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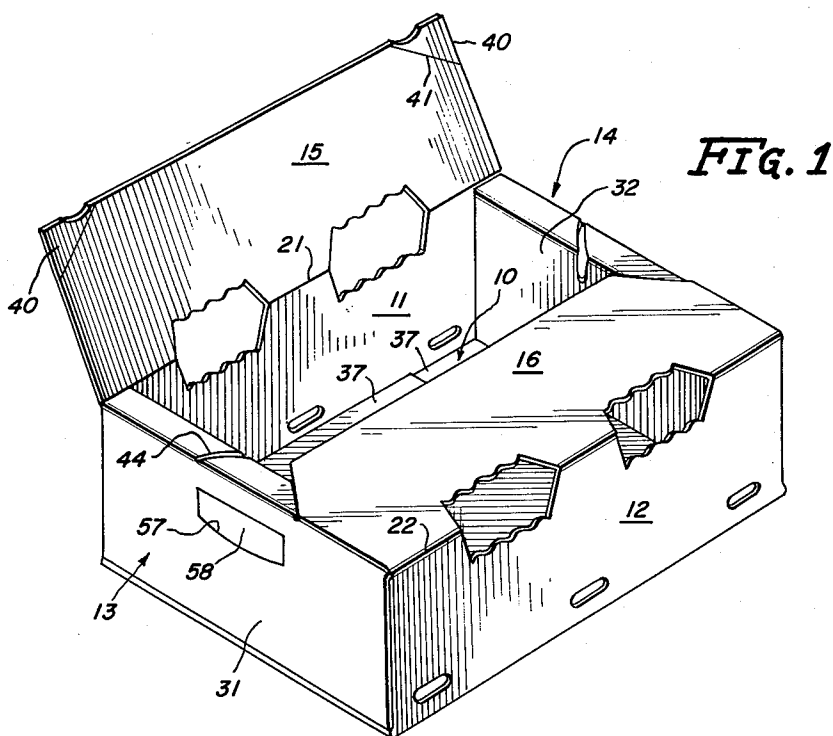
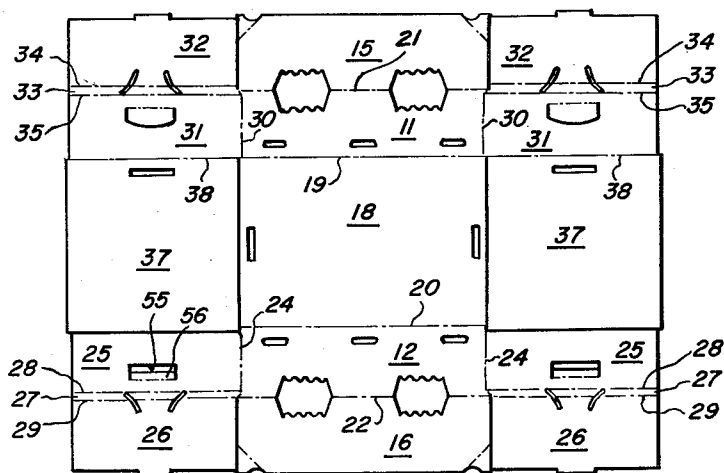


**FIG. 2**



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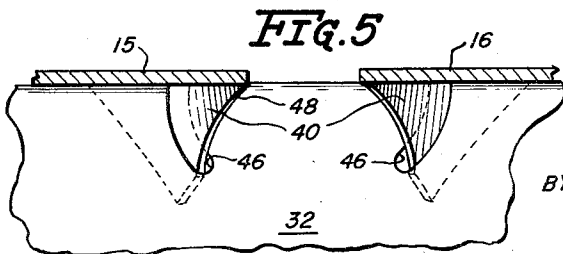
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## CONTAINER WITH COVER LOCK

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This invention relates to containers and particularly to containers made of foldable paperboard or like material for holding and transporting fruit, vegetables and similar articles packed in bulk.

An important object of this invention is to provide a container for handling heavy produce such as tomatoes, potatoes, apples or the like, wherein the bottom and certain of the vertical walls of the container are reinforced for stacking strength and wherein cover members are provided which include locking parts particularly designed for efficient interlocking with the reinforced vertical walls.

Another object of this invention is to provide a single cut and scored sheet or blank which may readily be formed into a strong and sturdy container having opposed vertical walls of multiple thickness and having cover flaps adapted to be rapidly and conveniently interlocked with such multiple thickness walls.

Further objects, features and advantages of the invention will appear or be apparent to one skilled in the art from the following description, reference being made to the accompanying drawings, in which

FIG. 1 is a perspective view of a container made in accordance with the teachings of the present invention;

FIG. 2 is a plan view, on a reduced scale, of the single blank from which the container is preferably formed;

FIG. 3 is a perspective view showing one side wall extended outward in the plane of the bottom and showing the inner end wall elements in folded condition ready to be assembled within the companion end wall elements;

FIG. 4 is an enlarged, fragmentary top plan view of the mid portion of one end of the closed container showing the cover locking tabs inserted in the diagonal slots in the end wall;

FIG. 5 is a cross-sectional view taken along line 5-5 of FIG. 4 looking in the direction of the arrows showing how the locking tabs are engaged in the slots in the vertical portions of the end wall; and

FIG. 6 is a cross-sectional view taken along line 6-6 of FIG. 4 showing the locking tabs engaged in the slots in two sets of panels forming the end wall.

Referring to the drawings and particularly to FIG. 1, the bottom of the container, indicated as a whole at 10, has joined therewith side panels 11 and 12 and end walls indicated as a whole at 13 and 14. The side walls 11 and 12 carry cover flaps 15 and 16, respectively, hinged on their upper edges. As herein shown, the container is of the top opening, double cover style particularly desirable for use in packaging bulk produce. While the container may be formed from various types of paperboard or other sheet material, it is preferably formed from strong and relatively stiff but readily foldable and resilient corrugated paperboard.

Referring to FIG. 2, showing a preferred form of blank from which the container may be formed, this blank is of generally rectangular shape and is suitably cut and scored to provide a central bottom forming panel 18 having the two side panels 11 and 12 hinged to its opposite edges along score lines 19 and 20. The cover panels 15 and 16 are hingedly supported on the upper edges of the side wall panels along score lines 21 and 22. The inward extent of these panels is somewhat less than one-half the width of the container.

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The side wall panels 11 and 12 carry at their end edges additional panels which comprise the end walls, and panels for reinforcing the bottom. The end walls indicated as a whole at 13 and 14 are preferably formed from two spaced pairs of panels to provide hollow end constructions which assure good stacking strength for the filled containers. As shown in FIGS. 2 and 4, side wall panel 12 carries at its ends, along score lines 24, 24, similar panels 25, 25 forming part of the multi-thickness end walls. Each panel 25, 25 carries along its outer or longitudinal edge a panel 26, each having substantially the same dimensions, and also forming parts of the end walls.

Narrow panels 27, 27 respectively, lie between the panels 25 and 26 and are defined from such panels by score lines 28 and 29. When the connected panels 25, 26 and 27 are folded along the score lines, the panels 25 and 26 will be arranged in parallelism and narrow panel 27 is disposed at right angles to its attached panels to form an upper end wall panel.

The side wall panel 11 carries at its ends along score lines 30, 30 similar panels 31, 31 which as herein shown constitute the outermost faces or panels of the multi-thickness end walls. Each panel 31, 31 carries at its outer or longitudinal edge a panel 32, each having the same dimensions, to form one of the inner plies of each end wall. Between the panels 30 and 31 is a narrow panel 33 which is defined from panels 31 and 32 by score lines 34 and 35. When this group of panels is folded along the score lines 34 and 35 the panels 31 and 32 will be brought into substantial parallelism with narrow panel 33 disposed at right angles thereto.

The spacing of score lines 34 and 35 provides a width for the narrow panel 33 which is somewhat greater than the narrow panel 27 so that, when the two panel groups 25, 26, 27 and 31, 32, 33 are interfolded with each other, the panels 31, 32 and 33 will fit snugly around the panels 25, 26 and 27.

Each panel 31 preferably carries at its inner or lower edge a panel 37 hinged along a score line 38 and adapted to be folded into overlying relation with the bottom panel 18. In the present instance due to the relative sizes of the side and end walls the outer free edges of panels 37, 37, when folded to overlie the bottom panel terminate short of the edge of the bottom panel.

Means are provided for holding the cover flaps in closed position and for this purpose tabs 40, 40 are provided, preferably at the outer corners of the flaps, by impressing a score line 41 diagonally of each corner portion. The tabs are adapted to be received within slots formed in the narrow top panels of the end walls, such slots also preferably extending into the inner end wall panels. As herein shown, two spaced diagonally extending slots are cut in each group of superposed narrow panels 27 and 33 as indicated at 43, 43 and 44, 44. Communicating with these slots are slots 45, 45 and 46, 46 cut in the vertical panels 26 and 32 respectively.

For the purpose of creating a snug fit of the tabs within the slots the tabs are folded along a relatively straight line and the slots in the narrow panels are somewhat curved. Thus, while the tabs are being moved down into the slots as the closure flaps are swinging down to closed position, there will be a tendency for the body portion of the tab to be deflected away from its planar form and it will tend to assume a bowed or concave shape. The mid-portion of one edge of the slot will thus bear frictionally upon the mid portion of the tab while the portions of the other edge of the slot remote from the central portion of the slot will bear frictionally upon the free edge portions of the tab at points approximately equidistant from the tab hinge line.

The communicating slot sections formed in the inner face portion of the hollow end wall are preferably some-

what curved as best shown in the detail view FIG. 5 to present their concave sides toward the center line of the container. In the areas where the tabs are engaged in these slots the tabs tend to be deflected to conform with the shape of the slots. This tends still further to cause snug frictional engagement of the individual tabs in their slots.

As best seen in FIG. 6 it is noted that the apex of tab 40, when the tab is folded down to a position normal to the plane of its cover flap, is brought substantially inward of the end edge of the cover flap that is substantially in register with the outer face of the end wall. It is desirable that the length of the tab at right angles to its hinge line be so related to the end wall thickness whereby the apex of the tab will first enter the communicating slots at approximately the point where the two slots meet.

The slot in the inner face of the end wall need not be as long measured vertically as the vertical extent of the tab. Thus, as shown in FIG. 6, the apex of the tab extends below the end of the slot 46. In certain constructions it is desirable to cut away a part of the tab along a curved line as indicated at 48, 48 to make the tab somewhat narrower in the area adjacent its hinge.

To increase still further the frictional engagement of the tabs the slots 44 and underlying slots 43 may be formed somewhat tapered outwardly of the panels 33 and 27 toward the respective score lines 35 and 28 to provide restricted portions which will more firmly engage the tabs.

The two inner end wall panels 26 and 32 at each end of the container are cut to provide rigid tabs 49 and 50 which are receivable together in die-cut openings or slots 51 in the inside bottom panels 37. By this arrangement the inner end wall panels may be locked more or less permanently in place.

Suitable openings to afford ventilation are formed in the container as indicated at 52, 52 along the hinges of the side panels and cover flaps, and, as indicated at 53, 53 along the lower edges of the side walls. The spacing of the free edges of the cover flaps also provides ventilation. See FIGS. 4 and 5.

Hand holes or finger openings are preferably formed in the two outer end wall panels 25 and 31. In the case of panels 25 an opening 55 is cut to leave a narrow flap 56. The panel 31 has the opening 57 formed by cutting a flap 58 along three sides. By pressing inward on this flap it will be displaced from its opening and will swing partially through the opening 55 in panel 25.

It is to be noted that by separating the edges of the cover flaps, the tab-receiving slots are rather widely separated and the space in between the slots in each end wall is ample for the hand holes. The end walls may thus provide these features without being appreciably weakened.

While the container has been illustrated and described as being of elongated rectangular form and the walls of the container are referred to as end walls and side walls, it is to be understood that these relationships are not essential, as the walls could be substantially of equal length, or the reinforced walls could in certain constructions be longer than the walls which carry the cover flaps.

The narrow, horizontal panels joining the inner and outer end wall panels may, for convenience of description, be referred to as load bearing panels as the stacking strength resides mainly in the reinforced walls and the load of overlying filled containers is carried by these narrow panels supported by the vertical panels.

From the foregoing it is apparent that the container of the present invention is of a sturdy, rugged construction, which can be quickly and easily set up solely by hand and thus is very convenient for use in the field where produce is harvested. The reinforced bottom and end walls give the filled containers good stacking qualities both in the field as well as when being transported in trucks or railway cars.

The locking tabs may be left temporarily in the plane of the closure flaps if desired and the flaps used to close

the container without securing them. When it is desired to secure the flaps it is only necessary to fold the tabs out of the plane of the flaps to approximately a right angle. The flaps may be then swung down while the fingers of the operator guide the tabs into the slots. It is to be noted that with this construction of locking tab formed from the corners of the closure flaps the outer edge of the tab is directed inwardly so that the slots to receive the tabs are located substantially entirely in the load bearing panels and inside vertical panels. The outer end of the slot terminates at the score line between the outer vertical panel and the load bearing panel and thus no unsightly cuts extend into the printing surface of the end panel.

While the foregoing description sets forth a preferred embodiment of the invention it is apparent that numerous changes may be made in the construction without departing from the spirit of the invention, and it is desired that the present embodiment be considered in all respects as illustrative rather than restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A container of foldable paperboard or like material having a rectangular bottom and four interconnected, vertical walls, two opposite walls being of multi-thickness and formed from spaced inner and outer panels connected along their top edges by a narrow, load-bearing panel, at least one of the other two opposite walls carrying a hinged cover panel having outer edge portions adapted to rest flat upon the narrow, load-bearing panels of the first mentioned walls, at least one outer edge of the cover panel having a downwardly foldable locking tab hinged to the cover panel along a diagonal fold line extending from the outer edge of the cover inwardly of the container at an obtuse angle to the cover hinge, the narrow, load-bearing panel of the vertical wall adjacent the locking tab having a generally diagonal slot cut therein, extending in conformity to the tab fold line and adapted to receive the tab as the cover is brought to its closed position.

2. A container as defined in claim 1, in which an additional slot communicating with the slot in the narrow, load-bearing panel, is cut in the inner panel of the multi-thickness wall, and said locking tab being adapted to be received into said communicating slots.

3. A container as defined in claim 1, in which an additional slot of restricted length, communicating with the slot in the narrow, load-bearing panel, is cut in the inner panel of the multi-thickness wall, said locking tab having a tapered form and being adapted to be received into said communicating slots with its outer extremity extending within the space between the spaced panels and below the lower end of the slot in said inner panel.

4. A container as defined in claim 1, in which the slot formed in the narrow, load-bearing panel is curved, whereby the locking tab when inserted into the slot tends to be somewhat distorted to thereby cause the tab to be gripped frictionally within said curved slot.

5. A container, as defined in claim 2, in which the communicating slot formed in the inner panel is curved, whereby the locking tab when inserted into said slot tends to be somewhat distorted to thereby cause the tab to be gripped frictionally within said curved slot.

6. A container of foldable paperboard or like material having an elongated, rectangular bottom, and interconnected side and end walls, the end walls being formed of two sets of spaced vertical panels, each set comprising spaced inner and outer panels connected along their upper edges by a narrow, load-bearing panel, one set of spaced vertical panels enclosing the other set and the underlying narrow panel being sufficiently narrower than the overlying narrow panel so that the two sets of spaced vertical panels and narrow panels are in snug relationship when the end wall is assembled, at least one of the side walls carrying a cover panel hinged on its upper edge, said cover panel having outer edge portions adapted to extend

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over and rest flat upon the outer, narrow panel of each end wall, at least one outer edge of the cover panel having a downwardly foldable locking tab hinged to the cover panel along a diagonal fold line extending from the outer edge of the cover inwardly of the container at an obtuse angle to the cover hinge, the overlying and underlying narrow panels adjacent the locking tab having substantially registering slots cut therein extending generally diagonally of the narrow panels in conformity to the tab fold line and adapted to receive the tab as the cover is brought to its closed position.

7. A container as defined in claim 6, in which an additional set of registering slots communicating with the

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slots in the respective load-bearing panels are formed in the two vertical, inner panels of the end wall, and said locking tab being adapted to be received into said communicating slots.

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