

PATENT SPECIFICATION

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(54) COLLAPSIBLE BULK HANDLING BIN

(71) We, DUDLEY JOHN SCHUBERT and DONALD ROBERT HOWE, both Australian citizens, of Baranduda via Wodonga and Morell Street, Mooroopna, respectively, both in the State of Victoria, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to collapsible bulk handling bins and more particularly relates to palletized bins having a predominance of timber in their construction.

The present specification will refer to a bin having specific application to the fruit and vegetable industry in which relatively large bins of strong construction are used to transport fruit from the grower to processing factories or the like. In such an application, the loading is only way and accordingly the problem arises (as it does in many other fields) as to the economic transport of empty containers to the growers. For this reason, collapsible containers are desirable and have been provided, in order that the collapsed containers could be economically back loaded, and also such containers could be economically back loaded, and also such containers consume very little storage space when not in use. Moreover collapsed bins are more easily handled by manual and mechanised labour.

The collapsed bins lend themselves to easy stacking and, therefore, in the case of palletized bins, a large number can be handled simultaneously by a fork lift vehicle.

However, it has been found that problems arise in the manufacture and construction of collapsible bins as to strength and ease of assembly and disassembly. It appears that the main disadvantage with such bins is lack of strength brought about by the fact that demountable components are inherently weaker than those utilised in conventional bin types. It is also important in collapsible bins that the demountable components should be interchangeable from bin to bin and

accordingly, should preferably lend themselves to simple mass production techniques having a low tolerance errors.

With the abovestated facts in view, it is accordingly a principal objective of this invention to provide a collapsible bulk handling bin which is relatively simple to construct, assemble and disassemble, while the assembled components are interconnected to form a strong container.

According to the present invention, there is provided a collapsible bulk handling bin comprising a rectangular pallet base for use with a fork lift vehicle, the base having cross members including an intermediate cross member, and a floor on the cross members, said cross members projecting beyond the edge of said floor, four side walls comprising a first pair of opposite side walls and a second pair of opposite side walls mounted on the edges of said pallet floor, said first pair of opposite side walls adapted to rest on the projecting portion of said cross members and contact a floor edge, interlock means on each end of said intermediate cross member and on the lower outer edge portion of each of said first pair of opposite side walls when said first pair of opposite side walls are resting on said projecting portion of said cross members, said interlock means including a catch member spaced a predetermined distance from said floor edge, and a latch member, said catch member and said latch member being coincident with one another and adapted to releasably interconnect in a snap action to form said interlock means when said first pair of opposite side walls are mounted on said cross members, each of said first pair of opposite side walls being in abutting relationship with said floor edge, said four side walls including upright members at or near the ends thereof, including releasable securing means attached to said side walls for releasable interengagement to secure said second pair of opposite side walls to said first pair of opposite side walls to form said bin, said interlock means interconnecting said first pair of opposite side

[Price 25p]

Price 75p

walls and said pallet base and said releasable securing means interconnecting said first pair of opposite side walls to said second pair of opposite side walls to resist outward thrust exerted by bin contents and being releasable to allow disassembly of said four side walls from one another and from said pallet base.

Practical arrangements of the invention will now be described with reference to the drawings accompanying the Provisional Specification. In these drawings:

Figure 1 is a perspective view of one arrangement of the bin in partly dismantled condition.

Figure 2 is a detailed partial exploded view of the interlock components constructed in accordance with the invention; and

Figure 3 is a partial exploded view of another arrangement of the invention.

In these arrangements, a wooden container will be referred to; however, it will be understood that a metal bin could be constructed in a similar manner with aluminium alloy lending itself as a preferable metal, being light and strong in use. The collapsible bin 1 is made up of a palletized base 2 formed by boards or planks 2a nailed or rivetted on to three beams 3 and 3a extending across the board; the beams 3 are arranged to rest on the ground whilst the beam 3a is of smaller dimension and arranged midway of the two beams 3. The side walls 4 and 6 have their planks 4a, 6a secured together by attachment to a length of angle or channel section 5 flush with the ends of the planks.

There are three separate points of connection between the side walls 4, 6 and the base 2 as will now be described.

Firstly, in this arrangement, a pivotal link 7 is attached to the angle or channel section 5 at each end of the side walls near the top thereof to interengage with a pin 8 fixed on the face of the other pair of side walls 4. Also in conjunction with this fastening, a pin 18 is provided to engage in a corresponding aperture of respective side walls 6 and 6a to carry side thrust, both in and out, on the side walls 4 and 4a. Secondly, the base 2 is provided with a central beam 3a extending between the two side walls 4 and carries a fixture at each end thereof which interconnects with a fixture on the foot of the side walls 4 as will be described in more detail later. Thirdly, as shown in Figure 1, there is provided at each bottom corner of the said side walls 4, an eyelet 9 rigidly connected to the member 5 and adapted to receive a peg member 10 rigidly secured to the bottom corner of each of the said pair of side walls 6.

The interconnecting fixtures on the side walls 4 and the central beam 3a may take many forms, and in one arrangement, best shown in Figure 2, the interconnecting fixtures comprise a bracket 11 mounted at each

end of the beam 3a extending along the centre of the base having a raised flange portion 11a to which is secured a horizontal bar member 12 which engages in interlocking manner with notches 14 on a bracket 13 on the side walls 4. The two brackets 11 and 13 are arranged so that the interengagement can be brought about simply by allowing the side walls 4 to fall into position between the neighbouring base plank 2a and the raised flange portion 11a and bar member 12, but which once they are in position the fixture rigidly and securely maintains the walls in position, and in particular effectively prevents any spreading of the walls.

Assembly of the container is simply carried out: the pair of side walls 4 are first fitted onto the base and are adapted to fit snugly between the bar member 12 and the neighbouring base planks 2a. The eyelet member 9 on the side walls 4 are positioned to end substantially flush with the edge of the base member 2. The other pair of side walls 6 are then presented to the base with the peg members 10 arranged in alignment with said eyelets 9 and pins 18 engaging in corresponding apertures in side walls 6 and 6a. These side walls 6 are arranged to rest upon the extreme border portion of the base 2 and the peg member 10 is sufficiently long to fit neatly into the eyelet 9. The assembly is completed by closing of the pivotal link 7 at the top corners of the walls. The dimensions of the link 7 and its associated slot 7a are arranged to neatly engage the pin 8 on the other wall so that accidental lifting out of the walls 6 is prevented. The dimensions are arranged so that a lateral force is created between the slot 7a and the pin 8, when and if the wall tends to lift.

The two outer beams of the palletized base may be suitably recessed (not shown) to the plank thickness of the side walls so that a locked stack of containers can be achieved thus preventing shifting of a load during normal transporting movement.

In the arrangement depicted in Figure 3, there is shown a variation on the peg and eyelet arrangement of Figure 1. It is to be assumed that all other parts of the bin remain the same as that shown in Figure 1 excepting for the provision of upright members 15 connected to the pair of side walls 6. The upright members 15 are provided with end dowels 15a arranged for insertion in apertures 16 in the corners of the base 2. The apertures 16 are preferably lined by sheet metal shrouds 17.

Assembly of the bin of the type shown in Figure 3 is extremely simple in that the uprights 15 with the pair of side walls 6 affixed thereto are positioned at each corner of the base 2. The other pair of side walls 4 are then snapped into position about the interconnecting fixture as described previ-

ously whereupon closing of the pivotal link 7 over the pin 8 at the top corners of the walls completes the assembly.

5. It will be appreciated that the components are constructed so that in the collapsed position they form a neat flat stack on top of the base and in such a collapsed position can be easily handled by one person. Alternatively, several collapsed containers stacked one on the other can be easily handled by a fork lift vehicle. It will also be appreciated that in the collapsed condition the containers take up relatively little storage or transporting space whilst the container in assembled condition is of a strong and long lasting construction.

WHAT WE CLAIM IS:—

1. A collapsible bulk handling bin comprising a rectangular pallet base for use with a fork lift vehicle, the base having cross members including an intermediate cross member, and a floor on the cross members, said cross members projecting beyond the edge of said floor, four side walls comprising a first pair of opposite side walls and a second pair of opposite side walls mounted on the edges of said pallet floor, said first pair of opposite side walls adapted to rest on the projecting portion of said cross members and contact a floor edge, interlock means on each end of said intermediate cross member and on the lower outer edge portion of each of said first pair of opposite side walls when said first pair of opposite side walls are resting on said projecting portion of said cross members, said interlock means including a catch member spaced a predetermined distance from said floor edge, and a latch member, said catch member and said latch member being coincident with one another and adapted to releasably interconnect in a snap action to form said interlock means when said first pair of opposite side walls are mounted on said cross members, each of said first pair of opposite side walls being in abutting relationship with said floor edge, said four side walls including upright members at or near the ends thereof, including releasable securing means attached to said side walls for releasable interengagement to secure said second pair of opposite side walls to said first pair of opposite side walls to form said bin, said interlock means interconnecting said first pair of opposite side walls and said pallet base and said releasable securing means interconnecting said first pair of opposite side walls to said second pair of opposite side walls to resist outward thrust exerted by bin contents and being releasable to allow disassembly of said four side walls from one another and from said pallet base.

2. A collapsible bulk handling bin as claimed in claim 1, wherein said upright members are channel section members on the ends of the side walls, each channel section member on said first pair of opposite side walls including an eyelet extending from an end at the foot thereof and a depending peg from each channel section member on said second pair of opposite side walls, said four side walls in assembled position overlapping at their ends to an extent whereby said depending peg releasably interengages with said eyelet to secure said side walls to one another at the foot thereof and a pivotal slotted link and peg means near the top of said side walls attached to said channel section members for releasable interengagement to secure said side walls to the top thereof.

3. A collapsible bulk handling bin as claimed in claim 1, wherein said four side walls including planks secured together at the ends by upright members, said upright members including a depending peg for removable engagement in a corresponding socket in the floor of said pallet base to secure said second pair of opposite side walls to said pallet base relative to said first pair of opposite side walls and a pivotal slotted link and peg means attached near the top of said side walls for releasable interengagement to secure said side walls to one another to form said bin, said interlock means and said peg and socket means interconnecting said respective side walls to said pallet base and said pivotal slotted link and peg means releasably interconnecting said side walls to resist outward thrust exerted by bin contents and being releasable to allow disassembly of said side walls from one another and from said base.

4. A collapsible bulk handling bin as claimed in any one of the preceding claims, wherein said catch includes a substantially horizontal protuberance and said latch member includes at least one notched projection both parts adapted to interengage in a snap fit.

5. A collapsible bulk handling bin substantially as hereinbefore described with reference to drawings accompanying the Provisional Specification.

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ously whereupon closing of the pivotal link 7 over the pin 8 at the top corners of the walls completes the assembly.

5. It will be appreciated that the components are constructed so that in the collapsed position they form a neat flat stack on top of the base and in such a collapsed position can be easily handled by one person. Alternatively, several collapsed containers stacked 10 one on the other can be easily handled by a fork lift vehicle. It will also be appreciated that in the collapsed condition the containers take up relatively little storage or transporting space whilst the container in assembled 15 condition is of a strong and long lasting construction.

WHAT WE CLAIM IS:—

- 20 1. A collapsible bulk handling bin comprising a rectangular pallet base for use with a fork lift vehicle, the base having cross members including an intermediate cross member, and a floor on the cross members, said cross members projecting beyond the 25 edge of said floor, four side walls comprising a first pair of opposite side walls and a second pair of opposite side walls mounted on the edges of said pallet floor, said first pair of opposite side walls adapted to rest 30 on the projecting portion of said cross members and contact a floor edge, interlock means on each end of said intermediate cross member and on the lower outer edge portion of each of said first pair of opposite side walls when said first pair of opposite side 35 walls are resting on said projecting portion of said cross members, said interlock means including a catch member spaced a predetermined distance from said floor edge, and a latch member, said catch member and said 40 latch member being coincident with one another and adapted to releasably interconnect in a snap action to form said interlock means when said first pair of opposite side walls 45 are mounted on said cross members, each of said first pair of opposite side walls being in abutting relationship with said floor edge, said four side walls including upright members at or near the ends thereof, including 50 releasable securing means attached to said side walls for releasable interengagement to secure said second pair of opposite side walls to said first pair of opposite side walls to form said bin, said interlock means inter- 55 connecting said first pair of opposite side walls and said pallet base and said releasable securing means interconnecting said first pair of opposite side walls to said second pair of opposite side walls to resist outward thrust exerted by bin contents 60 and being releasable to allow disassembly of said four side walls from one another and from said pallet base.

2. A collapsible bulk handling bin as claimed in claim 1, wherein said upright 65 members are channel section members on the ends of the side walls, each channel section member on said first pair of opposite side walls including an eyelet extending from an end at the foot thereof and a depending peg 70 from each channel section member on said second pair of opposite side walls, said four side walls in assembled position overlapping at their ends to an extent whereby said depending peg releasably interengages with said 75 eyelet to secure said side walls to one another at the foot thereof and a pivotal slotted link and peg means near the top of said side walls attached to said channel section members for releasable interengagement to 80 secure said side walls to the top thereof.

3. A collapsible bulk handling bin as claimed in claim 1, wherein said four side walls including planks secured together at the ends by upright members, said upright 85 members including a depending peg for removable engagement in a corresponding socket in the floor of said pallet base to secure said second pair of opposite side walls to said pallet base relative to said first pair 90 of opposite side walls and a pivotal slotted link and peg means attached near the top of said side walls for releasable interengagement to secure said side walls to one another to form said bin, said interlock means and said 95 peg and socket means interconnecting said respective side walls to said pallet base and said pivotal slotted link and peg means releasably interconnecting said side walls to resist outward thrust exerted by bin contents 100 and being releasable to allow disassembly of said side walls from one another and from said base.

4. A collapsible bulk handling bin as claimed in any one of the preceding claims, 105 wherein said catch includes a substantially horizontal protuberance and said latch member includes at least one notched projection both parts adapted to interengage in a snap fit. 110

5. A collapsible bulk handling bin substantially as hereinbefore described with reference to drawings accompanying the Provisional Specification.

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