June 24, 1969 J. D. EDMUNDSON 3,451,578

COLLAPSIBLE CONTAINER

Filed June 1, 1967 Sheet 1 of 2

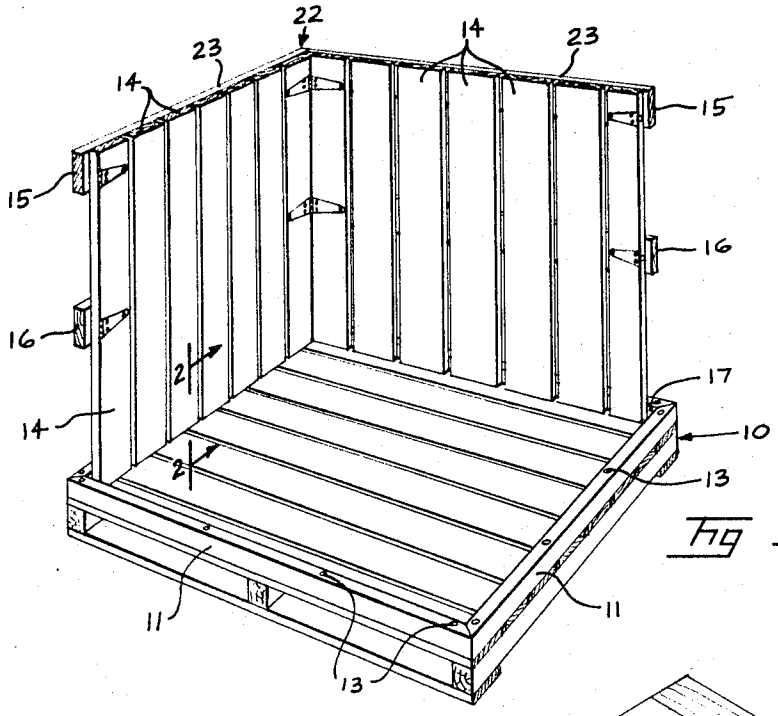


Fig 1

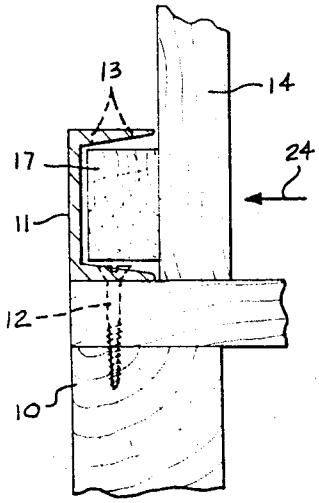


Fig 2

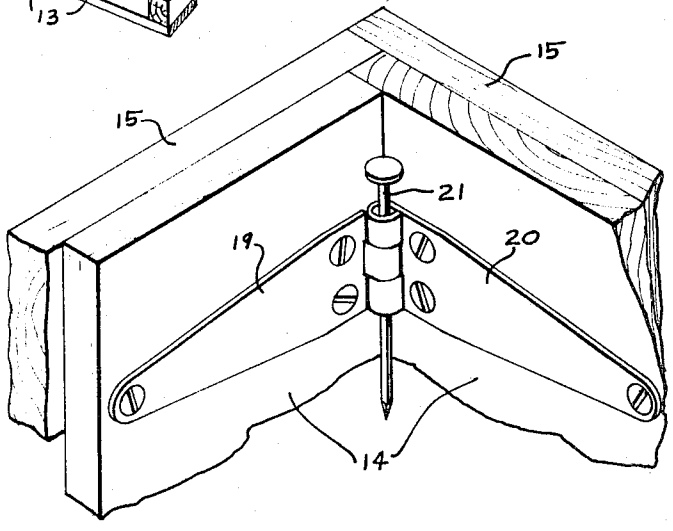


Fig 3

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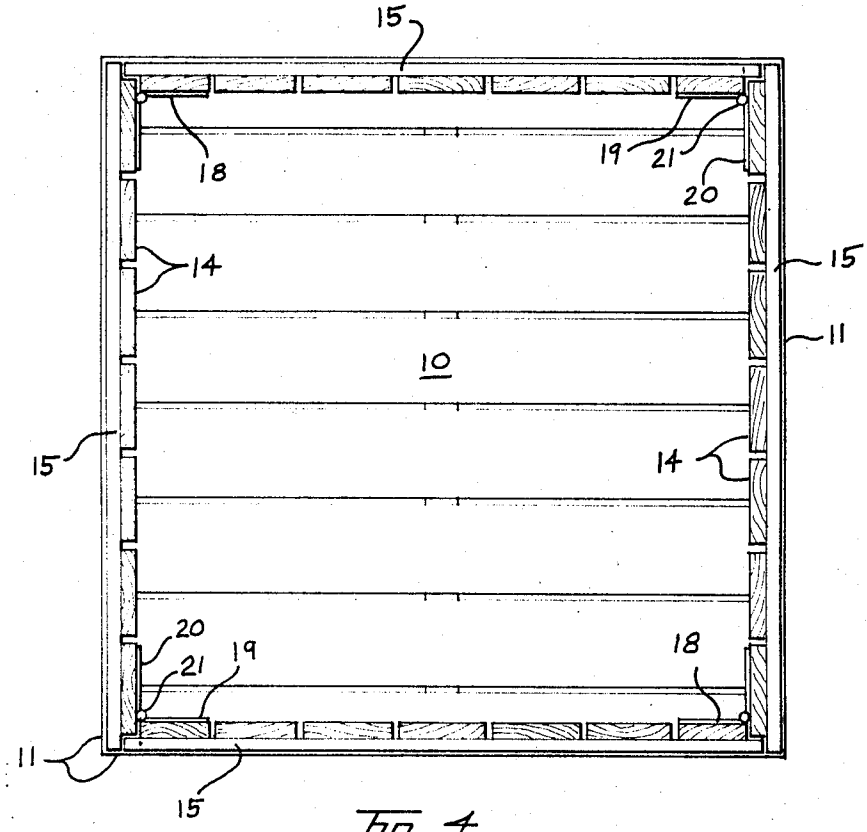


Fig 4

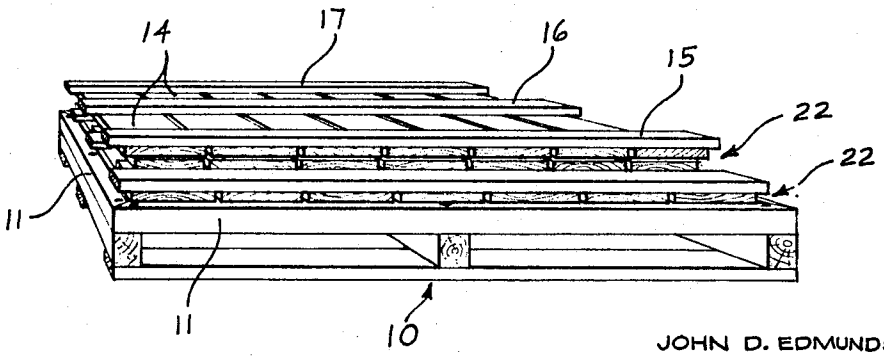


Fig 5

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COLLAPSIBLE CONTAINER

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U.S. Cl. 217—48 3 Claims

ABSTRACT OF THE DISCLOSURE

In abstract, a preferred embodiment of the present invention is a collapsible produce shipping container composed of a fork lift type pallet having a channel member about its outer edge to engage a tongue formed along the lower part of the sides to interlock the parts together.

This invention relates to receptacles and more particularly to palletized, readily collapsible transporting containers.

In the past, various types of containers of a fixed configuration have been used in the transportation of produce from the fields to the packing houses. In many instances, it is found more economical to fill these containers in the fields, load them on tractor-trailer trucks and transport them several hundred miles to a processing location in close proximity to the retail market. The disadvantage of this, however, has been that the truck could not carry any more containers back to its original loading location than it had brought to processing location since the containers were not foldable or collapsible. As an example of this, sixty fixed configuration containers holding a crop such as cucumbers may be transported by tractor-trailer from the farm to a city some 400 miles way. On return the truck, although weight-light, still carrys only sixty containers and at the present transport rate based on weight, could charge only $1.00 per crate or a total of $60.00. On the other hand if the crates could be collapsed in such a manner that they do not take up any more floor square footage disassembled than assembled, then up to 500 containers could be loaded for the return trip giving the transporter a fee of $500.00 compared to $60.00. This also would greatly reduce the out-of-season storage problems presently encountered.

The reason that truck farm type operations have not gone to collapsible containers in the past is that although various attempts have been made, no sturdy, readily collapsible container without small parts or complicated locking mechanisms has been developed. All of the prior art devices have included numerous small parts which may be easily lost and would not be readily replaceable on the job. These containers also are time consuming in collapsing and setting up and, even in the collapsed state, extend over a floor square footage area larger than the assembled container which prevents convenient stacking. The prior art devices also do not readily collapse into parts of such a size that one man may easily move without assistance.

Due to the present high labor cost and the fact that three hardy men are required to move an uncollapsible container, the prior art units are becoming more costly to use each year. They are also more expensive to maintain since they are usually stored outside during the off season due to their bulk and are thus subject to deterioration from the elements.

After much research and study into the above mentioned problems, applicant has developed a produce transporting container used in conjunction with a fork lift type pallet which may be readily loaded and unloaded from a transporting vehicle. In combination with this basic pallet, applicant has produced a container which is

equally as strong if not stronger than the fixed, uncollapsible containers presently in common use. Applicant's container is inexpensive to manufacture and maintain, has no small irreplaceable parts to get lost or mislaid and is adapted to be readily collapsible and assemblable by one person without assistance or the exertion of excessive energy.

It is, therefore, an object of the present invention to provide a quickly assemblage and disassemblable produce container capable of being stored in a flat disassemblable condition in an area covering no greater square footage than that covered while in the assembled position.

Another object of the present invention is to provide a palletized produce container having a channel member about its lower periphery whereby the outward pressure of the produce contained within the container strengthens the side wall to pallet bottom relationship.

A further object of the present invention is to provide a produce container which is readily assemblable and disassemblable and which uses any convenient elongated object such as a bolt, nail or the like to hold the container in assembled position.

Another object of the present invention is to provide a transporting and shipping container wherein the sides are disassemblable in at least two parts and are adapted to readily stack on the base portion thereof.

Another object of the present invention is to provide a collapsible container having at least two separate side portions which interlock in assembled position to form a rigid container for transporting and shipping of bulk objects.

Other objects and advantages of the present invention will become apparent and obvious from a study of the following description and the accompanying drawings which are merely illustrative of the present invention.

In the drawings:

FIG. 1 is a perspective of the partially assembled transporting container of the present invention;

FIG. 2 is a section taken through lines 2—2 of FIG. 1;

FIG. 3 is an enlarged view of one means of releasably securing the disassemblable side portions;

FIG. 4 is a top plan view of the assembled container; and

FIG. 5 is a perspective of the container in collapsed condition.

With further reference to the drawings, FIG. 1 discloses a pallet **10** of the type adapted to be used in conjunction with a fork lift type transporting and lift device. About the upper periphery of the pallet **10** is a channel member **11** which is fixedly secured thereto by means such as wood screws **12** which pass through the lower edge of said channel. Openings such as those disclosed at **13** are provided in the upper portion of channel member **11** in vertical alignment with each of the fastening means **12**. Two sets of identically shaped side assemblies **22** are provided which are composed of a series of vertically disposed members **14** which are fixedly secured to upper horizontal brace member **15**, central horizontal brace member **16** and horizontal tongue member **17**. Foldably joining the two side portions **23** of each of the two foldable assemblies **22** are hinge means **18**.

Spaced along the vertical edges of the foldable side portions where they join are disassembled hinge means fixedly secured in such a position that they will mate when both of said foldable portions are placed in assembled position on the pallet base **10**. These mating means are particularly disclosed in FIG. 3 wherein the male portion **19** and the female portion **20** are aligned with removable pin means **21** inserted therein.

To give added strength to the container, the hinged

corners as well as the disassemblable corners are offset in stepped fashion particularly as disclosed in FIGS. 3 and 4.

In actual use of the transportation container of the present invention, pallet **10** is placed on any suitable, relatively level area with the channel member **11** facing upward. The first foldable side assembly **22** is placed on the pallet **10** in such a manner that horizontally disposed tongue members **17** of each of the two side portions **23** project into the adjacent channel member **11** in a tongue and groove fashion thereby interlocking the side assembly **22** to the pallet **10**.

One of the side portions **23** of a second identically constructed foldable assembly is so placed on pallet **10** that its tongue **17** interconnectingly engages channel member **11**. The male portion of the securing means on one of the side portions is in alignment with the female portion of the securing means of the adjacent side portion. Pin members **21** are inserted therethrough to rigidly secure the two side assemblies together. The other side portions of the assembly being attached is swung or pivoted about its hinges until it is juxtaposed to channel member **11** thereby interlocking such member with tongue **17**. In this final assembly step, the all ready implaced unconnected side portion will have to be warped outwardly enough to allow the outer edge of the upper brace member and the central brace member of the being connected side portion to move into position. Once these last mentioned parts are in assembled relation to each other, the male and female portions may be pinned together as hereinabove described in connection with the first securing operation.

The now completely assembled transporting container may be loaded with truck farm type produce or other products. The more such produce or products that are placed within the container the greater the outwardly exerted pressure is. As this pressure increases, the stronger the container becomes due to the increase in the retentive pressures beween the interlocking channel member **11** and tongue members **17**, particularly as indicated by the arrow **24** in FIG. 2.

It is obvious that the present invention has the advantage of providing an extremely strong, sturdy transporting container which is readily collapsible and assemblable by one man. The present invention further has the advantage of disassembling into small enough portions that one man may easily handle them to stack, unstack and shift without assistance. Even including the above set forth advantages, applicant's container obviously is less expensive to manufacture and maintain than any collapsible transportation container heretofore known.

The terms "upper," "lower," "bottom," "top" and so forth have been used herein merely for convenience in the foregoing specification and in the appended claims to describe the transportation container and its parts as oriented in the drawings. It is to be understood, however, that these terms are in no way limiting to the invention since the container may obviously be disposed in many different positions when in use.

The present invention may, of course, be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative not restrictive, and all changes coming within the meaning and equivalency range are intended to be embraced herein.

What is claimed is:

1. In a collapsible container using a generally square, fork lift type pallet as a base, the improvement comprising: an inwardly opening channel member fixedly secured along the outer edges of the upper surface of said pallet; a pair of generally square, hingedly connected side portions removably disposed perpendicularly to said pallet interiorly of and juxtaposed to said channel; outwardly projecting tongue means fixedly secured along the lower portion of each of said sides and projecting into the opening in said channel member; a second pair of side portions of substantially identical configuration to said first set of side portions removably mounted on said generally square pallet inwardly of and juxtaposed to said channel member; and strap type hinge means with removable pivot pin means secured to the interior of said side portions to releasably secure the same together at their adjacent corner points whereby a relatively rigid, strong collapsible container is provided which increases in rigidity proportional to the outward pressure of contents placed therein.

2. The container of claim **1** wherein the points of contact between the two sets of side portions adjacent the releasable strap hinge means is of a stair-step shaped shoulder configuration whereby said side portions may be more rigidly releasably secured together.

3. The container of claim **1** wherein the overall dimensions of each individual, generally square, side portion is less than the overall dimensions of the pallet whereby when said sides are removed from said pallet they may be stacked thereon without requiring additional horizontal space for their storage.

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