United States Patent

Wolf

[15] **3,695,505**

[45] **Oct. 3, 1972**

[54] **ASPARAGUS CONTAINER**

[72] Inventor: **Donald G. Wolf,** Salinas, Calif.

[73] Assignee: **Hoerner Waldorf Corporation,** St. Paul, Minn.

[22] Filed: **Sept. 17, 1970**

[21] Appl. No.: **73,139**

[52] **U.S. Cl.**.....**229/37 R,** 229/27, 206/46 F

[51] **Int. Cl.**.....**B65d 5/48**

[58] **Field of Search**.....229/37 R, 27, 28 R, 15

[56] **References Cited**

UNITED STATES PATENTS

2,404,704	7/1946	Guyer	229/15
3,145,902	8/1964	Nolen	229/27
2,155,450	4/1939	Shoemaker	229/27 X
3,521,744	7/1970	Smith	229/37 R X

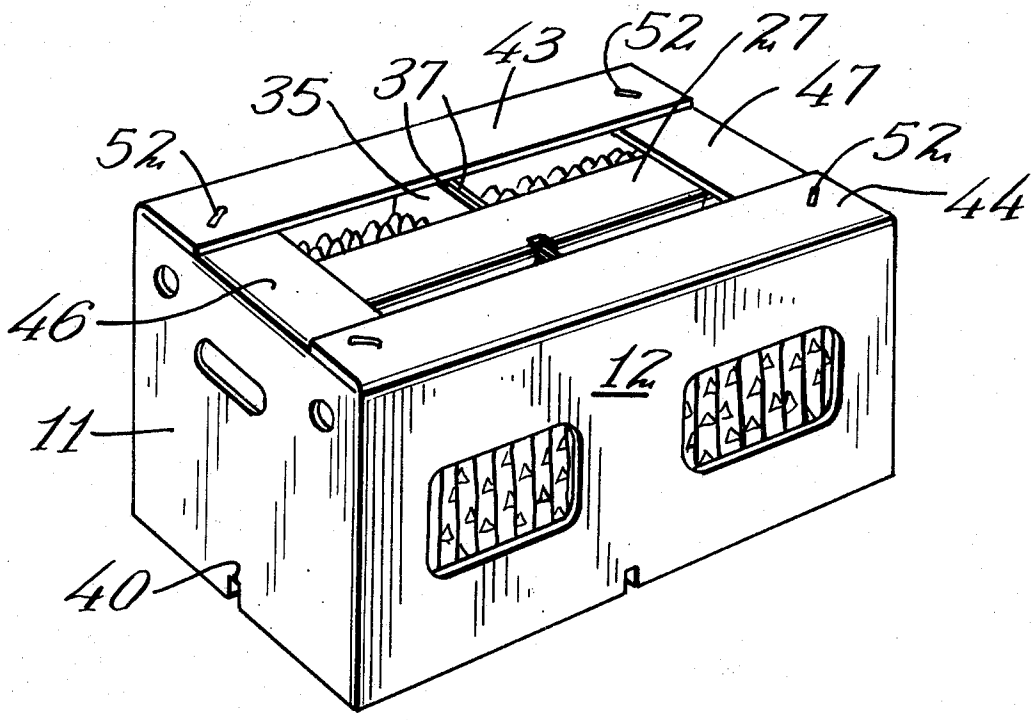
Primary Examiner—Donald F. Norton

Attorney—Robert M. Dunning

[57] **ABSTRACT**

An asparagus container is provided including rectangularly arranged side and end walls. Closure flaps are provided on each side wall extending to the center of the bottom, partition flaps are hinged to the abutting ends of these bottom flaps, and supporting flaps are hinged to the upper ends of the partition flaps. Aligned slots extend across the side wall closure flaps and vertically through the partition walls. Bottom closure flaps are hinged to the end walls and underlie the side wall closure flaps. End wall partition flaps extend vertically through the slots. When filled, the side wall closure flaps and supporting flaps may be folded into upwardly diverging relation to divide the cross-sectional area into a center triangular strut and trapezoidal compartments on opposite sides thereof.

10 Claims, 7 Drawing Figures



PATENTED OCT 3 1972

3,695,505

SHEET 1 OF 2

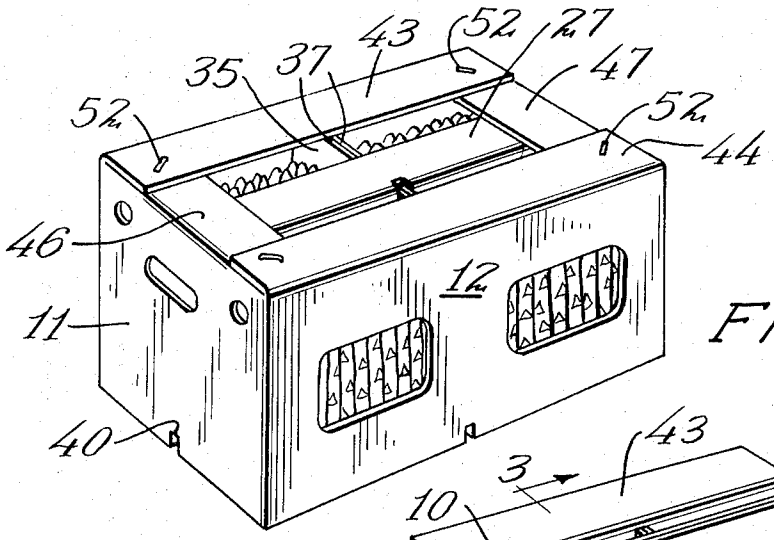


FIG. 1

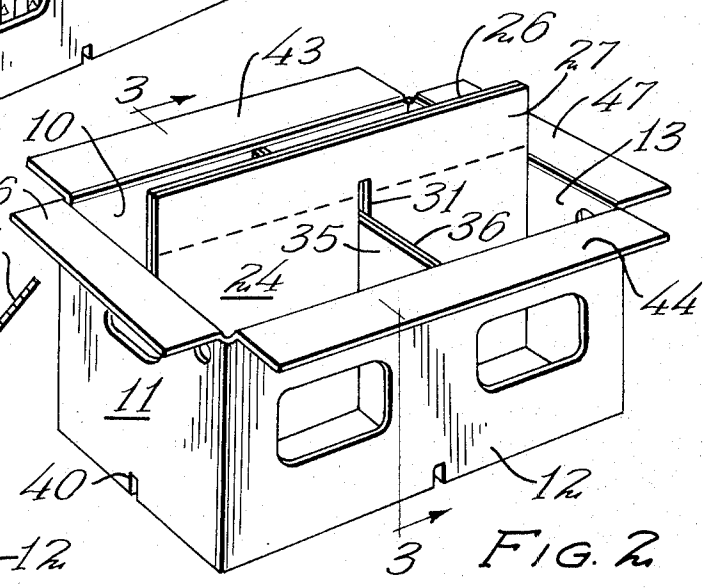


FIG. 2

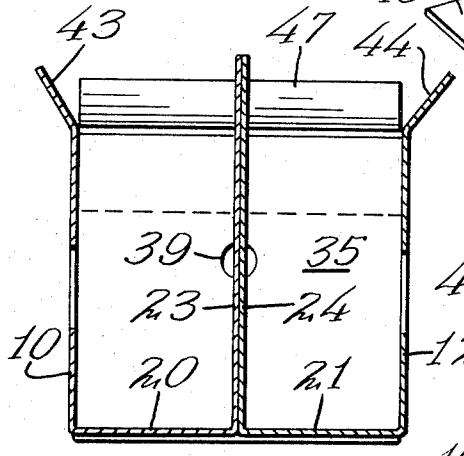


FIG. 3

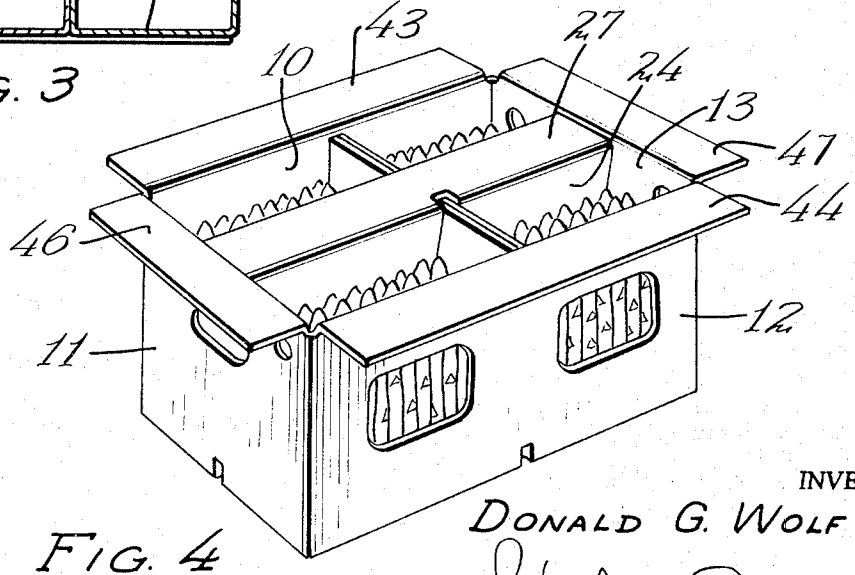


FIG. 4

INVENTOR

DONALD G. WOLF

BY Robert M. Dunning

ATTORNEY

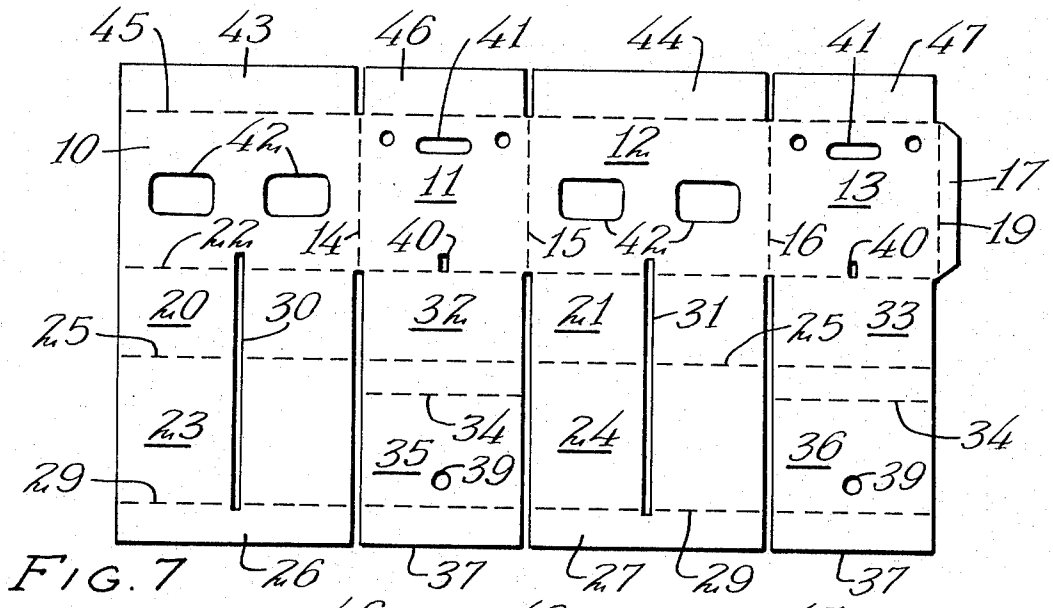


FIG. 7

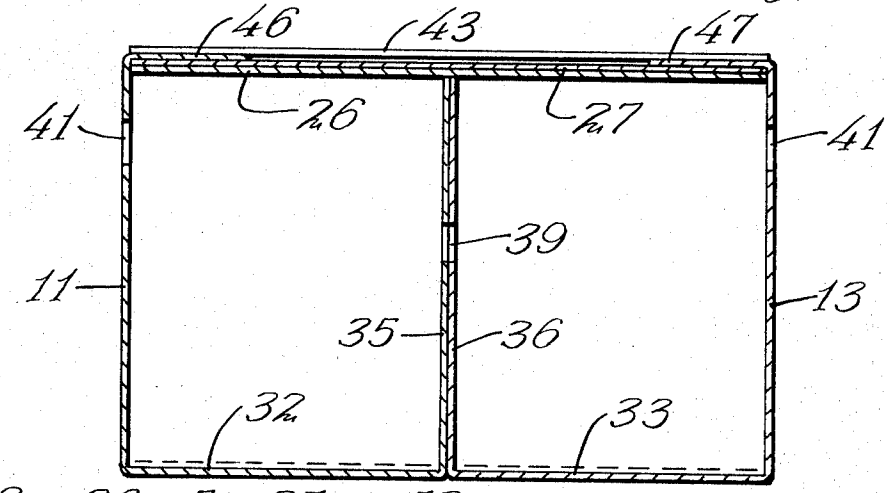


FIG. 5

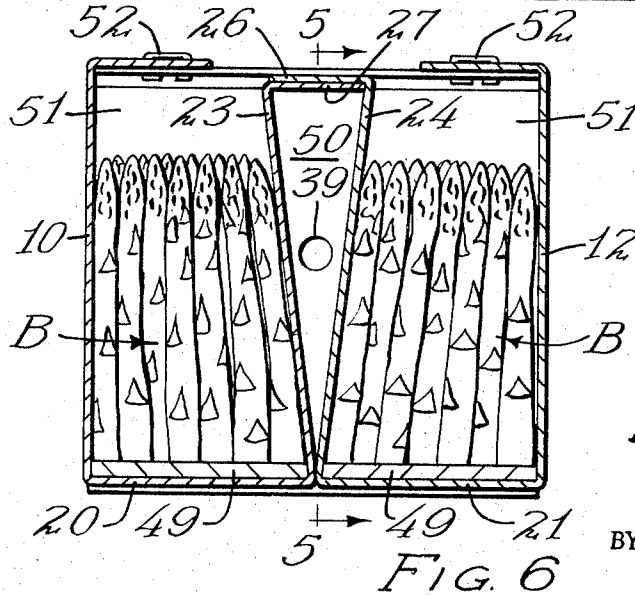


FIG. 6

INVENTOR
DONALD G. WOLF

BY Robert M. Dunning

ATTORNEY

ASPARAGUS CONTAINER

APPLICATION FOR PATENT

This invention relates to an improvement in asparagus container, and deals particularly with a container which may be used for the shipment of asparagus from the grower to the market place.

BACKGROUND OF INVENTION

Asparagus is one of the few remaining vegetables grown in the Western States which is still shipped to the fresh market almost exclusively in wooden crates. This is primarily due to the fact that asparagus is a unique vegetable in the way it must be handled and in the way it reacts in shipment from the field to the consumer. Asparagus is a fast growing shoot or spear that is harvested while still in its active growth cycle. The fact that its cell structure is still rapidly multiplying and elongating at harvest time results in some unique problems in packaging design. Certain of these problems may be listed as follows:

1. Since the spear or shoot is in an active growth phase, it is very tender and subject to damage very easily. This damage may result in broken tips which means that the shipper will be forced to accept a downward adjustment in price or possibly a complete rejection at the market place.
2. The spear has a larger girth at the butt end than at the tip. Since asparagus should be straight when it reaches the market, the shipping container must be designed with a built in taper to provide support for the spear from butt to tip.
3. Since asparagus is harvested during its active growth period, it will continue to grow after harvest. Therefore, the shipping container must provide room for this extra growth and must be provided with wet absorbent pads to provide moisture for this continued growth. The spears must be evenly cut at the butt end so that all spears will come in contact with the wet pad. If some of the spears do not come in contact with the pad, they will be limp and withered when they reach the market place.

The container used almost universally for shipping fresh bulk asparagus in the Western States is a wooden crate of pyramidal shape. The wooden crate has some features that are hard to duplicate in a container made of corrugated paperboard. For example, the pyramidal crate provides the rigidity to protect the asparagus in transit without any support from, or top and bottom pressure on, the commodity itself. The crate is tapered to hold the spears straight during shipment without any appreciable loss of stacking strength. The crate provides an extra 2 inches from the spear tip to the top of the container to allow for continued growth in transit. Furthermore, the crate is filled with the bottom and one side removed. This provides sufficient room so that the tips will not be broken off during the filling operation. This arrangement also permits the butt ends of the spears to be cut uniformly after packing so as to insure contact with the wet pad when the crate bottom is applied.

SUMMARY OF THE INVENTION

An object of the present invention resides in the provision of a rectangular container made of corrugated paperboard or similar material including bottom closure flaps which form a bottom which is of a double thickness. The closure flaps hinged to the side walls of the container are hingedly connected to longitudinal partition panels which in turn are connected along parallel fold lines to supporting flanges. These closure flaps secured to the container side walls are continuously slotted midway between the ends thereof, the slots extending across the bottom flaps and vertically through the partition panels. Closure flaps are also hingedly connected to the end walls and are folded to underlie the side wall closure flaps. Partition panels are hingedly connected to the end wall closure flaps to provide end wall closure flaps of a length to extend to the center slot of the side wall closure flaps. The partition flaps connected to the end wall closure flaps are inserted through the slots in the side wall closure flaps and upwardly through the slots in the partition panels hinged to the side wall closure flaps. When thus folded, the partition flaps divide the interior of the container into four compartments of equal size.

During the sorting and selecting operation, the asparagus is placed into bins, each of which contains sufficient asparagus to fill one of the container compartments. The asparagus in each bin is cut to uniform size and the asparagus placed in the container to fill one of the compartments.

After the container has been filled, the partition walls which are connected to the side wall closure flaps are spread apart, forming a center strut in the container which is of triangular cross section with one leg of the triangle at the top. The supporting flanges hinged to the upper ends of these partition walls are folded down into face contact, and secured together. The upper portion of the container is then closed or partially closed by closure flaps connected to the upper ends of the container walls.

A feature of the present invention resides in the fact that the triangular strut at the center of the container forms compartments of generally trapezoidal cross section, thus conforming to the tapered shape of the spears. This longitudinal strut is also important from a structural standpoint, as it greatly increases the stacking strength of the finished containers, and prevents the containers from crushing or bending downwardly when stacked one above the other. When completed, the container is extremely sturdy and resistent to crushing.

A further feature of the present invention resides in the fact that the asparagus may be inserted into the top of the container while the longitudinally extending partition flaps are in face contact, and the partitions may be folded into triangular form after the container has been filled. This arrangement tends to assure the engagement of each spear with the moisture bearing pads at the bottom of the container, and supports the spears in an upright position. The shape of the container is such as to prevent the breaking of the tips of the spears during shipment and storage.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the container after it has been closed and sealed.

FIG. 2 is a perspective view of the container in readiness for filling.

FIG. 3 is a sectional view on the line 3—3 of FIG. 2.

FIG. 4 is a perspective view of the filled container before the top closure flaps have been closed.

FIG. 5 is a longitudinal sectional view through the center of the closed container, the position of the section being indicated by the line 5—5 of FIG. 6.

FIG. 6 has a transverse vertical sectional view through the container after it is filled and sealed.

FIG. 7 is a diagrammatic view of the blank from which the container is formed.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

While the present containers have been designed particularly for the shipment of asparagus, it may also be used for other products. For example, the container may also be used for the shipment of rhubard, celery or other such products which are somewhat tapered in form.

The container is formed of the blank illustrated in FIG. 7 of the drawings. The blank includes a first side wall 10, a first end wall 11, a second side wall 12 and a second end wall 13 which are foldably connected along parallel fold lines 14, 15 and 16. A glue flap or stitch flap 17 may be connected to an end wall panel of the series, such as the second end wall 13, along a fold line 19 which is parallel to the previously described lines of fold. The side walls 10 and 12 are of equal length, as are the end walls 11 and 13.

Bottom side wall closure flaps 20 and 21 are hingedly connected to the side walls 10 and 12 along a fold 22. Partition panels 23 and 24 are hingedly connected to the side wall closure flaps 20 and 21 respectively along a fold line 25. The bottom closure flaps 20 and 21 are of a length which is approximately one-half the width of the end walls 11 and 13. The partition panels 23 and 24 are of a length substantially equal to, or slightly greater than, the height of the side walls 10 and 12. Supporting flanges 26 and 27 are hingedly connected to the ends of the partition panels 23 and 24 respectively along a common line of fold 29.

Elongated slots 30 and 31 are positioned midway between the end edges of the side wall closure flaps 20 and 21, the slots 30 preferably intersecting the fold line 22 to extend slightly into the side walls 10 and 12. The slots 30 and 31 extend completely across the bottom closure flaps 20 and 21, and throughout the height of the partition panels 23 and 24, extending slightly into the supporting flanges 26 and 27.

The end walls 11 and 13 are hingedly connected along the fold line 22 to bottom closure flaps 32 and 33. The bottom closure flaps 32 and 33 are of a length from the fold line 22 equal to substantially one-half the width of the side walls 10 and 12. The bottom flaps 32 and 33 are connected along a line of the side walls 10 and 12. The bottom flaps 32 and 33 are connected along aligned fold lined 34 to partition panels 35 and 36 respectively. The distance between the fold lines 34 and the edges 37 of the partition panels 35 and 36 is substantially equal to the height of the side and end walls of the container.

As a matter of convenience, continuations of the fold lines 25 and 29 may extend across the end wall closure flaps 32 and 33 and across the end wall partition panels 35 and 36 respectively. These extra fold lines simplify the operation of inserting the end wall partition panels into the slots 30 and 31. The partition panels 35 and 36 may have ventilating apertures 39 therethrough which register when the panels are in face contact and permit a free circulation of air through the center strut of the set up container. The end walls 11 and 13 may be provided with small apertures 40 adjoining the fold line 22 so as to serve as a drain for excess moisture. The end walls 11 and 13 are also provided with handle holds 41 for accommodation of the fingers in carrying the packed case as well as other ventilation apertures. A pair of ventilating openings 42 are also provided in each of the side walls 10 and 12 to provide adequate air circulation in each compartment.

Side wall top closure flaps 43 and 44 are hingedly connected to the upper edges of the side walls 10 and 12 along a fold line 45. End wall closure flaps 46 and 47 are hingedly connected to the upper edges of the end walls 11 and 13 along the fold line 45. In the arrangement illustrated the top closure flaps only partially cover the top of the completed case, the ends of the top closure flaps terminating in spaced relation. This arrangement is to provide circulation of air and possibly cooling water, if such is employed.

In setting up the containers, the flap 17 is stitched or glued to the free end of the side wall to form a tubular construction. The containers are stored and shipped in this form. The cases are most conveniently set up through the use of a jig which holds the cases in rectangular form, the jig being slotted to accommodate the partition panels. The partition panels 23 and 24 are bent into angular relation with the bottom closure flaps 20 and 21, and the bottom closure flaps are folded into coplanar relation, the partition panels in lieu thereof 23 and in lieu thereof 24, as well as the supporting flanges 43 and 44 being in face contact when the closure flaps are in right angular relation to the walls to which they are attached. The end wall closure flaps 35 and 36 are then inserted into the slots 30 and 31 so that when the bottom closure flaps 32 and 33 are in face contact with the side wall closure flaps 20 and 21, the partition panels 35 and 36 will be in face contact. When in place, the partition panels extend substantially the full height of the side and end walls of the container.

The asparagus is sorted, and stacked in bins which hold the amount of a product which will fill one of the four compartments of the container. In usual practice, while in the bins, the stocks are cut off to make the spears of uniform height. While still contained, the asparagus is inserted into the container and the bin is removed. As indicated in FIG. 6 of the drawings, porous pads 49 of moisture absorbent material are placed at the bottom of each compartment so that the square cut ends of the spears may rest in contact with this pad. It is important that, as nearly as possible, all the spears rest upon the absorbent pad to receive moisture therefrom.

After all of the compartments have been filled, the partition panels 23 and 24 are swung outwardly into the

position indicated in FIG. 6 of the drawings, thus dividing the cross section of the container into a triangular central compartment 50 within the center strut, and a pair of trapezoidal compartments 51 on opposite sides of the central strut. The supporting flanges 26 and 27 are folded into overlapping face contact, and are stitched or otherwise secured together if desired. The closure of the case is completed by folding the end wall closure flaps 46 and 47 into a common plane, and folding the side wall top closure flaps 43 and 44 into overlying relation with the side portions of the end flaps 46 and 47. The flaps may be stitched together as indicated at 52. As indicated in FIG. 6 of the drawings, the trapezoidal shape of the chambers 51 and 52 conforms to the shape of the asparagus B within the compartments. The side walls and end walls of the container are of sufficient height to provide an empty area above the asparagus spears to compensate for elongation of the stocks during shipment.

In accordance with the Patent Statutes I have described the principals of construction and operation of my asparagus container, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A container including rectangularly arranged side and end walls, bottom closure flaps thereon, and a generally triangular strut extending from end wall to end wall intermediate said side walls, said strut having an apex extending along the bottom center and having its sides extending substantially flush with the upper edges of said walls, and a supporting flange extending between the upper edges of said sides.

2. The structure of claim 1 and including top closure flaps hingedly connected to said end walls and folded to overlie said triangular strut.

3. The structure of claim 2 and including top flaps hingedly connected to said side walls and secured to said top closure flaps of said end walls.

4. The structure of claim 1 and including top closure flaps hingedly connected to the upper edges of said side and end walls, said flaps on said side walls terminating in spaced relation to said strut.

5. A container including rectangularly arranged side and end walls, bottom closure flaps hinged to the lower edges of said walls, the side wall closure flaps extending in end abutting relation and hingedly connected to side wall partition panels extending upwardly to substantially the height of said side and end walls, supporting flanges hinged to the upper ends of said partition panels, said side wall closure flaps and partition panels having aligned continuous slots throughout their length parallel to said end walls and at the center between said end walls, said closure flaps secured to said end walls extending into end abutting relation and at least one thereof being hingedly connected to an end wall partition flap, said end wall partition flap extending upwardly through said slots and held in upright relation thereby.

6. The structure of claim 5 and in which said side wall partition panels diverge upwardly and outwardly, and said supporting flanges are folded into overlapping relating to form with said side wall partition panels, substantially triangular struts extending substantially from one end wall to the other.

7. The structure of claim 6 and including top closure flaps hinged to said end walls and overlying the ends of said strut.

8. The structure of claim 6 and including top closure flaps hingedly connected to said walls and secured in overlapping relation.

9. The structure of claim 6 and including top closure flaps hingedly connected to said walls and secured in overlapping relation, said top closure flaps hinged to said end walls overlying the ends of said strut and said top closure flaps secured to said side walls overlying said end wall partition panels.

10. The structure of claim 5 and in which said slots in said side wall partition panels are of sufficient length relative to the height of said end wall partition panels to permit said side wall panels to fold into upwardly and outwardly diverging relation.

* * * * *