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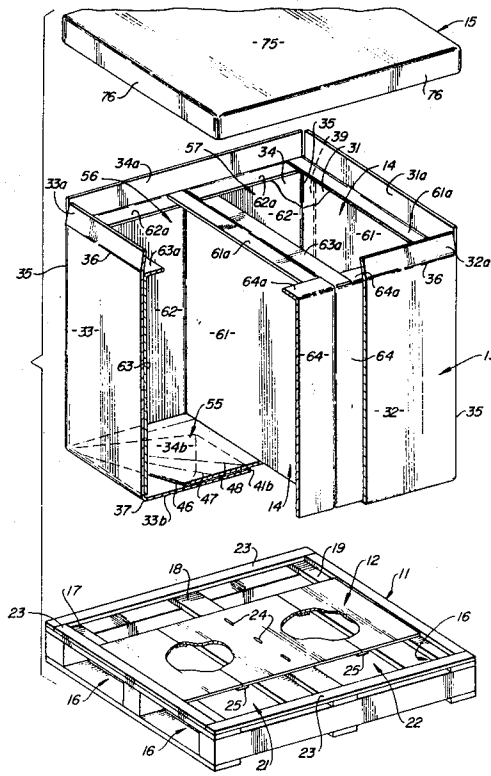
[54] **PACKING, SHIPPING AND DISPENSING
 CONTAINER FOR BULK MATERIAL**
 10 Claims, 8 Drawing Figs.

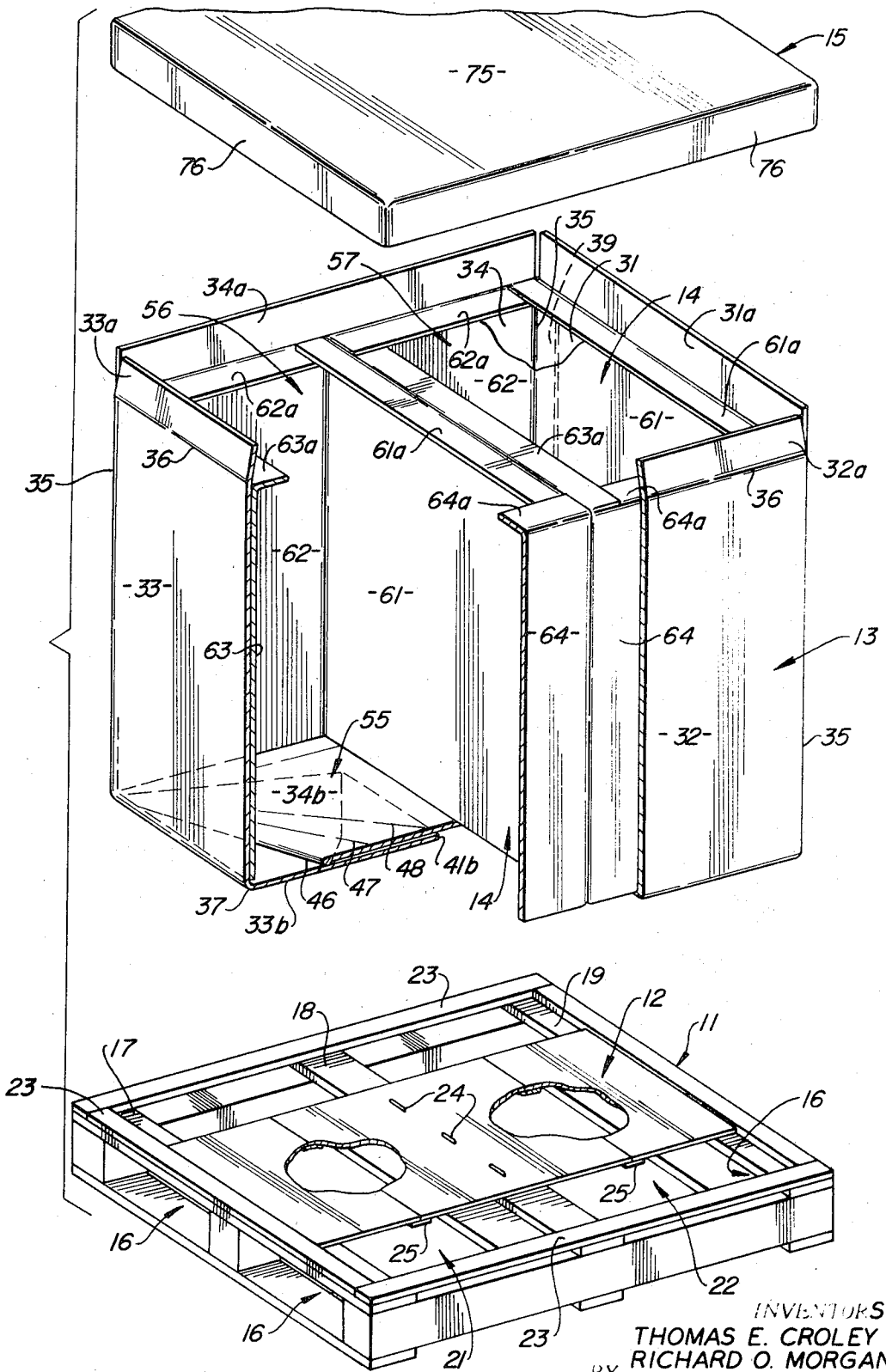
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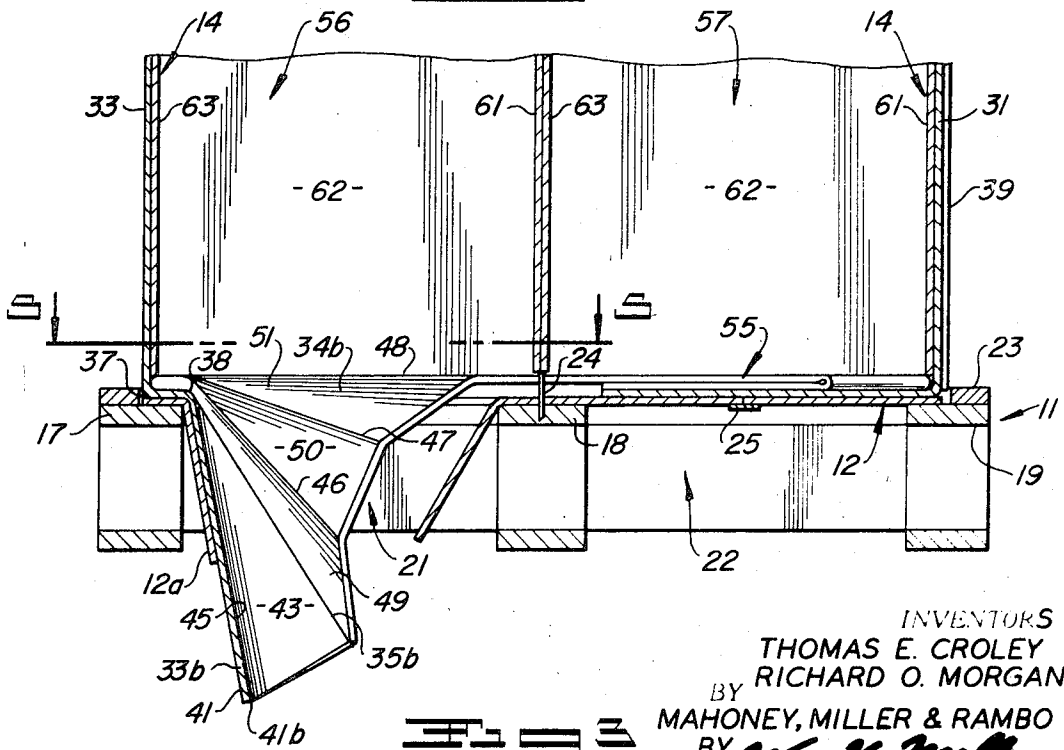
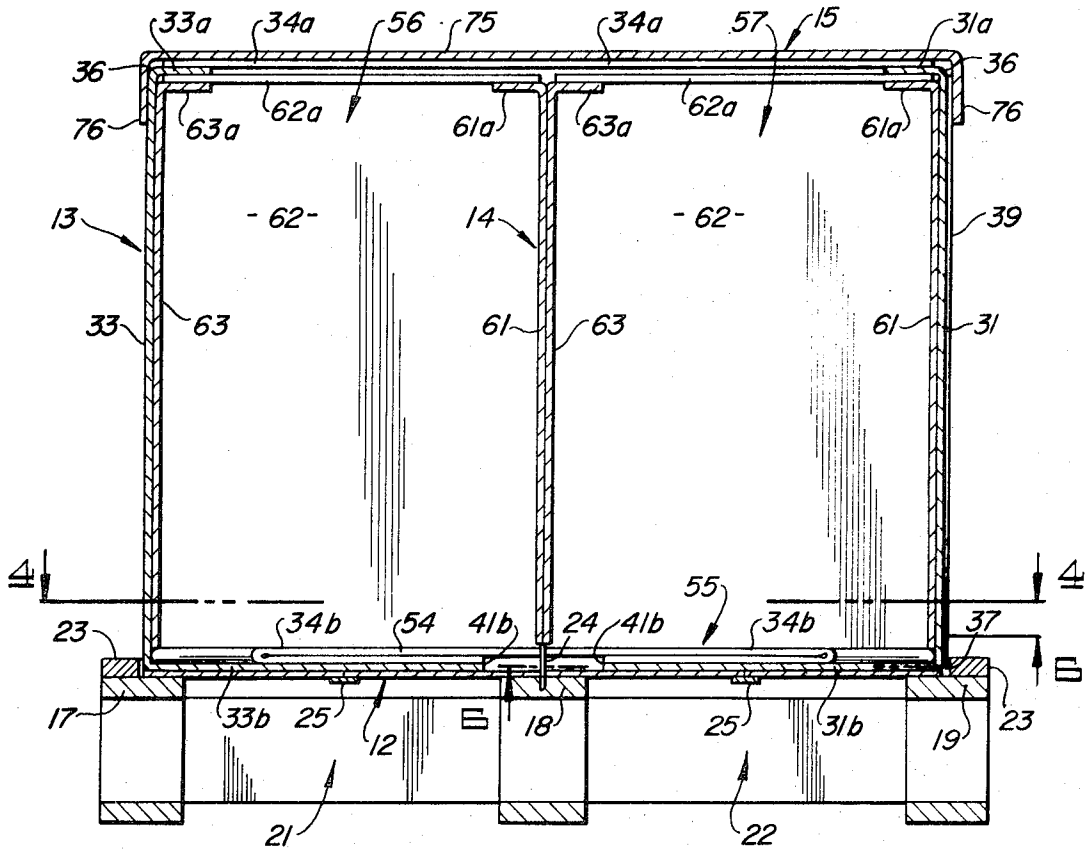
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ABSTRACT: A corrugated container and pallet construction including a main container body having a bottom structure composed of flaps integrally connected to the sidewalls of the body and to each other and scored to provide a dispensing spout when they drop downwardly. The container body is supported on a pallet with its bottom structure reinforced by a panel which rests on the pallet and normally prevents dropping of the bottom flaps, but which is provided with a tear strip to release the bottom structure of its support so that the flaps will drop downwardly for dispensing of the material packed in the container.

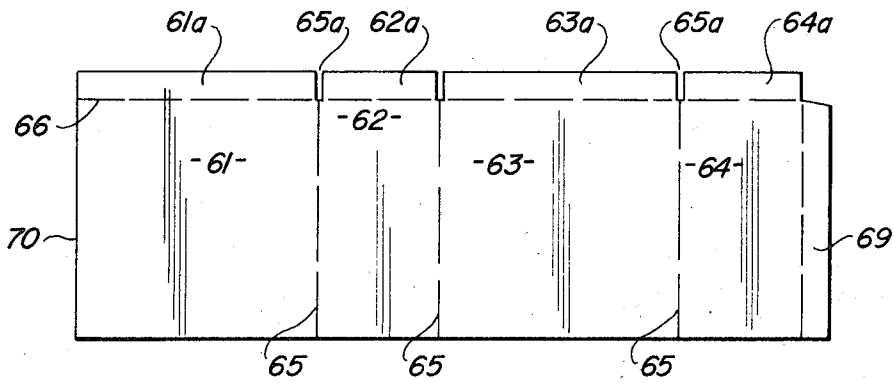
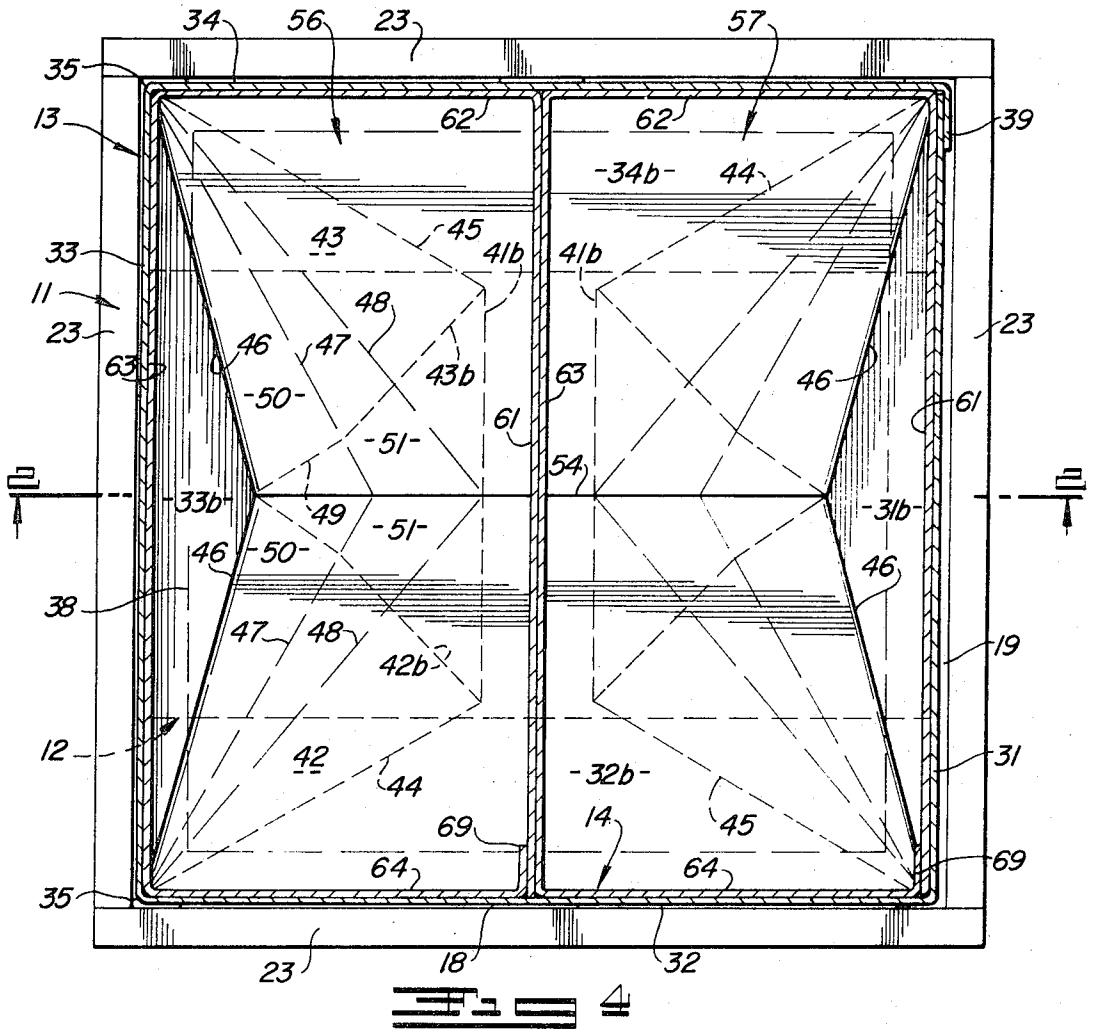




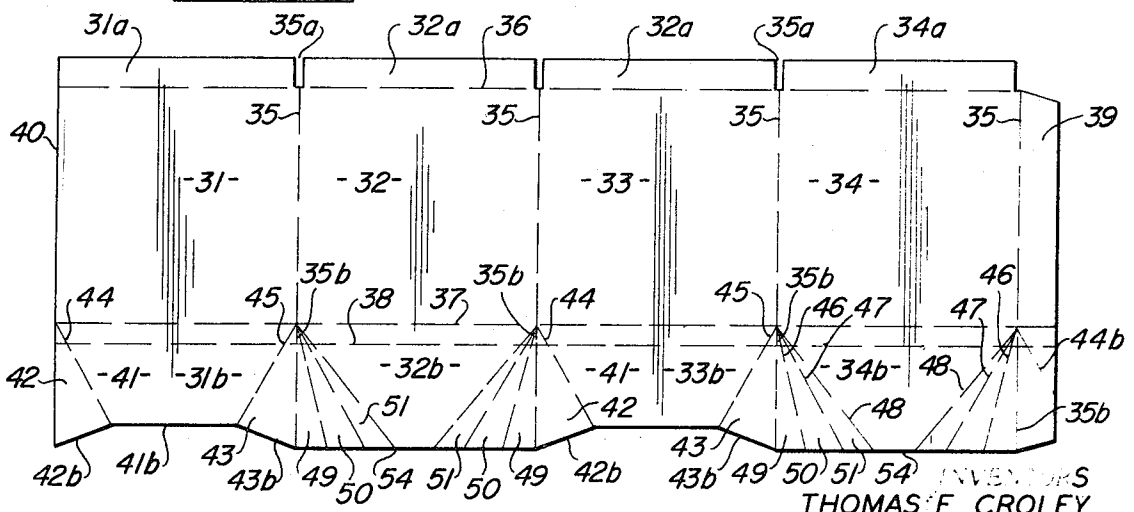
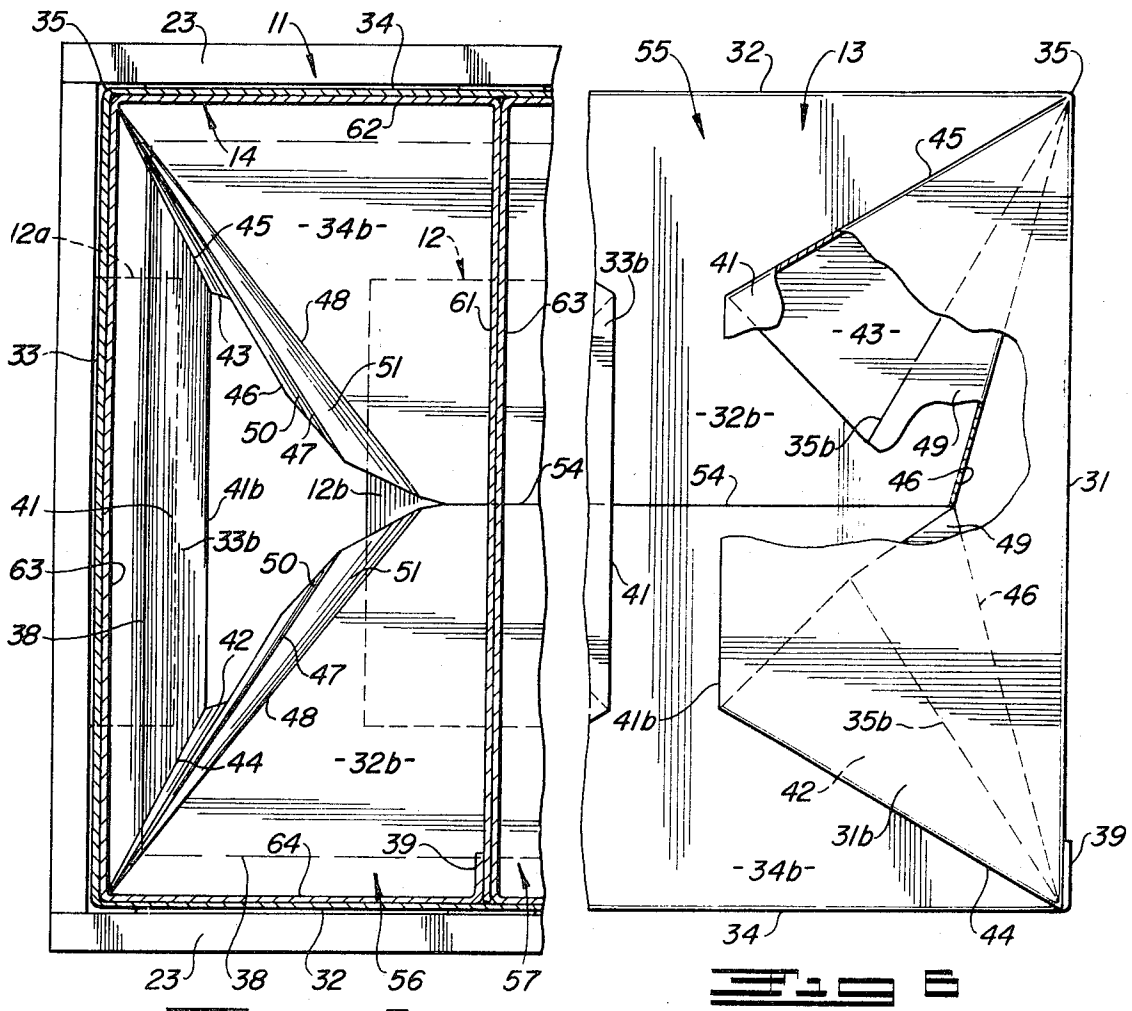
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PACKING, SHIPPING AND DISPENSING CONTAINER FOR BULK MATERIAL

The container assembly of this invention includes a main body made of fiberboard, preferably of corrugated board, and supported by a pallet of suitable rugged material, such as wood. The corrugated body is of suitable peripheral outline but preferably of boxlike form having a bottom structure including flaps which are integrally joined to the sidewalls of the box and to each other along suitable score or fold lines. Since the bottom structure is integral, it will be of great strength and there will be less tendency for the lower peripheral portion of the box to bulge outwardly and the bottom will be more moisture resistant and more effectively sealed. The score lines are so arranged that when the bottom drops downwardly, the flaps will automatically assume a position where they provide a material-directing dispensing spout. The box, with its integral bottom, rests on the wooden pallet which is so formed as to engage the box at its lower extremity to center it on the pallet and to permit the dropping of the bottom to provide the dispensing spout at the proper time. Dropping of the bottom is prevented until dispensing is desired by a reinforcing panel resting on the pallet and upon which the bottom structure rests, this panel being completely within the area of the box so as not to project outwardly beyond its upright sidewalls. This panel is provided with a tear strip arrangement so that its reinforcing effect on the bottom structure can be eliminated, when desired, to permit the dropping of the bottom and the dispensing operation. The integral arrangement of the bottom structure on the box also eliminates any projecting flanges or lips which would provide gutters that would collect dirt or water. Also, because of the nature of the bottom structure, the box can be made from a single one-piece blank without appreciable waste of material.

The accompanying drawings illustrate the best mode contemplated for carrying out this invention and in these drawings:

FIG. 1 is a perspective view showing the container assembly with various elements thereof separated and with the container body and associated liner cut away for illustration.

FIG. 2 is a vertical sectional view taken through the assembly along line 2—2 of FIG. 4 showing the bottom in its normal position before the dispensing operation.

FIG. 3 is a view of the lower portion of the assembly of FIG. 2 showing the bottom of one vertical dispensing chamber dropped for dispensing.

FIG. 4 is a horizontal sectional view taken along line 4—4 of FIG. 2.

FIG. 5 is a horizontal sectional view taken along line 5—5 of FIG. 3.

FIG. 6 is a horizontal sectional view, partly cut away, taken along line 6—6 of FIG. 2.

FIG. 7 is a plan view of the blank for the main or outer container.

FIG. 8 is a plan view of the blank for one of the inner liners which may be used.

With reference to FIG. 1 of the drawings, the container assembly is indicated as comprising generally the pallet 11, the bottom reinforcing panel 12 carried by the pallet, the main outer container or body 13, two inner liners 14 for forming packing and dispensing chambers, and a cap 15.

The pallet 11 may be formed of suitable materials although it is indicated as being of wood. It may be suitably fabricated and shaped to provide pockets 16 at each side for receiving the tines of a forklift truck. It is further provided with the transversely extending slats 17, 18, and 19 which will support the panel 12, but between these slats there is no support, so as to provide the clear spaces 21 and 22 through which the material from the container body will be dispensed, as will later appear. The pallet is further provided at its upper side with a peripheral border frame provided by relatively narrow strips 23 suitably secured thereto.

The slats 17, 18, and 19 provide a support upon which the panel 12 rests, the panel being elongated in the direction in

which the tine-receiving pockets 16 extend. If desired, the panel may be attached by staples 24 to the slat 18. The panel 12 is preferably made from a flat sheet of fiberboard, such as corrugated board, and extends between the opposed strips 23 at the end of the pallet with its midportion resting on the slat 18. Midway between the slats 17 and 18 and also midway between the slats 18 and 19, the panel is provided with a rip or a tear strip arrangement 25 of a common type which may consist of a metal strip embedded in the material of the corrugated board and the pulling of which will produce a complete severance of the board along the indicated line. It will be apparent from FIG. 1 that along this line there is no underlying support of the panel by the pallet and the spaces 21 and 22 will be clear of obstruction by the pallet. Thus, a support with clear dispensing openings is provided.

The outer container or body 13 is shown as being of square form when set up and the pallet 11 is of similar form. The body is formed from the single blank shown in FIG. 7 and comprises the upstanding sidewall panels 31, 32, 33, and 34 which are connected together at the scored corner joints 35. The upper edges of the respective side panels 31 and 32, 33 and 34 are provided with the flanges 31a, 32a, 33a, and 34a which are hinged thereto along a common score line 36 and are separated at the slits or notches 35a. These flanges may be folded inwardly into horizontal position for reinforcement. The upright side panels 31, 32, 33, and 34 are further provided with the lower closure flaps 31b, 32b, 33b, and 34b, respectively, connected thereto along the common scored hinge fold line 37. Another common hinge score line 38 is provided in the bottom flaps in parallel relationship to the line 37. The one panel 34 carries a connector flange 39 which is connected thereto along the adjacent scored corner fold 35. This connector flange is adapted to overlap the opposed free end 40 of the blank and be secured thereto, as indicated in FIG. 1. The flange 39 has a bottom extension 39b connected to the flange 39 by continuations of the scored lines 37 and 38.

All of the bottom closure flaps are integrally joined to the respective side panels as indicated above, but are also integrally joined to each other at the scored hinge joints 35b, which are continuations of the corner joints 35. The extension 39b of the connector flange 39 is similarly joined to the adjacent flap 35b at the joint 35b. All of the bottom closure flaps are provided with an arrangement of angularly extending score lines to permit inward folding to produce the laminated bottom structure 55.

Each of the flaps 31b and 33b includes a main central section 41 of trapezoid form and end sections 42 and 43 of right triangular form which are joined to the center section at the scored fold lines 44 and 45. The line 44 angles inwardly from the meeting blank edge 40 or corner line 35 and score line 37, preferably at an angle of 30°, and the line 45 is similarly disposed relative to the adjacent corner 35. Each of the flaps 31b and 33b thus has the recessed outer edge 41b at the center and the angular outer edges 42b and 43b at the ends. The outer edges 54 of the respective flaps 32b and 34b are straight.

The closure flaps 32b and 34b are provided with three fold lines 46, 47, and 48 adjacent each corner fold line 35b to produce triangular infold sections 49, 50, and 51 at each corner of the flap. All of these lines converge where the adjacent corner fold 35 meets the score line 37. Each line 46 is at an angle of about 15° from the line 35 and the other lines may be at successive 15° angles. The extension 39b is provided with an angular score line 44b which extends at the same angle from the corner 35 as the line 44 of flap 31b which is 30°. When the outer container 13 is set up, all of the bottom closure flaps 31b, 32b, 33b, and 34b will be folded inwardly into overlapping relationship as will be explained more in detail later. This will produce the laminated bottom structure 55 which will rest on the reinforcing or supporting panel 12.

The two liners 14 are of identical construction and are adapted to cooperate with the outer container or body 13 to provide the two packing and dispensing compartments 56 and 57 when set up. The liners 14 are of rectangular tubular form

open at both their upper and lower ends. Each liner is made from the blank indicated in FIG. 8 and comprises the upstanding wall panels 61 and 62, 63 and 64 connected to each other at scored corner fold lines 65. On the upper edge of the panels there are provided the respective reinforcing flanges 61a, 62a, 63a, and 64a which are hinged thereto along a common scored hinge line 66 so that they can be swung inwardly into horizontal reinforcing position being separated at the notches 65a. A connector flap 69 is provided at one of the blank for overlapping the other end of the blank at the free edge 70 where it may be secured thereto. When the blank of FIG. 8 is folded into tubular form, it is inserted along with another identical folded liner blank into the body 13 to provide the upright chambers 56 and 57. This will produce a double upstanding sidewall for each compartment 56 and 57, consisting of the double center wall formed by panels 61 and 63, of the respective liners 14, the opposed outer double walls formed by the panels 61 and 63 backed up by the respective outer panels 31 and 33 of the body 13, and the narrower end walls formed by the panels 62 and 64 backed up by the respective panels 34 and 32 of the outer body 13. The flanges 61a, 62a, 63a, and 64a will be turned inwardly into substantially horizontal position for reinforcement. This assembly will rest on the pallet 11 and the lower part of the body 13 will be disposed within the border frame provided by the strips 23.

The structure of the cap 15 is not important to this invention and for some uses a cap need not even be provided. If provided, the cap may be of any usual construction, but in the example shown, it is provided with a main panel 75 having a depending peripheral flange 76 adapted to telescope over the upper end of the body 13 and frictionally engage the respective side panels thereof.

The liners 14 are preferably though not necessarily used and before they are positioned in the body 13, the laminated bottom is formed by infolding of the bottom flaps, it being understood that at this time, the blank will be set up square in tubular form with the connector flap 39 secured to the side panel 31. The bottom flaps will be folded inwardly along the hinge line 37. As the flaps 32b and 34b are folded inwardly, the connected flaps 31b and 33b are folded inwardly simultaneously and will lie outside of or beneath the flaps 32b and 34b (FIGS. 1, 2, and 4). As the flaps swing inwardly and upwardly, they will bend along the fold lines 46 adjacent both corners of the two flaps 32b and 34b and along the fold lines 44 and 45 at the respective corners of the two flaps 31b and 33b. The flaps 32b and 34b will have their edge extremities 54 meeting at the middle of the body 13 (FIG. 4) whereas the edge extremities 41b of the flaps 31b and 33b will be spaced apart and will extend at right angles to the edges 54. The sections 50 and 51 of the flaps 32b and 34b will be innermost, the sections 49 of those flaps along with the sections 43 of the flaps 31b and 33b will be in an intermediate infolded layer and the sections 41 of the flaps 31b and 33b will be in an outermost layer. The sections 49 and 50 will overlap and be coextensive. The laminated bottom 55 will thus be produced and the container body 13 will be disposed on the pallet 11 with the infolded bottom flaps 31b and 33b resting on the panel 12 which is previously applied to the pallet. The flaps 31b and 33b will be so positioned on the pallet that they will extend transversely of the panel with their edges 41b at right angles to the long edges of the panel or parallel to the tear lines 25. The bottom will be thus supported sufficiently so that the bottom flaps will not drop downwardly. The two liners 14 will now preferably be positioned in the body 13 so that the inner abutting walls 61 and 63 will be disposed in a plane between and parallel to the inner edges 41b of the flaps 31b and 33b. This will dispose the material packing and dispensing compartments 56 and 57 transversely of the reinforcing panel 12 and over the clear spaces 21 and 22 of the pallet. After the liners 14 are positioned as indicated and the compartments 56 and 57 are filled, the flanges 61a, 62a, 63a, and 64a, at the top edges of the liners and the flanges 31a, 32a, 33a, and 34a, at the top edges of the body 13, may be turned inwardly. If a cap 15 is used, it

will be applied. The container will be supported on the panel 12 on the pallet 11 or if it need not be moved it can be supported on a rack or stand similar to the pallet. When the pallet is used, a forklift truck may be used in handling the assembly.

The weight of the material will normally keep the bottom flaps in position, although the panel 12 could be attached to the container bottom without being fastened to the pallet. On the other hand, the laminated bottom could be fastened to the panel 12 and underlying pallet supports. The container 13 will be located within the cleats or strips 23 and will thereby be maintained in a centered position on the pallet, the cleats preventing lateral sliding on the pallet as a result of sudden shocks.

To open either compartment 56 or 57 for dispensing, it is merely necessary to have the pallet on a suitable support and remove the tear strip 25 at the side where the dispensing is to occur, as indicated in FIG. 3, where dispensing is to occur from the left side or compartment 56. This removes the support of the panel from the flap 33b and allows it to drop downwardly (FIGS. 3 and 5) and along with the connected corners of the flaps 32b and 34b to produce a dispensing spout. The flap 33 will swing downwardly about the hinge line 38 since that hinge line will be located at the inner edge of the supporting slat 17. The panel 12 will break downwardly to form the outer depending section 12a and the inner depending section 12b. The flap 33b will fold downwardly at the score lines 44 and 45 and the connected corners of the flaps 32b and 34b will simultaneously fold down at the corner lines 35b and the lines 46, 47, and 48. The dispensing spout will thus have outer and attached sidewalls provided by the section 41 and attached corner sections 42 and 43 of the flap 33b, along with the sections 49, 50, and 51 of the respective flaps 32b and 34b. As indicated in FIG. 5, the sidewalls of the spout will converge inwardly adjacent the depending panel section 12b which will serve to direct the material outwardly.

It will be apparent from the above description that this invention provides a container assembly suitable for both packing and dispensing of material, especially loose bulk material. The container is centered and supported on the pallet by means of which it can be readily handled. The container and cooperating pallet are so designed that dispensing from the container can be readily accomplished. The bottom structure is exceedingly strong since all its flaps are integrally connected to each other at the corners which also provides a more effective seal. Bulging of bulk containers with the usual separate flaps commonly occurs in the lower quarter of the height of the upright walls but with the integrally connected bottom flaps, the upright walls and bottom structure are more strongly connected together to prevent this. In prior art assemblies, an unsuccessful attempt was made to prevent this bulging by having an upwardly telescoping cap banded with metal. Also, the bottom is so formed that an actual dispensing spout is produced when the bottom flaps are dropped by tearing the reinforcing supporting flap. No part of the reinforcing panel or the bottom structure projects beyond the side walls of the container which increases the moisture resistance and resistance to damage at the bottom.

Having thus described my invention, what is claimed is:

1. A container assembly comprising a body having upright sidewalls and bottom flaps integrally connected to the sidewalls and to each other along fold lines which provide a material-dispensing chute when the bottom drops, a pallet for supporting the body and having a space through which material discharging through the bottom chute will pass, means for normally preventing dropping of the bottom and comprising a supporting panel resting on the pallet and in supporting contact with the bottom flaps and being completely within the periphery of said body, said panel having a means for weakening it over said pallet space to permit portions of the bottom flaps to drop thereinto and form said dispensing chute.

2. A container assembly according to claim 1 including means for dividing the container into two separate material dispensing compartments, said pallet having clear dispensing

spaces below said compartments, said panel having said weakening means below each compartment so that portions of the bottom flaps below each compartment can be dropped to selectively dispense from either compartment.

3. A container assembly according to claim 2 in which the body is of square horizontal cross section with four upright walls joined at corner folds and the pallet is of similar square outline, said pallet supporting the bottom of the body and having a centering shoulder extending therearound within which the container body is disposed, said panel having transversely extending supports with the clear spaces therebetween over which the dispensing compartments are located, said panel being of elongated form extending over said supports and having its ends disposed within said shoulder, said panel having the weakening means in the form of tear lines extending across the panel at each of said respective spaces.

4. A container assembly according to claim 3 in which said bottom flaps are integrally joined at hinge lines to each of the four upright walls of the square body, said flaps being integrally joined at corners at the four corners of the body and provided with angular score lines at the corners to permit infolding of the bottom flaps into laminated relationship.

5. A container assembly according to claim 1 in which the body is of square cross section and has four upright walls, connected at corner fold lines, said bottom flaps being integrally joined at hinge lines to each of the side walls and flaps being integrally joined at corners aligning with the four corners of the body, and being provided with angular score lines at the corners to permit infolding of the bottom flaps into laminated relationship.

6. A container assembly according to claim 4 in which two of the opposed bottom flaps fold inwardly with their adjacent edges substantially meeting and the other two flaps fold inwardly beneath the first two and have their inner edges spaced from each other and extending transversely across the panel

parallel to said tear lines over said clear spaces of the pallet so that when the panel is weakened at the respective tear lines such edges will drop into the spaces.

7. A container assembly comprising a body having upright sidewalls joined to each other at corner fold lines, bottom flaps joined to the respective sidewalls along fold lines and to each other by integral corner fold lines corresponding to the first-mentioned fold lines, said flaps being provided with angular score lines at the corners to permit infolding of the bottom flaps into laminated relationship and unfolding to permit portions of the bottom to drop to form a dispensing cleat, support means cooperating with the bottom to normally prevent such dropping and having means cooperating therewith to weaken the support to permit such dropping.

8. A container assembly according to claim 7 which has four upright sidewalls joined at four corners and two pairs of opposed flaps joined to the respective sidewalls and joined to each other at four corners, one pair of flaps being first folded inwardly and having inner edges substantially meeting and the other pair of flaps being folded inwardly beneath the first four and at right angles thereto and having inner edges spaced apart, said support means normally engaging the last-named pair of flaps and having a clear dispensing space for cooperating with the dispensing chute created by dropping of either of such outer flaps, the support-weakening means being operable to drop either of said flaps.

9. A container assembly according to claim 8 in which the support means comprises a panel underlying the two last-named flaps with panel-weakening means beneath each of said outer flaps.

10. An assembly according to claim 9 in which the support means includes a support upon which said panel rests and which locates the panel-weakening means under each of said outer flaps.

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