July 12, 1949. W. B. CRANE ET AL 2,476,181

CELLULAR CONTAINER

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Fig. 1

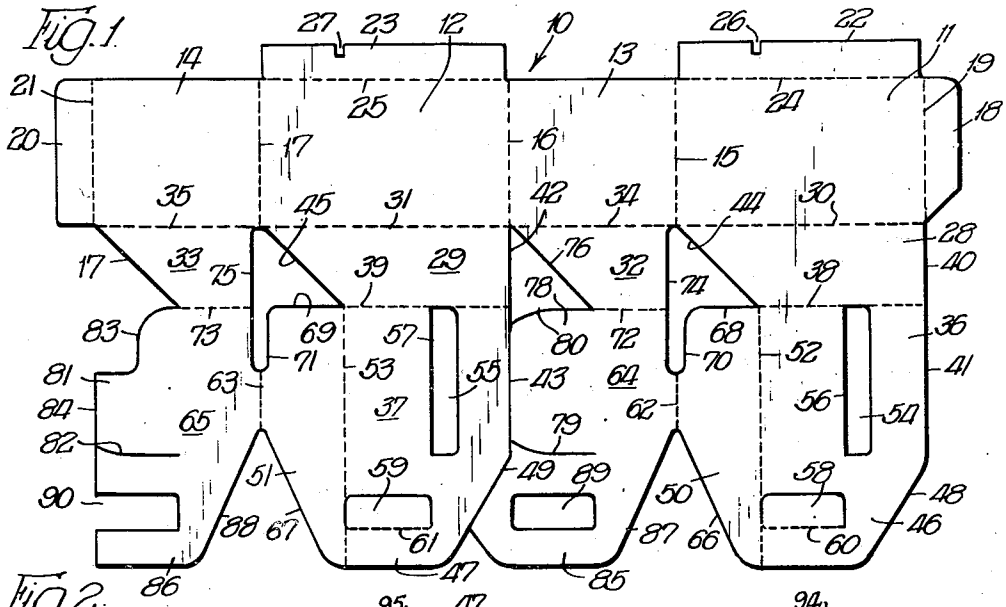


Fig. 2

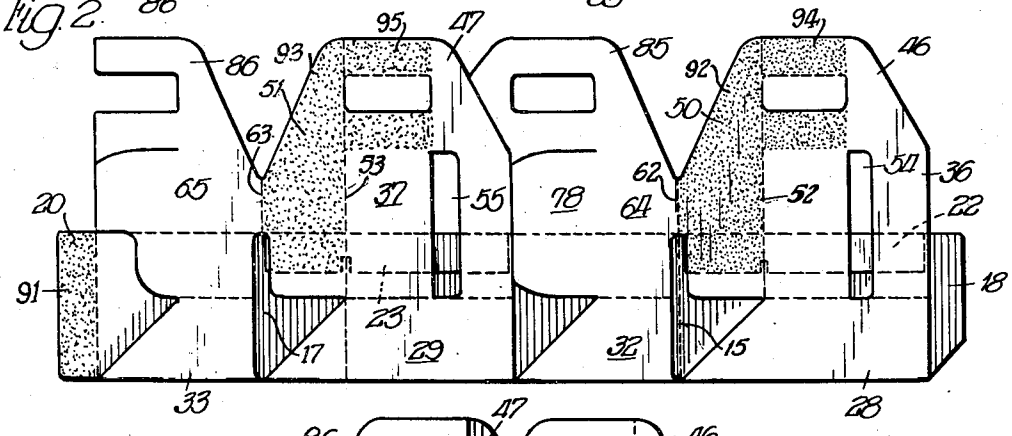
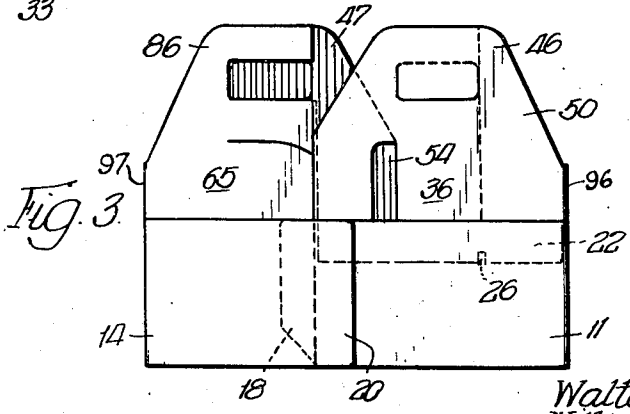


Fig. 3



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Fig. 4

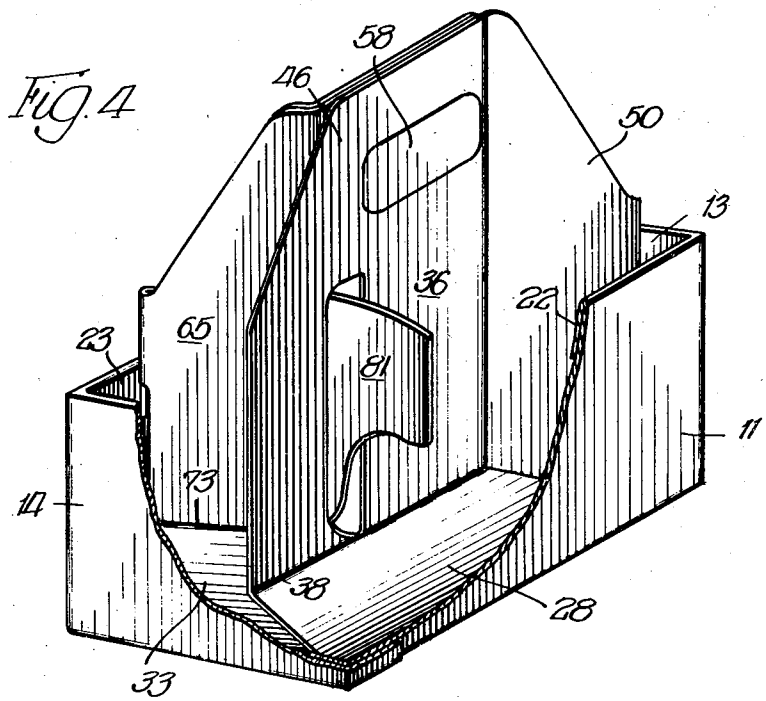
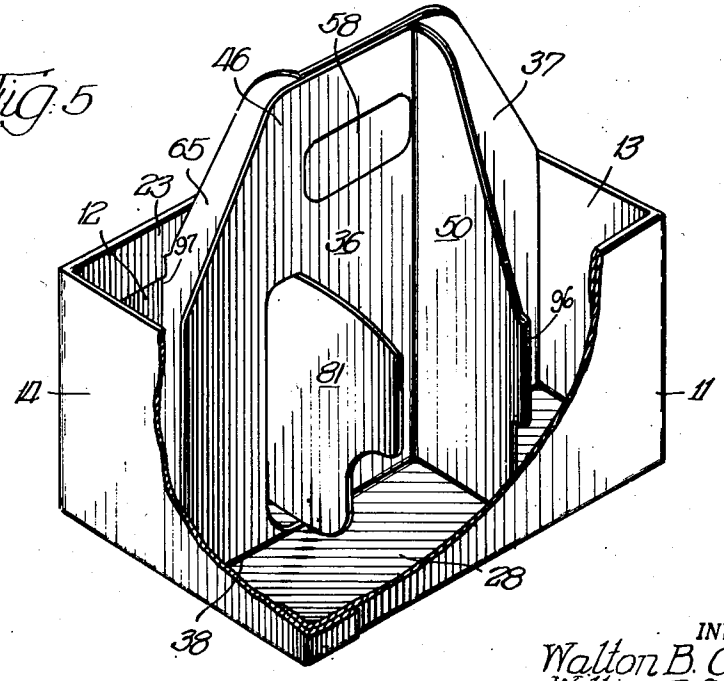


Fig. 5



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Fig. 6.

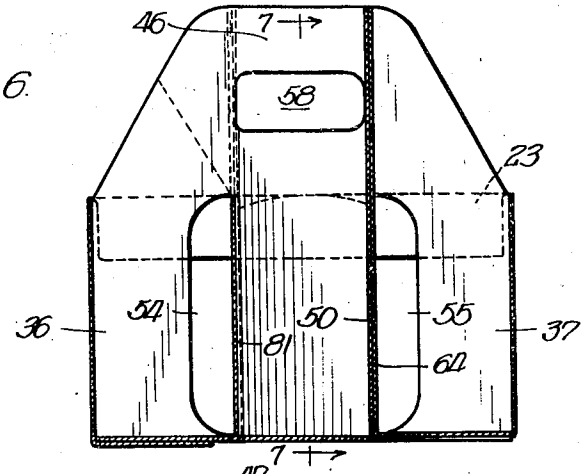


Fig. 7.

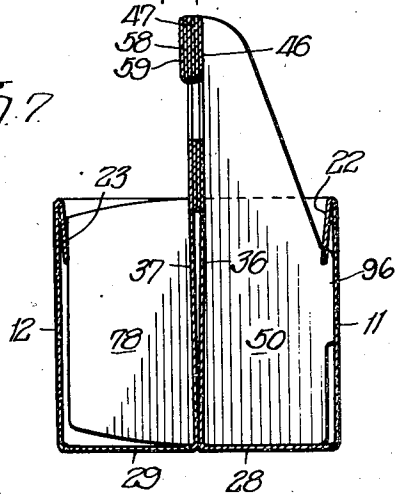


Fig. 8.

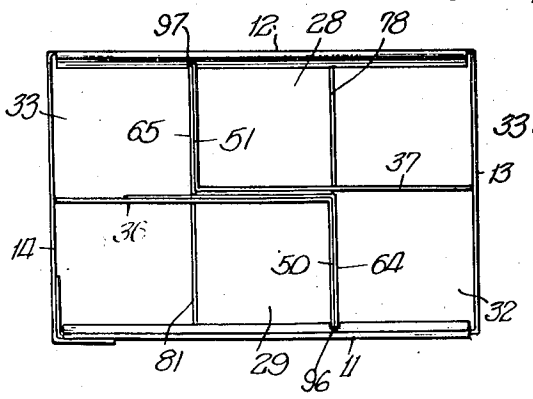
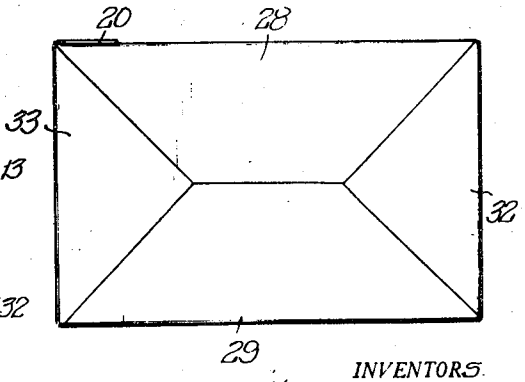


Fig. 9.



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UNITED STATES PATENT OFFICE

2,476,181

CELLULAR CONTAINER

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Application July 30, 1948, Serial No. 41,465

9 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 shipping and retailing bottled goods and similar commodities.

It is a general object of the invention to provide a combination shipping, storage and display container which is formed from a single blank of paperboard material adapted to be cut, scored and secured together in a collapsible position and to be thereafter erected with portions in interengaged partition forming relation thereby providing a cellular container structure having upstanding transverse and longitudinal partitions.

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 and end walls, respectively, and extensions on the bottom wall forming members which are foldable into upright interfitting relation for dividing the interior of the container into a plurality of rows of cells and for providing a handle formation of four thicknesses of material.

It is a further object of the invention to provide a collapsible container formed from a blank of paperboard material which is cut and scored to provide a plurality of connected panels which are so arranged that they form when the container is in erected condition, side and end walls, bottom wall members hinged to the side and end walls, respectively, longitudinal partition members hinged to the bottom wall members which are connected to the side walls and transverse partition members hinged to the bottom wall members which are connected to the end walls, the transverse partition members being also hingedly joined to the longitudinal partition members and the partition members being foldable into upstanding interengaging relation within the container to provide a combination partition and handle structure therein, the lateral edges of which are free of the respective side and end walls.

Another object of the invention is to provide a collapsible cellular container of the type described in which the bottom wall members and the longitudinal and transverse partition members are interconnected in such a manner that when the carton is erected the bottom wall members and the partition members are automatically caused to move simultaneously into proper erected position.

It is a further object of the invention to provide a collapsible cellular container of the type described in which the longitudinal and transverse

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partition forming members are hingedly connected to the bottom forming members and also to each other in such a manner that the collapsed carton may be automatically erected by moving the partition forming members first in a lateral direction toward each other and then downwardly into the container.

Another object of the invention is to provide a container of the type described in which portions at opposite ends of the longitudinal partition forming members are secured to the adjacent transverse partition forming members to foldably connect the respective partition members along the vertical center lines of the transverse partition members.

These and other objects of the invention will be apparent to those skilled in this art from a description 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 folded over upon itself about a longitudinal line forming the bottom of the side and end wall panels;

Fig. 3 is a view of the blank folded about transverse lines which form opposite corners of the container and secured together ready for shipping to the user by whom it automatically can be erected from its collapsed position for filling;

Fig. 4 is a perspective view with a portion of a side and end wall broken away, illustrating an intermediate position in the setting up of the container;

Fig. 5 is a view similar to Fig. 4 with the container in the completely set-up condition;

Fig. 6 is a longitudinal vertical sectional view of the container in the set-up condition;

Fig. 7 is a transverse section taken on the line 7—7 of Fig. 6;

Fig. 8 is a view of the top of the container in the set-up condition; and

Fig. 9 is a view of the bottom of the container in the set-up condition.

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

The wall forming portion of the blank 10 is divided into side wall forming panels 11 and 12 and end wall forming panels 13 and 14 by transverse score lines 15, 16 and 17. The one side wall

panel 11 is provided with an end connecting tongue or flap 18 which is separated therefrom by the transverse score line 19. End wall panel 14 is provided with a cooperating connecting tongue or flap 20 which is separated therefrom by the transverse score line 21.

The side wall panels 11 and 12 are provided with foldable top edge reinforcing flaps 22 and 23 which are separated therefrom by the longitudinal score lines 24 and 25, respectively. These reinforcing flaps 22 and 23 are provided with relatively short rectangular slots 26 and 27 extending inwardly from the free edge thereof and spaced from corresponding ends approximately one-third the length of the flaps for a purpose which will be described.

The bottom forming portions of the blank comprise side panels 28 and 29 which extend from the side wall panels 11 and 12 and are separated therefrom by score lines 30 and 31 and end panels 32 and 33 which extend from the end wall panels 13 and 14 and are separated therefrom by score lines 34 and 35.

The longitudinal partition forming portions of the blank comprise identical panels 36 and 37 which extend from the bottom side panels 28 and 29 and are separated therefrom by the longitudinal crease lines 38 and 39, respectively. The partition panels 36 and 37 and the adjoining bottom side panels 28 and 29, respectively, are provided with a free side or end edge extending transversely of the blank 10. The free edges 40 and 41 of bottom panel 28 and partition panel 36 are aligned with the corner forming crease line 19 and constitute one end edge of the blank 10. The free edges 42 and 43 of bottom panel 29 and partition panel 37 are formed by cutting the blank 10 along a line extending transversely and aligned with the opposite corner forming crease line 16.

The crease lines 38 and 39 which separate bottom side panels 28 and 29 from the longitudinal partition panels 36 and 37 extend inwardly from the free edges 40, 41 and 42, 43 approximately two-thirds of the length of the side wall panels 11 and 12 and terminate at the end of diagonal cutting lines 44 and 45 which extend to the ends of transverse crease lines 15 and 17 and which constitute oblique free edges at the other end of the bottom side panels 28 and 29.

The partition panels 36 and 37 are provided with adjoining portions 46 and 47 which extend in a direction transversely of the blank 10 and which project above the longitudinal partition panels 36 and 37 in the erected condition of the carton to provide juxtaposed handle forming portions. The handle forming portions 46 and 47 are provided with oblique free edges 48 and 49. The edge 48 extends inwardly of the portion 46 from the outer end of the free edge 41 of the partition panel 36 and constitutes a part of the end edge of the blank. The edge 49 extends inwardly of the portion 47 in the same direction from the end of the edge 43 and constitutes the end of the cutting line separating the panels 29 and 37 from the adjoining portions of the blank.

The partition panels 36, 37 and their adjoining handle extensions 46, 47, respectively, are separated from panel portions 50 and 51 by crease lines 52 and 53 which extend transversely of the blank from the points where the crease lines 38 and 39 terminate at the ends of the oblique edges 44 and 45, of the bottom side panels 28 and 29, respectively.

The partition panels 36 and 37 are provided with generally rectangular apertures 54 and 55

which extend outwardly from the crease lines 38 and 39 in a direction transversely of the blank 10. The apertures 54 and 55 are parallel to and are spaced inwardly of the edges 41 and 43 of the panels a sufficient distance to bring the inner edges 56 and 57 approximately on the center line of the panels. The apertures 54 and 55 are of substantial width and accommodate portions of the cross partition members in a manner which will be described. The outward extent or height of the apertures 54 and 55 depends upon the height of the portions of the cross partition panels which they are intended to accommodate. In the particular form of carton illustrated the apertures terminate approximately the same distance above the bottom panels 28 and 29 as the top edges of the side and end wall panels 11, 12 and 13, 14. However, the relative height of the partition panels and the side and end walls is subject to considerable variation.

The handle forming extensions 46 and 47 are provided with generally rectangular tab members 58 and 59 which are cut to free the ends and the bottom or inner side and creased to permit folding about the upper crease lines 60 and 61, respectively. The tab members 58 and 59 are spaced some distance from the top or outer free edges of the handle extensions 46 and 47 and extend approximately between the inner edges 56 and 57 of the apertures 54, 55 and the fold lines 52 and 53.

The panels 50 and 51 which are separated from the longitudinal partition panels 36 and 37 by crease lines 52 and 53 extend to relative short parallel crease lines 62 and 63 which are in line transversely of the blank 10 with the corner forming crease lines 15 and 17. The panels 50 and 51 are adapted to be doubled over about the crease lines 62 and 63 and secured to cross partition forming panels 64 and 65 which are cut from adjacent portions of the blank 10. The outer or top forming edges of the panels 50 and 51 are cut along oblique lines 66 and 67. The inner or bottom edges of the panels 50 and 51 are cut along lines 68 and 69 which are aligned with the score lines 38 and 39 and which are extended in the transverse direction of the blank at 70 and 71 to the inner ends of the crease lines 62 and 63.

The cross partition forming panels 64 and 65 are separated from the bottom end panels 32 and 33 by score lines 72 and 73 which extend from the transverse cutting lines 74 and 75 to approximately the center of the panels where they terminate at the outer ends of the oblique cutting lines 76 and 77 which form the end edges of the bottom end panels 32 and 33. The cutting lines 74 and 75 extend in inwardly offset relation to the bottom end panels 32, 33 and the cross partition panels 64, 65 to the inner ends of the fold lines 62 and 63. The cutting lines 74 and 75 define one side of generally triangular cut-outs or apertures having their other sides formed by the cutting lines 44 and 45 and 68, 70 and 69, 71.

The cross partition panels 64 and 65 are divided into two half portions which are adapted to extend on opposite sides of the longitudinal partition members when the container is in the erected condition. Half portion 78 of partition panel 64 is freed at the top and bottom edges by cutting along the curved lines 79 and 80 which extend inwardly from the transverse cutting line 43. The distance between cutting lines 79 and 80 may be varied but the maximum height of portion 78 must be the same or less than the height of the aperture 55 in the longitudinal partition panel 37 through which it is adapted to extend. The free vertical

edge of the portion 78 is reduced in height by the curvature of the lines 79 and 80 to insure entry of the portion 78 into the aperture 55, and the top and bottom edges formed by these curved cutting lines provide camming surfaces for guiding the portion 78 into proper position. The half portion 81 of partition panel 65 is freed at the top and bottom edges by cutting along curved lines 82 and 83 in a similar manner to insure proper entry of the portion 81 in the aperture 54 of the longitudinal partition panel 36. The length or height of the free vertical edge 84 of the panel portion 81 is less than the height of the aperture 54 through which it is adapted to extend.

The cross partition panels 64 and 65 are provided with outer extensions 85 and 86 which are secured in part to the panels 50 and 51 and in part to the handle forming extensions 46 and 47 on the longitudinal partition panels 36 and 37. The extensions 85 and 86 are cut along the oblique lines 87 and 88 at one side and provided with apertures 89 and 90 which correspond in size to the apertures formed by handle tabs 58 and 59 in the panels 46 and 47.

After the blank 10 has been cut and scored as illustrated in Fig. 1 it is adapted to be supplied with adhesive and folded into collapsed condition preferably by automatic machinery. The containers are supplied for shipment to the user in the collapsed condition.

Adhesive is supplied to the inner side of the one connecting flap 20 as indicated at 91. The connecting flap 18 at the other end of the blank may or may not be supplied with adhesive on the outside as desired. Adhesive is supplied to the panel portions 50 and 51 (on the bottom side as viewed in Fig. 1) as indicated at 92 and 93 of Fig. 2. Adhesive is also supplied on the adjoining portions of the handle forming extensions 46 and 47 as indicated at 94 and 95.

While the areas to which the adhesive is supplied are indicated as completely coated with the adhesive, it will be understood that full coverage is not required, it being sufficient to supply lines or spots of the adhesive of sufficient extent to hold the members in secured relation when the folding is completed.

The top edge reinforcing flaps 22 and 23 are turned inward about the lines 24 and 25 against the inner faces of the side wall panels 11 and 12 in the folding operation. The blank is thereafter folded about the score lines 30, 31, 34, 35, which constitute the bottom edges of the side and end walls of the container, to bring the blank into the condition illustrated in Fig. 2. The blank is then folded about the transverse score line 15 and finally about the transverse score line 17 to bring the partition forming panels into overlapped relation as indicated in Fig. 3.

In this condition the panel member 50 is secured to the adjacent half of the panel member 64 by the adhesive 92 to form one-half of one of the transverse partitions and the handle extension portion 46 is secured by the adhesive 94 to the handle forming portion 85. The panel 51 is secured to the adjoining half of panel 65 by the adhesive 93 to form one-half of the other transverse partition and the handle forming portion 47 is secured by the adhesive 95 to the handle forming portion 86. The side wall 11 is hingedly joined to the end wall 14 by the adhesive 91 on the end connecting flap 20. When the folding is completed the container is in collapsed and flattened form with the partition forming members confined between the walls of the container.

In order to place the container in the erected condition the outer folded edges of the container as viewed in Fig. 3 are moved toward each other in a lateral direction to cause the side and end walls to hinge along the vertical crease lines which connect them into squared-up relation. This movement causes the bottom side and end panels 28, 29 and 32, 33 to be pulled downwardly into bottom forming position. As the folded edges of the container are moved toward each other to square up the side and end walls the longitudinal partitions first move laterally relative to each other and separate in substantially parallel planes. The transverse partitions being hingedly connected to the horizontal partitions along the crease lines 52 and 53 and being horizontally connected to the bottom end panels along the crease lines 72 and 73 hinge about the crease lines 52 and 53 and move the tongue-like portions 78 and 81 into the adjacent apertures 55 and 54 in the horizontal partition members. As the bottom side and end panels move down into bottom forming position the longitudinal partition forming members move into alignment in the longitudinal center of the container while the transverse partition forming members swing into partition forming position transversely of the container with the portions 78 and 81 projecting through the apertures 55 and 54, respectively, and resting approximately against the edges 57 and 56 of the latter.

The edge reinforcing flaps 22 and 23 present their notches 26 and 27 at the proper position for receiving the folded edge portions 96 and 97 (Figs. 3, 8 and 9) of the transverse partitions and hold them in vertical alignment.

The handle forming tabs 58 and 59 may then be turned back through the apertures on either side of the longitudinal partition members to provide a handle carrying member of six thicknesses of material and to hold the longitudinal partition members in face-to-face contacting alignment.

With the construction shown the container may be cut from the blank and glued and folded by automatic machines. It is readily erected by hand and it is adaptable for use in standard filling machinery.

In the set up position of the container the handle forming portions of the longitudinal partition members are braced against sidewise movement by the transverse partitions. Improved support is provided for the handle portions as well as resistance to bending of the handle when the container is carried. Also there is less tendency for the handle to tear out due to the load placed on the portions which are gripped by the hand. This construction permits the use of lighter materials in the container with resulting economy in manufacture.

While the illustrated form of the container includes the top edge flaps 22 and 23, these members are not necessary for successful operation of the container but may be omitted if desired. The particular shape of the handle portions of the partition members may be varied.

While specific details of construction have been referred to in the illustrated form of the container, it will be appreciated that such details are by way of illustration only and that other details of construction may be resorted to within the spirit of the invention.

We claim:

1. In a container formed from a blank of cut paperboard material having crease lines defining

panels secured together to provide collapsible side and end walls and bottom wall members hinged to the end and side walls respectively, the improvement comprising longitudinal partition members hinged to the bottom wall members which are hinged to the container side walls, said longitudinal partition members having vertical apertures therein beginning adjacent the hinged connections with the bottom walls and extending upwardly and terminating marginally inwardly of the top edges thereof, and transverse partition members hinged along transverse lines to the bottom wall members which are hinged to the container end walls, said transverse partition members having portions which are adapted to extend through the apertures in the longitudinal partition members and said transverse partition members being hingedly connected along vertical lines to the longitudinal partition members whereby said transverse and longitudinal partition members are automatically moved into operative position when the side and end walls and bottom wall members are moved into container forming relation.

2. A container as recited in claim 1 wherein the longitudinal partition forming members are extended upwardly and provided with handle forming apertures whereby, when the container is filled with bottles having their tops extending to approximately the top of the partition members the filled containers may be stacked vertically and the container may be carried with the fingers extending through the handle forming apertures and the hand comfortably and snugly positioned in the space between the top portions of the bottles.

3. In a container formed from a blank of cut paperboard material having crease lines defining panels secured together to provide collapsible side and end walls and bottom wall forming flaps hinged to the end and side walls respectively, the improvement comprising longitudinal partition forming members hinged to the side bottom wall flaps and having apertures therein spaced inwardly of opposite vertical edges thereof and extending vertically from said bottom wall flaps to substantially the upper limits of said partition members, and transverse partition forming members hinged to the end bottom wall flaps and having tongue-like portions which are provided with curved top and bottom edges extending from the one vertical side edge thereof toward the center of the same providing camming surfaces and a side edge of reduced height, said transverse partition members being hingedly joined along vertical lines to the adjacent longitudinal partition members whereby said transverse partition members are automatically moved with the bottom wall flaps in setting up the container to project the tongue-like portions thereof through the apertures in said longitudinal partition members.

4. In a container as recited in claim 3 and handle forming extensions on the longitudinal partition members projecting above the upper limits of the vertical apertures therein and provided with generally rectangular hinged cut-out tabs, said tabs being adapted to hinge along their top edge to provide apertures for accommodating the fingers of the user and to provide locking means

for securing the longitudinal partition members together.

5. In a container formed from a blank of cut paperboard material having crease lines defining panels secured together to provide collapsible side and end walls and bottom side and end wall members hinged thereto, the improvement comprising longitudinal partition members hinged to bottom side wall members and having a vertical aperture therein and transverse partition members hinged along transverse lines to the bottom end wall members and having portions which are adapted to extend through the apertures in the longitudinal partition members, said transverse partitions being hinged along vertical lines to said longitudinal partition members whereby said transverse and longitudinal partition members are automatically moved into partition forming position when the side and end walls and bottom wall members are moved into container forming relation.

6. A container as claimed in claim 5 wherein the longitudinal partition forming members are provided with registering apertures whereby the container may be gripped by the user for carrying when it is filled with articles.

7. A container as recited in claim 5 wherein the longitudinal partition forming members are provided with laterally extending portions at opposite ends which, in the erected condition of the container, extend along portions of the cross partition members and are secured thereto in face-to-face relation.

8. In a container formed from a blank of cut paperboard material having crease lines defining panels secured together to provide collapsible side and end walls and bottom wall forming flaps hinged to the side and end walls respectively, longitudinal partition forming members hinged to the transversely extending bottom wall flaps and adapted to extend from one end of the container to a transverse partition spaced from the other end, said longitudinal partition forming members having vertical slots intermediate their ends, and transverse partition forming members hinged to the transversely extending bottom wall flaps, said transverse partition forming members having tongue-like portions extending from the one vertical side edge thereof toward the center of the same, said transverse partition members being hingedly joined along their vertical centers to vertical ends of the adjacent longitudinal partition member whereby said transverse partition members are automatically moved with the bottom wall flaps in setting up the container to project the tongue-like portions thereof through the apertures in said longitudinal partition members.

9. In a container as recited in claim 8 and handle forming extensions on the longitudinal partition members projecting above the upper limits of the vertical apertures therein and provided with generally rectangular cut-out members hinged along the top edge for accommodating the fingers of the user, and locking tongues for securing the longitudinal partition members together.

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No references cited.