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E. L. ARNESON  
ARTICLE CARRIER

2,984,383

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2 Sheets-Sheet 1

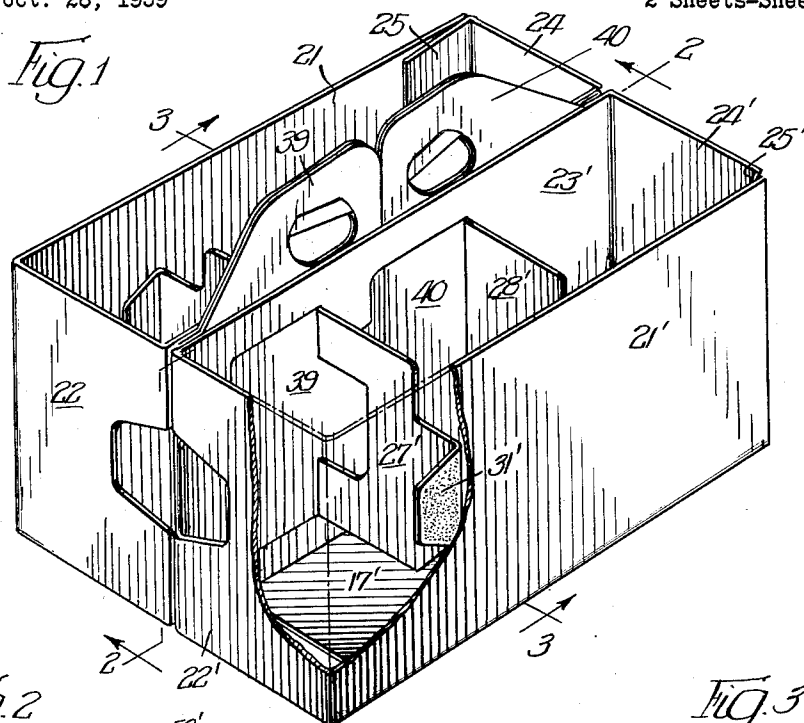
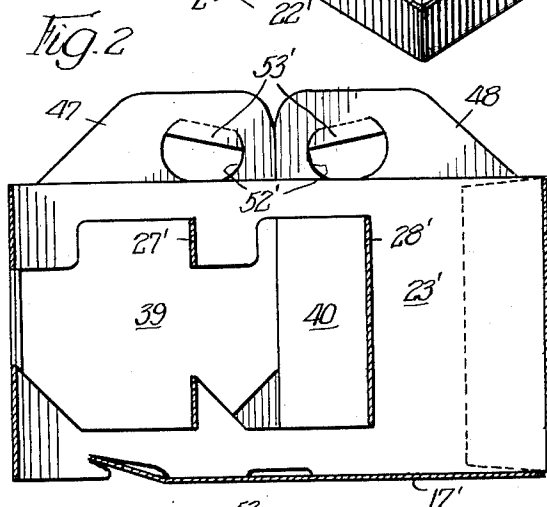
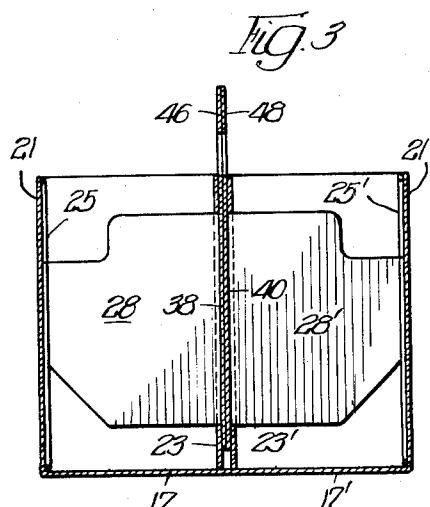
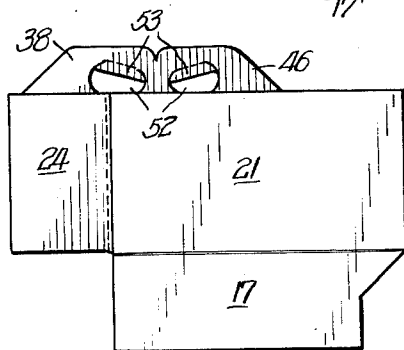


*Fig. 7*

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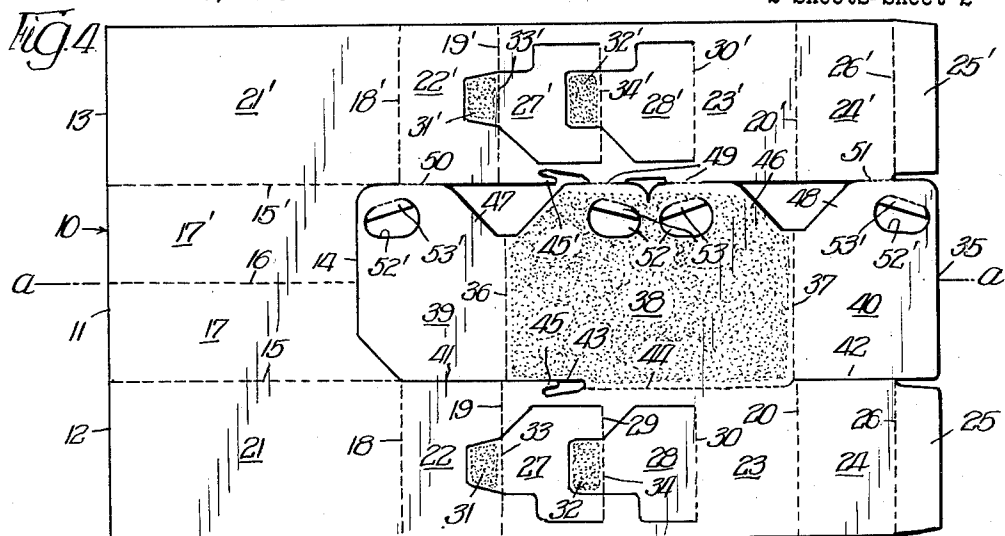
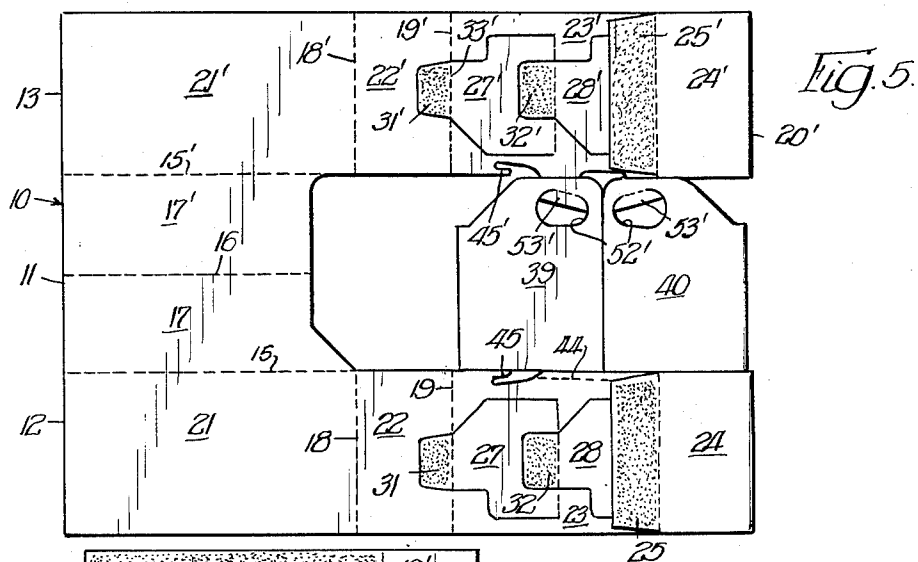
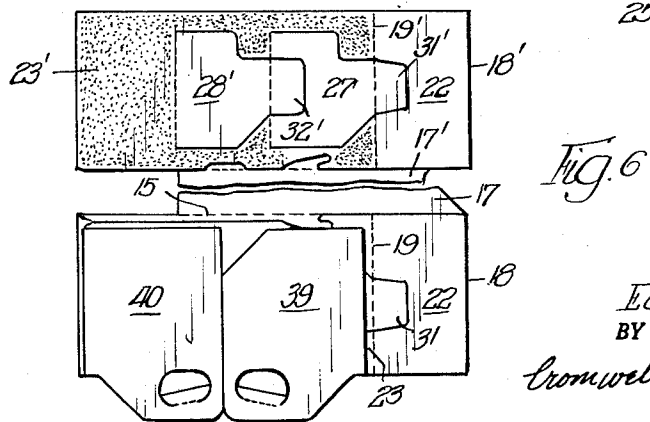
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2 Sheets-Sheet 2



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## ARTICLE CARRIER

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6 Claims. (Cl. 220—113)

This invention relates to article carriers of the type which are fabricated from a single blank of sheet material and which are adapted to provide a plurality of cells for the articles and a strong and sturdy center partition and associated handle structure.

Article carriers have heretofore been provided which are formed from a single blank of paperboard and which are adapted for use primarily in connection with the marketing of bottled beverages, such as soft drinks, beer, and the like. Generally, these carriers have been designed for use with bottles which are returned to the bottling plant for refilling and reuse a number of times and they have been made of relatively heavy paperboard stock in order to withstand the rough use and liability to damage attendant upon repeated trips between the bottling plant and the ultimate consumer. The need for heavy stock and rugged construction has, of course, made the cost of such carriers relatively high. With the introduction and increasing use of single trip or disposable glass bottles in the beverage industry, there has been an increasing demand for a less costly carrier which will, however, be sufficiently rugged to withstand the normal abuse incident upon a single trip between the bottling plant and the ultimate consumer. However, efforts to design a carrier employing a paperboard blank of smaller dimensions or of lighter weight in order to achieve a substantial reduction in cost and make it practical from an economical standpoint to employ this type carrier with the single trip bottles have not been entirely successful because it is not practical to reduce the overall size of the carrier and its strength cannot be reduced materially or it is unsatisfactory for even single trip use.

It is a general object of this invention to provide an improved article carrier which is formed from a single sheet of paper board material which is sufficiently rugged to withstand single trip use and which achieves substantial savings in material so that it may be economically produced.

It is a more specific object of the invention to provide a strong and rugged article carrier of the multicell type which is fabricated from a single blank of relatively lightweight paperboard material wherein the blank is cut and creased so that there is a minimum amount of material required with minimum waste in the blank and in the sheet or web from which the blank is taken and wherein the carrier, when assembled, is provided with a strong and rugged center partition and handle structure and a cross partition structure affording adequate protection between the articles in the cells.

It is another object of the invention to provide a collapsible cellular bottle carrier having, when erected, a bottom wall, side and end walls and a cell forming partition structure which includes longitudinal partition panels extending between the end walls intermediate the side walls and cross partition members which are cut from the longitudinal partition panels and hinged out of the plane thereof with their outer edges connected to the side

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walls and affording substantially full depth protection for articles in the cells which carrier is formed from a rectangular paperboard blank of minimum size and relatively lightweight stock.

These and other objects and advantages of the invention will be apparent from a consideration of the article carrier which is shown by way of illustration in the accompanying drawings wherein:

Figure 1 is a perspective view of an article carrier having embodied therein the principal features of the invention, the carrier being shown in set up empty condition;

Figure 2 is a longitudinal, vertical section taken on the line 2—2 of Figure 1;

Figure 3 is a transverse section taken on the line 3—3 of Figure 1;

Figure 4 is a plan view of the inside face of the prepared blank from which the carrier is formed, the view showing adhesive applied to certain areas of the blank preliminary to executing the first folding operations;

Figure 5 is a plan view of the blank shown in Figure 4 following the first folding and subsequent adhesive applying operations;

Figure 6 is a plan view with portions broken away, showing the blank at a further stage in the folding thereof;

and Figure 7 is a plan view of the completed carrier in the flat knocked down condition.

Referring to the drawings, the illustrated form of the carrier is fabricated from a blank 10 which is cut and creased as shown in Figure 4. The blank 10 is a generally rectangular sheet of relatively lightweight paperboard which is divided into three longitudinally extending sections 11, 12 and 13. The center section 11 is sub-divided to provide a bottom wall and a combination handle and longitudinal partition forming structure while the two side sections 12 and 13 which are on opposite sides of the center section 11 are sub-divided to provide side walls, end walls and longitudinal and cross partition members. Since the side sections 12 and 13 are symmetrical about a longitudinally extending center line *a—b* (Figure 4) only one of these sections will be described in detail with corresponding parts in the same relationship on the opposite side of the longitudinal center line being indicated by the same numerals primed.

The one end of the center section 11 of the blank 10 is separated from the remainder of the center section by a transverse cutting line 14 which extends between the inner ends of laterally spaced, longitudinally extending score or crease lines 15 and 15'. The crease lines 15 and 15' are equally spaced on opposite sides of a medial crease line 16 which coincides with the longitudinal center line *a—b* of the blank and which divides the bottom wall forming panel between the two crease lines 15 and 15' into two equal panel sections 17 and 17' so as to provide for folding of the bottom wall in the collapsed condition of the carrier. The crease lines 15 and 15' separate the bottom wall forming portion of the center section 11 at this end of the blank 10 from the side sections 12 and 13 of the blank.

The blank side section 12 is sub-divided by the parallel, longitudinally spaced, transverse crease lines 18, 19 and 20 into a side wall forming panel 21, an end wall forming panel 22, a longitudinal portion and cross divider forming panel 23 and an end wall forming panel 24, with the end wall forming panel 24 having a glue flap 25 extending at the end of the blank and separated from the end wall panel 24 by a transverse crease line 26. The side wall and longitudinal partition forming panels 21 and 23 are of equal length and the end wall forming panels 22 and 24 are of equal size, corresponding to a cell width in the set up condition of the carrier.

Two cross partition forming panels 27 and 28 are cut

from the longitudinal partition panel 23 so that when the carrier is set up they swing about the hinge forming crease lines 29 and 30 which extend in longitudinally spaced relation transversely of the longitudinal partition panel 23. The hinge forming crease lines 29 and 30 terminate at their opposite ends short of the side edges of the panel 23 and are spaced longitudinally so as to divide the panel 23 into three equal sections, each the width of a bottle which the carrier is designed to receive. The cross partition panels 27 and 28 are provided with glue flaps 31 and 32 for connecting these members to the side wall 21 when the carrier is assembled. The glue flap 31 is cut from the end wall panel 22 and is adapted to hinge about the crease line 33 which is aligned with or forms a central portion of crease line 19. The glue flap 32 is cut from the body of the cross partition panel 27 and is adapted to hinge about the score line 34 which is aligned with or forms a central part of the hinge forming score line 29 for the panel 27.

A combination longitudinal partition and handle forming structure is cut from the portion 35 of the center section 11 of the blank which extends from the transverse cutting line 14 to the other end of the blank. The blank portion 35 is cut and creased so that it may be freed from the side section 13 and hinged into face engagement with the panel 23 of the blank side section 12. It is subdivided by longitudinally spaced, transverse crease lines 36 and 37 into a full length longitudinal partition panel 38 and two half length longitudinal partition panels 39 and 40 which are hinged to the panel 38 on the crease lines 36 and 37. At one side of the blank section 35 the longitudinal partition panels 39 and 40 are freed from the end wall forming panels 22 and 24 by longitudinally extending cutting lines 41 and 42 which are aligned in the direction longitudinally of the blank with the bottom side edge forming score line 15. The center longitudinal partition panel 38 is cut free from one end of the longitudinal partition panel 23 on the cutting line 43 which forms an extension of the cutting line 41 and remains hingedly attached to the panel 23 by the longitudinally extending score line 44, the latter being parallel with and slightly offset in the direction of the side edge of the blank from the cutting lines 15, 41 and 42. A hook formation 45 is cut out in the bottom forming edge of the longitudinal partition panel 23 at the inner end of the cutting line 43. At the other side of the portion 35 of the blank the panels 38, 39 and 40 are provided with integral handle forming portions or sections 46, 47 and 48, these sections being cut or perforated along their outermost side edges so as to be readily freed from the side section 13 of the blank. The center handle panel 46 remains temporarily connected to the longitudinal partition panel 23' on the perforated lines 49, this panel being readily broken loose by tearing along the perforation lines 49 when required for folding the blank to form the carrier. The longitudinal partition panels 39 and 40 remain attached to the end wall panels 22' and 24' on the perforated lines 50 and 51. The panel 39 is freed from the bottom wall forming panels 17 and 17' on the cutting line 14 so that this panel may be torn loose at the line 50 to free the same from all but the longitudinal partition panel 38 and permit the same to be folded about the transverse crease line 36 into engagement with the face of the center panel 38. Likewise, the longitudinal partition panel 40 may be torn loose from the end wall forming panel 24' at the line 51 which permits this panel to be folded about the crease line 37. The center longitudinal partition panel 38 is provided with two cooperating finger holes 52 in the handle forming portion 46 thereof which have hinged reinforcing tabs 53 along their upper edges and the two adjoining panels 39 and 40 are provided in the handle forming portions 47 and 48 thereof with matching finger holes 52' which also have hinged reinforcing tabs 53'.

The blank 10, when cut and creased, is glued and folded to provide the carrier which is illustrated in Fig-

ure 1. Glue is initially applied to the panel 38 and the flaps 31, 31' and 32, 32'. The longitudinal partition panels 39 and 40 are folded inwardly about the transverse crease lines 36 and 37 into face engagement with the adhesive coated panel 38 and the end wall panels 24 and 24' at one end of the blank are folded inwardly about the crease lines 20 and 20' as shown in Figure 5. Glue is applied to the flaps 25 and 25' as shown in Figure 5, and the two side sections 12 and 13 are then folded about the transverse crease lines 18 and 18' onto the bottom wall and side wall forming end section of the blank. Glue is applied to the longitudinal partition panels 23 and 23' as indicated in Figure 6, and the longitudinal partition panels 38, 39 and 40 are folded over about the crease line 44 onto the uppermost face of the longitudinal partition panel 23 to bring the blank into the condition shown in Figure 6. Assembly of the carrier is then completed by folding the same about the medial crease line 16 to bring the longitudinal partition panels 39 and 40 into engagement with the glue coated face of the longitudinal partition panel 23'. This completes the assembly of the carrier, in the collapsed condition as shown in Figure 7, in which it is supplied to the bottler or other user.

The carrier, when opened up, as shown in Figure 1, provides substantially full depth protection for the bottles with the longitudinal partition structure providing a minimum of two plies of paperboard between two pairs of the cells and a maximum at the one end of the carrier of four plies between the two end cells, giving substantial strength and rigidity to the partition structure and providing a handle portion extending above the top edge of the side and end walls where it is readily accessible between the two rows of bottles. The cross partition panels 27, 27' and 28, 28' extend the major portion of the depth of the carrier and afford adequate protection between the bottles in the cells preventing contact between the bottles in the center cells and in the adjoining end cells. Substantial savings in material are achieved in the manufacture of the carrier because it employs a blank of rectangular shape which is taken from paperboard stock of substantially lighter weight than normally employed in the manufacture of multiple trip carriers of this type while the construction of the carrier utilizes to the best advantage practically all of the material in the blank, resulting in a strong and rugged carrier.

While particular materials and specific details of construction are referred to in describing the form of the carrier illustrated, it will be understood that other materials and different details of construction may be resorted to within the spirit of the invention.

#### I claim:

1. An article carrier formed from a paperboard blank which is cut and folded to provide, when erected, a rectangular bottom wall, upstanding side walls integrally hinged to the side edges of the bottom wall, pairs of end walls connected along vertical hinge lines to the end edges of the side walls and to opposite ends of an upright longitudinal center partition structure which extends parallel with the side walls, said center partition structure comprising two center partition panels extending the full length of the carrier and integrally hinged at corresponding ends to the adjacent inner edges of a pair of end walls, a full length center partition reinforcing panel hinged to the bottom edge of one of said center partition panels, and a pair of half length center partition reinforcing panels hinged to the vertical end edges of said full length center partition reinforcing panel, said half length center partition reinforcing panels being folded on said full length center partition reinforcing panel and said folded full length and half length panels being sandwiched between said center partition panels and having handle forming portions extending above the latter, and cross partition members cut from said center

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partition panels and hinged into transverse planes, which cross partition members have end tabs secured to the side walls whereby to divide the carrier into a plurality of cells.

2. A collapsible article carrier formed from a paperboard blank which is cut and folded to provide, in erected condition, a foldable bottom wall, upstanding side walls integrally hinged to the side edges of the bottom wall, pairs of end walls hinged to the end edges of the side walls and to opposite ends of an upright longitudinal center partition structure which extends between the end walls and parallel with the side walls, said center partition structure comprising two partition panels extending the full length of the carrier and integrally hinged at the ends to the end walls, a full length center partition reinforcing panel hinged to the bottom edge of one of said center partition panels, and a pair of half length center partition reinforcing panels hinged to the end edges of said full length center partition reinforcing panel, said half length partition reinforcing panels being folded on said full length partition reinforcing panel and said full length and half length panels being sandwiched between said center partition panels, and cross partition members cut from said center partition panels and hinged into longitudinally spaced vertical planes, which cross partition members have their ends secured to the side walls thereby to divide the carrier into a plurality of cells.

3. An article carrier formed from a blank of flexible sheet material which is cut and folded to provide, in erected position, a bottom wall, upstanding side walls integrally hinged to the side edges of the bottom wall, pairs of end walls hinged to the ends of the side walls and to opposite ends of an upright longitudinal center partition structure which extends between the pairs of end walls and is parallel with the side walls, said center partition structure comprising two center partition panels which are hinged at their ends to the inner edges of the end walls, a center partition reinforcing panel hinged to the bottom edge of one of said center partition panels, and a pair of center partition reinforcing flaps hinged to the end edges of said center partition reinforcing panel, said center partition reinforcing flaps being folded on said center partition reinforcing panel and said center partition reinforcing panels being secured between said center partition panels, and cross partition panel members taken from said center partition panels and swung into transverse cross partition forming relation, which cross partition members have their outer ends secured to the side walls thereby to divide the carrier into a plurality of cells.

4. A collapsible article carrier formed from a paperboard blank which is cut and creased to provide, when assembled in erected condition, a rectangular bottom wall which is foldable about a medial crease line, upstanding side walls integrally hinged to the side edges of the bottom wall, pairs of end walls integrally connected along vertical hinge lines to the end edges of the side walls and extending inwardly between said end edges, an upright longitudinal center partition structure which extends between said pairs of end walls and parallel with the side walls, said center partition structure comprising two center partition panels each extending the full length of the carrier and integrally hinged at its ends to the inner edges of oppositely disposed end walls, a full length center partition reinforcing panel integrally hinged to the bottom edge of one of said center partition panels, and a pair of half length center partition reinforcing panels integrally hinged to the vertical end edges of said full length center partition reinforcing panel, said half length center partition reinforcing panels being folded on said full length center partition reinforcing panel and said full length and half length panels being secured between said center partition panels and having handle forming portions extending above the latter, and cross partition members cut

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from said center partition panels and hinged on longitudinally spaced, vertical hinge lines into transverse planes, which cross partition members have glue tabs at their outer edges which are secured to the side walls thereby to divide the carrier into a plurality of cells.

5. A rectangular paperboard blank for a collapsible cellular article carrier, which blank is cut and creased to divide the same into a series of connected panels, the blank being divided at one end thereof into a pair of bottom wall forming panels and two side wall forming panels extending along opposite sides thereof, the remaining portions of the blank being divided along laterally spaced, longitudinally extending lines into two side sections and a center section, each of the side sections being separated from the side wall forming panel at that side of the blank by a corner edge forming transverse crease line and being divided by longitudinally spaced, transversely extending, parallel hinge forming crease lines into an end wall forming panel, a center longitudinal partition forming panel, and a second end wall forming panel, which panels are hingedly connected in the order named with the second end wall forming panel being adjacent the end of the blank and having a glue flap at the free end edge thereof, said center longitudinal partition forming panel having two cross partition panels cut from an area intermediate the side edges thereof and adapted to hinge about crease lines which extend transversely of the panel and divide said center longitudinal partition panel into three equal portions in the longitudinal direction of the blank, said blank center section being divided by transversely extending crease lines into a center longitudinal partition reinforcing panel which is taken from the area between the two center longitudinal partition forming panels in the blank side sections and two center longitudinal partition reinforcing flaps at opposite ends of said center longitudinal partition reinforcing panel which are taken from the areas between the two pairs of end wall forming panels in the side sections of the blank, said center longitudinal partition reinforcing flaps being separated by cutting lines from the adjoining wall forming portions of the blank and being adapted to hinge about said transverse crease lines into face engagement with said center longitudinal partition reinforcing panel and said center longitudinal partition reinforcing panel being separated by cutting lines from the one side section of the blank and being adapted to hinge about a crease line dividing the center longitudinal partition panel in the opposite side section of the blank.

6. A rectangular paperboard blank for a collapsible cellular article carrier, which blank is cut and creased to divide the same into a series of connected wall forming panels, one end of said blank being divided by transversely spaced, parallel, longitudinal crease lines into a bottom wall forming panel which is foldable about a medial crease line and two side wall forming panels extending along opposite sides thereof, the remaining portions of the blank being divided by longitudinal cutting and crease lines into two side sections and a center section, each of the side sections being separated from a side wall forming panel by a corner edge forming, transverse crease line and being divided by longitudinally spaced, parallel hinge forming, transverse crease lines into two end wall forming panels of equal size and a center longitudinal partition forming panel extending between the end wall forming panels which center longitudinal partition panel is the same size as said side wall forming panels, the one end wall forming panel which is at the end of the blank having a glue flap at the outer edge thereof, said center longitudinal partition forming panel having two cross partition panels cut therefrom so as to hinge about transversely extending, longitudinally spaced, parallel crease lines which extend short of the side edges of said panel and which divide said panel into three equal portions in the longitudinal direction of the blank, said

center section of the blank being divided by longitudinally spaced, parallel, transverse crease lines into a center longitudinal partition reinforcing panel which is taken from the area between the two center longitudinal partition forming panels in the side sections of the blanks and two center longitudinal partition reinforcing flaps which are taken from the areas between the oppositely disposed end wall forming panels in the side sections of the blank, said center longitudinal partition flaps being cut on three sides thereof so that they are adapted to hinge about said transverse crease lines into face engagement with said center

longitudinal partition reinforcing panel and said center longitudinal partition reinforcing panel being cut free of one blank side section so that it is adapted to hinge about a longitudinally extending crease line dividing the same from the center longitudinal partition panel in the other blank side section.

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