Aug. 27, 1968 C. K. EASTWOOD 3,398,849

COLLAPSIBLE PALLET BOX

Filed July 11, 1966 2 Sheets-Sheet 1

FIG. 1

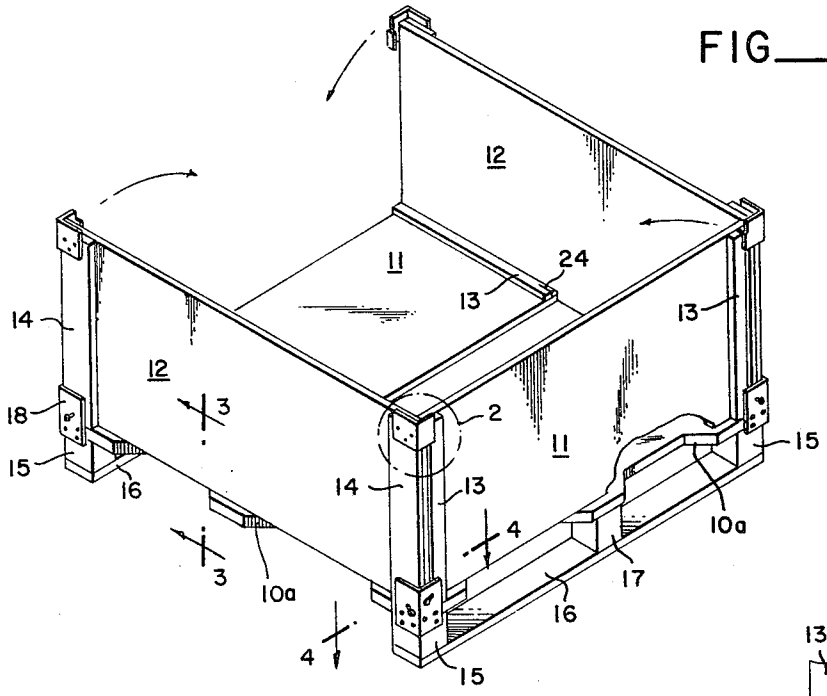


FIG. 2

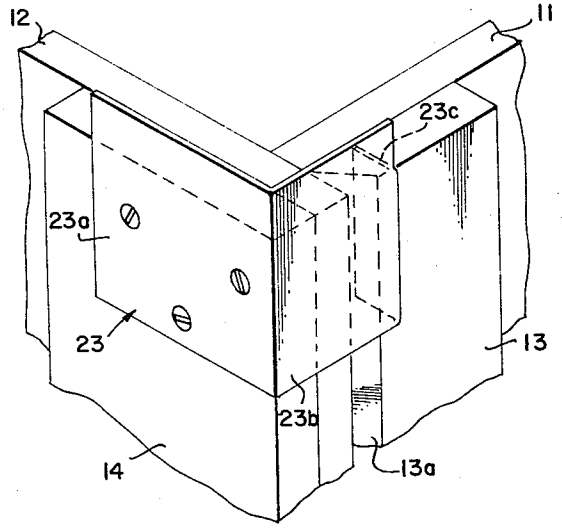
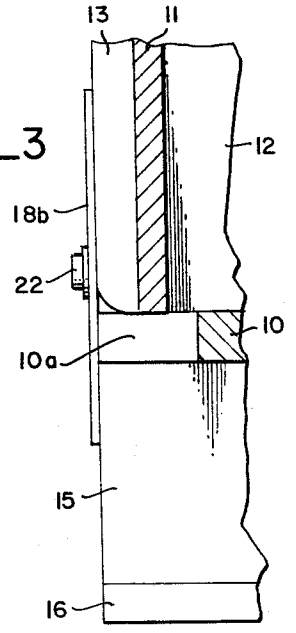


FIG. 3



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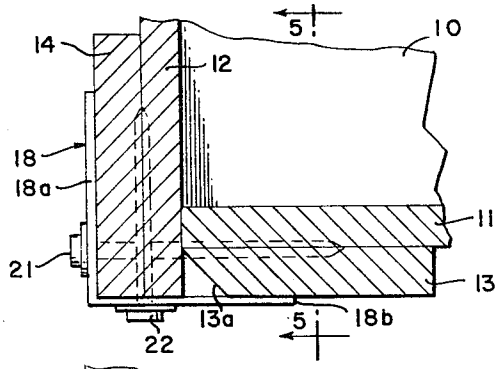


FIG. 4

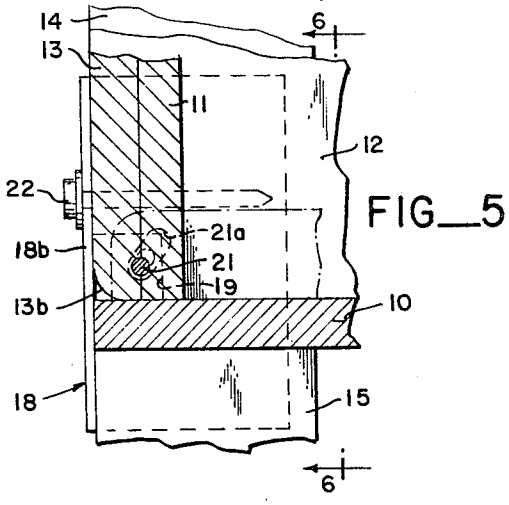
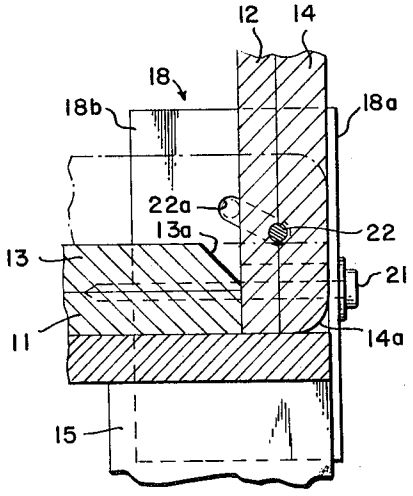


FIG. 5

FIG. 6



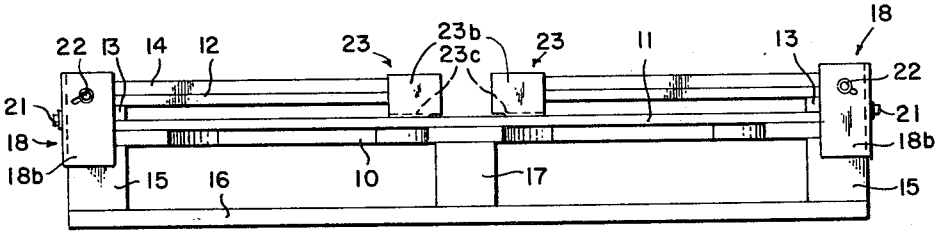
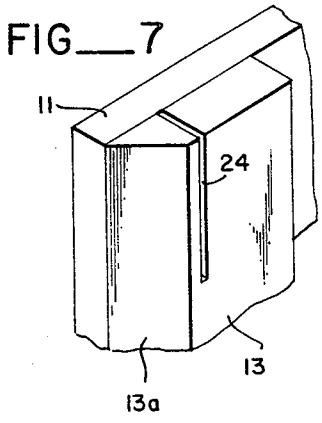


FIG. 9

FIG. 7



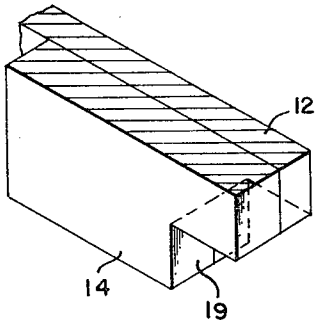


FIG. 8

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COLLAPSIBLE PALLET BOX

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3 Claims. (Cl. 217—15)

ABSTRACT OF THE DISCLOSURE

A collapsible pallet box having fold-down side and end panels which pivot at their lower ends on pins riding in respective slots formed in angle brackets mounted at the bottom corners of the box.

The present invention relates to a collapsible pallet box of the type having fold-down side and end walls arranged when collapsed to lay with the side walls flat against the bottom of the box and the end walls on top of the side walls.

The invention aims to provide such a pallet box which has smooth uninterrupted inside faces with all bracing on the outside, is sturdy and durable when expanded, and is relatively ligth in weight.

Other objects are to provide such a pallet box which nests when stacked either in folded or expanded condition, is ventilated for cooling and drainage, and in which warping and weathering are minimized while the box is stored in collapsed position.

Other more particular objects and advantages of the invention will, with the foregoing, appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIG. 1 is a perspective view of a pallet box embodying the present invention, and illustrated with one of the sides folded down;

FIG. 2 is a detail view of an upper corner of the box as indicated by the circled area 2 in FIG. 1;

FIG. 3 is an enlarged fragmentary vertical sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is an enlarged fragmentary horizontal sectional view taken along the line 4—4 of FIG. 1;

FIG. 5 is a fragmentary vertical sectional view taken as indicated by line 5—5 in FIG. 4;

FIG. 6 is a fragmentary vertical sectional view taken as indicated by line 6—6 of FIG. 5, but with one of the side walls folded down;

FIG. 7 is a perspective detail view of one of the upper corners of a side panel of the box;

FIG. 8 is a perspective detail view of one of the lower corners of an end panel of the box; and

FIG. 9 is a side elevational view of the box in collapsed position.

Referring to the drawings it is seen that the floor, longitudinal side walls, and end walls of the pallet box are numbered **10**, **11—11**, and **12—12**, respectively, and may be formed of plywood with the side and end walls being reinforced by face strips **13** and **14**, respectively, at their vertical ends. The floor **10** has marginal cutouts **10***a* for ventilation and drainage and is mounted on corner blocks **15** which carry a pair of longitudinal skids **16** braced at the center by intermediate blocks **17**. Angle brackets **18** are screw-mounted to the corner blocks **15** and project upwardly above the floor level to limit outward movement of the side and end panels of the box when they are erected.

The brackets **18** also carry the outer end portions of

sets of pivot pins **21–22** for the pairs of panels **11–12** in an arrangement whereby the end panels **12** fold down over the side panels **11** after the latter are collapsed. To this end the brackets **18** have sloped slots **21***a* and **22***a* for passage of the pins **21–22**, and the end panels and strips **12** have cutouts **19** at the lower corners for passage of the pins **21**. Lag screws may be used for the pins **21–22** and may be screwed to center along the seams between the panels **11–12** and the respective face strips **13–14** as illustrated.

At their upper corners the end panels **12** have angle brackets **23** with one flange **23***a* screw-mounted to the face strips **14** and the other flange **23***b* extending beyond the planes of the inside faces of the end panels to lap over an upper part of the face strips **14** of the side panels when the box is erected. It will be noted that each flange **23***b* has its longitudinal edge portion turned back to form a lip **23***c* parallel to the flange **23***a*. For receiving each lip **23***c* the respective face strip **13** has a vertical slot **24**. It is preferred that the flanges **23***a–23b* of the upper corner angles project above the top of the box as shown so that the boxes will vertically nest. Accordingly, the lips **23***c* are shortened so that they will terminate at the upper ends of the strips **13** and not interfere with the nesting.

It will be noted that the side panels **11** are shorter in length than the floor **10** by twice the sum of the thickness of an end panel **12** and face strip **14** so that the side panels can be folded down between the end panels when erect. In order that the side panels **11** will not overlap when collapsed, the box has a maximum height above the floor level corresponding to one-half the width of the floor panel **10**.

During down-folding of the side panels **11** their pivot pins **21** ride from the lower ends of the slots **21***a* to the upper end thereof to give sufficient relief for the lower outside edges **13***b* to swing and clear the related flanges **18***b* of the corner brackets **18** and for the lower inside edges **11***a* of the panels **11** to swing outwardly over the floor. Then as the down-folding of the side panels **11** is completed the pins **21** slide back down toward the lower ends of the slots **21***a*. Although not preferred, as an alternative to the slots **21***a* the edges **13***b* of the strips **13** and the inside edges **11***a* of the side panels could be rounded to bullnoses so that the pins **21** could swing about fixed axes defined by round holes located in conformance with the lower end portions of the slots **21***a*.

When the end panels **12** are erect their pivot pins **22** occupy the lower ends of the slots **22***a*. As shown in FIG. 6, the lower end of each strip **14** on the end panels is formed with a bullnose **14***a*, and the outer longitudinal edges **13***a* of the strips **13** are beveled so that the end panels are free to be folded down after the side panels **11** have been folded in flat against the floor **10**. During this down-folding of the end panels the pins **22** slide upwardly to the upper ends of the slots **22***a* to occupy positions which are the same horizontal distance from the respective corner flange **18***a* as the vertical distance to the floor **10** from the positions occupied by the pins at the lower ends of the slots when the end walls are erect. The lips **23***c* on the upper bracket **23** are preferably spaced from the flanges **23***a* a distance corresponding to the thickness of the strips **13** so that when the end panels are fully collapsed, the lips **23***c* will rest flat against the underlying side panels **11** and the end panels **12** will rest flat against the strips **13**.

When the pallet box is collapsed the lower corner brackets **18** project above the level of the strips **13** on the folded side panels. This arrangement permits a stack of the collapsed pallet boxes to be nested, each with its skids **16** seated on the strips **13** of the subjacent

box and confined by the upwardly projecting portion of the brackets **18** of the subjacent box.

To erect the collapsed box of the present invention it is only necessary to swing up the end panels **12** by gripping their upper edges which are spaced from the underlying side panels **11**, and to then swing up the side panels between the erect end panels until the slots in the upper ends of the strips interfit with the lips **23***c* of the upper corner brackets **23**. When the end and side panels are erect their lower ends are confined by the lower corner brackets **18**, the upper ends of the side panels **11** are confined by the flanges **23***a* of the upper corner brackets **23**, and the upper ends of the end panels **12** are confined by the interfit of lips **23***c* with the slots **24**. As before mentioned, the boxes in erected state can be nested one on another within the confines of the upwardly projecting portions of the upper corner brackets **23**.

It is believed that the invention will have been clearly understood from the foregoing detailed description of my now-preferred illustrated embodiment. Changes in the details of construction may be resorted to without departing from the spirit of the invention and it is accordingly my intention that no limitations be implied and that the hereto annexed claims be given the broadest interpretation to which the employed language fairly admits.

What is claimed is:

1. A collapsible box comprising, a generally rectangular bottom panel, a pair of opposed fold-down end panels, a pair of opposed fold-down side panels located between said end panels when the latter are upright, respective upwardly projecting angle brackets anchored at the corners of said bottom panel and each having two vertically sloping slots in planes at substantially right angles to one another thereby forming two sets of slots with the slots in each set being parallel to one another, first pivotal connection means between said angle brackets and said side panels received in one of said sets whereby the side panels are foldable inwardly from an upright position between said end panels to a collapsed horizontal position resting on said bottom panel, and second pivotal connection means between said angle brackets and said end panels received in the other of said sets and upwardly movable a limited distance relative to said bottom panel whereby said end panels are then foldable inwardly from an upright position whereat their lower edges are at the upper level of said bottom panel to a collapsed horizontal position whereat said lower edges are raised above said upper level and said end panels rest on said collapsed side panels.

2. A collapsible box according to claim **1** in which the set of slots for said second pivotal connection means extends to an elevation higher than the set of slots for said first pivotal connection means.

3. A collapsible box according to claim **1** in which the outer lower edges of said end panels and the outer vertical side edges of said side panels are beveled.

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