Aug. 4, 1959 A. J. FARRAR 2,897,995

COLLAPSIBLE CONTAINER AND PALLET ASSEMBLY

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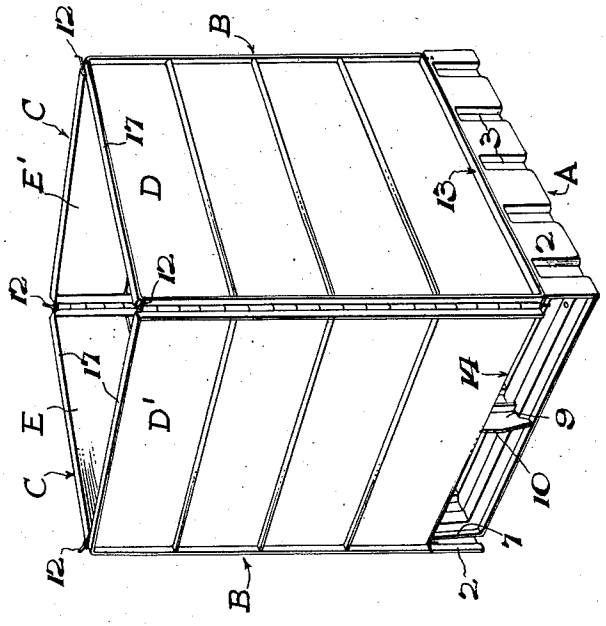

Fig. 2.

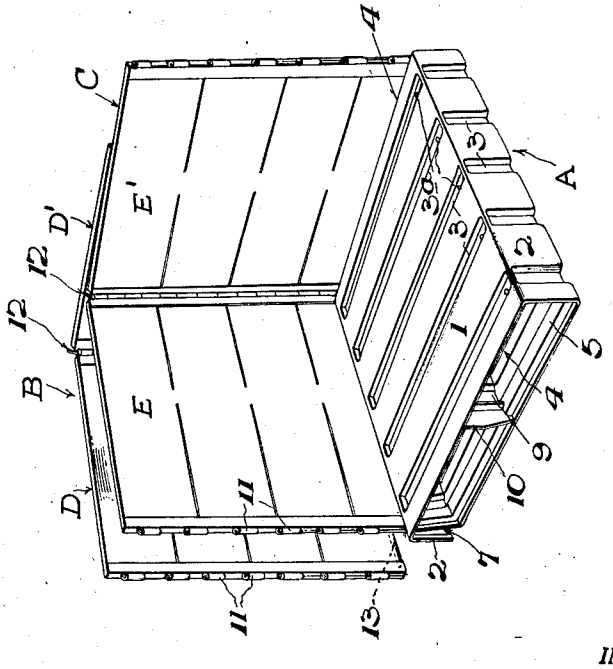

Fig. 1.

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Fig. 4.

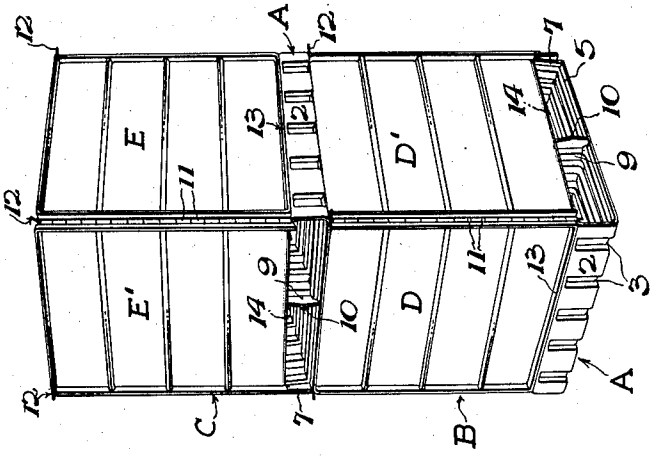
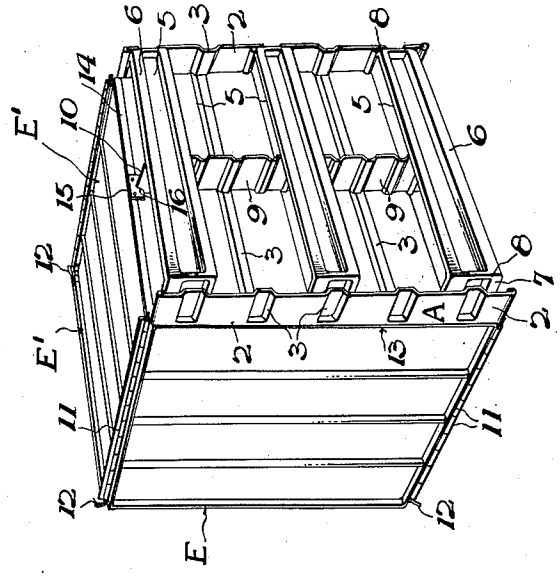


Fig. 3.



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COLLAPSIBLE CONTAINER AND PALLET ASSEMBLY

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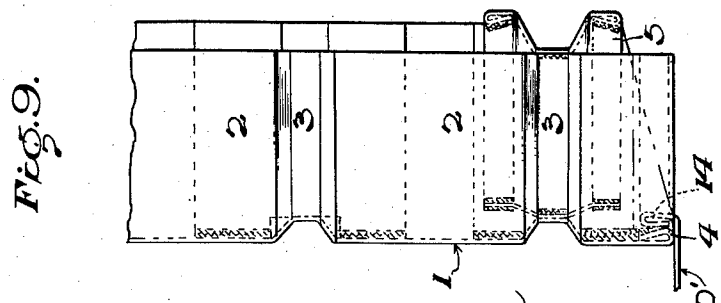

Fig. 9.

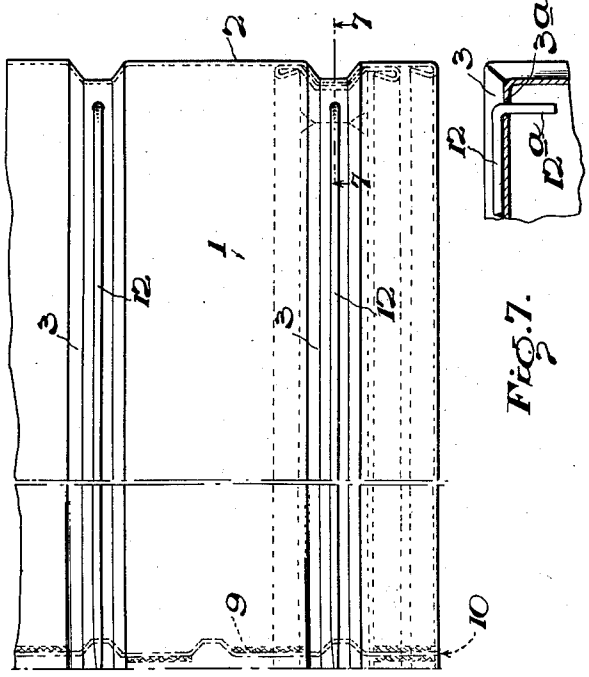

Fig. 6.

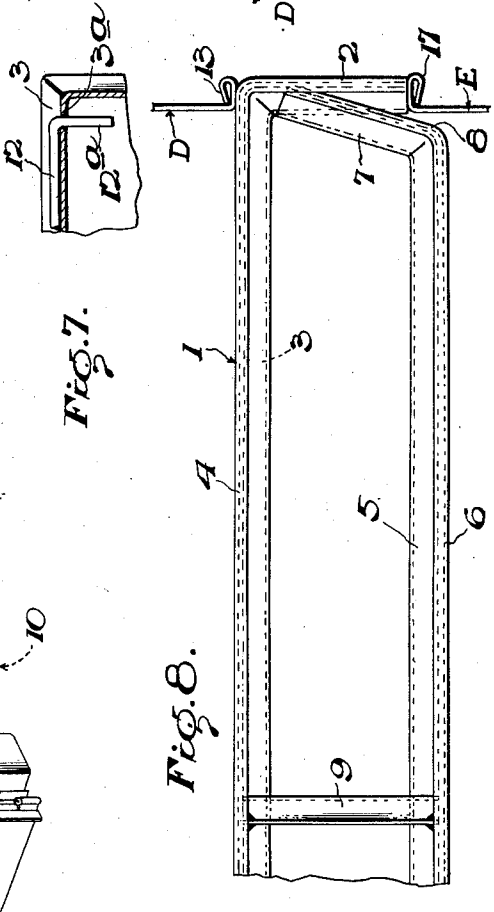

Fig. 7.

Fig. 8.

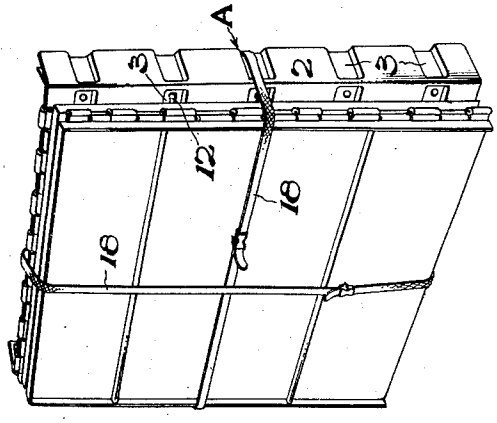

Fig. 5.

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COLLAPSIBLE CONTAINER AND PALLET ASSEMBLY

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Application March 25, 1954, Serial No. 418,637

1 Claim. (Cl. 220—6)

This invention relates to receptacle assemblies such as may be used as containers for transporting small parts in bulk about a manufacturing plant or as a shipping container.

One of the objects of the invention is to provide an erectable and collapsible container, including, a pallet as a base and side panels formed to be easily and quickly applied to the pallet in such a way that the panels may be readily set up in opposite connected pairs and then applied to the pallet to become interlocked therewith and held in locked position by the simple insertion of connecting pins in the otherwise free edge portions of the panels constituting the opposite pairs.

Another object of the invention is to provide a pallet base whose reinforcement in part cooperates with certain of the panels to anchor them in place while other parts of the reinforcement serve as skids whose ends are formed to cooperated with the sides of the pallet to provide clearance for stacking one assembly on another.

A further object of the invention is to provide a container whose parts may be flatly assembled when collapsing the container for shipment in knock-down condition.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a perspective view of the receptacle assembly with the connected panels of opposite pairs resting on the same level as the pallet, but behind the latter, preliminary to assembling the panels to the pallet.

Fig. 2 is a perspective view of the complete assembly ready for use.

Fig. 3 is a perspective view of the assembly shown in Fig. 2 looking toward the bottom of the pallet.

Fig. 4 is a perspective view illustrating the manner in which the assemblies may be stacked in vertical relationship.

Fig. 5 is a perspective view of a complete assembly collapsed for shipment or storage.

Fig. 6 is a partial plan view of the pallet.

Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary elevation of the pallet looking toward one of the exposed edges thereof and also partially illustrating the arrangement which permits of convenient stacking.

Fig. 9 is a partial elevation of the pallet taken at right angles to Fig. 8 and showing the downturned skirt portion.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

As will be observed from Figs. 1 and 2, the present invention includes as its primary components, a pallet designated generally as A and which cooperates with superimposed enclosure forming units designated generally as B and C, each unit respectively comprising a pair of hingedly connected panels D and D' and E and E'.

Referring first to Figs. 1 and 3, the pallet A includes a top 1 turned downwardly at opposite ends to provide the skirt portions 2. The top and skirt portions are preferably formed with depressed channels 3. It may also be noted that the sides of the top 1 disposed at right angles to the skirt portions 2 have exposed edge portions 4. Below the top 1 and the skirt portions 2 the pallet is provided with reinforcing elements 5 whose bottom edges 6 serve as skid surfaces and lie in a plane below the terminal edges of the skirts 2. The reinforcing elements 5 have their end portions inclined upwardly as indicated at 7 so that their upper edges lie within the skirt portion 2 while the bend or junction 8 between the parts 6 and 7 lies inwardly of the skirt portions 2 to provide clearance to permit stacking of the units as shown in Fig. 4.

The pallet is also provided with additional reinforcement 9 disposed at right angles to the reinforcing elements 5, and, as shown, this reinforcement may be conveniently made of corrugated metal. An anchoring edge portion 10 thereof is exposed at each side of the pallet adjacent the exposed side edges 4 to enable a bracket, later described and carried by certain of the panels to interlockingly engage with said edge 10.

As will be observed from Fig. 1 for example, each of the panels D—D' and E—E' are provided at opposite vertical edge portions with mating hinge knuckles or registering connector eyes 11. At this point it may be also noted that the related edge of panels D—D' and E—E' are initially connected by elongated hinge pins 12 to connect the panels in two wall forming sections initially to facilitate setting them up in relation to the pallet.

The panels D and E are provided at their lower edges with outturned flanges 13 which are intended to rest on the edge of the top 1 of the pallet adjacent the downturned skirt portion 2. One of these flanges 13 is shown in Fig. 2 at the bottom edge of panel D, and they are shown again in Fig. 4 so it will, of course, be understood that the panel E is similarly provided with an outturned flange.

The lower edge portions of the panels D' and E' are provided with inturned flanges 14 (Fig. 3) which are at a lower elevation than the flanges 13 thereby to engage beneath the related exposed edge 4 of the panel. The inturned flange 14 of panel D' (or E') is shown beneath the edge 4 of Fig. 9. Thus, it is apparent that when panels D and D' and E and E' are connected by the elongated hinge pins 12, they will form oppositely located pairs of panels which may be interlocked with the pallet A, because, when the opposite pairs of panels are placed in position, the inturned flanges 14 of panels D' and E' will engage beneath the exposed edges 4 of the pallet while the outturned flanges 13 at the bottom edges of the panels D and E will rest on the upper edge of the top 1 adjacent the downturned skirt portions. When the opposite pairs of panels are thus assembled, additional hinge or connector pins 12 are placed in their related knuckles or eyes to connect all four panels in rigid vertically erected position and against vertical displacement as shown in Figs. 2, 3 and 4.

To prevent lateral shifting of opposite pairs of panels in relation to the top of the pallet it will be seen from Fig. 3 that each inturned flange 14 is provided with a bracket 15 having a notch 16 to receive the vertical edge 10 of the corrugated reinforcement 9. Therefore, it will be understood that the erected enclosure will be locked against vertical displacement relative to the pallet A by reason of the inter-engagement of exposed edges 4 of the pallet with the inturned flanges 14, and will also be locked against lateral displacement by the notched brackets 15 and 16.

All of the panels preferably have their upper edges formed with out-turned reinforcing flanges **17** which do not interfere with the handling of the contents of the container and also enable firm stacking of one unit upon another.

The connecting pins **12**, as will be seen from Fig. 7 are provided with the angularly disposed handle portions **12***a* for facilitating manipulation and handling, and, as also shown in this figure the channels **3** are provided with openings **3***a* to receive the handle portions **12***a* when the entire assembly is collapsed for shipment or storage as shown in Fig. 5. That is to say, the connecting elements **12** may be placed in the channels, and the collapsed panels may be laid toward the top or face of the pallet and secured by suitable straps or ties **18** as shown in Fig. 5.

To facilitate an understanding of the invention, the following acts of assembly may be performed:

Assuming that the entire structure is collapsed as shown in Fig. 5, the straps **18** may be released to free the panels from the pallet and also give access to the connecting pins **12**.

The pallet A is then laid on the floor as shown in Fig. 1. Panels D and D′ as well as panels E and E′ may be flexibly secured together by their connecting pins **12**. The panel E for example may be positioned with its outturned bottom flange **13** on top of the pallet **1** while the inturned flange **14** of the panel E′ will engage beneath the exposed edge **4** at the far end of the pallet in Fig. 1.

The connected panel units D and D′ may then be similarly disposed on the pallet opposite the panels E and E′, with the inturned flange **14** of the panel D′ engaging the exposed edge of the pallet **4** and the outturned flange **13** resting on the top edge of the pallet adjacent a downturned skirt portion **2**. Connecting pins **12** may then be placed in the mating knuckles or eyes **11** of the otherwise free edges of the panels to connect both pairs of panels to the pallet to prevent relative vertical displacement, and of course, the brackets **15** of opposite panels D′ and E′ will have their notches **16** engage with the edge **10** of the reinforcement **9** to prevent lateral movement between the enclosure forming elements and the pallet.

Should it be desired to vertically stack one assembly upon another, it will be observed from Figs. 4 and 8 that this may be readily accomplished because of the clearance provided between the inclined ends of the reinforcement **5** and the inner face of the skirt **2** will receive the related upper flange **17** of a panel (Fig. 8). As will be seen from Fig. 4, in stacking the assemblies, the upper assembly is turned 90° from the lower assembly.

When it is desired to collapse an assembly for shipment or storage, it is simply necessary to withdraw the connecting pins **12** from the knuckle eyes of the panels and place them as shown in Fig. 5, with the connecting pins laid in the channels **3** with their handles **12***a* inserted in the eyes **3***a*.

From the foregoing it will now be seen that the construction described provides an erectable and collapsible container construction which may be manipulated with facility in assembling or in collapsing, and yet, when erected, will provide a rigid and practical container or bin for holding parts to be transported about a plant. Also the construction lends itself to use in the shipment of less than car load lots of materials in the respect that the container may be used for shipping material and upon reaching its destination may be emptied and readily collapsed to be sent back to the shipper, occupying only a minimum of space on the return trip.

I claim:

A container assembly, comprising, in combination, a pallet having a top provided with opposite downturned skirt portions and horizontal exposed edge portions disposed opposite each other between said skirt portions, wall means cooperating with said pallet top for forming a container space, said wall means including two wall forming sections, each section comprising a pair of panels hingedly connected together at adjacent vertical edges thereof, one of said panels of each section having an out-turned flange at its bottom edge resting on the upper marginal portion of the pallet top adjacent a downturned skirt portion, and the other of said panels of each section having an inturned flange at its bottom edge disposed at a lower elevation than said out-turned flange of the other panel for engagement beneath an exposed horizontal edge portion of the pallet, means for connecting the opposite corners of said sections, whereby, the panels of the wall forming sections are interlocked with the pallet against vertical movement in either direction relative to the top of said pallet, said pallet having a vertical reinforcement disposed intermediate said skirt portions and whose opposite vertical ends are disposed adjacent said inturned flanges, and a horizontal bracket rigidly supported on the lower face of each flange and having a notch therein for receiving a corresponding end of said vertical reinforcement, whereby opposite pairs of panels are restrained against lateral shifting in relation to the top of the pallet.

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