Dec. 11, 1951 W. B. CRANE 2,578,174

CELLULAR CONTAINER

Filed April 1, 1949 2 SHEETS—SHEET 1

Fig. 1.

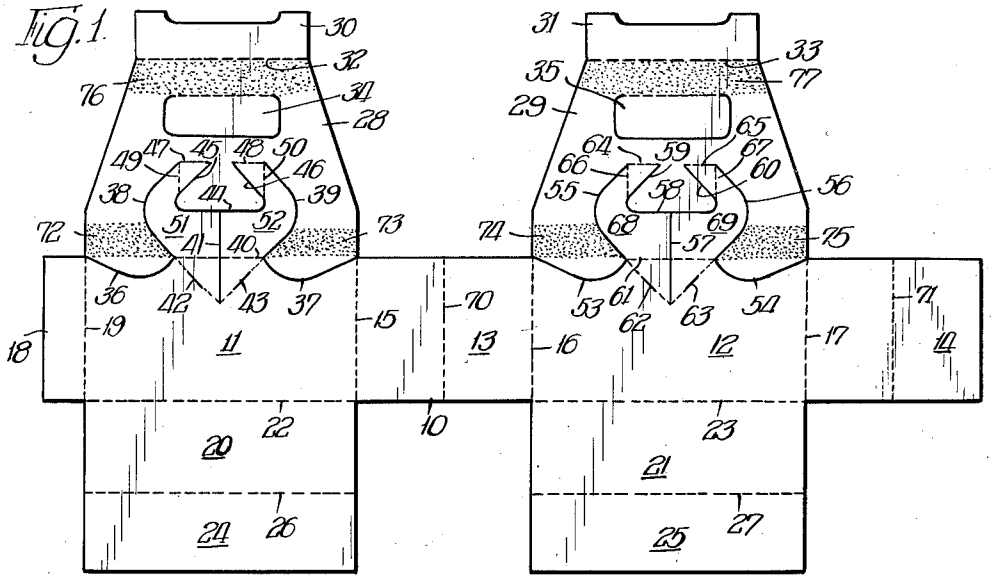


Fig. 2.

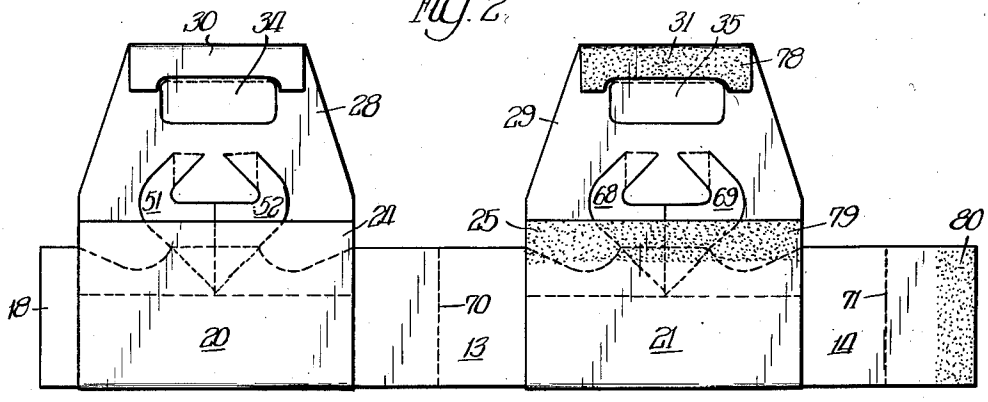
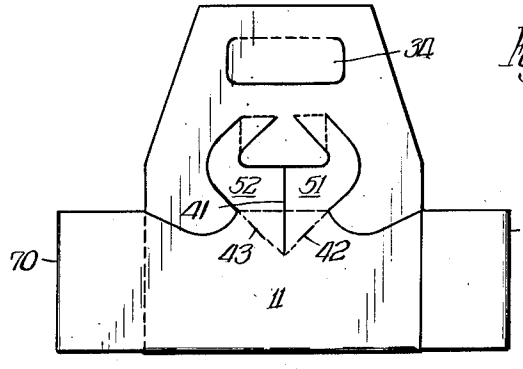


Fig. 3.



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Fig. 4

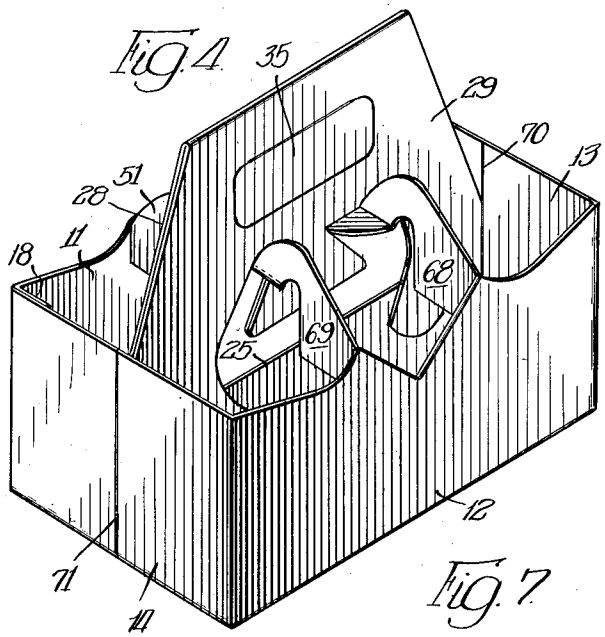


Fig. 6

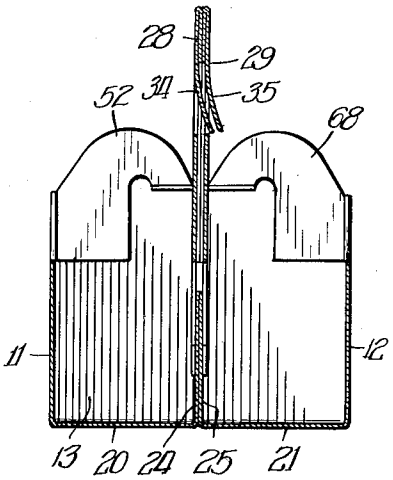


Fig. 7

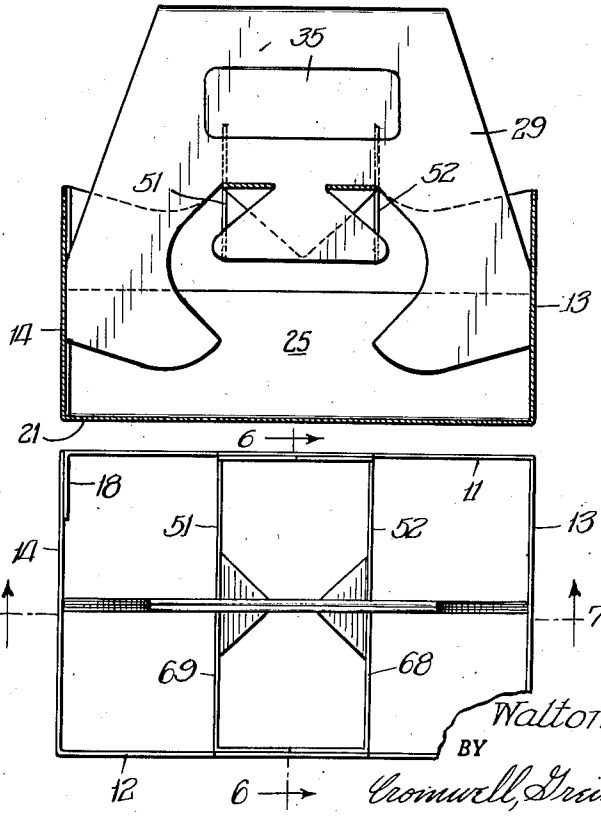


Fig. 5

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CELLULAR CONTAINER

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7 Claims. (Cl. 229—52)

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This invention is concerned with improvements in a cellular container of the type which is particularly adapted for carrying bottled goods and similar commodities.

The general object of the invention is to provide a combination shipping, storage and display container formed from a single blank of paperboard material which is cut, scored and secured together in flat folded condition and which is capable of being erected to form a bottom, connected side and end walls and longitudinal and transverse partitions dividing the interior of the container into a plurality of rows of cells.

It is a more specific object of the invention to provide a paperboard container having integrally connected side and end walls, bottom wall forming members hinged to the side walls and extensions on the bottom wall forming members and the side walls, respectively, which are connected together to form an upright longitudinally extending partition intermediate the side walls, when the container is erected, which partition is connected to the side walls by vertically extending longitudinally spaced transverse strip members forming transverse partitions on opposite sides of the same for dividing the container into two parallel rows of commodity receiving cells.

It is a further object of the invention to provide in a bottle carrier of the type described a longitudinal partition and handle forming member comprising panels which are cut from extensions of the side wall forming panels in such a manner as to provide transverse partition forming strips which are adapted to extend in upstanding position between the longitudinal partition and the side walls, in the erected condition of the carrier, the transverse strips being connected to the partition along longitudinal hinge lines and to the side wall members along diagonal hinge lines and being spaced longitudinally of the container to divide the interior of the same into a plurality of cells.

It is a further object of the invention to provide in a container of the type described a longitudinal partition comprising panel members having their lower portions hingedly connected to the bottom wall forming members and having their upper portions cut from extensions of the side wall members and connected therewith by uncut strips which are moved into longitudinally spaced upstanding relation when the container is erected, with horizontally extending triangularly shaped web portions connecting the strips with the longitudinal partition members and with triangularly shaped web portions extending in a vertical direction at the opposite ends of the strips and connecting the same to the side walls.

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

Fig. 1 is a view of a blank of cut and scored paperboard material which is adapted to be assembled into a container embodying the principles of the invention;

Fig. 2 is a view of the blank of Fig. 1 with portions folded over thereon about longitudinal lines;

Fig. 3 is a view of the blank folded about transverse lines to complete the assembly of the container in flat folded form;

Fig. 4 is a perspective view of the container in fully set-up or erected condition;

Fig. 5 is a plan view of the container in erected condition;

Fig. 6 is a section taken on the line 6—6 of Fig. 5; and

Fig. 7 is a longitudinal section taken on the line 7—7 of Fig. 5.

Referring to Fig. 1 of the drawings, there is illustrated a blank 10 which is cut and scored to provide the necessary panels for assembly of a container which incorporates the principal features of the invention.

The central portion of the blank 10 is divided into side wall forming panels 11, 12 and end wall forming panels 13 and 14 by transverse crease or score lines 15, 16 and 17. One side wall panel 11 is provided with an end connecting tongue or flap 18 which is separated therefrom by the score line 19 and which serves to connect the free corners of the container when assembling the same. The side wall panels 11 and 12 are preferably identical and the end wall panels 13 and 14 are also preferably identical.

The side wall panels 11 and 12 are separated from bottom forming panels 20 and 21 by longitudinally extending score lines 22 and 23, respectively. The bottom forming panels 20 and 21 are provided with extensions 24 and 25 which are separated therefrom by score lines 26 and 27 and which are connected in upstanding face-to-face relation to the lower part of the longitudinal partition member when the container is erected.

The side wall panels 11 and 12 are provided at the sides opposite the bottom forming panels 20 and 21 with laterally extending panel members 28 and 29 the major portions of which are adapted to be connected in face-to-face relation to form the upper part of the longitudinal partition member when the container is erected.

The panels 28 and 29 which are preferably identical are tapered outwardly and provided at their outer ends with flaps 30 and 31 which are defined by the score lines 32 and 33, respectively. The flaps 30 and 31 are adapted to be folded back onto the respective panels about the score lines 32 and 33 and to be secured together to provide a quadruple thickness in the upper or outer handle forming portion of the longitudinal partition. The panels 28 and 29 are also provided with generally rectangular cut-out tabs 34 and 35 which are adapted to be hinged along the top and folded outwardly and upwardly along one of the panel members 28 or 29 to provide a reinforced handhold for carrying the container.

The panels 28 and 29 are both cut and scored to permit movement laterally of the side wall forming panels 11, 12 of the greater portions of the panels which form the upper part of the longitudinal partition member and also to provide connecting strip members which fold into upstanding cross partition forming relation when the container is erected.

Panel 28 is cut along curved generally longitudinal lines 36, 37 and curved generally transverse lines 38, 39. The cutting lines 36, 37 extend toward each other from the transversely extending edges of the panel and terminate at the inner ends of the transverse cutting lines 38, 39. The cutting lines 38, 39 are spaced longitudinally of the blank in opposed symmetrical relation to the transverse center line of the panel and extend outwardly a predetermined distance which corresponds to approximately half the desired width of the container or a distance sufficient to accommodate the size of bottle for which the container is designed. The meeting ends of the cutting lines 36, 37 and 38, 39 are connected by a longitudinally extending crease line 40. A relatively short cutting line 41 is provided along the transverse center line of the panel extending across the crease line 40. Diagonal crease lines 42, 43 are provided which extend inwardly of the side wall panel 11 to the inner end of the cutting line 41. The outer end of cutting line 41 terminates at a short longitudinally extending cutting line 44 which straddles the transverse center line of the panel. The cutting line 44 merges at opposite ends with outwardly extending diagonal cutting lines 45, 46 which extend generally parallel with and in spaced relation to the outer portions of the curved cutting lines 38, 39, respectively. The outer ends of the cutting lines 45, 46 are longitudinally spaced from each other and also from the outer ends of cutting lines 38, 39. Longitudinally extending lines 47, 48 extend between the outer ends of cutting lines 38, 45 and 39, 46. Transversely extending crease lines 49, 50 extend from the ends of cutting lines 38, 39 inwardly of the panel to the cutting lines 45, 46, respectively. The cutting lines 36, 37 and 38, 39 free the outer portions of the panel for movement laterally of the side wall forming panel 11. The cutting lines 41, 44, 45 and 46 cooperate with the cutting lines 38, 39 to form the transverse connecting strips 51 and 52 which fold about the crease lines 40, 42 and 40, 43 at their inner ends and about the crease lines 47, 49 and 48, 50 at their outer ends.

Panel 29 is cut in the same manner as panel 28 along the longitudinally extending lines 53, 54 and the transversely extending lines 55, 56 to free the outer portion for movement laterally of the side wall forming panel 12. The panel 29 is also cut along the lines 57, 58, 59, 60 and provided with crease lines 61, 62, 63, 64, 65, 66, 67 to form transverse partition forming connecting strips 68 and 69.

The end wall forming panels 13 and 14 are provided with transversely extending crease lines 70, 71 intermediate their ends to permit assembly of the container in flat folded condition.

The blank 10, after being provided with the cutting and crease lines described, may be assembled in standard gluing and folding machinery. It is first passed through a gluing machine to provide areas of adhesive on panels 28, 29 as indicated at 72, 73, 74, 75, 76 and 77 (Fig. 1). Thereafter the blank is passed through a folding machine which first folds the bottom forming panels 20, 21 and their extensions 24, 25 about the score lines 22 and 23 to bring the partition forming extensions 24 and 25 into face engagement with the glue areas 72, 73 and 74, 75 on the oppositely disposed panels 28 and 29, respectively. At the same time the handle reinforcing flaps 30 and 31 are folded inwardly about the crease lines 32 and 33 into face engagement with the adhesive areas 76 and 77, respectively.

The partially folded blank which is then in the condition illustrated in Fig. 2 is passed through a second gluing machine which applies adhesive to the areas indicated at 78 on the handle 31, at 79 on the bottom panel extension 25 and at 80 on the end wall panel 14.

The partially folded and glued blank is then passed through a further folding mechanism which folds the same transversely first about the score line 70 and then about the score line 71 to bring the opposite bottom wall extension 24 into face-to-face relation with the glued surface 79 on the bottom wall extension 25 and also to bring the side end wall connecting tongue 18 into engagement with the glue surface 80 on the end wall member 14 to complete the assembling operation and provide the container in flat folded condition as illustrated in Fig. 3 ready to be erected by a single operation.

The container is shipped to the user in the flat folded condition. It may be erected (Fig. 4) by pressing inwardly on the folded end members along the fold lines 70 and 71 and then downwardly on the longitudinal partition. The central partition forming extensions 24, 25 and the connected panel members 28 and 29 are moved into upstanding, longitudinally extending position by the folding movement of the bottom forming panels 20 and 21 which occurs when the side walls 11 and 12 are moved away from each other by the unfolding movement of the end walls 13 and 14. The transverse partition forming strips 51, 52 and 68, 69 are moved into vertical position by the downward movement of the partition forming members 28 and 29. They hinge first in the horizontal plane about the score lines 47, 48 and 64, 65 at the ends connecting with the partition members formed by the panels 28 and 29 and about the score lines 40 and 61 at the opposite ends, and then into the vertical plane about the transverse lines 49, 50 and 66, 67 at the partition ends and about the diagonal score lines 42, 43 and 62, 63 at the side wall ends.

The panel members 28 and 29 separate from the side walls 11 and 12 in a lateral direction by reason of the cutting lines 36, 38 and 37, 39 which free the panel 28 and the cutting lines 53, 55 and 54, 56 which free the panel 29 from the side walls 11 and 12, respectively. In the

erected condition of the container the tranvserse partition forming strips **51**, **52** and **68**, **69** are each connected at one end to a longitudinal partition member by a triangularly shaped web-like portion which is located in a horizontal plane and which is hinged along a horizontal line to the partition member and along a transverse line to the strip. At their outer ends the transverse partition forming strips are each connected to the top edges of the side walls by a triangularly shaped web portion which is located in a vertical plane in the erected position of the container and which is hinged along a horizontal line to the strip and along a diagonal line to the respective side wall.

When the container is erected and bottles or similar articles are placed in the cells provided by the longitudinally extending central partition formation and the longitudinally spaced transversely extending cross partition strips, the weight of the bottles is supported directly by the longitudinal partition formation through its connection with the bottom wall extension members. The strain placed on the transversely extending cross partitions which hold the side walls in spaced relation with the longitudinal partition is relatively slight. The major portion of the weight of the bottles which is transmitted to the side walls is carried by the end walls through their corner connections with the side walls, the end walls serving to brace the side walls. The only appreciable strain placed on the cross partitions occurs when the bottles in the intermediate cells are tipped outwardly for any reason.

The handhold provided by the hinged flaps **34** and **35** is normally positioned below the tops of the bottles placed in the cells of the container, and the uppermost extremity of the longitudinal partition does not extend above the tops of the bottles so that a plurality of the containers when filled with bottles or similar commodities may be stacked in vertical relation without any interference.

While specific materials and details of construction have been referred to in describing the illustrated container, it will be understood that other materials and other details of construction may be resorted to within the spirit of the invention.

I claim:

1. A collapsible bottle carrier formed from a sheet of flexible material blanked and creased to provide bottom forming panels upon which the bottles rest in the carrier, side wall forming panels joined at their lower edges directly to the outer edges of the bottom panels, foldable end wall forming panels connecting the ends of the side wall panels, centrally disposed longitudinal partition forming panels having bottom portions connected to the bottom wall panels, and top handle forming portions extending above the top edge of the side wall panels and transverse partition forming strips connecting the upper portions of the side wall panels with intermediate portions of the longitudinal partition panels, said transverse partition strips being joined to said side wall panels along diagonal lines and to said longitudinal partition panels along horizontal lines, and said transverse partition strips dividing the carrier longitudinally into a plurality of bottle receiving cells.

2. A collapsible bottle carrier as recited in claim 1 wherein said transverse partition strips

are foldable along vertical and horizontal lines in transverse planes to a vertical position when the carrier is erected.

3. A collapsible bottle carrier formed from a sheet of flexible material blanked and creased to provide bottom forming panels upon which the bottles rest in the carrier, side wall forming panels joined at their lower edges directly to the outer edges of the bottom panels, foldable end wall forming panels connecting the ends of the side wall panels, centrally disposed longitudinal partition forming panels having bottom portions connected to the bottom wall panels and top handle forming portions extending above the top edge of the side wall panels, and transverse partition forming members connecting the upper portions of the side wall panels with portions of the longitudinal partition panels, said transverse partition members being joined to said side wall panels by triangular web portions which are foldable against said side wall panels, said transverse partition members being connected to said longitudinal partition panels by other triangular web portions which fold into a horizontal plane, and said transverse partition members cooperating with said longitudinal partition panels to divide the carrier into a plurality of bottle receiving cells.

4. A collapsible bottle carrier as recited in claim 3 wherein said transverse partition members are foldably connected to said triangular web portions along vertical and horizontal lines in transverse planes whereby they automatically move to a vertical position when the carrier is erected.

5. A collapsible bottle carrier formed from a sheet of flexible material blanked and creased to provide bottom members upon which the bottles rest in the carrier, side members joined at their lower edges directly to the outer edges of the bottom members, collapsible end members connecting the ends of the side members, centrally disposed longitudinal partition forming members having bottom portions connected to the bottom members and top handle forming portins extending above the top edge of the side members, and transverse partition members connecting the upper portions of the side members with intermediate portions of the longitudinal partition members, said transverse partition members being joined to said side members by triangular webs foldable into a vertical plane along diagonal and vertical lines and said transverse partition members being joined to said longitudinal partition members by triangular webs foldable into a horizontal plane along longitudinal and transverse lines, said transverse partition members dividing the carrier longitudinally into a plurality of bottle receiving cells.

6. A collapsible bottle carrier formed from a sheet of flexible material blanked and creased to provide bottom forming panels upon which the bottles rest in the carrier, side forming panels joined at their lower edges directly to the outer edges of the bottom forming panels, centrally disposed longitudinal partition forming panels having bottom portions connected to the bottom forming panels and top handle forming portions extending above the top edge of the side forming panels, and transverse partition forming members cut from said longitudinal partition forming panels and extending from the upper portions of the side forming panels to intermediate portions of the longitudinal partition forming panels, said transverse partition forming members being foldably connected to said side forming panels

along diagonal lines, said transverse partition forming members being foldably connected to said longitudinal partition forming panels along horizontal lines, and said transverse partition forming members dividing the carrier longitudinally into a plurality of bottle receiving cells.

7. A collapsible bottle carrier formed from a sheet of flexible material blanked and creased to provide bottom panels upon which the bottles rest in the carrier, side panels joined at their lower edges directly to the outer edges of the bottom panels, centrally disposed longitudinal partition forming panels having bottom portions connected to the bottom panels and top handle forming portions extending above the top edge of the side panels, and integral transverse partition forming members cut from said longitudinal partition forming panels and extending from the upper portions of the side panels to intermediate portions of the longitudinal partition forming panels, said transverse partition forming members being joined to the respective side panels and to said longitudinal partition forming panels along non-parallel hinge lines, said transverse partition forming members dividing the carrier longitudinally into a plurality of bottle receiving cells.

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