

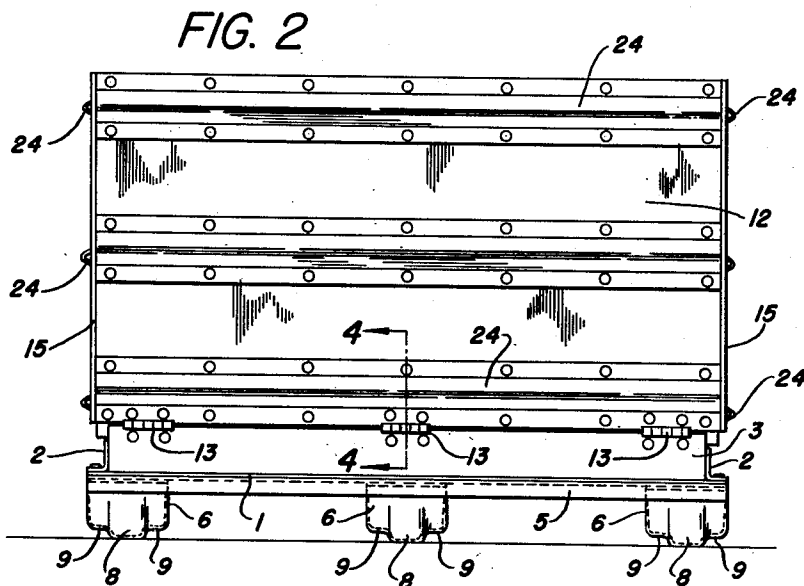
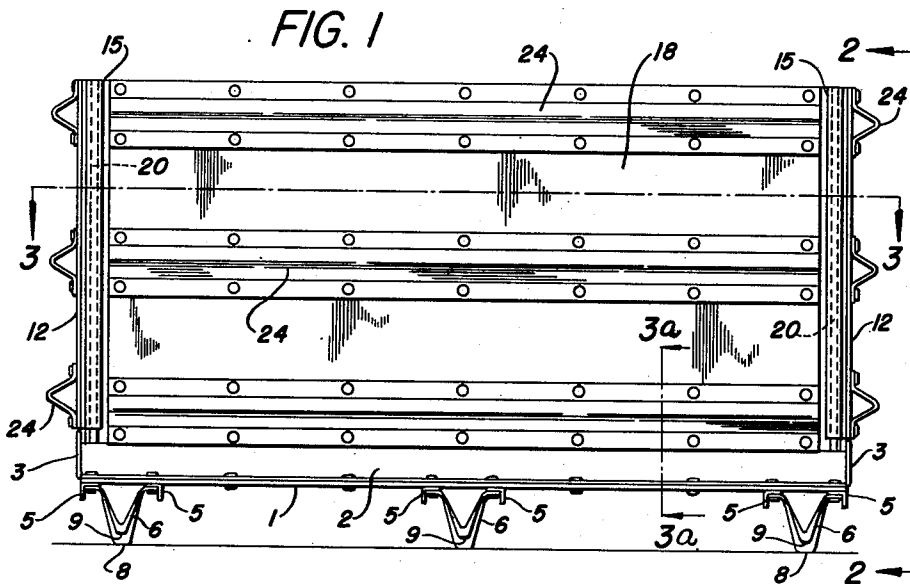
June 2, 1953

M. D. WALKLET
COLLAPSIBLE CONTAINER

2,640,620

Filed Nov. 4, 1950

4 Sheets-Sheet 1



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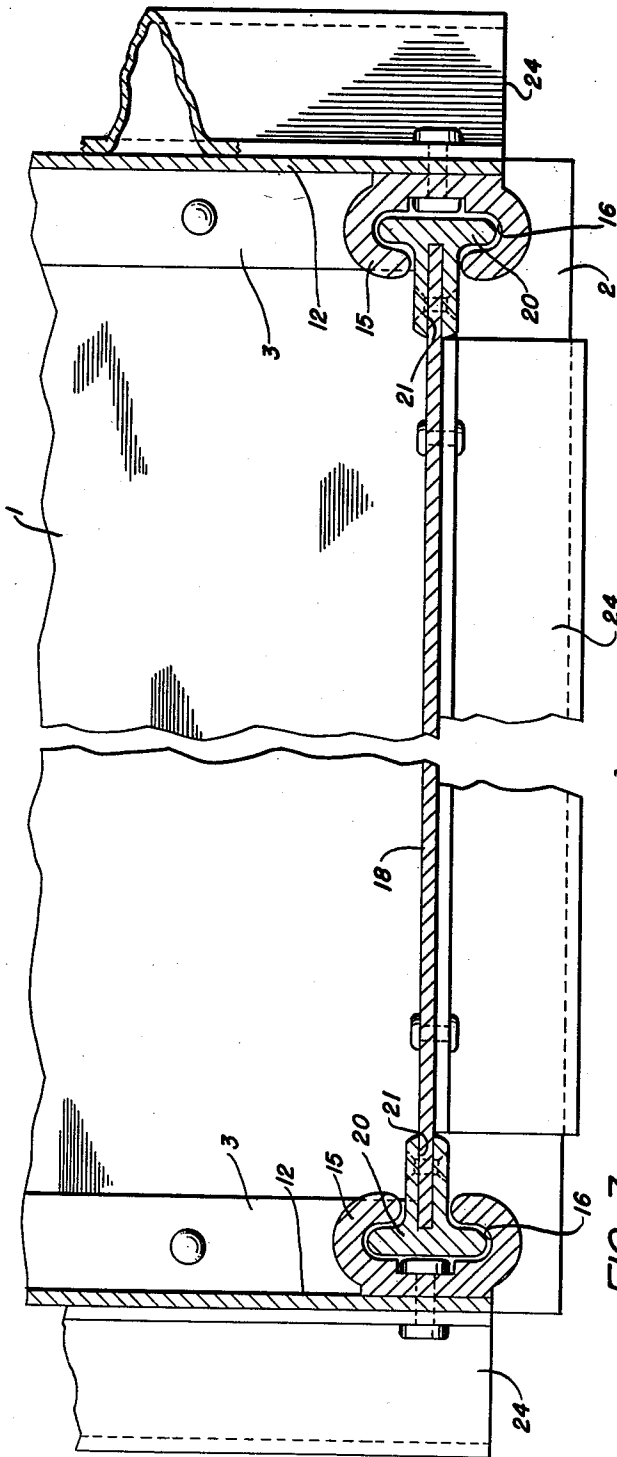


FIG. 3

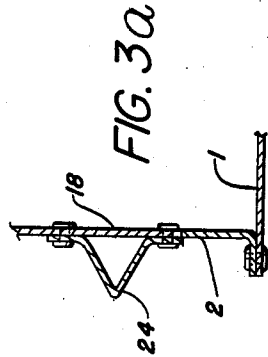


FIG. 3a

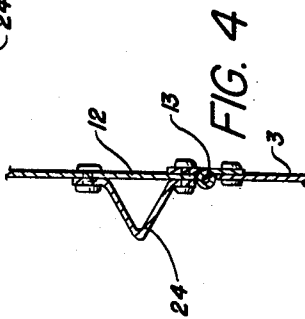


FIG. 4

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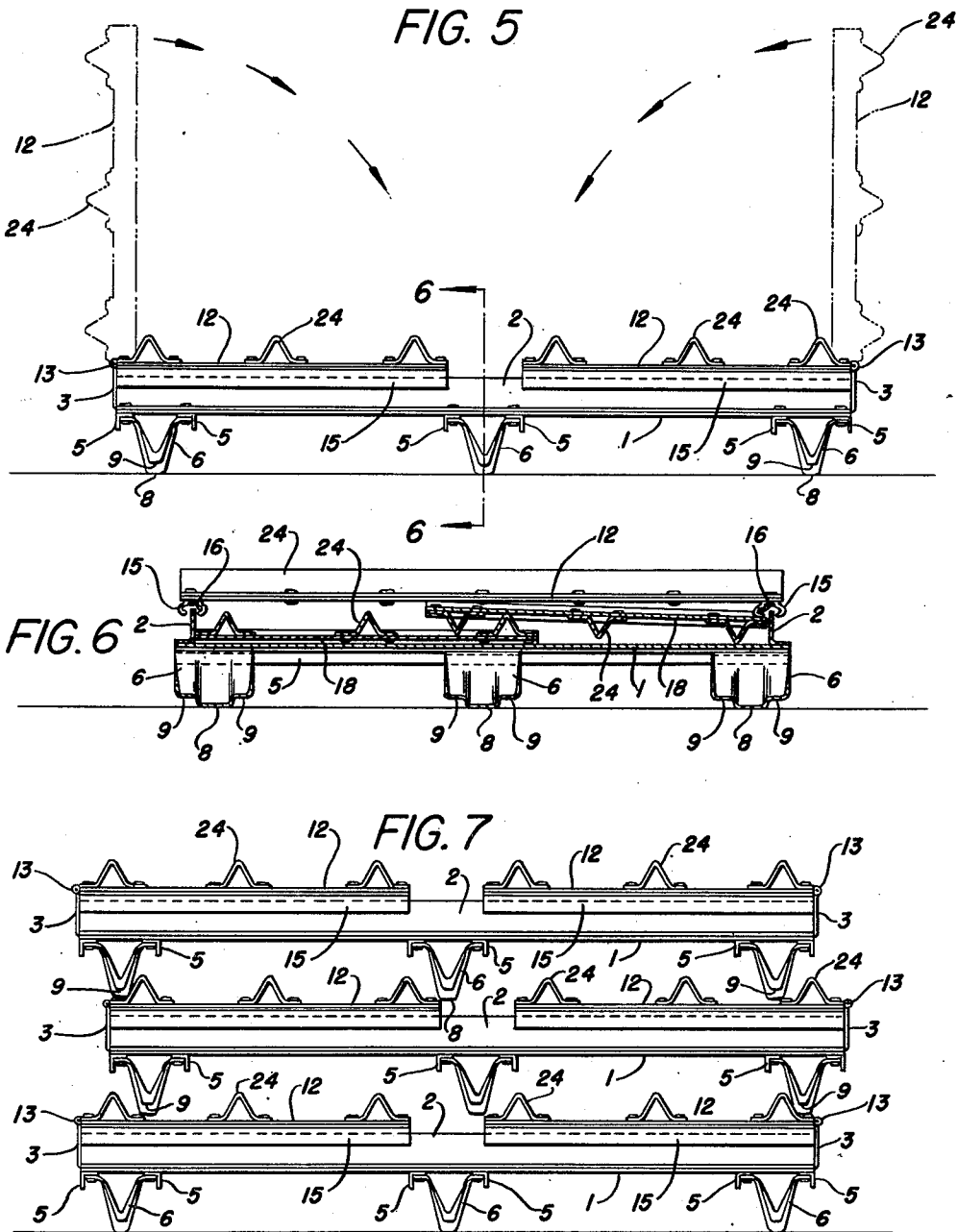
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4 Sheets-Sheet 3



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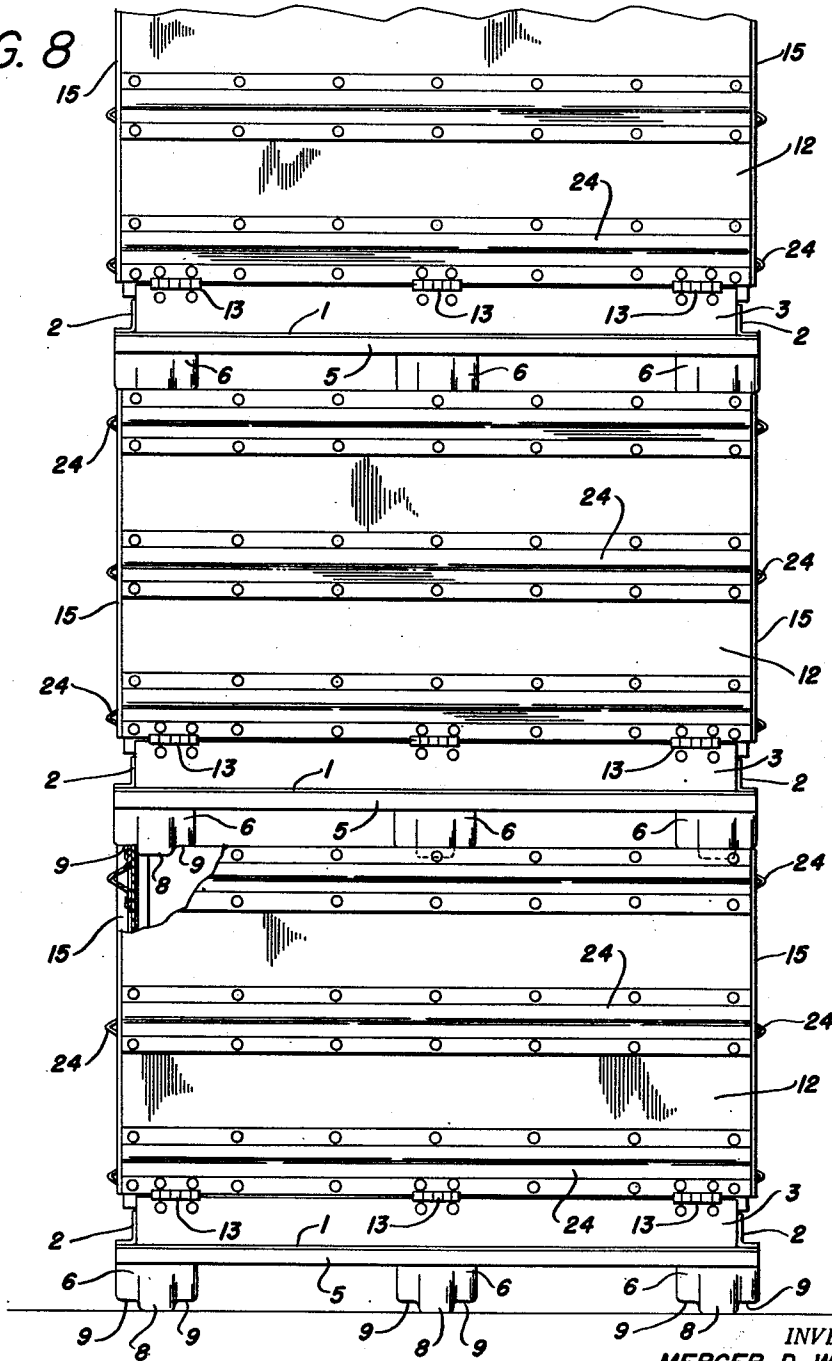
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4 Sheets-Sheet 4

FIG. 8



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COLLAPSIBLE CONTAINER

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1 Claim. (Cl. 220-6)

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The present invention relates to containers of the type which are used extensively for the handling, storage, and shipment of a large number of articles in modern manufacturing plants. While containers of this type are employed for the storage and shipment of all types of goods, the invention has been particularly designed for the handling of small castings or stampings which are used in automobile manufacturing plants.

There are numerous requirements which a practical container of this type must meet and the design of the present invention answers these requirements much better than any previously known containers. Attempts have been made to improve upon the original boxes or crates used for the purpose but none have met the need in as efficient and satisfactory manner as that shown herein.

A container of the type specified must be sturdy so as to withstand the rough usage to which it is put. It also should be as light as possible for ease in handling and to reduce shipping costs. It should be of a knockdown construction so that it will occupy the minimum of space both when in idle storage and also in the reshipment of empty containers. Knockdown containers have been suggested, but the design shown herein is superior to previous forms of knockdown containers for the reason that the component parts may be packed easily and without danger of accidental loss of parts.

The container should be capable of stacking when filled and also when empty in such a manner that the stacks will be stable and cannot be easily upset. The container should adapt itself for handling by the common type of lift-tractors which are in use in factories and warehouses. These lift-tractors are provided with long, horizontal arms which are thrust under the container and then raised to transport the containers.

The container should also be adaptable for easy unloading. In the form shown herein, the contents of the container are unloaded by merely lifting one side thereof, whereupon the articles will spill out onto the floor. The container should also be simple in design and relatively inexpensive and of long life.

It will be seen that the container shown and described here meets all of these requirements in a practical manner and, while the invention is shown in its preferred embodiment, it is possible to modify or alter the details thereof within the scope of the invention as set forth in the claims.

In the drawings,

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Fig. 1 is a front elevation of the improved container of the present invention shown in its perfected form;

Fig. 2 is a side elevation, the location of this view being indicated by the line 2-2 of Fig. 1.

Fig. 3 is a detail sectional view through one side of the container on the line 3-3 of Fig. 1.

Fig. 3a is a detail section on the line 3a-3a of Fig. 1.

Fig. 4 is a detail of the lower portion of an end wall on the line 4-4 of Fig. 2.

Fig. 5 is a view showing the container in collapsed condition.

Fig. 6 is a section on the line 6-6 of Fig. 5.

Fig. 7 is a view showing the manner in which the collapsed containers may be stacked for storage or shipment.

Fig. 8 is a view showing a number of the containers assembled and erected, showing the manner in which the containers may be stacked in a stable column.

The container which is the subject of this invention is made of an aluminum alloy which is light but amply strong for the purpose. As the containers are primarily intended for holding loose castings or stampings, the material has to be sufficiently rugged to withstand the hard usage to which it is put.

It consists of a rectangular bottom plate 1 of convenient size, to the upper side of which are riveted the horizontal webs of two front and rear angles 2 and the horizontal webs of the two side angles 3. As shown in Figs. 1 and 2, the vertical webs of the side angles 3 are somewhat higher than the front and rear angles 2. These angles constitute flanges for the bottom plate 1, which form a chamber to house the removable side plates to be described.

On the underside of the plate 1 are riveted longitudinal reinforcing angle rails 5 which extend along the length of the plate and are arranged in three pairs, one pair being located at the center line of the plate 1 and the others along the front and rear edges of the plate. These angles 5 not only serve to reinforce the bottom of the container but they also provide a secure anchorage for the feet by which the container is supported with the bottom above the floor level sufficiently to allow for the entrance of the usual forks or lifting arms which are provided on the lift-tractor. In the form of the invention shown herein, three feet 6 are spaced along each pair of reinforcing rails 5. Each foot is a stamping, the details of which are shown in the drawing and is in the form of a triangular stamping, the

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upper edges of which are flanged for riveting to the reinforcing rails 5. The base of each foot is formed with a narrow central rib 8, which forms the surface on which the container rests. At the side of the rib are shorter recessed areas or shoulders 9. The shoulders provide for nesting one container within the walls of another when the erected containers are stacked upon one another as shown at the broken out portion of Fig. 8, it being noted that one container will rest upon the upper edges of the container beneath on the surfaces 9, while the extensions 8 provide an interlocking engagement with the container beneath. This construction makes a stable stack of containers and prevents one container from shifting on the container beneath.

As will be seen by comparing Figs. 1 and 2, the feet 6 are distributed over the bottom of the container so that the fork of the lift-truck can be entered from any side of the container.

Two opposite end walls of the container are indicated by the reference numeral 12. These walls are mounted on the upper edges of the angles 3 by hinges 13, so that they may be folded inwardly over the space provided at the bottom of the containers. The end walls are so proportioned that when the containers are collapsed they will lie flat on the upper edges of the angles 2, without interfering with one another. This is shown in Fig. 5.

Along the vertical edges of each end wall 12 are located long channel members indicated at 15, the edges of which are turned inwardly to provide undercut grooves 16.

The front and rear side plates are indicated by the numerals 18, the lower edges of which rest upon the vertical webs of the angles 2 when the side plates are in position. Along each vertical edge of each side plate is riveted a T-shaped guide rail 20 which fits in the groove 16 on the channel 15 at the meeting edges of the side and end plates. Preferably, the guide rail 20 is channeled, as at 21, to receive the edge portion of the side plate to which it is riveted.

To reinforce both the side plates and the end plates, reinforcing ribs 24, which are preferably triangular in cross section, are riveted along the upper and lower edges of these plates and at a midway point.

When the container is erected, the end walls are raised to vertical position and the side walls are placed in position by engaging the rails 20 with the channels 15. This makes a strong and rigid container. To unload the container one or both side plates are raised and the contents will spill out over the floor.

To collapse the container, the two side plates 18 will be laid on the bottom of the container where they will be housed by the vertical webs of the angles 2 and 3. This is shown in Fig. 6, which illustrates the manner in which the side plates will be laid. In this position, the sides lie below the tops of the angle 3 so that when the end plates are folded inwardly, as shown in Fig. 5, they will lie in flat position with the ribs 24 projecting upwardly. It will be noted that, as shown in Fig. 6, the channels 15 pass over the upper edges of the angles 2, which now support the end plates, and that the chan-

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nels will hold the end plates from twisting. As the containers are apt to receive very rough handling, the channels 15, engaging the angles 2, will take any side strain off the hinges 13 should the side of the collapsed container be struck during shipment or handling.

It will be seen that a sturdy container has been provided and one which will occupy little space when in collapsed condition. When the containers are stacked for reshipment, they may be piled up in the manner shown in Fig. 7. As shown in this view, the containers will be prevented from shifting relatively to one another by the nesting of the feet 6 with the reinforcing ribs 24 on the end plates. For example, the collapsed container at the top of the stack cannot shift to the right because the feet 6 at the edges of the containers are blocked by the ribs 24 on the edges of the container beneath. Nor can it shift to the left because the feet 6 at the center line of the plate 1 are blocked by the rib 24 on the edge of the folded end plate 12 on the container beneath. In this connection it will be noted that the spacing of the feet 6 and the location of the ribs 24 on the end plates are carefully laid out so as to provide for a stable column of collapsed containers stacked in echelon formation due to the nesting of the feet on one container with the reinforcing ribs 24 on the container beneath.

What is claimed is:

A collapsible container comprising a rectangular bottom plate having vertical flanges at opposite ends, end plates hinged along the upper edge of said flanges for movement from a collapsed to an erected position and vice versa, removable side plates slidably carried by said end plates, supporting feet located on the under side of the bottom plate at the corners thereof, each of said feet being formed with an inwardly offset portion at its bottom end providing a downwardly facing shoulder to rest upon the upper edge of the wall of a similar container when two containers in erected condition are stacked and also providing on each of said feet a downwardly projecting portion to nest within the upper portion of said walls of said similar container, and reinforcing ribs on the outer faces of said end plates parallel to said flanges, whereby when said end plates are in a collapsed position, the feet on a superjacent container cooperate with said ribs to prevent undue relative lateral movement between the containers.

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