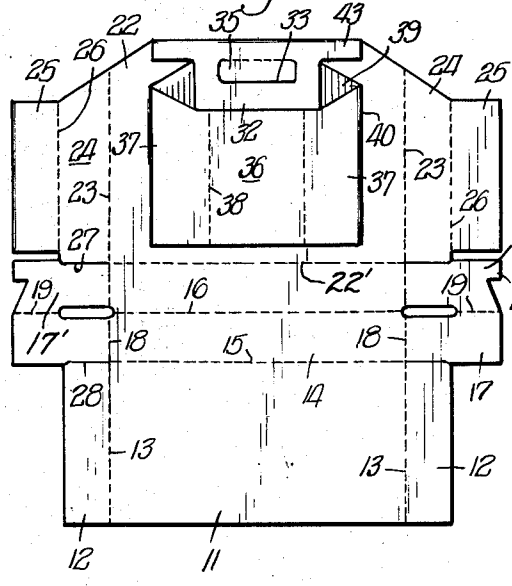

Fig. 4.

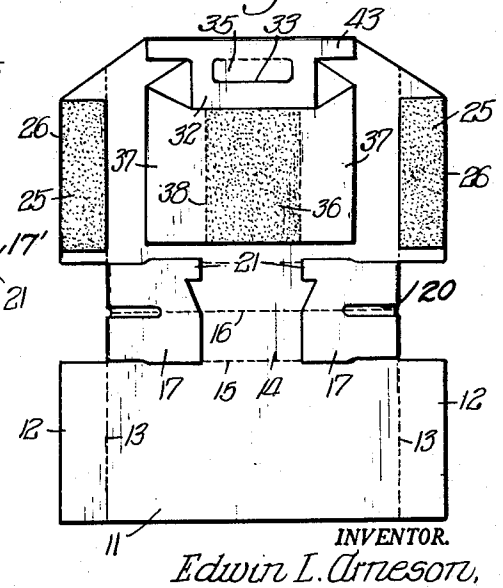

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Fig. 5

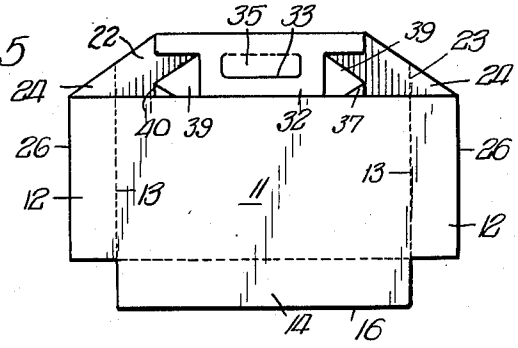


Fig. 6

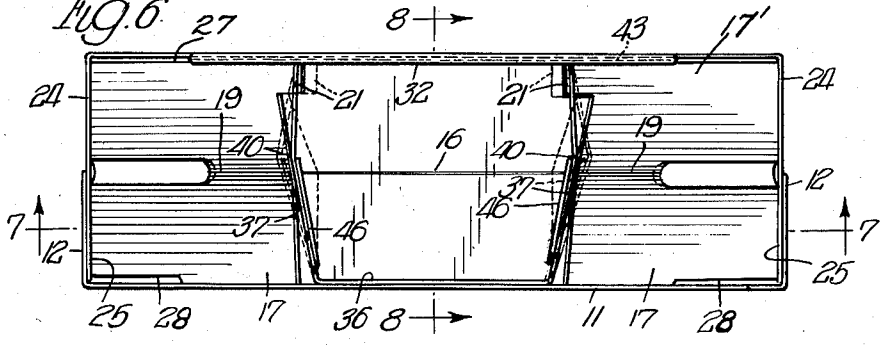


Fig. 7

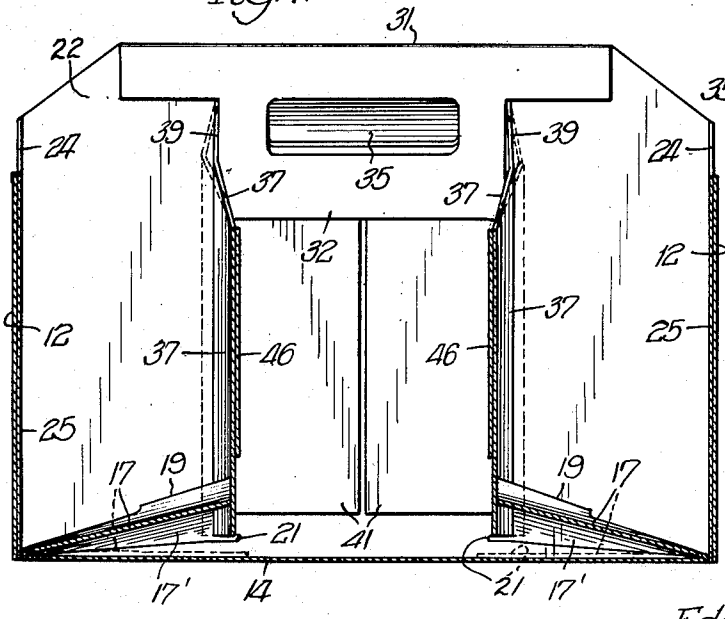
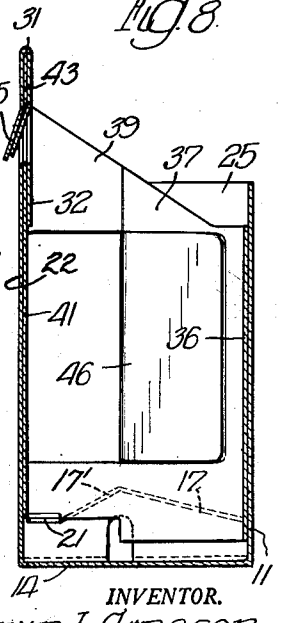


Fig. 8



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2,772,810

ARTICLE CARRIER

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Application February 20, 1952, Serial No. 272,623

5 Claims. (Cl. 220—111)

The present invention relates to improvements in a flexible paperboard carrier for bottles and related articles of uniform size and shape.

More particularly, it is an object of the invention to provide an improved carrier of this sort having a very strong, rigid suspending handle and structure, as well as improved means for the protection of bottles loaded therein against impact damage or destructive contact with one another.

It is another and more specific object of the invention to provide a flexible paperboard carrier, here illustrated as a carrier of three-bottle capacity, which carrier features a novel cross partition or divider unit integrally hinged to the top margin of a side wall of the carrier, this unit including improved means providing a suspending grip at that wall, and at the same time reinforcing the latter in a novel and improved fashion.

Still more specifically, it is an object to provide such a paperboard carrier, characterized by side and end walls, a bottom, and a cross partition defining and handle reinforcing unit integrally hinged to one of said walls, said unit including a panel adhesively secured to the other side wall and individually collapsible cross partition elements adapted to extend normal to and between said walls when the carrier is completed and erected, the carrier bottom having novel end flaps adapted to engage and brace the cross partition elements against lateral collapse while articles are being inserted into cells defined by the elements.

It is a general object of the invention to provide an improved carrier having the foregoing attributes, and a flexible paperboard blank for manufacturing the same, in which the blank is of minimum size in relation to the size and strength of the completed carrier.

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

A single embodiment of the invention is presented herein for purpose of illustration. It will be appreciated that the invention may be incorporated in other modified forms coming equally within the scope of the appended claims.

In the drawings,

Fig. 1 is a top plan view of an improved flexible paperboard blank employed in the fabrication of the improved carrier, showing the application of a preparatory coating of adhesive to certain areas thereof;

Fig. 2 is a top plan view of the blank following an initial manipulation thereof, also indicating the application of a further coating of adhesive prior to a succeeding operation;

Fig. 3 is a top plan view of the blank following the succeeding operation referred to above;

Fig. 4 is a top plan view of the blank following still further folding and gluing succeeding operations;

Fig. 5 is a plan view of the blank in its completed, flat or knocked-down condition;

Fig. 6 is a top plan view of the carrier in erected, article receiving condition, illustrating certain details of the wall reinforcing and partition defining unit, as well as the bracing relationship of certain flaps on the carrier bottom to the partitions of that unit; and

Figs. 7 and 8 are, respectively, views in longitudinal and transverse vertical section along lines corresponding approximately to lines 7—7 and 8—8 of Fig. 6, these views indicating in dotted and solid lines the action of the bottom end flaps in bracing the laterally collapsible partitions when the carrier is erected.

Referring to Fig. 1 of the drawings, the improved carrier is fabricated from a flexible paperboard blank **10** of a generally rectangular over-all outline. Blank **10** is died out, slitted and creased to provide a first rectangular side wall panel **11** having opposed end wall forming panels or flaps **12** integrally hinged to opposite margins thereof by means of parallel vertical creases **13**. A bottom forming section **14** is integrally hinged by a crease **15** to a horizontal lower side margin of panel **11**. Bottom **14** is of elongated rectangular outline, and is divided by a longitudinally extending, medial crease **16** into two equal halves. The bottom has end flaps **17** integrally hinged by creases **18** to its opposite ends. Flaps **17** carry horizontally aligned medial creases **19** and elongated slots **20** which are also aligned with the bottom crease **16**, the creases **19** and slots **20** subdividing the respective flaps **17** into two halves of which one, designated **17'**, has a hook-like configuration at **21**.

A second side wall panel **22** of generally rectangular outline, is integrally hinged to the bottom **14** by means of a horizontal crease **22'**. Parallel creases **23** in transverse alignment with the side wall end creases **13**, **18**, serve to hinge to the opposite margin of the wall panel **22** a pair of like end wall forming panels **24**, and these panels in turn have glue lap panels **25** integrally hinged thereto by the creases **26**. Spaced horizontal slits **27**, in longitudinal alignment with the bottom defining crease **22'**, separate the end wall panels **24** from the end flap sections **17'** on the bottom section form crease. Horizontal slits **28**, aligned with the crease **15**, separate the end wall panel **12** of the wall **11** from the remainder of the flaps **17**. Similarly, horizontally aligned, outwardly opening slots **29** separate the glue flaps **25** from bottom end flaps **17**. The outer ends of the respective slits **27**, **28** are hooked somewhat in opposite directions, for a purpose to be described.

A handle reinforcing and cross partition defining unit **30** is integrally hinged by means of a horizontal crease **31**, to the upper margin of the side wall panel **22**. Unit **30** includes a grip element or section **32** of inverted T-shaped outline, which immediately adjoins crease **31**, and this panel and the side wall **22** are each provided with a U-shaped slit **33** whose termini are connected by a crease **34**, thereby to define a hand hole flap **35** which is deflectable from the plane of the handle side wall **22** when the carrier is completed.

The unit **30** also includes an intermediate rectangular panel **36** which, in the completed condition of the carrier, is adhesively secured to the side wall panel **11** in a central zone of the latter. Similar cross partition elements **37** are integrally hinged to opposite ends of panel **36** by vertical creases **38**, and a pair of further cross partition elements **39** are integrally hinged to the respective panels **37** by creases **40**. A terminal handle reinforcing flap or panel **41** is integrally hinged to each of the elements **39** by means of a crease **42**.

The panels **41** are each provided wih an integral inner, T-shaped extension **43**, the latter being integrally connected by short creases **44** to the opposite lateral extremities of the handle reinforcing member **32**. Extensions **43**

are in part defined by died out recesses 43' opening laterally outwardly of the blank and adapted to coincide with the area of the flaps 35 when the panels 41 are disposed in operative, face-to-face relation to the side wall 22 in the completed condition of the carrier.

Opposed U-shaped slits 45 in the two cross partition panels 39, their ends terminating at creases 40, serve to outline a partition stiffening tongue 46 for increasing the thickness of the partition. The tongue is bendably connected by hinge crease 40 to partition element 37.

In completing the carrier from the blank illustrated in Fig. 1, adhesive is first applied to the two tabs 46 excised from the material of panels 39, as indicated by stippling, whereupon those panels and tabs, together with the wall reinforcing panels 41 and extensions 43, are bodily folded upwardly, inwardly and downwardly about the creases 40, 44, respectively, causing the tabe 46 to be adhesively secured to the adjoining panels 37, as shown in Fig. 2. Further adhesive is now applied to the upwardly exposed surface of panels 41 and extensions 43, as indicated by stippling in Fig. 2 of the drawings, after which the entire cross partition and handle reinforcing unit 30 is folded upwardly, inwardly and downwardly about crease 31 with the result that this unit is adhesively secured to the side wall 22, as illustrated in Fig. 3 of the drawings.

Following this, end wall bracing flaps 17 are folded about their creased connections 18 to the bottom 14, and the glue flaps 25 are folded upwardly, inwardly and downwardly about the respective creases 26, leaving the blank in the condition illustrated in Fig. 4 of the drawings. Adhesive is now applied to the upwardly exposed surfaces of flaps 25 and to the intermediate panel 36 of cross partition and wall reinforcing unit 30, as indicated by stippling in Fig. 4. The side wall panel 11 and adjoining section of bottom 14 are now folded upwardly, inwardly and downwardly about the medial bottom crease 16, with the result that a central area of the side wall 11 is secured to the intermediate partition unit panel 36 and the two end wall defining panels 12 are secured to the two adhesively coated flaps 25.

The completed carrier is illustrated in Fig. 5 in collapsed or knocked-down condition. In order to erect the same to the operative condition illustrated in Figs. 6, 7 and 8, compressive pressure is applied to the opposite ends of the blank, represented by the creases 26, with the assistance of some slight spreading pressure applied to the opposite side wall panels 11, 22. This causes the carrier to approach a rectangular condition, the cross partititon constituted by the panels 39, 37, and reinforcing tabs 46 adhesively secured to the latter, at the same time approaching a position in which it is in approximately 90° relation to the opposed side wall.

In this condition the bottom end flaps 17 are disposed in immediately overlying relation to the bottom section 14 and have approached, but not quite arrived at, a flat horizontal planar condition with the latter. These flaps may now be manually shifted upwardly, as by the insertion of a suitable instrument through the slots 20 therein, past the horizontal condition shown in dotted line in Figs. 6, 7 and 8. The oppositely curved termini of the respective sets of slits 27, 28 which free the flaps 17 from end wall panels 12, 24 of the blank (see Fig. 1) result in a greater width of the flaps at their outer ends. Hence in the swinging of the flaps upwardly as described the side edges of these enlarged extremities wipe past side walls 11, 22 and tend to urge the same outwardly. This in turn promotes flexure of the flaps about their medial creases 19, towards an inverted V sectional outline. As the flaps 17 are so elevated, their inner edges wipe upwardly past the bottom margin of the cross partitions and, having passed a truly planar position, buckle upwardly about creases 19 and assume the inverted V outline referred to, with their inner margins in edge engagement with the partitions, adjacent the lower margin of the

latter, as indicated in solid lines in Figs. 6, 7 and 8. The hook formations 21 of the flap sections 17 remain beneath the cross partitions at the portion of the latter adjacent the side wall 22, thus restraining the flaps from further upward movement past the desired partition-bracing position. The flaps thus hold the partitions temporarily in position for filling of the carrier by an automatic bottle loading machine. As bottles are gravitationally discharged to the cells defined by the cross partitions and side and end walls of the carrier, they return the flaps 17 to coplanar relationship with the bottom 14 of the carrier, as shown in dotted lines in Figs. 6, 7 and 8.

The completed carrier is rigidified on its front wall 11 by the presence of the adhesively secured intermediate panel 36 of the cross partition structure or unit 30, while the rear panel 22 is correspondingly stiffened by the handle reinforcing member 32, and by the reinforcing flaps or elements 41 and their extensions 43 which lie in adhesively secured, side-by-side relation to wall 22. The bottles are also well protected by double thickness of stock at the cross partitions, represented by the adhesively secured panel 37 and glue tabs 46.

I claim:

1. A collapsible paperboard article carrier formed from a one-piece blank and comprising opposed side walls, a bottom extending therebetween and hinged to the lower margins thereof, said bottom being subdivided into a pair of sections by a medial crease about which the bottom is vertically collapsible to bring said walls into coplanar, face-to-face relation, end flaps integrally hinged to opposite ends of said bottom and having medial creases corresponding with the crease in the bottom, and a cross partititon unit hinged to one of said side walls along a top horizontal margin thereof, said cross partition unit including a plurality of panel integrally hinged to one another, one of said panels being secured in face-to-face relation to the opposite side wall, other of said panels constituting cross partitions adapted to extend between said side walls when the carrier is erected and being collopsible upon themselves about medial vertical creases, and terminal panels integrally hinged to said collapsible panels and secured in face-to-face relation to said side wall to which said cross partition unit is hinged, said bottom end flaps having notches in their inner edges and being swung upwardly about their hinged connection to said bottom when said carrier is in erected condition to bring the inner edges thereof into engagement with said cross partitions with the bottom edges of the latter engaged in said notches to brace the cross partitions laterally.

2. A collapsible paperboard article carrier formed from a one-piece blank and comprising opposed side walls, a bottom extending therebetween and hinged to the lower margins thereof, said bottom being subdivided into a pair of sections by a medial crease about which the bottom is downwardly collapsible to bring said side walls into coplanar, face-to-face relation, and end flaps integrally hinged to opposite ends of said bottom, and a cross partition unit hinged to one of said side walls along a top horizontal margin thereof, said cross partition unit including a plurality of panels integrally hinged to one another, one of said panels being secured in face-to-face relation to the other wall, adjoining panels constituting cross partitions adapted to extend between said side walls when the carrier is erected and being collapsible upon themselves about medial vertical creases, and terminal panels integrally hinged to said collapsible panels and secured in face-to-face relation to said wall to which said cross partition unit is hinged, said bottom end flaps being provided with medial creases about which they are collapsible to position said cross partition panels between said collapsed bottom section, said bottom end flaps having notches in their inner edges intermediate the side edges thereof and being swung upwardly about their hinged connection to said bottom when said carrier is in erected

condition to bring the bottom portions of said cross partitions into said notches to brace the same laterally.

3. A collapsible paperboard article carrier fabricated from a one-piece blank and comprising, in erected condition thereof, a pair of opposed side wall panels, a bottom hinged to the lower margins of said side wall panels and medially creased longitudinally to subdivide the same into sections adapted for outward and downward collapsing movement relative to said side wall panels, infolded end flaps integrally hinged by transverse creases to opposite end margins of said bottom and medially creased in alignment with the medial bottom crease for collapsing movement downwardly along with said bottom, said flaps lying between said bottom sections when collapsed, end walls hinged to opposite ends of said side wall panels, said end walls being medially creased for outward collapsing movement, and a cross partition structure integrally connected to a top horizontal margin of one of said side wall panels, said cross partition structure including cross partition forming panels hingedly connected to each other and extending with the lower edges thereof between said side walls in spaced relation above said bottom when in erected condition, said cross partition panels being creased for outward collapse toward the end walls, said bottom end flaps overlying said bottom sections and being swung upwardly about their hinged connection with said bottom, when said carrier is in erected position, and into engagement with said respective cross partition forming panels, the inner edge of each of said bottom end flaps having a recessed formation providing a portion which engages beneath the bottom edge of said cross partition forming panels to limit said upward swinging thereof and another portion which engages edgewise with the outer faces of said cross partition forming panels thereby to brace the latter against outward collapse about the creases thereof.

4. In a collapsible article carrier formed from flexible paperboard material and having parallel upstanding panels defining opposite side walls of an article receiving space, a foldable cross partition structure extending transversely between said panels and subdividing said space, said structure comprising a cross partition unit having a first panel element secured in flatwise face-to-face relation to one of said upstanding side wall panels, a second panel element integrally hinged along a vertical crease to said first panel element, and a third panel element integrally hinged by a vertical crease to said second panel element and joined along a vertical crease in hinged relation to the other of said upstanding side wall panels, and a protective reinforcing flap element cut from the material of said third panel element, said reinforcing flap element being folded about the connecting crease line with said second panel element and being secured in flatwise face-to-face relation to said second panel element.

5. In a collapsible article carrier formed of flexible paperboard material and having parallel upstanding panels defining opposite side walls of an article receiving space, a foldable cross partition structure extending transversely between said side wall panels and subdividing said space, said structure comprising a cross partition unit having a cross panel element integrally hinged along a vertical crease to one of said upstanding panels and a second cross panel element integrally hinged by a vertical crease to said cross panel element and joined along a vertical crease in hinged relation to the other of said upstanding side wall panels, said cross panel elements being foldable upon each other about their connecting vertical crease upon collapse of the carrier, and a protective reinforcing flap element of substantial width and height cut from the material of one of said cross panel elements and folded over about the connecting vertical crease between said cross panel elements and secured in flatwise face-to-face relation to the adjoining cross panel element.

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