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3,029,977

ARTICLE CARRIER

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2 Sheets-Sheet 1

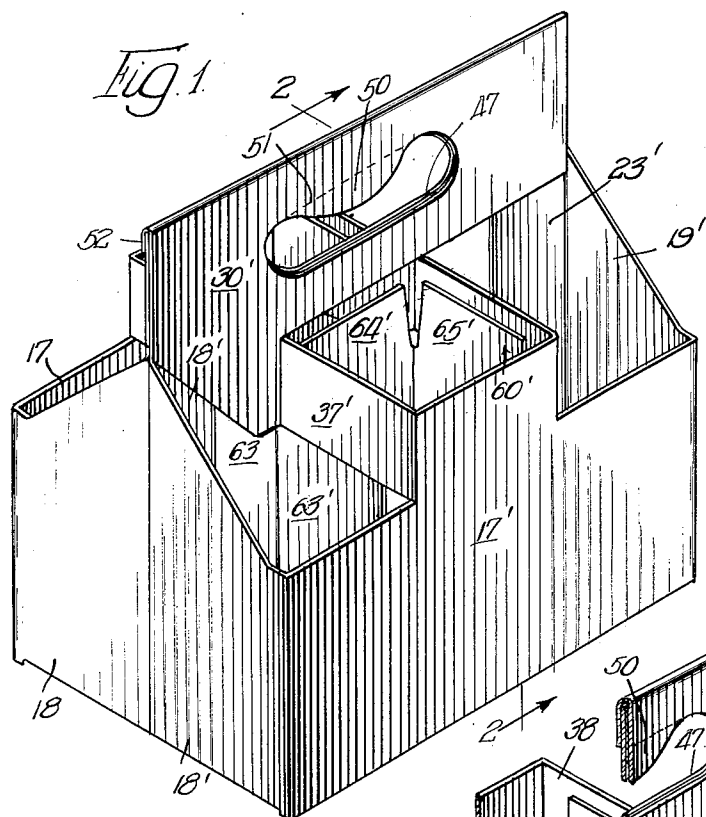
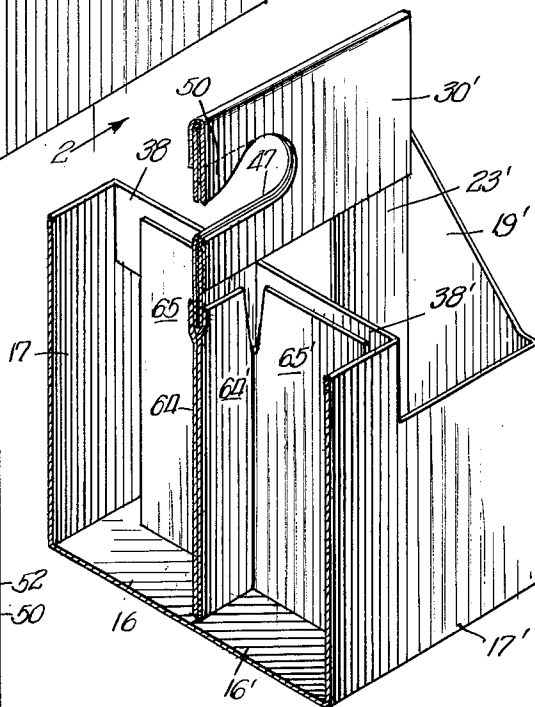
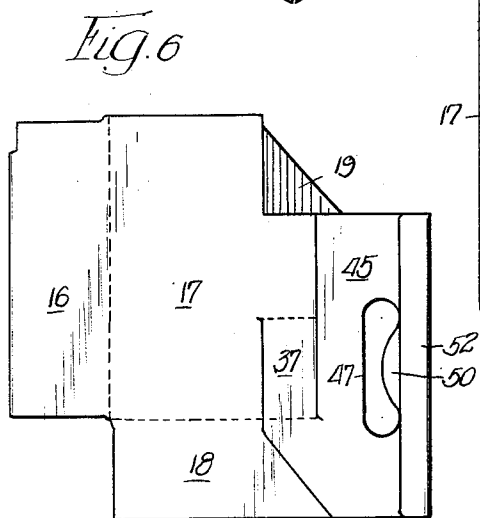


Fig. 2



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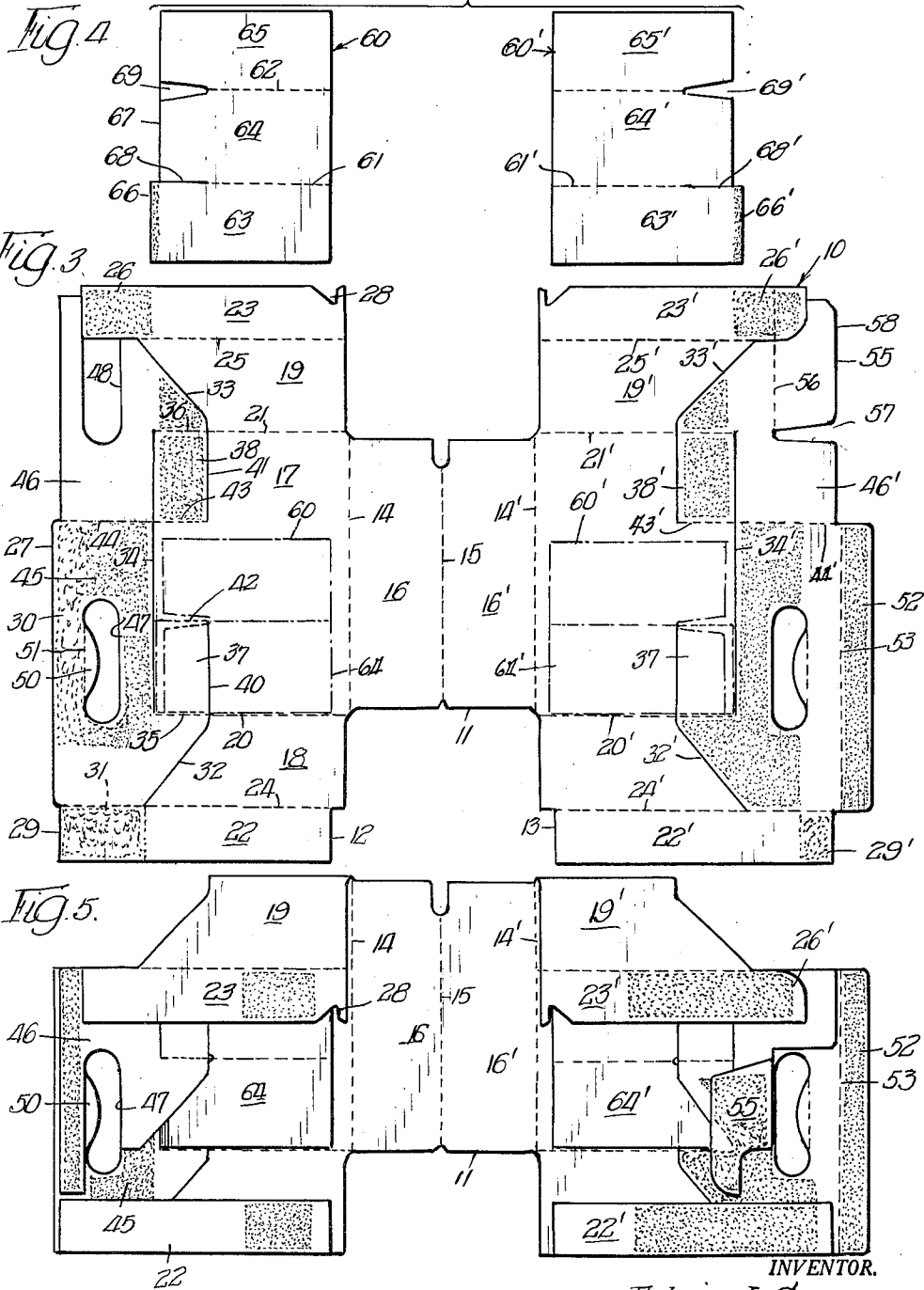
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2 Sheets-Sheet 2



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ARTICLE CARRIER

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7 Claims. (Cl. 220-113)

This invention relates to article carriers and is particularly concerned with improvements in a carrier of the type which is formed from sheet material cut and folded so as to provide a tray-like cellular compartment for the articles and a strong and sturdy center partition and associated handle structure.

The present carrier is of the general type illustrated in my copending application Serial No. 840,417, filed September 16, 1959, now Patent No. 2,993,619. Such a carrier is characterized by opposed pairs of vertical, flexible side and end walls, by a longitudinal partition and handle structure extending in a vertical plane between the end walls and parallel to the side walls, and by flexible cross partition straps which are disposed in longitudinally spaced, vertical planes and are integrally hinged on vertical fold lines to the respective side walls and to the longitudinal partition and handle structure. The carrier is formed from a blank which can be cut from fiberboard or paperboard stock sheets previously imprinted on one side thereof only with little waste in cutting. The blank is cut, creased and folded with certain partition forming portions being adhesively secured so as to provide a collapsed bottom panel having side panels foldably connected thereto, which side panels have a raised center section with intumed cross partition forming straps hinged to the ends thereof, paired end panels foldably connected to the side panels and joined in hinged relation by integral intumed center partition securing flaps, with a multiple ply, longitudinal partition and handle structure formed by a pair of handle sections which are foldably connected at one end thereof to end extensions of adjacent center partition securing flaps and a handle facing flap foldably connected to the top edge of one of the handle sections and adhesively secured to the other handle section.

The principal object of the present invention is to provide in a carrier of the type described, a supplemental partition forming structure which comprises a pair of foldable panels formed from separate blanks and inserted in the center cells on each side of the longitudinal partition and handle structure with marginal portions secured to the cross partition straps and the longitudinal partition structure so as to provide substantially full depth separation between articles in the center cells and the articles in the adjoining end cells.

It is a more specific object of the invention to provide a cellular carrier of the type described in which supplemental inserts in the form of separate foldable blanks are incorporated in the center cells on opposite sides of the longitudinal partition with panel portions thereof forming substantially full depth cross partition members and a double ply full depth longitudinal partition separator, the supplemental panels being adhesively secured at their upper margins to the cross partition straps and to the longitudinal partition structure and having the marginal portions which are so secured freed from each other at the hinge lines so as to permit a limited degree of misalignment of the hinges of the supplemental panels and the hinges connecting the cross straps with the longitudinal partition structure.

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

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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 perspective view of a portion of the carrier with the carrier being cut on a plane indicated by the line 2-2 of FIGURE 1;

FIGURE 3 is a plan view of the inside face of the prepared blank from which the main portion of the carrier is formed, the view showing adhesive applied to certain areas of the blank, preliminary to executing the first folding operations;

FIGURE 4 is a plan view of a pair of supplemental blanks which are adapted to be assembled in partially folded condition with the blank of FIGURE 3 prior to the first folding operations;

FIGURE 5 is a plan view of the blank shown in FIGURE 3 with the supplemental panels attached thereto and with certain folding and gluing operations having been performed; and

FIGURE 6 is a plan view of the completed carrier in a flat knocked down condition.

Referring to the drawings, the body or main portion of the carrier is fabricated from a generally rectangular paperboard blank 10 which is cut and creased, as shown in FIGURE 3. The blank 10 is divided in the longitudinal direction into a bottom forming center section 11 and two wall and partition forming end sections 12 and 13 by parallel, transverse crease lines 14 and 14' which are equally spaced from a medial transverse crease line 15, the latter dividing the bottom forming section 11 into two equal panels 16 and 16'. Since the blank sections 12 and 13 are divided, to a large extent, into wall and partition forming elements by identical creasing and cutting lines, only one of these sections will be fully described, and corresponding parts in the same relationship on the opposite side of the medial crease line 15 will be indicated by the same numerals primed.

The end section 12 of the blank is divided by longitudinally extending, transversely spaced crease lines and transversely extending cutting lines into side wall panel 17, end wall panels 18 and 19 at opposite sides thereof which are separated therefrom by the parallel score lines 20 and 21 extending longitudinally of the blank, and longitudinal partition forming panels 22 and 23 which are separated from the adjoining end wall forming panels 18 and 19 by crease lines 24 and 25, the latter also extending longitudinally of the blank. The one longitudinal partition panel 23 has an extended outer end portion 26 which terminates short of the end edge 27 of the blank and is adapted to be trapped between panel elements of the handle structure when the carrier is set up. This panel has a notched hook formation 28 at its inner end which forms its bottom edge. The other longitudinal partition panel has an extended outer end portion 29 which is also adapted to be trapped between panel elements of the handle structure when the carrier is set up.

A center divider or longitudinal partition and handle forming section 30 extends between the crease lines 24 and 25 and outwardly in the direction of the edge 27 of the blank from the side wall panel 17. This partition and handle forming section 30 is hingedly connected to the extended end portion 29 of the one longitudinal partition panel 22 by an extended portion 31 of the crease line 24. The section 30 is freed from the end wall forming panels 18 and 19 by diagonal cutting lines 32 and 33 and from the side wall panel 17 by the transverse cutting line 34 which extends between outer hinge forming sections 35 and 36 of the crease lines 20 and 21, respectively. The crease lines 35 and 36 form the inner hinges for relatively narrow cross partition forming straps 37 and 38 which are cut from the corners of the side wall panel 17 on the transversely extending cutting lines 40

and 41, the latter terminating short of the longitudinal center of the panel and extending parallel with the end portions of the transverse cutting line 34. Longitudinal crease lines 42 and 43 extend between the spaced inner ends of the cutting lines 40 and 41 and the cutting line 34 to form the outer hinges of the cross partition straps 37 and 38, which straps extend, in the set up position of the carrier, between the side wall 17 and the longitudinal partition and handle structure.

The longitudinal partition and handle forming section 30 of the blank 10 is divided by a longitudinally extending crease line 44 which is aligned with the crease line 43, into outer and inner handle panels 45 and 46 having hand holes 47 and 48 cut out as indicated, with the hand hole 47 having an edge reinforcing flap 50 extending therein from a transverse crease line 51.

A handle facing panel or cover flap 52 is separated from the handle forming section 30' of the opposite end section 13 of the blank by the transverse score line 53. In this section of the blank the inner handle panel 46' has a portion of its outer margin divided therefrom by the transverse crease line 56 and the generally V-shaped slot 57 to provide a panel 55. The panel 55 extends for a short distance along the outer edge of the longitudinal partition panel 23' and is freed from the panel 23' and the adjoining end wall panel 19' by an extended portion 58 of the cutting line 33' which frees the panel 46' from the end wall panel 19'. The panel 55 has a dimension in the direction transversely of the blank which is somewhat greater than the corresponding dimension of the cross partition straps 37' and 38'.

Supplemental panels 60 and 60' of identical construction, except for being rights and lefts, are provided for assembly with the blank 10, which are illustrated in FIGURE 4. Only one of these panels will be described in detail, the other having corresponding parts which are identified by the same numerals primed. The blank 60 is of rectangular shape and is divided by parallel spaced, transversely extending score lines 61 and 62 into three panels 63, 64 and 65 which are adapted to be hinged on the score lines 61 and 62. The one panel 63 has a relatively narrow extended portion 66 which facilitates the assembly of the blank with the main blank of the carrier through the use of automatic machinery. At the side edge 67 of the blank 60 which becomes the top thereof in the set up carrier, an end portion 68 of the score line 61 is cut through and an outwardly opening V-shaped slot 69 is cut at the end of the score line 62. The length of the cut 68 and the depth of the slot 69 corresponds approximately to the depth of the strap members 37 and 38.

The blanks 60 and 60' when cut and creased as shown in FIGURE 4 are initially folded on the score lines 61 and 61' and an adhesive is applied to the end shections 66 and 66' of the panels 63 and 63'. With the panels 63 and 63' folded under the panels 64 and 64' about the score lines 61 and 61', the two supplemental blanks are then assembled with the main blank 10 as illustrated in dotted line in FIGURE 3.

When the assembly of the blanks 60 and 60' with the blank 10 is completed, the blank 10 with the blanks 60 and 60' attached is glued and folded to provide the carrier which is illustrated in FIGURES 1 and 6. Prior to folding the blank, an adhesive is applied to the handle panels 45, 45' and 46, 46' and to the end portions 36, 36' and 29, 29' of the longitudinal partition panels 22, 22', and 23, 23'. Adhesive is also applied to the areas indicated on the straps 38 and 38'. The panels 46 and 46' are then folded inwardly about the score lines 44 and 44'. The longitudinal partition panels 22 and 22' are folded inwardly about the score lines 24 and 24', while the corresponding panels 23 and 23' at the other side of the blank along with their adjoining end wall forming panels 19 and 19' are folded inwardly about the score lines 21 and 21' so as to bring them into the position shown in FIGURE 5. Adhesive is then applied to the

exposed portions of the outer handle panel 45, the inner handle panel 46 and the longitudinal partition panels 22 and 23. Adhesive is also applied to portions of outer handle panel 45' and inner handle panel 46' and to the handle covering panel 52. The partition forming blanks 60 and 60' receive an adhesive in the area at the outer edge of the panels 63 and 63' as indicated in FIGURE 4. The handle reinforcing panel 55 is then folded about the score line 56 as indicated in FIGURE 5, the two sections of the blank are folded about the medial crease line 15 and the handle cover panel 52 is folded about the crease line 53 which completes the gluing and folding of the carrier and provides the collapsed carrier as shown in FIGURE 5, which, when opened up, has the form shown in FIGURE 1.

It will be noted that the supplemental cross partition panels 63, 63' and 65, 65' extend into the areas below the cross partition straps 37, 38 and 37', 38' so as to separate the articles in the center cells from the articles in the adjoining end cells. The center panels 64, 64' of the supplemental partition blanks occupy the space below the cross partition straps in the center partition and for a double ply separator for the articles in the two center cells. The slits 68, 68' and the V-shaped slots 69, 69' insure that the supplemental panels will fold properly regardless of when there is a substantial degree of misalignment between the fold forming score lines 61, 61' and 62, 62' with the hinge lines 35, 36 and 35', 36' of the cross partition straps 37, 38 and 37', 38'. Some misalignment between these hinge forming score lines is likely to result when the partially folded supplemental blanks 60 and 60' are positioned on the main blank 10 and thereafter carried through the folding machine with the only means of attachment being the adhesive applied to the top end forming portions 66 and 66' of the panels 63 and 63'.

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

I claim:

1. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and to the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure and hinged at their opposite ends on vertical hinge lines to the side walls and the longitudinal partition and handle structure, the improvement which comprises a pair of panel forming partition insert members each having three panels hingedly connected on vertically extending hinge forming score lines which terminate short of the upper edges of the end panels, said panels being positioned so that their hinge lines register approximately with the hinge lines connecting the cross partition straps with the longitudinal partition and handle structure and having upper marginal portions of their end panels disconnected from the center panels and said disconnected upper marginal portions only being secured to the cross partition straps, and extending below the cross partition straps so as to separate the articles in the cells.

2. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and to the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure, the im-

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provement which comprises a pair of panel forming members each having at least three panels hingedly connected on vertically extending hinge forming score lines which are spaced apart a distance corresponding to the longitudinal distance between the cross partition straps of each pair thereof, said members having the upper portion of one score line thereof slit and the upper portion of the other score line cut away to form a V-shaped slot opening on the top edge of the member, said members having their upper margins secured to the cross partition straps and the longitudinal partition and handle structure so as to extend below the cross partition straps and separate the articles in the cells.

3. In a carrier as recited in claim 2, and said panel forming members having the hinge lines separating the three panels thereof registering approximately with the hinge lines connecting the cross partition straps with the longitudinal partition and handle structure and one of said panels of each of said members having a relatively narrow extension on the top edge thereof.

4. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure and hinged at their opposite ends on vertical hinge lines to the side walls and the longitudinal partition and handle structure, the improvement which comprises a pair of partition forming members each having three panels hingedly connected on vertically extending hinge forming score lines which are spaced apart a distance corresponding to the distance between the pairs of cross partition straps in the longitudinal direction of the carrier and having their upper margins adhesively connected to the cross partition straps and the longitudinal partition and handle structure, said partition forming members having their upper margins divided by cutting along the hinge lines to a depth corresponding approximately to the depth of the cross partition straps and said partition forming members extending below the cross partition straps so as to separate the articles in the cells.

5. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and to the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure and hinged at their opposite ends on vertical hinge lines to the side walls and the longitudinal partition and handle structure, the improvement which comprises a pair of partition forming members each having three panels hingedly connected on vertically extending hinge forming score lines which are spaced apart a distance corresponding to the distance between the pairs of cross partition straps in the longitudinal direction of the carrier and having their upper margins adhesively connected to the cross partition straps and the longitudinal partition and handle structure, said partition forming members having the upper margins of the panels thereof separated from each other by cutting along the hinge lines to a depth corresponding approximately

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to the depth of the cross partition straps with one of said cuts being in the form of an upwardly opening generally V-shaped slot below the cross partition straps so as to separate the articles in the cells.

6. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and to the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure and hinged at their opposite ends on vertical hinge lines to the side walls and the longitudinal partition and handle structure, the improvement which comprises a pair of partition forming members each having at least three panels hingedly connected on vertically extending hinge forming score lines which are spaced apart a distance corresponding to the distance between the straps of each pair of cross partition straps and having the upper margins of the end panels connected to the cross partition straps, said partition members having the upper margin of each panel thereof separated from the adjoining panels by cutting along the hinge lines to a depth corresponding approximately to the depth of the cross partition straps and said panels extending below the cross partition straps so as to separate the articles in the cells.

7. In a cellular article carrier of the type which comprises a foldable bottom panel, spaced side walls hinged to the side edges of the bottom panel in upstanding relation thereto on opposite sides of a longitudinal partition and handle structure, pairs of end walls hinged to the vertical ends of the side walls and to the longitudinal partition and handle structure and pairs of cross partition straps extending in spaced relation on opposite sides of the longitudinal partition and handle structure and hinged at their opposite ends on vertical hinge lines to the side walls and the longitudinal partition and handle structure, the improvement which comprises a pair of partition forming inserts each having three panels hingedly connected on vertically extending hinge forming score lines which are spaced apart a distance corresponding to the distance between the pairs of cross partition straps in the longitudinal direction of the carrier, said hinge forming score lines being cut through at the upper end portions so as to free upper marginal portions of the panels from each other, said partition inserts being positioned so that their hinge lines register approximately with the hinge lines connecting the cross partition straps with the longitudinal partition and handle structure and the freed upper marginal portions of the end panels being adhesively connected to the cross partition straps to a depth no more than the depth of the cut upper end portion of the adjacent hinge forming score lines whereby the panels extend from the cross partition straps to the bottom panel and separate the articles in the cells.

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