June 30, 1964 T. HAUBRICH 3,139,205

COLLAPSIBLE BULK BIN

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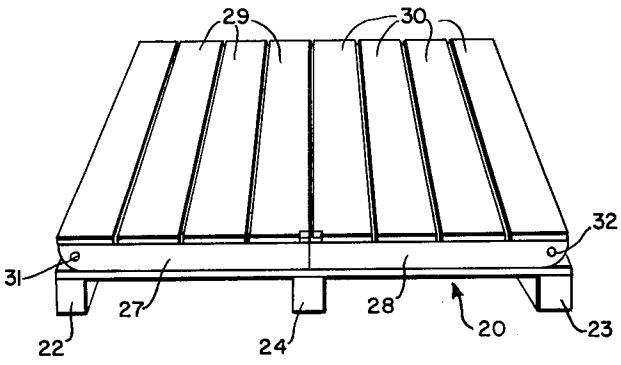


FIG. 1.

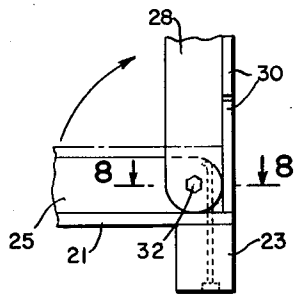


FIG. 7.

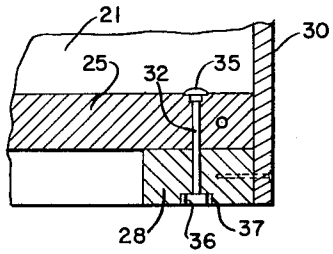


FIG. 8.

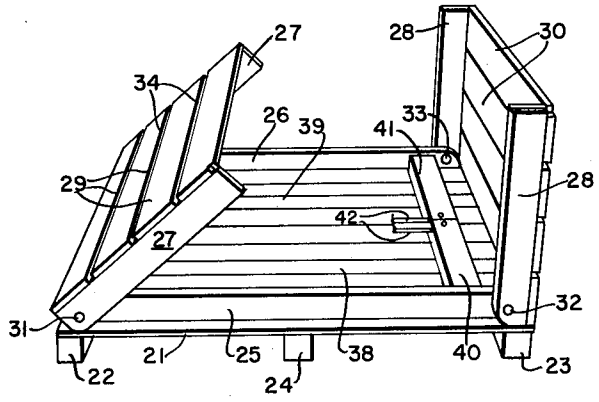


FIG. 2.

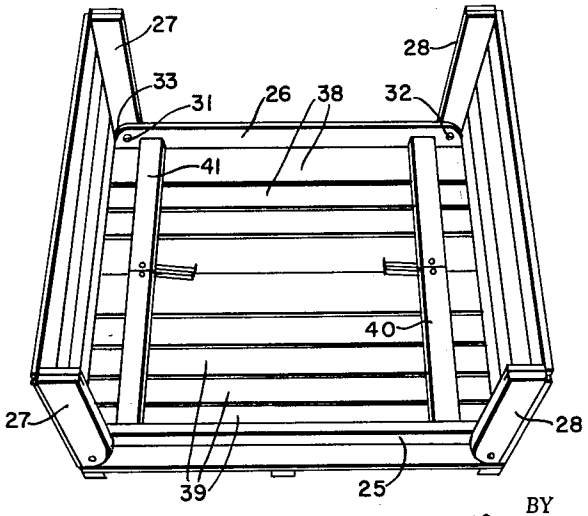


FIG. 3.

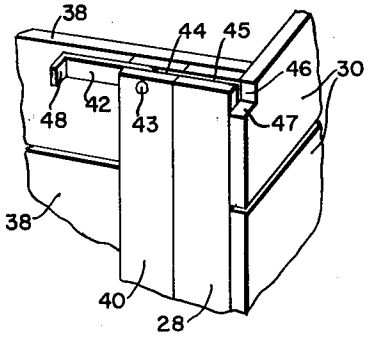


FIG. 9.

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COLLAPSIBLE BULK BIN

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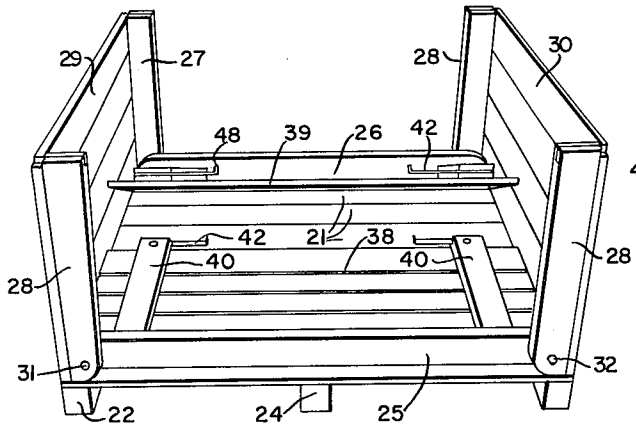


FIG. 4.

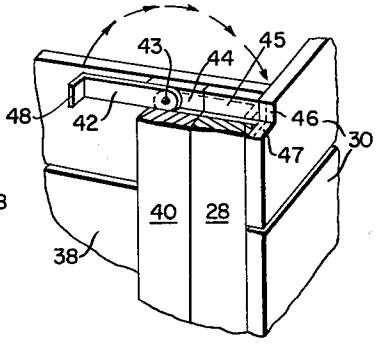


FIG. 10.

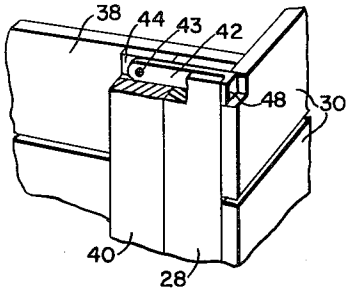


FIG. 11.

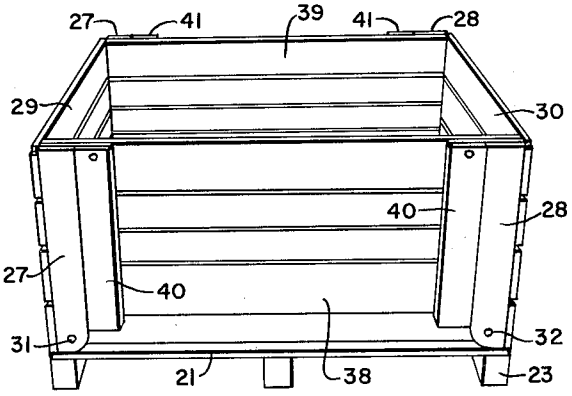


FIG. 5.

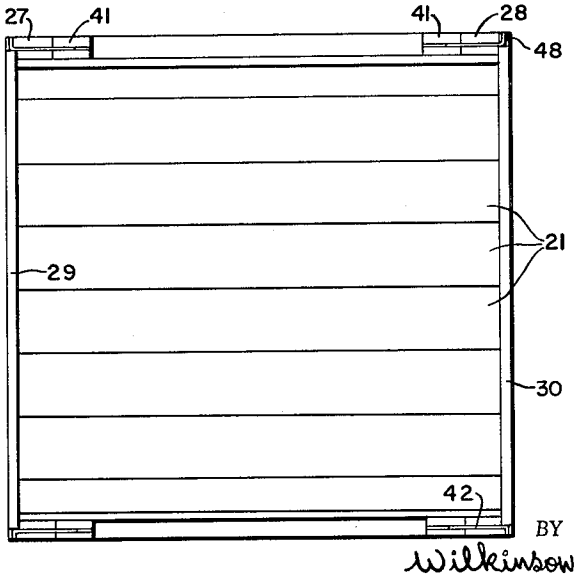


FIG. 6.

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3,139,205

COLLAPSIBLE BULK BIN

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7 Claims. (Cl. 217—47)

The present invention relates to a collapsible bulk bin and has been designed more particularly for widespread use in the Pacific Northwest area for the handling of fruit in bulk both in the orchards and in the warehouses.

An object of the invention is to provide a pallet form of base, bed or platform for the bin so constructed and arranged for pick-up by fork lift trucks and for use by carryall equipment in hauling from the orchard to the warehouse.

The bin of this invention is characterized by rugged strength and convenience in stacking a multiplicity of bins on one another, thereby permitting high stacking of one bin upon other fully loaded bins.

An especial object of the invention is to provide a bin having an interior fruit receiving space substantially devoid of internal projections, sharp edges and the like which would tend to bruise the fruit, thereby depreciating the market value of the same: and the construction is such that fruit bruising is substantially reduced especially when the bin is turned and dumped into the warehouse equipment for washing and packing.

A further object of the invention is to provide smooth external construction which prevents hooking and snagging of one bin with another in the course of handling, moving and transporting the same.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views:

FIGURE 1 is an isometric view of a collapsible bulk bin constructed in accordance with the present invention shown in the collapsed or knockdown condition.

FIGURE 2 is a similar view with the right-hand end member fully raised in the set-up or erected position and the left-hand end member partially raised.

FIGURE 3 is a perspective view showing the two end members in final erect position revealing the collapsed position of the two side members.

FIGURE 4 is also a perspective view taken from a lower position illustrating the far side member partially raised.

FIGURE 5 is a similar view showing both side members in erected position and illustrating the final erect position of the bin.

FIGURE 6 is a top plan view of the bin in erect position.

FIGURE 7 is a fragmentary side elevational view of a corner portion of the base or pallet member illustrating a form of hinge or pivot connection of an end member to the base member.

FIGURE 8 is a fragmentary horizontal sectional view taken on the line 8—8 in FIGURE 7.

FIGURE 9 is a fragmentary perspective view of an upper corner portion of the bin illustrating in open position a form of keeper for interlocking the side members with the end members.

FIGURE 10 is a similar view showing parts of the side and end members in section with the keeper in open position and an arc of arrows indicating path of movement of the keeper to the engaged or locked position.

FIGURE 11 is a view similar to FIGURE 10 showing the keeper in full lines in the engaged or locked position.

Referring more particularly to the drawings, 20 designates generally a base, bed or platform preferably in the form of a pallet in which the bin bottom 21 is preferably formed of slats extending crosswise of end and intermediate stringers or beams 22, 23 and 24 to which the bottom, whether of slatted or solid construction, is nailed or otherwise affixed whereby the bottom 21 is elevated from the ground line by the stringers 22, 23 and 24 which are spaced apart to permit of the forks of a lift truck to be engaged under the bottom.

The base also includes side rails 25 and 26 nailed or otherwise secured to the bottom 21 and preferably also to the stringers 22, 23 and 24, these rails 25 and 26 upstanding from the plane of the bottom or bed 21 and set inwardly a suitable distance from the side edges of the bottom 21 to accommodate exteriorly thereof stanchions 27 and 28 of two end members including, in addition to the stanchions 27 and 28, end walls 29 and 30 preferably composed of slats spaced apart from one another and nailed or otherwise secured to outer end edges of the stanchions 27 and 28.

The lower ends of the stanchions 27 and 28 are pivoted at 31 and 32 to opposite end portions of the rails 25 and 26, which rails are preferably rounded at upper end portions 33 thereof (FIGURES 2 and 3) to remove corners or sharp edges. These rounded or cutaway portions 33 also provide clearance for the lowermost slats 29, 30 in the hinging or pivoting action of the end members 27, 29 and 28, 30 to the end that in the fully erected positions of FIGURES 3 and 5 the lowermost slats 29 and 30 may engage opposite end portions of the bottom 21 forming a substantially closed bin except for the ventilating slots 34 afforded by the spacing of the slats 29 and 30. FIGURE 7 also shows the lowermost slat 30 impinging the upper surface of the bottom 21.

FIGURES 7 and 8 illustrate one of the pivots 32 showing the rounded head 35 exposed on the interior of the bin to avoid fruit damage and the nut 36 countersunk in a recess 37 in the stanchion 28 to eliminate projections apt to cause snagging.

The side members of the bin are preferably detachable and are composed of solid, though preferably spaced slatted, side walls 38 and 39, in addition to pairs of cleats 40 and 41 nailed or otherwise affixed to the external surfaces of the side walls 38, 39 inwardly of the ends thereof by a distance substantially equal to the widths of the stanchions 27 and 28. The side walls 38, 39 are of a length to abut at opposite ends the end walls 29, 30 in the erect position whereby the side walls prevent the hinging collapsing inwardly of the end walls 29, 30.

The side walls plus the rails 25, 26 are of substantially the same height as the end walls 29, 30 so that as the side walls 38, 39 are supported on the rails 25, 26, the upper edges of both side and end walls will be substantially flush in the erected position of the bin. In this condition with the side walls 38 and 39 pushed outwardly against the inner surfaces of the stanchions 27 and 28, the cleats 40 and 41 will abut the adjacent edges of the stanchions 27 and 28 and will thus prohibit any longitudinal shifting of the side walls 38 and 39 as well as furnishing a rugged corner construction in cooperation with the stanchions 27, 28.

The cleats 40 and 41 have also a third function in that they are sufficiently long vertically to project beyond the lowermost portions of the side walls 38 and 39 thus enabling the lower ends of the cleats 40, 41 to overlap the rails 25, 26 thus tending to lock the side members at lower portions thereof against any casual or accidental inward movement or collapse.

Similar restraint against inward movement or collapse of the side members at upper portions thereof is afforded by keepers 42 pivoted at 43 within slots 44 formed in the

upper ends of the cleats, these slots **44** opening upwardly and at opposite ends and being, in the set-up position of the parts in alignment with similar slots **45** provided in the upper ends of the stanchions **27** and **28**.

The end walls **29** and **30** at upper portions thereof are provided with cutaway parts in alignment with the slots **44** and **45**. These cutaway parts are defined by vertical walls **46** and horizontal walls **47** which give clearance to the outer free end portions of the keepers **42** and angled ends **48** thereof which serve at once as handles for the manipulation of the keepers from the positions of FIGURES 9 and 10 to the positions of FIGURES 5, 6 and 11.

The keepers **42** are preferably of metallic bar construction edgewise vertical and pivoted to swing in a substantially vertical plane and being of a length whereby in the interlocked or engaged position of FIGURE 11 the lower edges of the keepers will engage the bases or bottoms of the slots **44** and **45** and the lower edge of the angled ends **48** will engage the horizontal wall **47** of the cut-out portions while the inner flat sides of the keepers will engage the vertical walls **46** of said cut-out parts.

In this position, as will be clear from FIGURE 11, the angled ends **48** of the keepers will be wholly contained in the cutaway parts. In other words, such angled ends **48** will not project to the exterior of any of the flat external walls of the bin or crate and will, therefore, be in no position to create snagging or interference with other crates or external objects. These keepers interlock three members, namely, the cleats, the stanchions and the end walls.

In the use of the device the keepers may be disengaged by swinging movement as indicated in FIGURE 10, thus releasing the side members so that the same may be lifted off the rails **25** and **26**, disengaging the lower projecting ends of the cleats **40** and **41** from their overlapping relation with the rails **25** and **26**. The side members, thus freed, can be rotated over on their lower edges toward one another and laid in substantially the same plane on the upper surface of the bottom **21** well within the vertical confines of the rails **25** and **26** which form limit stops for preventing casual shifting of the side members in the knockdown condition.

The end members are then folded inwardly and downwardly around their pivot points **31** and **32** until the same arrive at the flat position of FIGURE 1 which illustrates the knockdown or collapsed condition of the parts.

It is a simple matter in erecting the bin to rotate the end members to a vertical position to lift the side members and place them in the positions of FIGURES 5 and 6 and then to throw the keepers **42**, which effectively lock the bin in the erect position and prevent its accidental collapse, upon the fruit at any time during use.

The fruit industry, particularly the large apple industry in the State of Washington, suffers heavy losses each year through bruising of fruit from tree to the delivery to the customer. A great deal of that bruising occurs immediately in the orchard in handling through the boxes or bins and the bruising continues when the apples are dumped into the big washer and run out on the sorting belts and packed into the containers for shipment. Any protrusions inside the bins result in damage to the apples touching them. If the protrusions are present, further contact and bruising will occur as the apples are dumped into the washer.

The use of rounded bolt heads, rounded edges of parts and avoidance of protrusions constitute valuable improvements and the knockdown arrangement has substantial value in saving warehouse space. The spacing apart of the slats allows air and water circulation and is of real importance in permitting longer storage and in handling without damage; and the construction allowing forks of a lift truck to enter beneath the bin for lifting is a substantial financial saving.

The keepers or latches, while providing adequate fasteners, protrude neither inside nor outside of the bin.

The pivots **31** and **32** located at each of the four corners of the bin prevent the end members from falling out as the bin is being turned upside down by a mechanical dumper to empty its contents.

All bolts have oval or rounded heads and the lumber has all edges rounded and smooth.

The container of the invention is characterized by the following features:

(1) No hooks, hinges, rods, latches or any other device protrudes inside the bin to damage the delicate fruit contained therein.

(2) None of the devices used to fasten the bin together extend outward beyond the normal perimeter or confines of the bin to catch on other bins or objects while transporting or stacking close together for maximum capacity in storage and hauling.

Although I have disclosed herein the best form of the invention known to me at this time, I reserve the right to all such modifications and changes as may come within the scope of the following claims.

I claim:

1. A collapsible bulk bin comprising
(*a*) a base member,
(*b*) end members foldably connected to the base member, said end members including
(*c*) end walls and
(*d*) means for spacing the end walls above the base member in the collapsed condition of the bin to provide
(*e*) a space between the collapsed end walls and the base member,
(*f*) detachable side members accommodated in said space adapted to be removed and set up between said end walls in the erected condition of the bin, and
(*g*) latch means between the side members and the end members in position to be interlocked in the erected position of the bin, said end and side members having
(*h*) complemental slots adapted to align in the set-up condition of the bin, said latch means comprising
(*i*) keepers adapted to move in common through the slots to interlock the side members to the end members, said end members including
(*j*) stanchions, said side members including
(*k*) cleats fitted against the stanchions in the erected condition of the bin,
(*l*) said slots being made in said stanchions and cleats, and
(*m*) said keepers being pivoted in the slots of said cleats and swingable into the slots of the stanchions.

2. A collapsible bulk bin as claimed in claim 1 in which the end walls of the end members have
(*h*) cutaway parts in alignment with the slots in the stanchions,
(*i*) said keepers having free end portions adapted to enter and interlock with the cutaway portions.

3. A collapsible bulk bin as claimed in claim 2 in which the cutaway parts of the end walls have
(*h*) walls formng prolongations of base and side walls of the slots.

4. A collapsible bulk bin as claimed in claim 3 in which said keepers have
(*h*) angled free end portions positioned to enter the cutaway portions of the end walls
(*i*) with parts thereof engaging the side and base walls of the cutaway parts.

5. A collapsible bulk bin comprising
(*a*) a generally rectangular base member,
(*b*) rails affixed to opposite sides of said base member and spaced from the edges thereof,
(*c*) end wall members including
(*d*) stanchions pivotably connected to the outer ends of said rails with the outer surfaces of said stanchions substantially flush with the ends of said base member,
(*e*) side wall members including

(*f*) cleats mounted on said rails,

(*g*) said cleats being of a length to overlap the outer surfaces of said rails,

(*h*) said side wall members being of a lateral length to abut the inner surfaces of said stanchions so that an internal space is provided devoid of bruising protrusions,

(*i*) latch means positioned between said side wall cleat members and said end wall stanchion members to interlock said members together so that the exterior of said bin is provided with a normal perimeter of smooth characteristics devoid of protrusions.

6. A collapsible bulk bin as claimed in claim 5 wherein

(*j*) each stanchion is provided with a recess in the lower end portion thereof and opening through the outer surface thereof, the pivotal connection between each of said stanchions and its rail comprises

(*k*) a pivot pin extending through the recess in the lower end of the stanchion and the adjacent end portion of the rail, and

(*l*) a nut housed within the recess and mounted on the outer end of the pivot pin which terminates within the recess.

7. A collapsible bulk bin comprising

(*a*) a base member,

(*b*) end members foldably connected to the base member and including

(*c*) stanchions extending inwardly of the bin when in erected condition,

(*d*) detachable side members set up between said end members in the erected condition of the bin,

(*e*) said side members being of a length to abut the inner surfaces of said stanchions to prevent outward movement of the side members when in the erected condition of the bin, and

(*f*) cooperating releasable latching means on one set of said end and side members adjacent the top thereof including a hook engageable with the adjacent end or side members to prevent outward movement of said end members and inward movement of said side members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,705,003	Crosley	Mar. 12, 1929
1,834,553	Seabold	Dec. 1, 1931
2,515,084	Harris	July 11, 1950
2,890,809	Poley	June 16, 1959