Feb. 21, 1956 C. C. AVERILL 2,735,569

COLLAPSIBLE WALLED STACKING PALLET AND STACKING CONTAINER

Filed Aug. 16, 1952 3 Sheets-Sheet 1

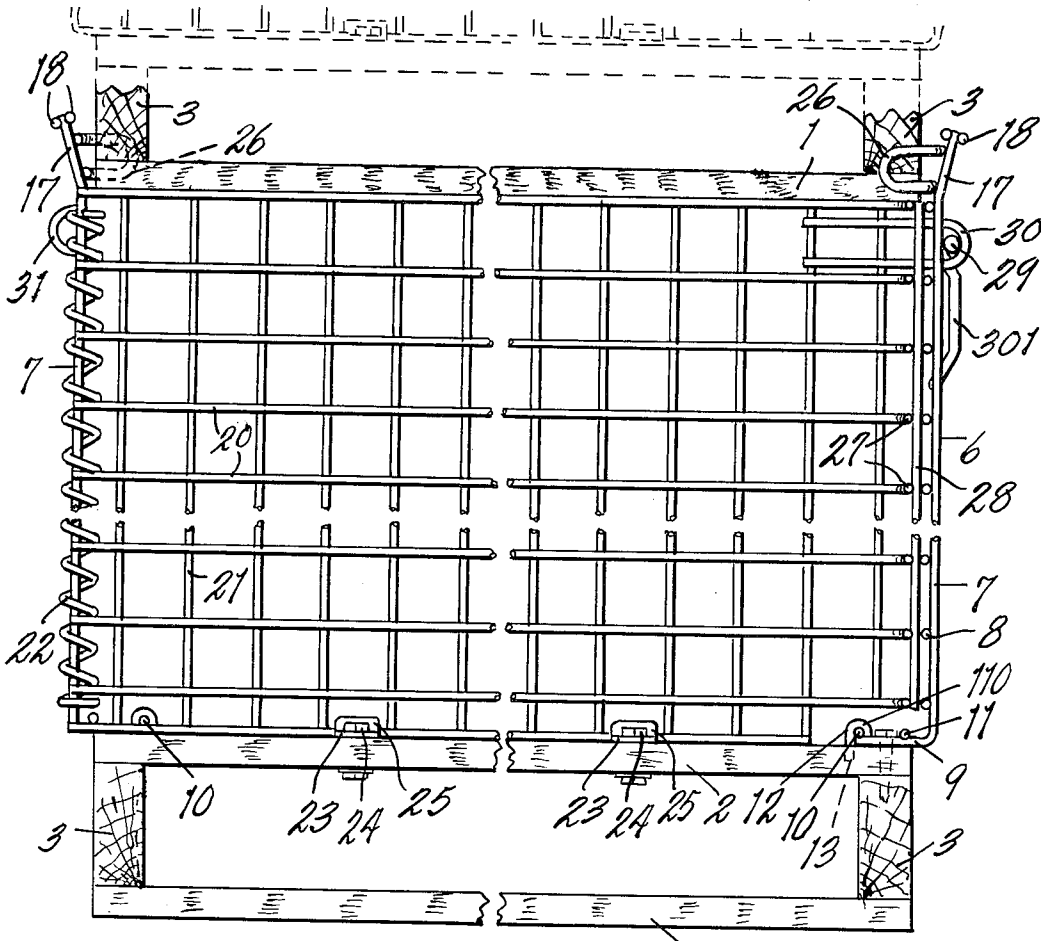

Fig. 1.

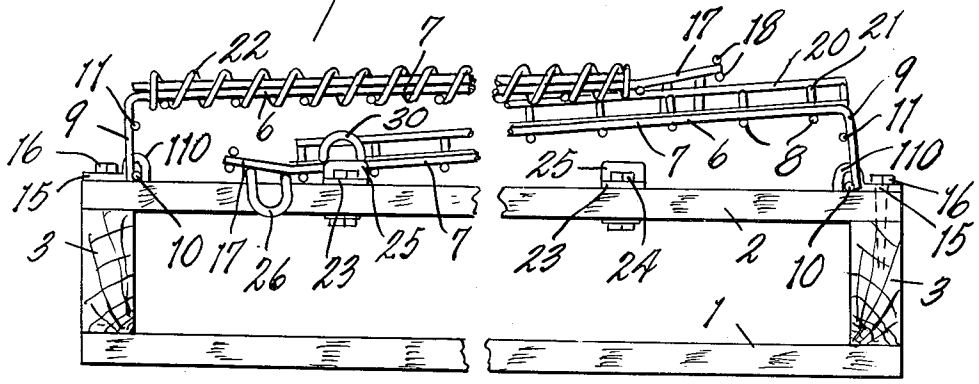

Fig. 2.

INVENTOR.
Charles C. Averill
BY
Attorney.

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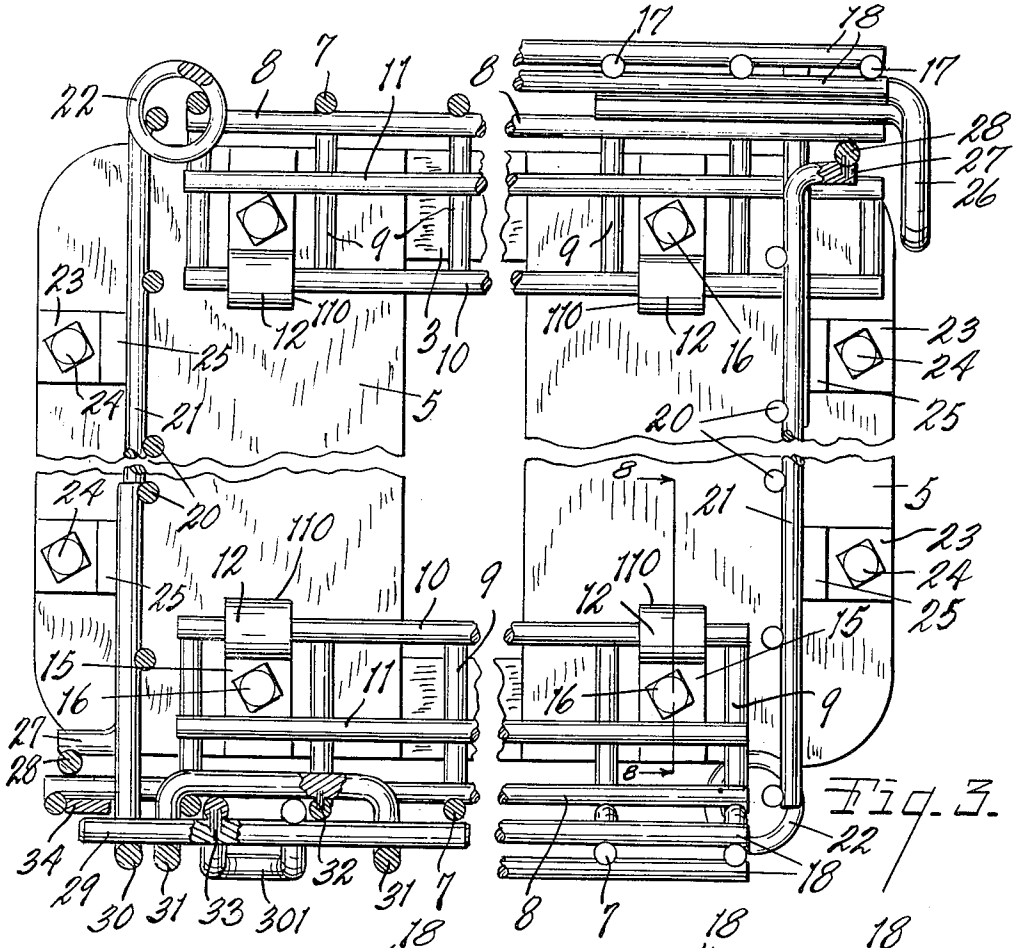

Fig. 3.

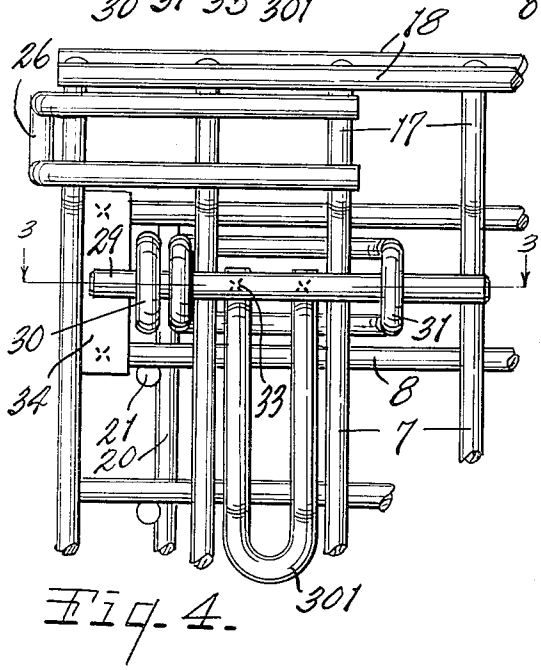

Fig. 4.

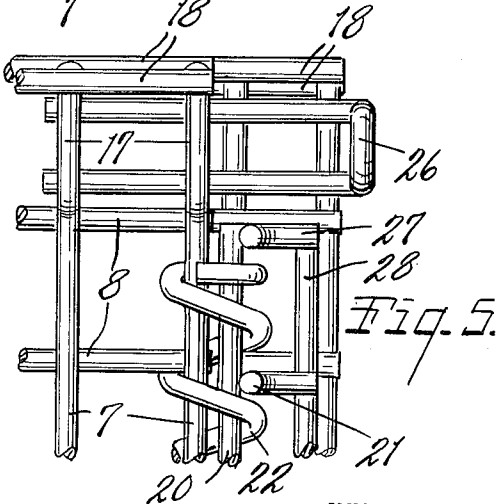

Fig. 5.

INVENTOR.
Charles C. Averill
BY Otto A. Earl
Attorney.

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COLLAPSIBLE WALLED STACKING PALLET AND STACKING CONTAINER

Filed Aug. 16, 1952 3 Sheets-Sheet 3

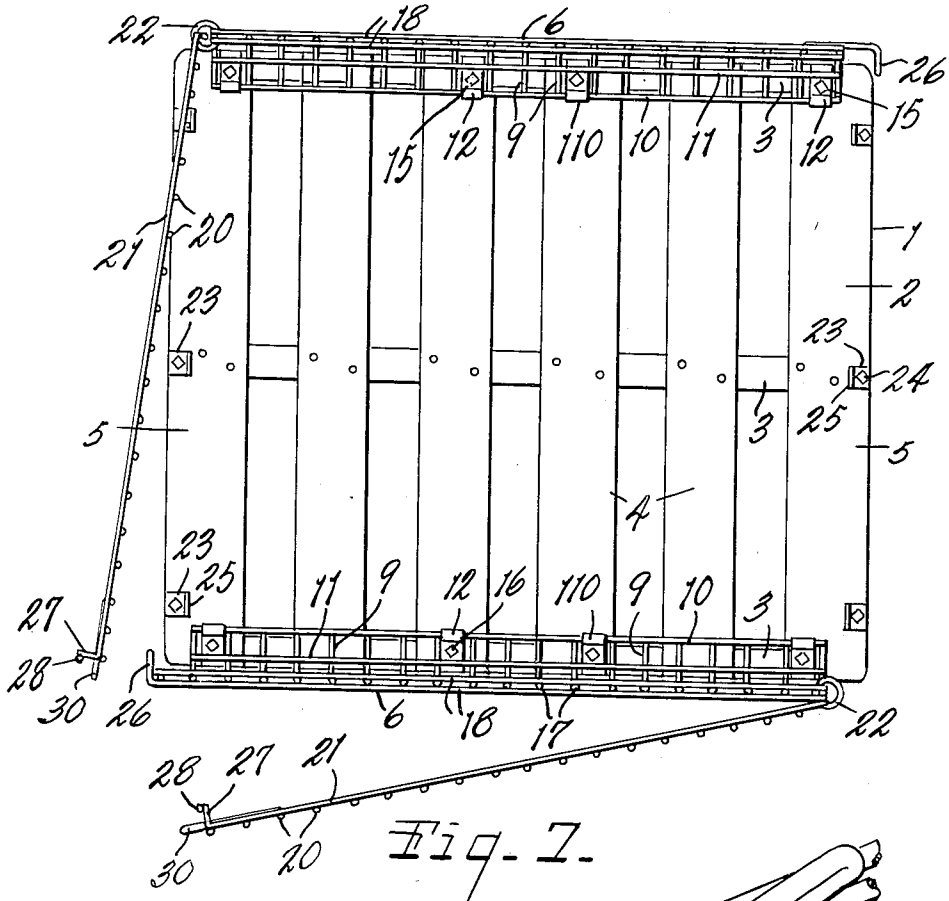

Fig. 7.

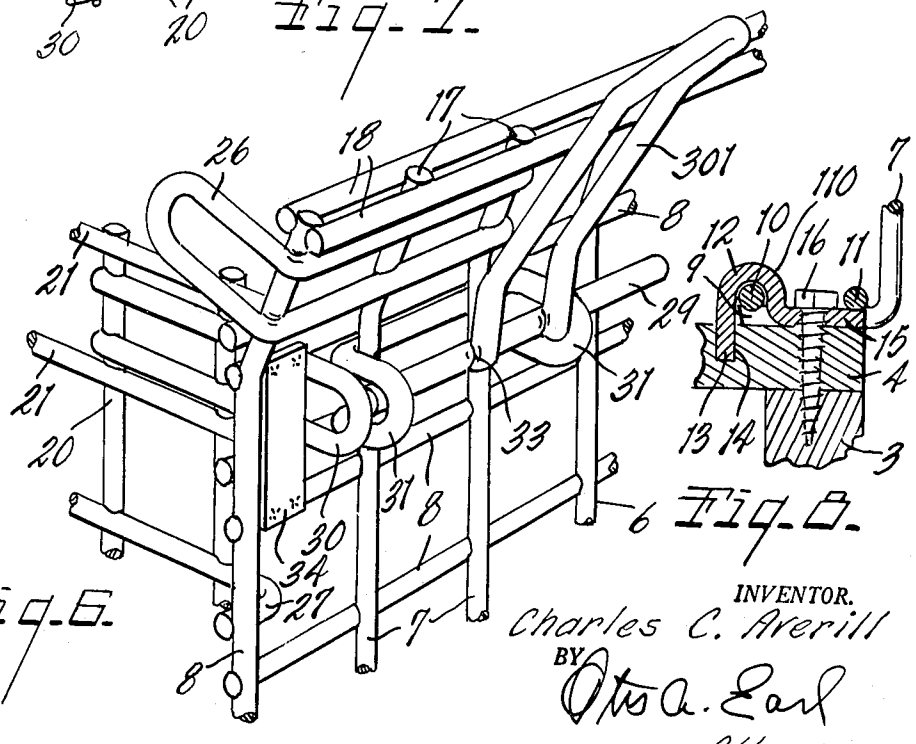

Fig. 8.

Fig. 6.

INVENTOR.
Charles C. Averill
BY
Otis A. Earl
Attorney.

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2,735,569

COLLAPSIBLE WALLED STACKING PALLET AND STACKING CONTAINER

Charles C. Averill, Albion, Mich., assignor to Union Steel Products Company, Albion, Mich.

Application August 16, 1952, Serial No. 304,675

14 Claims. (Cl. 220—6)

This invention relates to improvements in a collapsible walled stacking pallet and stacking container.

The main objects of this invention are:

First, to provide a collapsible walled stacking materials handling pallet comprising a wood pallet having metal walls collapsibly mounted thereon.

Second, to provide a collapsible metal wall structure adatped to be mounted upon a pallet having a base and a deck of the same dimensions, the pallet being without stacking legs.

Third, to provide a collapsible walled stacking container structure which is well adapted to carry relatively heavy loads and one in which the stacking with the walls erected can be easily accomplished and also one in which the superimposed pallets are very effectively supported against shifting.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary end elevational view of a structure embodying my invention with the walls in erected position and with a superimposed pallet mounted thereon.

Fig. 2 is a fragmentary end elevation with the walls in collapsed position.

Fig. 3 is an enlarged fragmentary plan view partially in horizontal section on a line corresponding to line 3—3 of Fig. 4.

Fig. 4 is a fragmentary side elevational view showing details of the means for locking the swinging end walls to the side walls.

Fig. 5 is a fragmentary side elevational view showing further details of the structure.

Fig. 6 is a fragmentary perspective view of a corner of the container walls with the locking bolt in retracted position.

Fig. 7 is a fragmentary plan view illustrating the swinging relation of the end walls to the side walls, the side walls being shown in erected position.

Fig. 8 is a fragmentary sectional view on a line corresponding to line 8—8 of Fig. 3 showing details of the mounting of the side walls upon the deck or bottom member.

In the accompanying drawing I illustrate my invention as embodied in a wood pallet comprising a base 1, deck 2 and deck supports 3 carried by the base. The deck is made up of a plurality of board-like members 4 and 5, the members 5 being the end members of the deck. It should be understood that in the specification and claims I use the terms "end" and "side" for convenience in description and as the structure of my invention may be and is frequently embodied in structures which are square as distinguished from being elongated in one direction.

Wood pallets of the type illustrated without walls are in quite extensive use. One of the main objects of my invention is to provide such pallets with container walls, the wall structure of my invention being well adapted to be mounted on pallets of this type now in the possession of users as distinguished from the manufacture of the complete structure although, of course, that may be done,

and the invention is well adapted for embodiment in stacking containers as material handling pallets.

The container side walls designated generally by the numeral 6 comprise a plurality of spaced vertical slats 7 and a plurality of spaced horizontal slats 8 disposed in crossing relation and fixedly secured at their crossing points, desirably by welding. The lower ends of the vertical slats 7 are bent inwardly providing base arms 9 which are connected by the horizontal bars 10 and 11, these bars being fixedly secured to the arms. The bar 10 constitutes pintles which are engaged by the hinge members 110, the hinge members having knuckles 12 at one end terminating in tongues 13 engaged in openings 14 in the deck, the attaching portions 15 of the hinge members being secured to the deck by the screws 16. These hinge members are positioned so that when the side walls are erected the arms 9 rest upon the deck and project beyond the side edges thereof to support the side walls in outwardly spaced relation to the edges of the deck as is shown in the drawing, see particularly the right of Fig. 1 and Fig. 3. The purpose of thus positioning the side walls will be clear as the description proceeds.

The upper ends of the vertical slats 7 are inclined outwardly or have outwardly inclined portions 17 which are connected at their top ends by the bars 18 arranged on opposite sides thereof. This outwardly diverging relation of the upper portions of the side walls facilitates the stacking of a superimposed pallet as is illustrated in Fig. 1. The end walls comprise a plurality of vertical slats 20 and horizontal slats 21 which are fixedly secured to each other at their crossing points. The slats are desirably formed of heavy wire or light rod stock.

The end walls are swingably connected to diagonally opposite ends of the side walls by the helically coiled hinge members 22 which are spiralled around adjacent upright slats of the end walls and the side walls.

The side walls are mounted on the deck in longitudinally or endwise offset relation to each other and with their ends, to which the end walls are swingably connected, spaced inwardly from the end edges of the deck so that when erected the end walls rest upon the deck and in inwardly offset relation to the ends of the deck so as to constitute supports for the superimposed pallet or container arranged thereon. The deck is provided with angled abutments 23 which are secured thereto by the screws 24 with the arms 25 thereof projecting upwardly at the outer sides of the end walls and sustaining the outward thrust of the load on the end walls as well as preventing outward bulging of the end walls under the load of a superimposed pallet. The side walls are provided with loop-like retaining members or stops 26 preventing endwise shifting of the superimposed container. These stops 26 are located on the diagonally opposite ends of the side walls.

The horizontal slats of the end walls have outturned end portions 27 connected by the vertical slats 28 which abut the inner side of the end walls when the parts are in erected position to support the inner thrust thereon which may result from handling and also to support the same in proper position to receive the locking bolts 29 which in locked position, as shown in Figs. 3 and 4, engage the loop-like keepers 30 welded to certain of the vertical slats of the end members to project beyond the end walls and through openings in the side walls.

The bolts 29 are supported by the looped members 31 welded as indicated at 32 on the inner sides of uprights of the side walls with the loops projecting outwardly therefrom. The bolt is provided with a handle 301 formed of wire looped upon itself, the arms welded on the inner side of and welded to the bolt 33. One of the vertical slats constitutes a stop holding the bolt in locked position, as shown in Figs. 3 and 4, when the handle is in

locked position; however, the bolt may be withdrawn by swinging it to the position shown in Fig. 6 when the handle will clear the slats constituting stops allowing the bolt to be withdrawn. A plate 34 is mounted on the pair of horizontal slats to support the projected end of the bolt, that is, the end that projects through the keeper 30, thereby minimizing the likelihood of the load bending the parts of the lock. With the parts thus arranged the end walls may be collapsed outwardly upon the side walls and the side and end walls thus collapsed collapse inwardly in overlying relation upon the pallet as is shown in Fig. 2.

It will be understood that the deck 2 of the pallet constitutes the bottom of the container and my invention contemplates that the walls may be mounted upon a bottom member other than one constituting the deck of a pallet. My invention is, however, particularly well adapted for embodiment in wood type of pallets and permits the effective stacking thereof although they are not provided with stacking legs and my present invention eliminates the necessity for or the use of such stacking legs.

In erecting the walls the end walls are positioned at the inner sides of the abutment members 23 before the swinging ends are locked to the adjacent side walls. This may be readily accomplished by slightly tilting the side walls when the end walls are being swung to their erected position. The side walls may be sprung sufficiently to enable the ready engagement or positioning of the keepers on the end walls therewith.

I have illustrated and described my invention in a highly practical embodiment thereof. I have not attempted to illustrate other embodiments or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described my invention, what I claim as new and desire to obtain by Letters Patent is:

1. A collapsible walled stacking pallet comprising a base and a wood deck, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by a plurality of longitudinally extending bars, the inner of which is positioned at the inner ends of the arms and constitutes hinge pintles, the upper ends of the vertical slats being outwardly inclined and connected by longitudinal bars fixedly connected thereto, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being swingably connected to the adjacent vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, hinge members fixedly secured to the deck in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the deck, said hinge members being spaced from the side edges of the deck so that said inturned arms supportingly rest upon the deck when the side walls are in erected position with the arms projecting outwardly beyond the edges of the deck supporting the side walls in outwardly spaced relation to the side edges of the deck, said side walls being mounted on said deck in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the deck so that the end walls rest upon the deck when erected, said side walls having inwardly projecting end stops for a superimposed pallet at their diagonally opposite ends, and end wall outward thrust abutments disposed on said deck to coact with said end walls when they are erected.

2. A collapsible walled stacking pallet comprising a base and a wood deck, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by a plurality of longitudinally extending bars, the inner of which is positioned at the inner ends of the arms and constitutes hinge pintles, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being swingably connected to the adjacent vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, hinge members fixedly secured to the deck in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the deck, said hinge members being spaced from the side edges of the deck so that said inturned arms supportingly rest upon the deck when the side walls are in erected position with the arms projecting outwardly beyond the edges of the deck supporting the side walls in outwardly spaced relation to the side edges of the deck, said side walls being mounted on said deck in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the deck so that the end walls rest upon the deck when erected, and end wall outward thrust abutments disposed on said deck to coact with said end walls when they are erected.

3. A collapsible walled stacking pallet comprising a base and a wood deck, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by a plurality of longitudinally extending bars, the inner of which is positioned at the inner ends of the arms and constitutes hinge pintles, the upper ends of the vertical slats being outwardly inclined and connected by longitudinal bars fixedly connected thereto, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being swingably connected to the adjacent vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, and hinge members fixedly secured to the deck in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the deck, said hinge members being spaced from the side edges of the deck so that said inturned arms supportingly rest upon the deck when the side walls are in erected position with the arms projecting outwardly beyond the edges of the deck supporting the side walls in outwardly spaced relation to the side edges of the deck, said side walls having inwardly projecting end stops for a superimposed pallet at their diagonally opposite ends.

4. A collapsible walled stacking pallet comprising a base and a wood deck, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by a plurality of longitudinally extending bars, the inner of which is positioned at the inner ends of the arms and constitutes hinge pintles, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being swingably connected to the adjacent vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, and hinge members fixedly secured to the deck in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the deck, said hinge members being

spaced from the side edges of the deck so that said inturned arms supportingly rest upon the deck when the side walls are in erected position with the arms projecting outwardly beyond the edges of the deck supporting the side walls in outwardly spaced relation to the side edges of the deck.

5. A collapsible walled stacking pallet comprising a base and a wood deck, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by a plurality of longitudinally extending bars, the inner of which is positioned at the inner ends of the arms and constitutes hinge pintles, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being swingably connected to the adjacent vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, and hinge members fixedly secured to the deck in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the deck, said hinge members being spaced from the side edges of the deck so that said inturned arms supportingly rest upon the deck when the side walls are in erected position with the arms projecting outwardly beyond the edges of the deck supporting the side walls in outwardly spaced relation to the side edges of the deck, said end walls having outwardly offset portions at their swinging ends supportingly engaging the adjacent ends of the side wall when the walls are in erected position.

6. A collapsible stacking container comprising a bottom member, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by longitudinal bars constituting hinge pintles, the upper ends of the side walls being outwardly inclined, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being connected to the adjacent vertical edge of the other side wall by means permitting the collapsing of the end walls upon the outer sides of the side walls, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, hinge members connected to the bottom in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the bottom member, said hinge members being spaced from the side edges of the bottom member so that said inturned arms supportingly rest upon the bottom member when the side walls are in erected position with the arms projecting outwardly beyond the side edges of the bottom member and supporting the side walls in outwardly spaced relation to the side edges of the bottom member, said side walls being mounted on said bottom member in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when erected, said side walls having inwardly projecting end stops for a superimposed container at their diagonally opposite ends, and end wall outward thrust abutments disposed on said bottom member to coact with said end walls when they are erected.

7. A collapsible stacking container comprising a bottom member, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by longitudinal bars constituting hinge pintles, end

walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being connected to the adjacent vertical edge of the other side wall by means permitting the collapsing of the end walls upon the outer sides of the side walls, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, hinge members connected to the bottom in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the bottom member, said hinge members being spaced from the side edges of the bottom member so that said inturned arms supportingly rest upon the bottom member when the side walls are in erected position, said side walls being mounted on said bottom member in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when erected, and end wall outward thrust abutments disposed on said bottom member to coact with said end walls when they are erected.

8. A collapsible stacking container comprising a bottom member, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having inwardly projecting integral arms at their lower ends connected by longitudinal bars constituting hinge pintles, the upper ends of the side walls being outwardly inclined, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being connected to the adjacent vertical edge of the other side wall by means permitting the collapsing of the end walls upon the outer sides of the side walls, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, hinge members connected to the bottom in engagement with said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the bottom member, said hinge members being spaced from the side edges of the bottom member so that said inturned arms supportingly rest upon the bottom member when the side walls are in erected position with the arms projecting outwardly beyond the side edges of the bottom member and supporting the side walls in outwardly spaced relation to the side edges of the bottom member, said side walls having inwardly projecting end stops for a superimposed container at their diagonally opposite ends, and end wall outward thrust abutments disposed on said bottom member to coact with said end walls when they are erected.

9. A collapsible stacking container comprising a bottom, side walls comprising fixedly connected vertical and horizontal slats, the vertical slats having spaced inwardly projecting integral arms at their lower ends connected adjacent to their inner ends by longitudinal bars constituting hinge pintles, end walls comprising fixedly connected vertical and horizontal slats, one vertical edge of one end wall being swingably connected to the adjacent vertical edge of one side wall and the opposite vertical edge of the other end wall being connected to the adjacent vertical edge of the other side wall by means permitting the collapsing of the end walls upon the outer sides of the side walls, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, and spaced hinge members connected to the bottom in engagement with each of said hinge pintles permitting the inward collapsing of the side walls with the end walls collapsed thereon into superimposed relation above the bottom member, said hinge members being spaced from the side edges of the bottom member so that said inturned arms supportingly rest upon the bottom member when the side walls are in erected posi-

tion, the hinged pintle of each side wall being disposed in crossing relation and fixedly connected to the spaced inwardly projecting arms of the vertical slats of said side wall, the spaced hinged members of said side wall having hinging engagement with the portions of said hinge pintle disposed between said spaced inwardly projecting arms so related and connected to said hinge pintle, said hinge members of each side wall being fixedly connected to said bottom adjacent to their hinged engagements with the hinge pintle of said side wall.

10. A collapsible stacking container comprising a bottom member, side walls having inwardly projecting bottom extensions hingedly connected at their inner edges to the bottom member in spaced relation to its side edges and resting upon the bottom member when in erected position, said extensions being of such width that the walls are supported in outwardly spaced relation relative to the side edges of the bottom member when the side walls are in erected position, end walls swingably connected at one vertical edge to the vertical edge of one side wall, the opposite vertical edge of the other end wall being swingably connected to the vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, said side walls being mounted on said bottom member in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when in erected position and constitute supports for a superimposed stacked container, the upper portions of the side walls being outwardly diverged to facilitate positioning of a stacked container between them upon the end walls, said side walls having inwardly projecting end stops for a superimposed container at diagonally opposite ends thereof, and abutment members disposed on said bottom member to sustain outward thrust on the end walls when they are in erected position.

11. A collapsible stacking container comprising a bottom member, side walls having inwardly projecting bottom extensions hingedly connected at their inner edges to the bottom member in spaced relation to its side edges and resting upon the bottom member when in erected position, said extensions being of such width that the walls are supported in outwardly spaced relation relative to the side edges of the bottom member when the side walls are in erected position, end walls one being swingably connected at one vertical edge to the vertical edge of one side wall, the opposite vertical edge of the other end wall being swingably connected to the vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, said side walls projecting above the end walls and being mounted on said bottom member with their bottom extensions extending outwardly beyond the side edges of said bottom member and with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when in erected position and constitute supports for a superimposed container stacked with its bottom member disposed on said end walls and between the portions of the side walls projecting above the end walls, and abutment members disposed on said bottom member to sustain outward thrust on the end walls when they are in erected position.

12. A collapsible stacking container comprising a bottom member, side walls having inwardly projecting bottom extensions hingedly connected at their inner edges to the bottom member in spaced relation to its side edges and resting upon the bottom member when in erected position, end walls one being swingably connected at one vertical edge to the vertical edge of one side wall, the opposite vertical edge of the other end wall being swingably connected to the vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, said side walls being mounted on said bottom member in longitudinally offset relation to each other with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when in erected position and constitute supports for a superimposed stacked container, the upper portions of the side walls being outwardly diverged to facilitate positioning of a stacked container between them upon the end walls, said side walls having inwardly projecting end stops for a superimposed container at diagonally opposite ends thereof, and abutment members disposed on said bottom member to sustain outward thrust on the end walls when they are in erected position.

13. A collapsible stacking container comprising a bottom member, side walls having inwardly projecting bottom extensions hingedly connected at their inner edges to the bottom member in spaced relaion to its side edges and resting upon the bottom member when in erected position, end walls swingably connected at one vertical edge to the vertical edge of one side wall, the opposite vertical edge of the other end wall being swingably connected to the vertical edge of the other side wall, and means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, said side walls projecting above the end walls and being mounted on said bottom member with their bottom extensions extending outwardly beyond the side edges of said bottom member and with their ends to which the end walls are swingably connected spaced inwardly from the end edges of the bottom member so that the end walls rest upon the bottom member when in erected position and constitute supports for a superimposed container stacked with its bottom member disposed on said end walls and between the portions of the side walls projecting above the end walls.

14. A collapsible stacking container comprising a bottom member, side walls having inwardly projecting bottom extensions hingedly connected at their inner edges to the bottom member in spaced relation to its side edges and resting upon the bottom member when in erected position, said extensions being of such width that the walls are supported in outwardly spaced relation relative to the side edges of the bottom member when the side walls are in erected position, end walls swingably connected at one vertical edge to the vertical edge of one side wall, the opposite vertical edge of the other end wall being swingably connected to the vertical edge of the other side wall, means for detachably connecting the swinging ends of the end members to the adjacent ends of the side walls when the walls are erected, said end walls resting upon the deck when in erected position and constituting supports for a superimposed stacked container, the upper portions of the side walls being outwardly diverged to facilitate positioning of a superimposed container between them upon the end walls, said side walls having inwardly projecting end stops for a superimposed container at diagonally opposite ends thereof, and abutment members disposed on said bottom member to sustain outward thrust on the end walls when they are in erected position.

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