

Jan. 6, 1970

T. H. RIDDELL

3,487,975

ARTICLE CARRIER

Filed May 23, 1968

4 Sheets-Sheet 1

FIG. 1

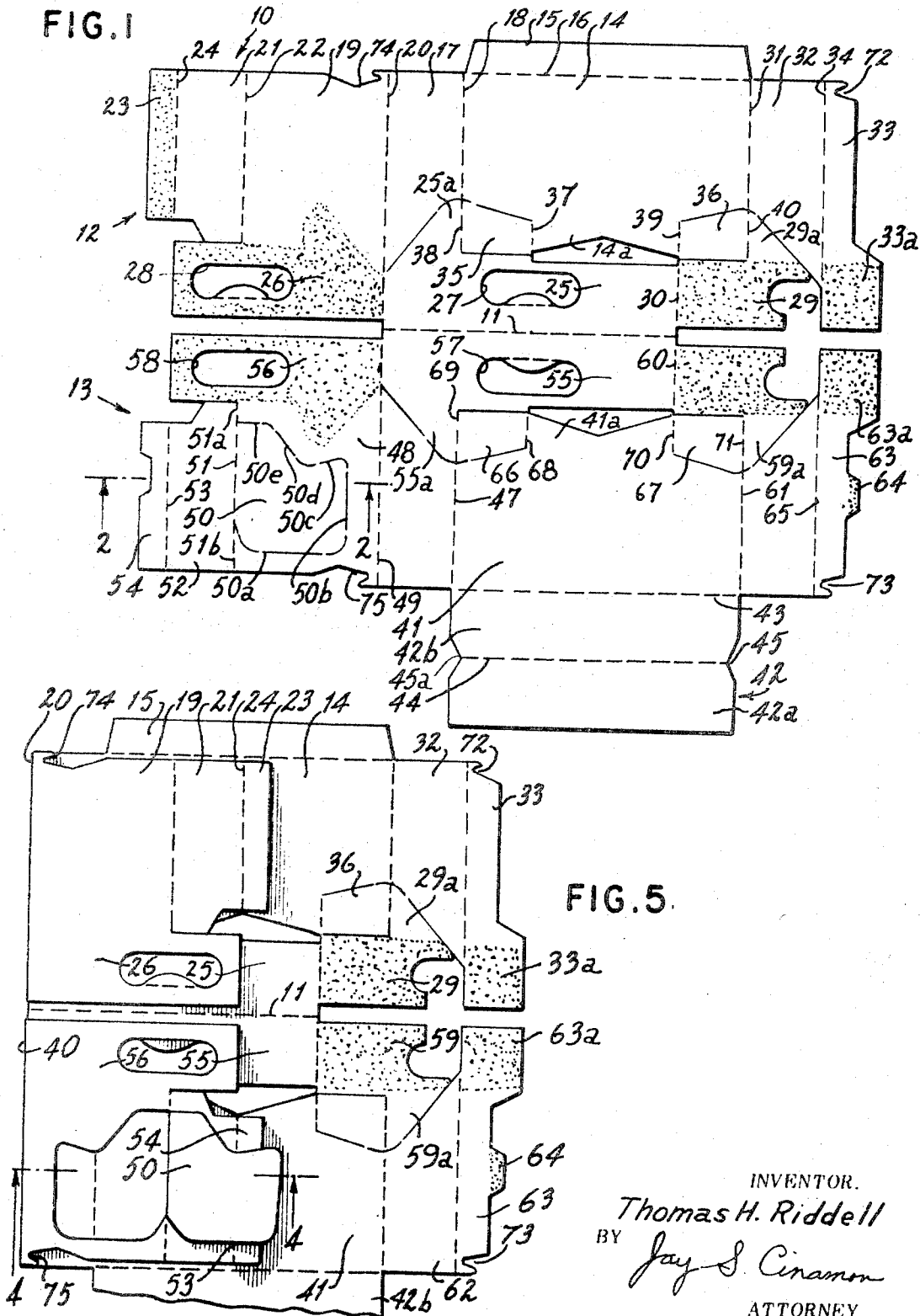


FIG. 5.

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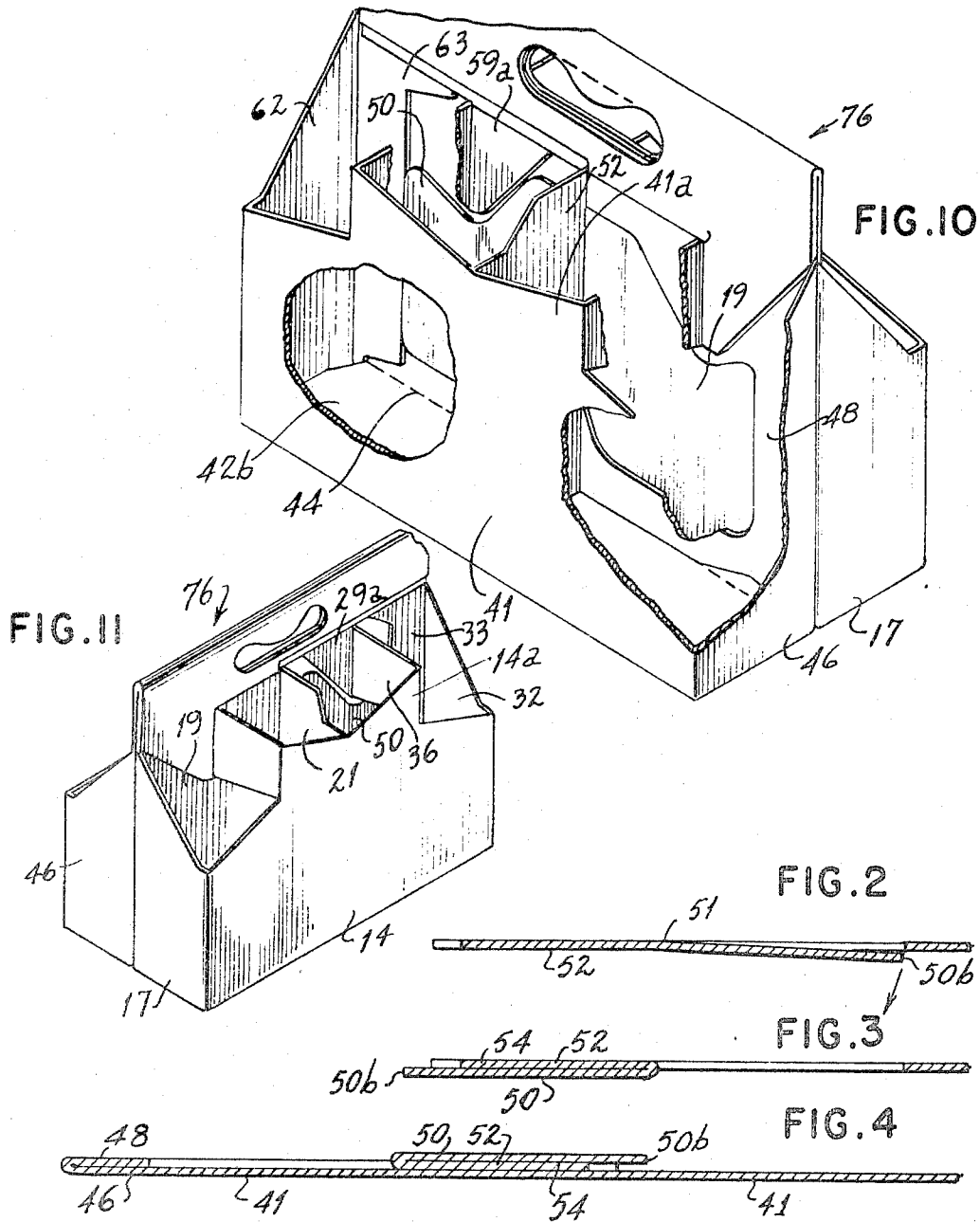
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Filed May 23, 1968

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Filed May 23, 1968

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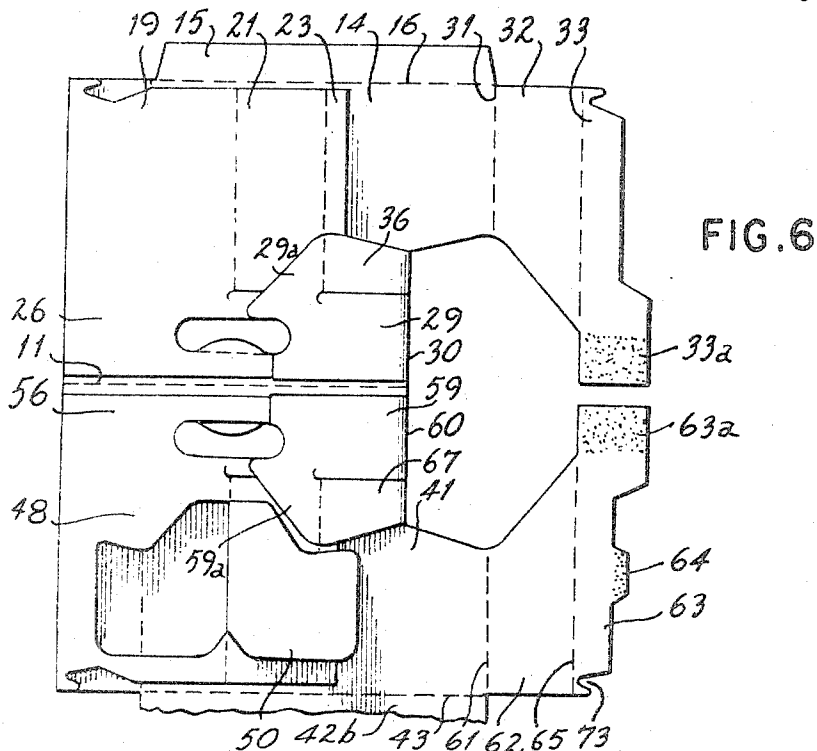


FIG. 6

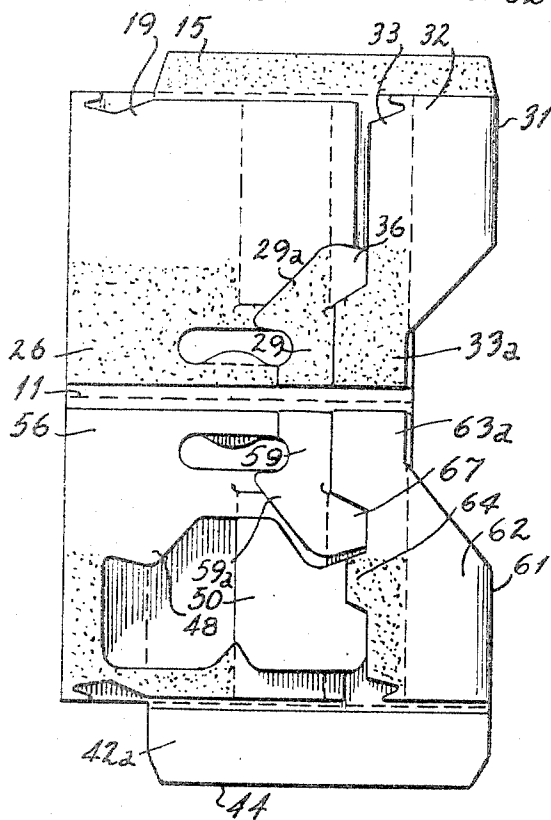


FIG. 7

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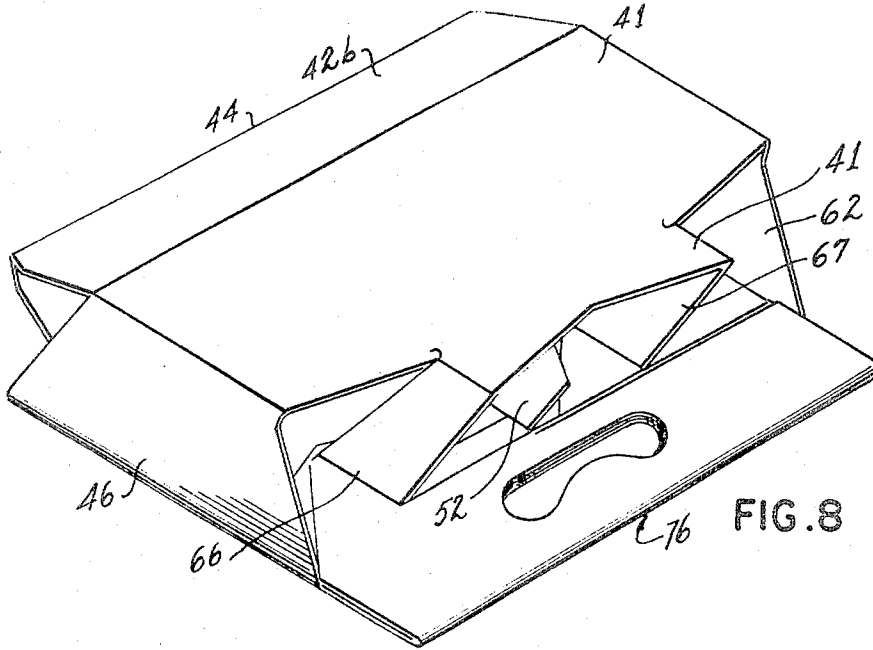
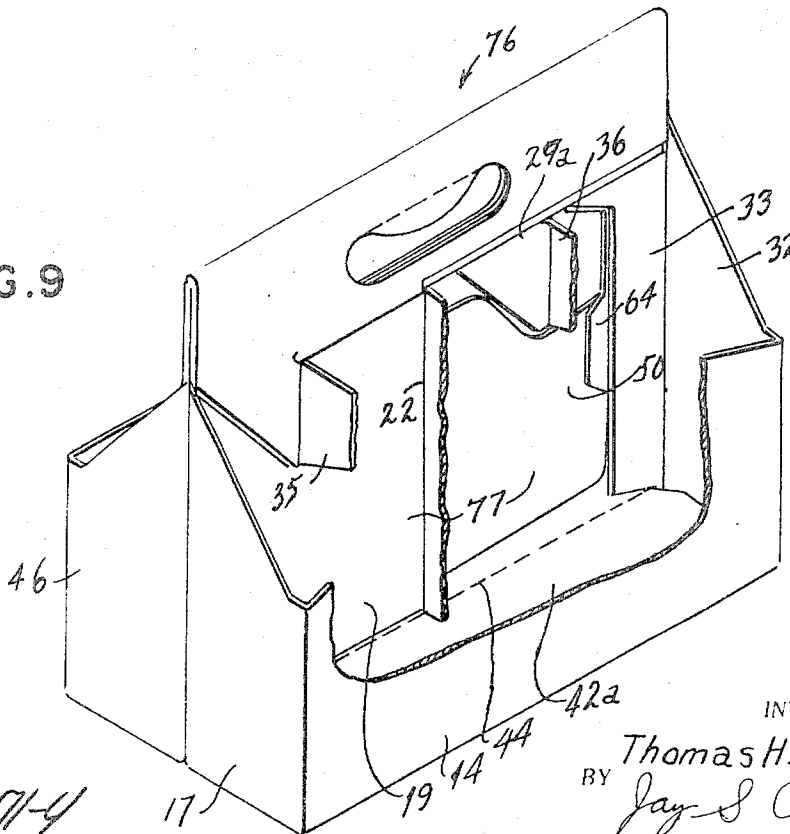


FIG. 9



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3,487,975

ARTICLE CARRIER

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Filed May 23, 1968, Ser. No. 731,444

Int. Cl. B65d 5/46, 5/48

U.S. Cl. 220—113

12 Claims

ABSTRACT OF THE DISCLOSURE

An article carrier having a two-piece, essentially single ply, full length medial keel comprised of a complementary divider panel which is die-cut from one of a pair of longitudinal center partition forming panels, and the other of said pair of longitudinal center partition forming panels which is intact and uncut.

This invention relates to article carriers made from paperboard or similar materials and, in particular, to strap style article carriers which provide a plurality of article accommodating cells on either side of a full length, longitudinal keel.

Article carriers designed to hold, ship, store, display, and transport between supermarket and home a plurality of canned or bottled carbonated or malt beverages, or the like, must possess several attributes. The carrier must be sturdy enough to withstand the abusive treatment to which it is subjected in handling. It must retain the articles satisfactorily and attractively. There must be a minimum amount of waste of paperboard in the design of the carrier in order to minimize production costs. The carrier must also be capable of reducing the risks of breakage of, or damage to, the articles contained therein; this is of particular importance in the instance of bottled carbonated beverages. Thus, for example by reducing or altogether eliminating article-to-article contact between bottles in adjacent carrier cells on either side of the carrier handle structure, the frequency of broken articles is appreciably diminished.

It is an object of the present invention to provide an article carrier wherein article-to-article contact between articles on either side of the carrier handle structure is substantially reduced or eliminated.

It is another object of the present invention to provide an article carrier wherein article-to-article contact between articles in adjacent cells on either side of the carrier handle structure is reduced or eliminated.

It is another object of the present invention to provide an article carrier having a longitudinal, keel extending medially of the carrier for substantially the full length thereof, whereby article-to-article contact between articles in adjacent cells on either side of the handle structure is substantially inhibited or prevented.

It is another object of the present invention to provide an article carrier having an essentially single ply, two-piece keel, extending medially of the carrier for substantially the full length thereof, whereby article-to-article contact between articles in adjacent cells on either side of the handle structure is substantially inhibited or prevented.

In accordance with the above-identified objects, a complementary, single ply, longitudinal center divider panel for the carrier is captured from one of a pair of longitudinal center partition forming panels in the article carrier by die cutting said divider panel from one of said pair of longitudinal center partition forming panels while the carrier is still in the form of a blank. Then, during the folding sequence leading to the erection of the carrier, the die-cut divider panel is swung out of the plane of the blank through successive 180° arcs, i.e., an arc of 360° to form, in conjunction with the uncut longitudinal center partition forming panel, a substantially full length, two-

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piece, essentially single ply, longitudinal center partition keel medially of the fully erected article carrier.

Further features, objects, and advantages of the present invention will be apparent from the following detailed description and the accompanying drawings, in which:

FIGURE 1 is a plan view of the blank from which the article carrier of the present invention is formed;

FIGURE 2 is a sectional view, taken substantially along the line 2—2 of FIGURE 1 showing the initial movement of a divider panel out of the plane of the blank of FIGURE 1 during the blank folding sequence;

FIGURE 3 is a view of the divider panel of FIGURE 2 after it has passed through an arc of 180° and underlies a part of the blank of FIGURE 1;

FIGURE 4 is a sectional view of the divider panel of FIGURE 2, taken along the line 4—4 of FIGURE 5;

FIGURES 5, 6, 7 and 8 are plan views which depict stages of folding the blank of FIGURE 1 to arrive at the completed carrier depicted in partially collapsed form in FIGURE 8;

FIGURE 9 is a perspective view of one side of the carrier of the present invention with the side wall, cross partition straps and center cross partition panel thereof partially broken away;

FIGURE 10 is a perspective view of the other side of the carrier shown in FIGURE 9 with portions thereof partially broken away;

FIGURE 11 is a perspective view of the fully erected carrier.

Referring to the drawings, the illustrated form of the carrier is fabricated from a one-piece paperboard blank 10, of single ply thickness throughout, which is cut and scored as shown in FIG. 1. The blank 10 is divided by a medial fold line 11 into two halves, an upper half generally indicated by the numeral 12 and a lower half generally indicated by the numeral 13. The upper half 12 of the carrier blank 10 will be described first.

In the drawings, the numeral 14 designates a side wall of the carrier having an upwardly extending, high center portion or extension 14a on said side wall, which is integral therewith. The bottom edge of side wall 14 is foldably connected to a glue flap 15 along horizontal fold line 16. An end wall panel 17 is foldably connected along vertical fold line 18 to one end of the side wall 14. A first longitudinal center partition forming panel 19 is foldably connected along vertical fold line 20 to one end of the end panel 17. A first center cross partition panel 21 is foldably connected along vertical fold line 22 to one end of first longitudinal center partition forming panel 19. A glue flap 23 is foldably connected along a vertical fold line 24, at the inner end thereof, to one end of first center cross partition panel 21. An outer handle panel 25, having a lower marginal portion 25a, and an inner handle panel 26 are foldably connected at one end of outer handle panel 25 along the upper margin of vertical fold line 20. Hand gripping apertures 27 and 28 are provided in the handle panels 25 and 26, respectively. A handle reinforcing panel 29, having a lower portion 29a which generally has a right triangular configuration, is foldably connected along vertical fold line 30 to the other end of outer handle panel 25.

Foldably connected to the other end of side wall 14 along vertical fold line 31 is an end wall panel 32. A riser panel 33, having an upper marginal portion 33a, is foldably connected along vertical fold line 34 to the other end of the end wall panel 32.

In order to provide transverse partitioning for articles disposed on one side of the carrier handle structure, to be described hereinafter, a pair of transverse partition straps 35 and 36 are foldably joined to high center portion 14a. Transverse partition strap 35 is foldably connected at the outer end thereof to side wall extension 14a along

vertical fold line 37, and at its inner end to lower marginal portion 25a of outer handle panel 25 along a vertical fold line 38. Transverse partition strap 36 is foldably connected at the outer end thereof to side wall extension 14a along vertical fold line 39, and at its inner end to handle reinforcing panel portion 29a along vertical fold line 40.

Referring now to the lower half 13 of carrier blank 10, the numeral 41 designates a side wall of the carrier, having an upwardly extending, high center portion or extension 41a, which is integral therewith. The bottom edge of side wall 41 is foldably connected to a bottom panel 42 along horizontal fold line 43. The bottom panel 42 is separated into outer and inner bottom panel portions 42a and 42b, respectively, by medial fold 44. At the ends of medial fold line 44, a pair of notches 45 and 45a are formed. An end wall panel 46 is foldably connected along vertical fold line 47 to one end of the side wall 41.

In accordance with the present invention, a second longitudinal center partition forming panel 48, which is foldably connected along vertical fold line 49 to one end of end wall panel 46, has a complementary divider panel 50 struck therefrom by die-cutting a major portion of the surface area of second longitudinal center partition forming panel 48. The divider panel 50 is cut so that it has essentially five free sides or edges which are designated as 50a, 50b, 50c, 50d and 50e. This particular irregular, polygonal configuration facilitates the folding of the divider panel 50 so that it fits together with the other structural members of the erected carrier. Divider panel 50 is foldably connected along vertical fold line 51, having upper and lower extremities or edges 51a and 51b, respectively, which functions as a hinge or pivot during the blank folding operation, to the inner end of a second center cross partition panel 52. A more detailed discussion of the function of, and the manner of folding of, the divider panel 50 will follow hereinafter, during the description of the various folding steps. A glue flap 54 is foldably connected along vertical fold line 53, at the inner end thereof, to one end of second center cross partition panel 52.

An outer handle panel 55, having a lower marginal portion 55a, and an inner handle panel 56 are foldably connected at one end of outer handle panel 55 along the upper margin of vertical fold line 49. Hand gripping apertures 57 and 58 are provided in handle panels 55 and 56, respectively. A handle reinforcing panel 59, having a lower portion 59a, which generally has a right triangular configuration, is foldably connected along a fold line 60 to the other end of outer handle panel 55.

Foldably connected to the other end of side wall 41 along vertical fold line 61 is end wall panel 62. A riser panel 63, provided with an integral glue tab 64, is foldably connected along a fold line 65 to one end of end panel 62.

In order to provide transverse partitioning means for articles disposed on the other side of the carrier handle structure, to be described hereinafter, a pair of transverse partition straps 66 and 67 are foldably joined to high center portion 41a. Transverse partition strap 66 is foldably connected at the outer end thereof to side wall extension 41a along vertical fold line 68, and at its inner end to outer handle panel portion 55a along vertical fold line 69. Transverse partition strap 67 is foldably connected at the outer end thereof to side wall extension 41a along a fold line 70, and at its inner end to handle reinforcing panel portion 59a along a vertical fold line 71.

The lower edges of riser panels 33 and 63 are provided with locking notches 72 and 73, respectively, and the lower edges of longitudinal center partition forming panels 19 and 48 are provided with locking notches 74 and 75, respectively. In order to maintain the carrier in set-up condition, locking notches 72 and 73 engage with notch 45 and locking notches 74 and 75 engage with

notch 45a and thus maintain the article carrier in erect condition.

In order to form the partially collapsed carrier depicted in FIG. 8 from the blank depicted in FIG. 1, a series of folding and gluing steps are performed. It is to be understood that these folding and gluing steps although described sequentially, occur either simultaneously or, in fact, in the sequence described, but are not to be considered as limiting the invention in any respect.

First, leading edge 50b is folded downwardly out of the plane of the blank, as shown in FIG. 2, and to the left through an arc of 180°. The complementary divider panel 50 is at this stage in the folding sequence beneath end panel 52 and glue flap 54, with divider panel edge 50b being outside the outer edge of glue flap 54. An application of glue is then made to those sections of the blank 10 as is indicated by the stippled areas in FIG. 1. Then the sections of the blank 10 which are to the left of fold lines 20 and 49 are swung upwardly and to the right through an arc of 180°. The flaps 23 and 54, having glue thereon, as indicated by stippling, become adhered to the inner faces of side walls 14 and 41, with fold lines 24 and 53, defining the inner ends of flaps 23 and 54, being disposed substantially medially or centrally of said side walls. Paired inner handle panels 26 and 56 become adhered to portions of paired outer handle panels 25 and 55, respectively.

The divider panel 50 has now passed through a 360° arc from the plane it originally occupied in the blank. It has completed its passage through two successive 180° arcs and it has, so to speak, "doubled-back" upon itself, as is shown in FIGS. 4 and 5. After this folding operation the blank 10 is in the condition illustrated in FIG. 5.

The handle reinforcing panels 29 and 59 are then folded upwardly and to the left, out of the plane of the blank, through an arc of 180°, to the position shown in FIG. 6. Handle reinforcing panels 29 and 59, respectively, are, thus, adhered to portions of paired outer handle panels 25 and 55, respectively, and portions of inner handle panels 26 and 56, respectively.

Then those sections of the blank which are to the right of fold lines 31 and 61, respectively, are folded upwardly and to the left, out of the plane of the blank, through an arc of 180° to the position indicated in FIG. 7. Thus, the upper marginal portions 33a and 63a, respectively, of riser panels 33 and 63, respectively, are adhered in face-to-face contact with the outer faces of handle reinforcing panels 29 and 59, respectively, and integral tab means 64 on riser panel 63 is adhered to divider panel 50 along edge 50b thereof.

Glue is then applied to the entire inner face of glue flap 15 and to those sections of the upper and lower halves 12 and 13 of the blank, as indicated by the stippling in FIG. 7. Then the upper half 12 of blank 10 is folded upwardly through an arc of 180° about medial fold line 11. After glue flap 15 has progressed through approximately 135° of said 180° arc, outer bottom panel portion 42a, begins to swing upwardly about fold line 44 so that eventually it completely overlies inner bottom panel portion 42b, as shown in FIG. 7, just prior to the time that glue flap 15 makes adhering contact with the outer edge of bottom panel portion 42a. After the completion of this folding operation hand gripping apertures 28 and 58, respectively, in paired inner handle panels 26 and 56, respectively, are in alignment with hand gripping apertures 27 and 57, respectively, in paired outer handle panels 25 and 55, respectively. It is apparent that the plurality of handle panels, each with a hand gripping aperture, provide a strong handle structure which may be easily grasped by the consumer without fear of the handle structure breaking or tearing. The carrier which results subsequent to the various folding and gluing operations, which have been described hereinbefore, is the partially collapsed carrier depicted in FIG. 8.

In order to erect the carrier from its collapsed condition, as shown in FIG. 8, to the erect position shown in FIGS. 9, 10 and 11, it is simply necessary to press inwardly on the end wall panels 32 and 62 at the fold lines 31 and 61 while urging the side walls 14 and 41 toward the right. This action causes the locking notch 45 to engage the notches 72 and 73 and also permits the locking notch 45a to engage the notches 74 and 75. Thereafter, the carrier appears as is depicted in FIG. 11.

The carrier as depicted in FIGS. 9, 10 and 11 has a medial, multi-ply handle structure 76 which spans the length of said article carrier and which comprises: (1) outer handle panels 25 and 55 and inner handle panels 26 and 56 adhered thereto and disposed therebetween in face contacting relation therewith; (2) handle reinforcing panels 29 and 59 which are in face contacting, adhering relation with portions of said pair of outer handle panels 25 and 55 and portions of said pair of inner handle panels 26 and 56; and (3) the upper marginal portions 33a and 63a of riser panels 33 and 63, respectively, which overlie and are in face contacting, adhering relation with the outer faces of said handle reinforcing panels 29 and 59.

As can be seen in FIGS. 9, 10 and 11 the article carrier has a medial, longitudinal, essentially full length, substantially single ply, two-piece keel, generally designated as 77. The keel 77 comprises: (a) first longitudinal center partition forming panel 19 which is hingedly connected at the outer end thereof to end wall panel 17 and is foldably connected at the inner end thereof to first center cross partition panel 21 along fold line 22 and (b) die-cut, complementary divider panel 50 which is adhered at its outer end to tab means 64, which is integral with riser panel 63, and at its inner end is hingedly connected to second center cross partition panel 52 along fold line 51 only between the upper and lower extremities or edges 51a and 51b of said fold line. Thus, the inner end of divider panel 50 is in closely spaced-apart juxtaposition to the inner end or edge, defined by fold line 22, of first longitudinal center partition forming panel 19.

The particular configuration employed for the divider panel 50 allows divider panel edge 50d to be proximate to, but not contiguous with, the edges of the lower marginal portions 29a and 59a of handle reinforcing panels 29 and 59. Each of the lower marginal portions 29a and 59a have the configuration of a right triangle, as has been previously noted. Thus, the edge 50d of divider panel 50 is in closely spaced-apart juxtaposition to the edges of said right-triangular portions 29a and 59a.

Prior art carriers have achieved a full length keel by using external rather than integral, internal portions of a generally symmetrical blank of paperboard. In addition, the full length keels of the prior art usually had two plies or thicknesses of paperboard along a considerable part if not most of their length resulting in waste paperboard. Furthermore, the design of the prior art keels did not permit nesting across the web and was, thus, uneconomical, since only one carrier could be run across the web at a time.

By the present invention the die-cut divider panel is captured internally from a symmetrical blank of paperboard. Doubling back of the divider panel forms a complete keel of single ply thickness, thus, minimizing waste, while increasing internal strength and compartmentalization, and at the same time improving the appearance of the carrier. Furthermore, this design permits the cutting and printing of two carriers at the same time, since capturing of the divider panel by die-cutting a longitudinal center partition forming panel permits nesting of the bottom panels of two blanks across the web.

While the invention has been described in connection with a specific embodiment thereof, various modifications thereof will occur to those skilled in the art without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A cellular article carrier formed from a suitably cut and scored one-piece blank, which comprises:

- (a) a bottom panel;
- (b) opposed side walls foldably connected to opposite side edges of said bottom panel;
- (c) end wall panels foldably connected to the end edges of each of said side walls and extending transversely inward therefrom;
- (d) first and second longitudinal center partition forming panels foldably connected to the inner edges of a pair of said end wall panels and extending inwardly and medially of said carrier;
- (e) a pair of riser panels foldably connected to the inner edges of another pair of said end wall panels and extending inwardly and medially of said carrier;
- (f) said riser panels having upper marginal portions extending above the top edge of the side walls and being connected in face-to-face paired relation at one end of the carrier;
- (g) a medial, multi-ply, handle structure connected at one end thereof to the upper marginal portions of said riser panels and at the other end thereof to portions of said center partition forming panels, said handle structure spanning the length of said carrier and being disposed medially of said side walls;
- (h) handle reinforcing panels extending between plies of said handle structure, the inner faces of said upper marginal portions of said riser panels overlying portions of said handle reinforcing panels, said handle reinforcing panels having a lower portion extending below said handle structure;
- (i) first and second center cross partition panels foldably connected to the inner ends of said first and second longitudinal center partition forming panels, respectively, and extending transversely outward therefrom and being connected at their outer ends to said side walls;
- (j) a divider panel being die-cut out of said second longitudinal center partition forming panel, said divider panel comprising a major portion of the surface area of said second longitudinal center partition forming panel;
- (k) said divider panel complementing said first longitudinal center partition forming panel to form a medial, essentially single ply, full length keel whereby article-to-article contact on either side of said keel and said handle structure is prevented;
- (l) said divider panel being foldably connected at one end thereof to said second center cross partition panel and being connected at the other end thereof to said pair of riser panels;
- (m) pairs of cross partition straps foldably connected at their outer ends along vertical fold lines to said side walls, said cross partition straps extending transversely inward of said carrier, one of each of said pairs of cross partition straps being foldably connected at the inner ends thereof along a vertical fold line to the lower portions of said handle reinforcing panels, the other of each of said pairs of cross partition straps being foldably connected at the inner ends thereof along a vertical fold line to a portion of said handle structure.

2. The article carrier as recited in claim 1 wherein said die-cut complementary divider panel during the folding of said blank into said article carrier swings out of the plane of said second longitudinal center partition forming panel in said blank and after passing through two 180° arcs becomes connected to one of said pair of riser panels whereby said uncut first longitudinal center partition forming panel and said divider panel complement each other to form a medial, two-piece, essentially single ply, longitudinally extending, substantially full length keel.

3. The article carrier as recited in claim 1 wherein said die-cut divider panel is of an irregular, polygonal configuration having a plurality of edges.

4. The article carrier as recited in claim 1 wherein said divider panel is adhered to a tab means integral with and extending from the inner edge of one of said riser panels.

5. The article carrier as recited in claim 1 wherein one edge of said divider panel is in closely spaced-apart juxtaposition to the edges of the lower marginal portions of said handle reinforcing panels extending below said handle structure.

6. The article carrier as recited in claim 1 wherein said divider panel is foldably connected to said second center cross partition panel only between the upper and lower extremities thereof.

7. The article carrier as recited in claim 1 wherein each side wall has an integral, upwardly extending, high center portion formed thereon, the length of said high center portion being approximately twice the length of a cross partition strap.

8. The article carrier as recited in claim 7 wherein said cross partition straps are foldably connected at their outer ends along vertical fold lines to opposite end edges of said upwardly extending high center portions which are integral with said side walls.

9. The article carrier as recited in claim 1 wherein said center cross partition panels are substantially full depth panels.

10. The article carrier as recited in claim 1 wherein each of said first and second center cross partition panels

has an integral flap at the outer end thereof connecting said center cross partition panel to the inner face of one of said side walls, each of said flaps having a vertical fold line at the inner end thereof, said vertical fold lines on said flaps being located centrally of said side walls and intermediate said cross partition straps whereby said article carrier is divided into two rows of four cells each.

11. The article carrier as recited in claim 1 wherein the inner end of said divider panel is in closely spaced-apart juxtaposition to the inner end of said first longitudinal center partition forming panel.

12. The article carrier as recited in claim 1 wherein said medial, multi-ply handle structure comprises a pair of outer handle panels and a pair of inner handle panels disposed therebetween in face contacting relation therewith and the upper marginal portions of said riser panels and said handle reinforcing panels, said handle reinforcing panels extending between and being in face contacting relation with portions of said pairs of inner and outer handle panels and the upper marginal portions of said riser panels.

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