Dec. 4, 1956 E. L. ARNESON 2,772,610

METHOD OF MAKING ARTICLE CARRIER

Filed Aug. 22, 1952 3 Sheets-Sheet 1

Fig. 1

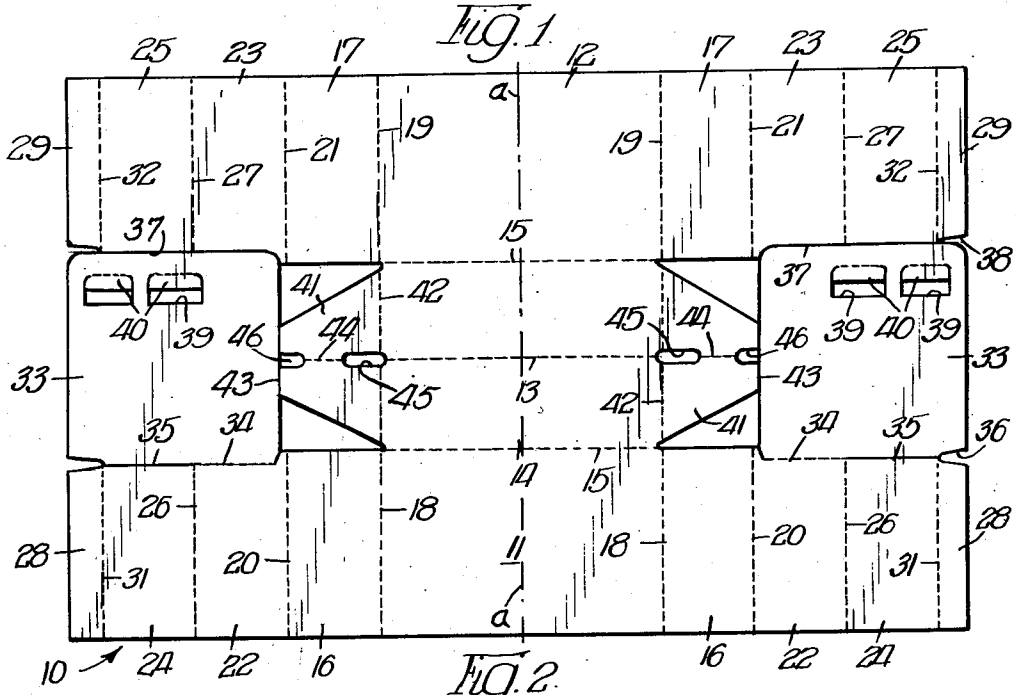
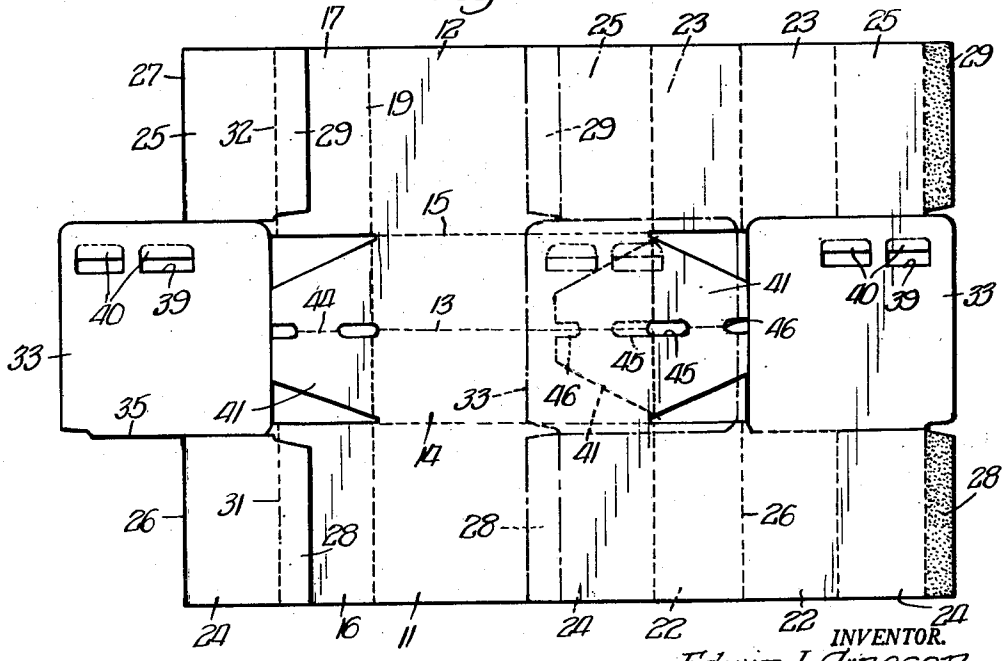


Fig. 2



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Filed Aug. 22, 1952 3 Sheets-Sheet 2

Fig. 3.

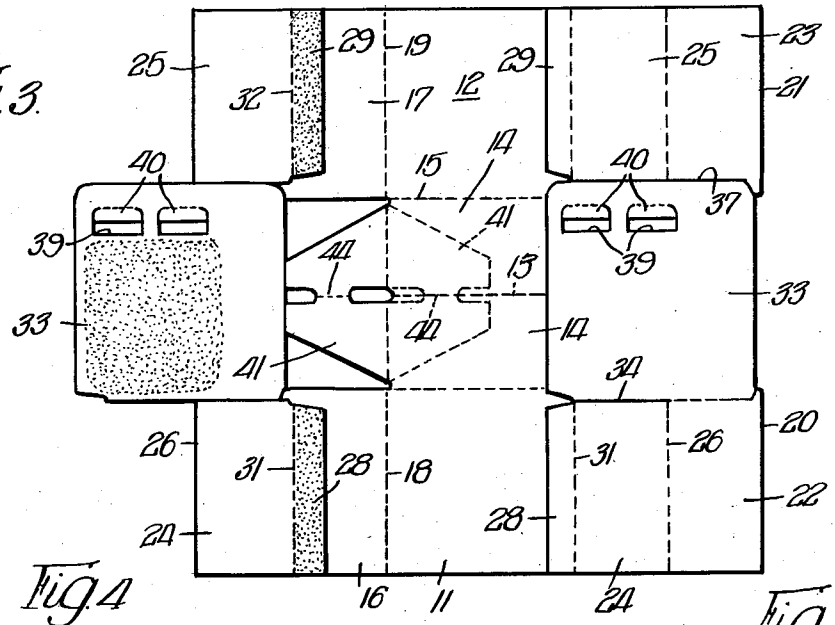


Fig. 4

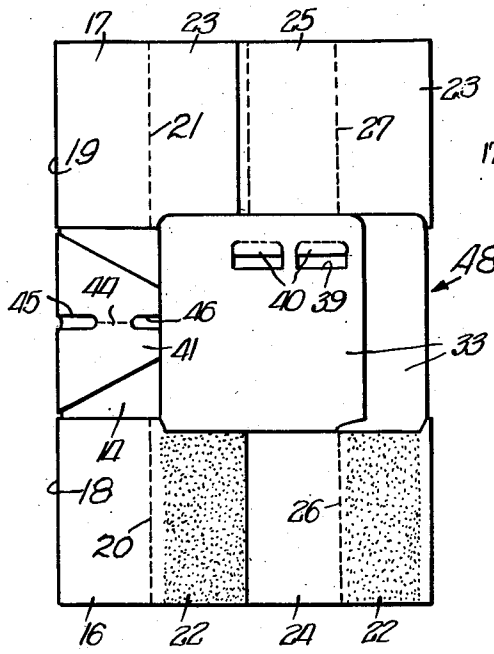
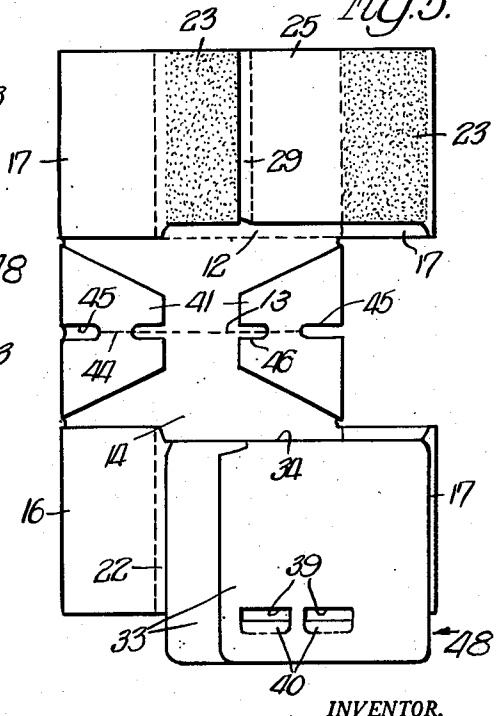


Fig. 5.



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Filed Aug. 22, 1952 3 Sheets-Sheet 3

Fig. 6.

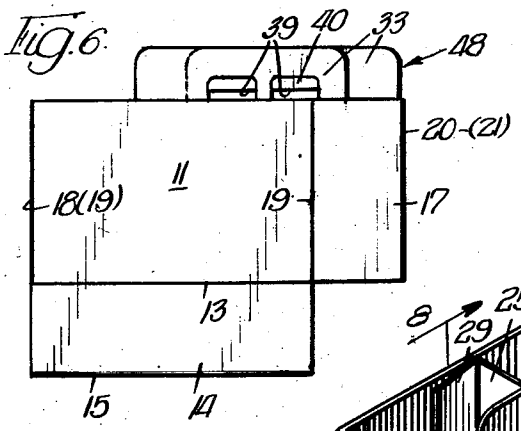


Fig. 7.

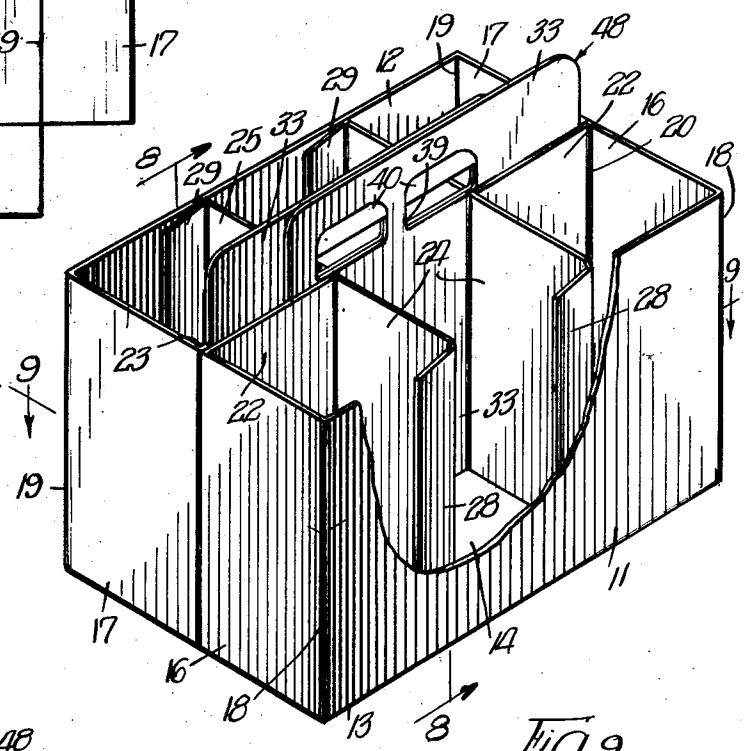


Fig. 8.

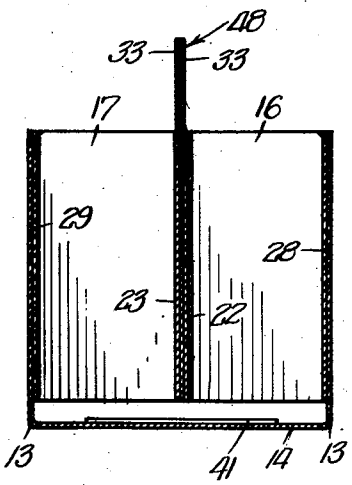
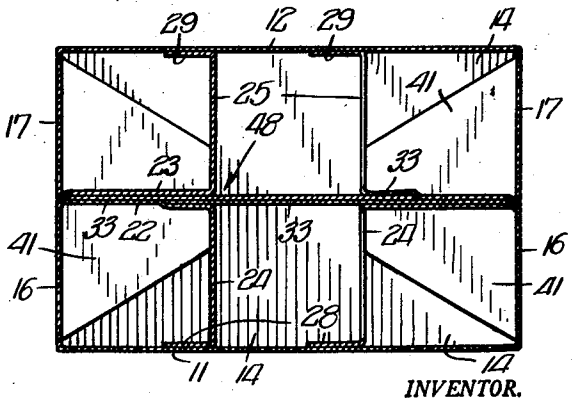


Fig. 9.



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2,772,610

METHOD OF MAKING ARTICLE CARRIER

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Application August 22, 1952, Serial No. 305,776

4 Claims. (Cl. 93—49)

The present invention relates to improvements in a paperboard carrier for bottles and like articles of uniform size and shape, and to an improved method for constructing such carriers from a one-piece paperboard blank of a minimum size in relation to the high degree of strength and rigidity possessed by the carrier which is the product of the method.

It is an object of the invention to provide an improved article carrier which is characterized by a very strong suspending and partition structure, constituted by two longitudinal partition panels of full depth and width which are adhesively secured in rigid, board-like relation to one another, together with a further partition defining structure which is adhered to the two panel longitudinal partition and to opposed side walls of the carrier paralleling the latter, thus further reinforcing the longitudinal unit and at the same time defining cross partition elements which are of substantial depth.

Another object is to provide a method for making a carrier as described in the preceding paragraph in which carrier blank is manipulated by successive, compound foldings at one end thereof about crease fold lines paralleling the direction of advance of the blank through a folding and gluing machine, and by a single, reversely directed fold of certain panels at the opposite end of the blank about crease fold lines also paralleling its path of advance, followed by successive foldings of certain longitudinal partition panels and of the two major halves of the blank upon one another, both of these manipulations being about fold lines at right angles to the lines of fold referred to above, thus to enable the production of a strong and well reinforced carrier from a blank of small size on standard right angle gluing equipment of well known type.

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 construction and operation of the improved carrier and method.

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 a one-piece flexible paperboard blank employed in fabricating the improved carrier;

Fig. 2 is a top plan view illustrating the blank of Fig. 1 following a preliminary folding and application of adhesive thereto, also indicating in dot-dash line a succeeding folding operation;

Fig. 3 is a top plan view of the blank following the succeeding folding operation referred to above, and indicating the application of a further adhesive to certain areas thereof;

Fig. 4 is a top plan view of the blank after another folding operation upon same, and showing yet another application of adhesive to certain areas thereof;

Fig. 5 is a top plan view of the blank following a further fold of certain longitudinal partition panels thereof at a right angle to the direction of fold of the other members, also indicating the application of adhesive as a preliminary to a final folding operation;

Fig. 6 is a top plan view of the completed carrier in a flat, knocked-down condition;

Fig. 7 is a perspective view, partially broken away, of the carrier in erected condition, ready for the reception of its intended contents; and

Figs. 8 and 9 are, respectively, views in transverse and longitudinal vertical section along lines 8—8 and 9—9, respectively of Fig. 7, illustrating the strongly reinforced longitudinal and transverse partition structure resulting from manipulating the blank in accordance with the improved method.

Referring to Fig. 1 of the drawings, the carrier is constructed from a flat blank **10** of flexible paperboard stock which is of generally rectangular outline. This blank is exactly symmetric about a theoretical transverse medial line *a—a* (vertical as viewed in Fig. 1) extending through the mid point of its transversely spaced, rectangular side wall forming panels **11, 12**. It is also approximately symmetric about a medial longitudinal crease line **13** through its bottom forming section **14** which connects panels **11, 12**. This bottom forming section is subdivided into two identical panel sections by the crease **13**, these panel sections being integrally hinged to side wall panels **11, 12** by longitudinally extending marginal creases **15**. Accordingly, due to the symmetry of the blank with reference to the hypothetical transverse line referred to above, corresponding elements and relationships thereof which are found at opposite ends of the side walls and bottom section will be designated by corresponding reference numerals.

Each of the side wall panels **11, 12** has a pair of end wall panels, designated **16, 17**, respectively, integrally hinged to its opposite ends by means of transversely extending creases **18, 19**. End wall panels each in turn have a partition forming structure integrally hinged thereto by the respective transverse creases **20, 21** which parallel creases **18, 19**.

These partition structures are constituted by longitudinal partition-engaging panel sections **22, 23** adjoining creases **20, 21** respectively, by cross partition panel sections **24, 25** which are integrally hinged to the respective sections **22, 23** by transverse creases **26, 27**, and by terminal glue laps **28, 29** hinged to sections **24, 25** by transverse creases **31, 32** respectively.

A longitudinal partition and suspending panel **33** is integrally hinged to the inner margin of each of the panels **22** by a longitudinally extending crease **34** paralleling medial bottom section crease **13**. Creases **34** extend oppositely from points at one side of the respective panel hinge creases **20** and terminate at the inner extremity of the next panel hinge creases **26**. Longitudinal partition panels **33** are then separated from the cross partition structures by longitudinal slits **35** extending outwardly from creases **34**. U-shaped notches or bays **36** extend inwardly from the ends of the blank to the outer termini of the respective slits **35**.

Each of the longitudinal partition panels **33** is separated from the cross partition structure at the opposite side of the blank by means of a longitudinally extending slit **37**, which defines the upper margin of the handle portion of the longitudinal partition which is to be constituted by panels **33**. Blank **10** is notched out at **38** to space the ends of glue laps **29** from longitudinal partition and suspending panels **33**. Each of the panels **33** is also provided with conventional hand hold openings **39** having flaps **40** integrally hinged to the upper margins thereof.

Bottom member 14 is provided with reinforcing and stabilizing flaps 41 at either end thereof, these flaps being integrally hinged to the bottom by transversely extending creases 42 in alignment with side wall margin creases 18, 19. Flaps 41 are separated from longitudinal partition panels 33 by means of transversely extending slits 43. Each flap 41 is also subdivided into two like halves by a longitudinally extending crease 44 aligned with medial bottom crease 13. Slots 45, 46 are formed in flaps 41 at opposite ends extremities of the subdividing creases 44.

It will be noted that longitudinal partition panels 33 are both of substantial longitudinal dimension, being somewhat larger in this respect than the sum of the widths of any two of the panels 22, 23, 24 or 25 of the cross partition structure. They are also substantially greater in their transverse dimension than the side walls 11, 12 or any of the panels of the cross partition structure. Hinge creases 34 and separating slits 35, 37 are located somewhat outwardly, in the transverse sense, of the creases 15 which define the lower margins of side walls 11, 12 when the carrier is completed.

The improved carrier is formed from blank 10 on a standard right angle gluing and folding machine. The blank is first fed in a direction paralleling side wall marginal creases 18, 19, and in the first folding operation the cross partition panel elements 24, 25 on the left hand side thereof, as viewed in Fig. 1, are swung upwardly inwardly and downwardly about creases 26, 27, respectively, leaving the blank in the condition illustrated in Fig. 2. Adhesive is now applied to glue laps 28, 29 on the opposite side of the blank, as indicated by stippling. The next operation is that of folding the respective sets of cross partition panels 22, 24, and 23, 25 on that side, together with their longitudinal panel 33 and respective glue laps, upwardly, inwardly and downwardly about transverse creases 20, 21. End bottom flap 41 may be folded upwardly, inwardly and downwardly about crease 42 and onto section 14 as panels 22, 24 and 23, 25 are manipulated in the fashion just described, or may be so folded just prior thereto, insuring that when they are folded the flap underlies panel 33.

This brings these members to the position shown by dot-dash lines in Fig. 2 and in solid lines in Fig. 3, glue laps 28, 29 being adhered to the respective side wall panels 11, 12, and panel 33 partially overlying bottom 14. The next operation is that of folding the previously infolded cross partition panels 24, 25 on the left hand side of the blank, along with the associated cross partition panels 22, 23 and end wall panels 16, 17, about the creases 18, 19, respectively, which articulate the same to side wall panels 11, 12. The second bottom end flap 41 may be folded simultaneously, or prior to this, about its hinging crease 42, from the solid line position of Fig. 3 to that indicated in dotted line. As a preliminary to the panel folding operation referred to, the glue laps 28, 29 on panels 24, 25 are given a coating of adhesive, as indicated by stippling in Fig. 3. Adhesive is similarly applied to that portion of the area of the associated panel 33 which will overlie the other panel 33 when the blank is so folded. This adhesive is also indicated by stippling in Fig. 3.

Following these operations of gluing and folding, the blank appears as illustrated in Fig. 4. Glue laps 28, 29 are adhered to side wall panels 11, 12 respectively and panels 33 are adhered in partially overlapped or fanned, face-to-face contact.

Adhesive, indicated by stippling, is now applied to the exposed upper surfaces of the two panels 22, to which the longitudinal partition panels 33 are hinged, after which the overlapped panels 33 are folded as a unit about their respective creases 34. This causes a composite, two ply partition and suspending member 48, composed of panels 33, to be adhesively secured to panels 22, thus adding a third ply to its thickness, and leaves

the blank in the almost completed form illustrated in Fig. 5.

The next step is the application of adhesive, as shown by stippling, to the exposed upper surface of the panels 23, whereupon the two halves of the blank are folded upon one another about medial bottom section crease 13. Member 48 is thus adhesively secured to the other pair of longitudinal partition engaging panels 23, adding a fourth rigidifying thickness to its structure.

The carrier illustrated in Fig. 6 of the drawings is in its flat, knocked-down and completed condition. It is erected in well known manner, to the operative position illustrated in Figs. 7, 8 and 9 by simply applying compressive force to its opposite ends, represented by the opposed marginal creases 20, 21 and 18, 19. The longitudinal partition panels 33 are overlapped and adhesively secured to one another over a substantial area and throughout the major portion of the height of the partition and suspending member 48. The latter is materially stiffened and rigidified by its various component panels and their adhered connections. With this very rigid member as an anchor, the cross partition elements 24, 25 are adhesively secured over substantial glue lap areas to the respective side walls 11, 12. It will be noted that the sets of glue laps 28, 29 face in the same longitudinal direction as the result of the compound folding operations described below.

Full depth bottle protection is afforded by panels 33, extending the full length of the completed carrier, due to the substantially overlapped relationship of its two main components. Member 48 also projects vertically a substantial distance above the wall structure of the carrier, affording a well reinforced suspending grip. A large area is presented for the reception of printing or ornamentation, due to the substantial depth of the walls of the carrier. Because of its integrally connected, non-glued bottom construction, the carrier may be repeatedly used under adverse conditions.

It is another noteworthy feature of the improved carrier that the blank 10 from which it is fabricated calls for an absolute minimum of material, considering its size, strength and protective values. This results from the fact that bottom section 14 and both of the longitudinal partition panels 33 are taken from the interior of the blank, rather than being appended marginally.

I claim:

1. A method of forming an article carrier from a one-piece paperboard blank characterized by a rectangular bottom panel, side wall panels integrally hinged by longitudinal creases to oppoiste side margins of said bottom panel, four sets of end wall and partition forming panels having the panels of each set integrally connected by transverse hinging creases to one another and to an end margin of one of said side walls, and a longitudinal partition panel lying between each of a pair of said sets at either end of said respective side wall panels, each of said longitudinal partition panels being integrally connected by a longitudinal hinging crease to a panel of one set of each pair and being separated by a cut from the other set of the pair; said method comprising the steps of folding all four of said sets about a transverse hinging crease of each thereof, terminally securing the free end of two of said sets to the respective side wall panels, again folding the other two sets about a further transverse hinging crease of each thereof, terminally securing the last named sets to said side walls, with said longitudinal partition panels in substantially overlapped, face to face contact, folding said longitudinal partition panels unidirectionally and as a unit about the longitudinal hinging creases thereof, folding said blank about said medial bottom crease, and securing the longitudinal partition panels in face to face relation to one another and to corresponding panels of said four folded sets.

2. A method of forming an article carrier from a one-piece paperboard blank characterized by a rectangular

bottom panel, side wall panels integrally hinged by longitudinal creases to opposite side margins of said bottom panel, four sets of end wall and partition forming panels, having the panels of each set integrally connected by transverse hinging creases to one another and to an end margin of one of said side walls, and a longitudinal partition panel lying between each of a pair of said sets at either end of said respective side wall panels, each of said longitudinal partition panels being integrally connected by a longitudinal hinging crease to a panel of one set of each pair and being separated by a cut from the other set of the pair; said method comprising the steps of folding all four of said sets about a transverse hinging crease of each thereof, terminally securing two of said sets at one end of said side walls to the respective side wall panels, again folding the other two sets about a further transverse hinging crease of each thereof, terminally securing the last named sets to said side walls, with said longitudinal partition panels in substantially overlapped, face to face contact, folding said longitudinal partition panels unidirectionally and as a unit about the longitudinal hinging creases thereof, folding said blank about said medial bottom crease, and securing the longitudinal partition panels in face to face relation to one another and to corresponding panels of said four folded sets.

3. A method of forming an article carrier from a one-piece paperboard blank characterized by a rectangular bottom panel, side wall panels integrally hinged by longitudinal creases to opposite side margins of said bottom panel, four sets of end wall and partition forming panels having the panels of each set integrally connected by transverse hinging creases to one another and to an end margin of one of said side walls, and a longitudinal partition panel lying between each of a pair of said sets at either end of said respective side wall panels, each of said longitudinal partition panels being integrally connected by a longitudinal hinging crease to a panel of one set of each pair and being separated by a cut from the other set of the pair; said method comprising the steps of folding all four of said sets about a transverse hinging crease of each thereof, terminally securing the free end of two of said sets to the respective side wall panels, again folding the other two sets about a further transverse hinging crease of each thereof, terminally securing the last named sets to said side walls, with said longitudinal partition panels in substantially overlapped, face to face contact, folding said longitudinal partition panels unidirectionally and as a unit about the longitudinal hinging creases thereof, folding said blank about said medial bottom crease, and securing the longitudinal partition panels in face to face contact with one another and in face to face contact of the respective longitudinal partition panels with corresponding panels of said four folded sets.

4. A method of forming an article carrier from a one-piece paperboard blank characterized by a rectangular bottom panel, side wall panels integrally hinged by longitudinal creases to opposite side margins of said bottom panel, four sets of end wall and partition forming panels having the panels of each set integrally connected by transverse hinging creases to one another and to an end margin of one of said side walls, and a longitudinal partition panel lying between each of a pair of said sets at either end of said respective side wall panels, each of said longitudinal partition panels being integrally connected by a longitudinal hinging crease to a panel of one set of each pair and being separated by a cut from the other set of the pair; said method comprising the steps of folding all four of said sets about a transverse hinging crease of each thereof, terminally securing two of said sets at one end of said side walls to the respective side wall panels, again folding the other two sets about a further transverse hinging crease of each thereof, terminally securing the last named sets to said side walls, with said longitudinal partition panels in substantially overlapped, face to face contact, folding said longitudinal partition panels unidirectionally and as a unit about the longitudinal hinging creases thereof, folding said blank about said medial bottom crease, and securing the longitudinal partition panels in face to face contact with one another and in face to face contact of the respective longitudinal partition panels with corresponding panels of said four folded sets.

References Cited in the file of this patent

UNITED STATES PATENTS

1,157,712	Miller	Oct. 26, 1915
2,345,746	Goodyear	Apr. 4, 1944
2,460,108	Smith et al.	Jan. 25, 1949
2,489,034	James	Nov. 22, 1949
2,532,446	Hall	Dec. 5, 1950
2,586,301	Castle	Feb. 19, 1952