Nov. 5, 1968 A. W. LEVENHAGEN 3,409,169

NESTING AND STACKING TRAY

Filed Oct. 12, 1967

4 Sheets-Sheet 1

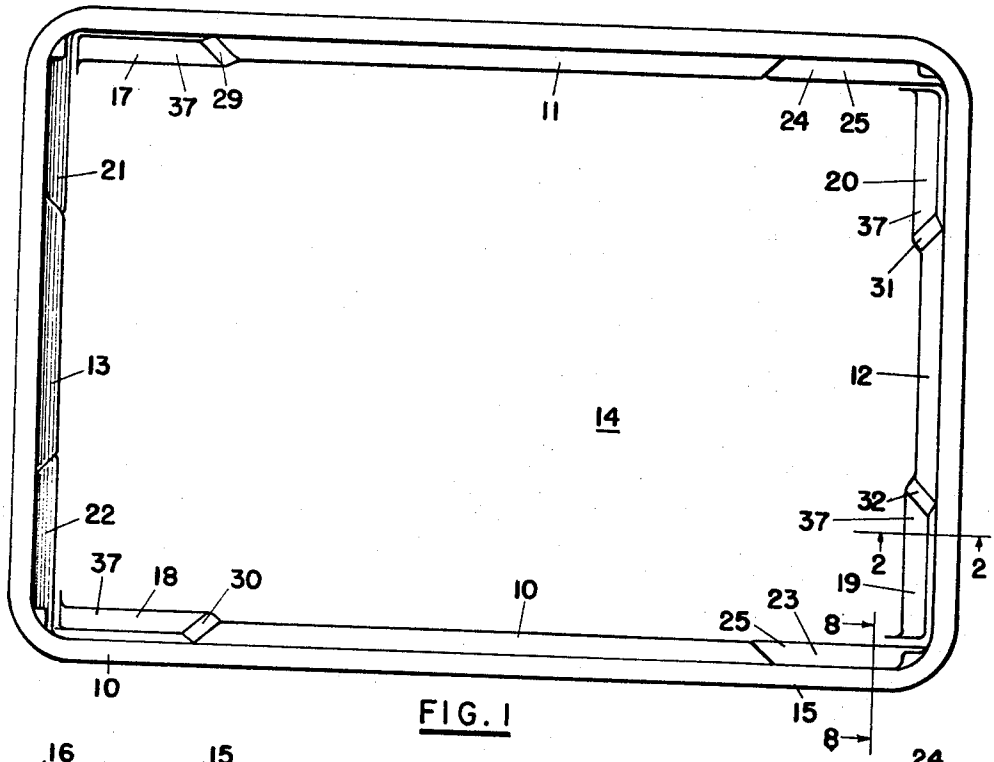


FIG. 1

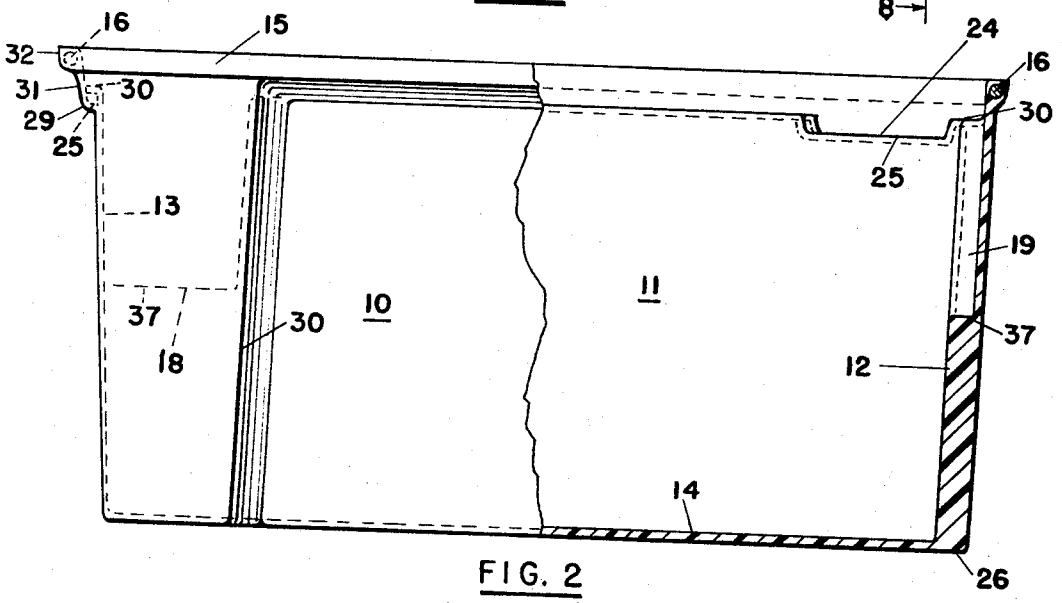


FIG. 2

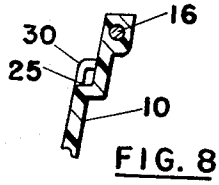


FIG. 8

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NESTING AND STACKING TRAY

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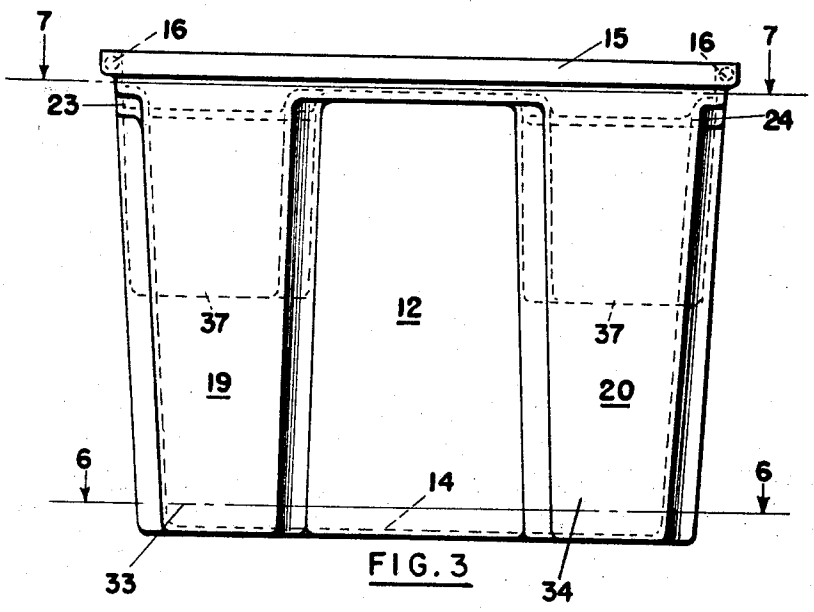


FIG. 3

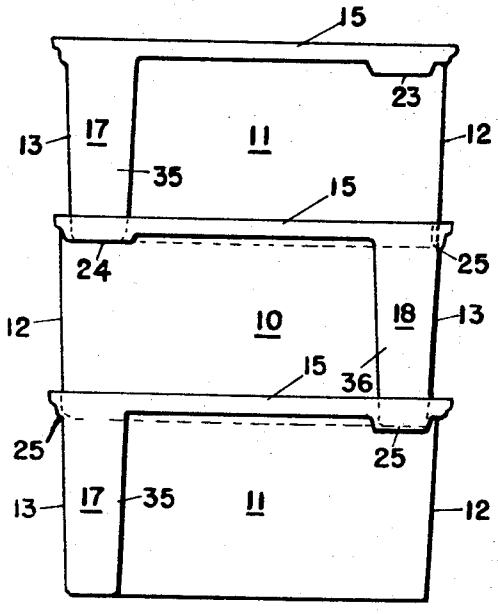


FIG. 4

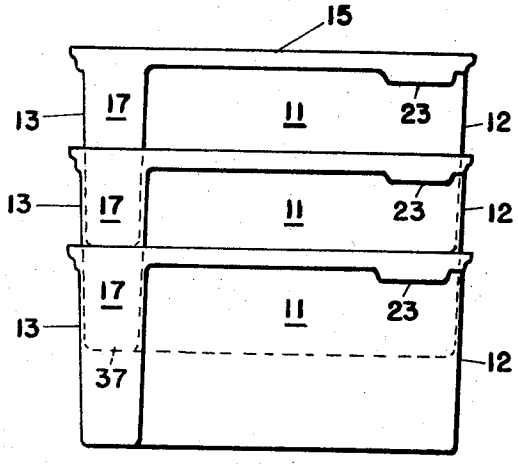


FIG. 5

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NESTING AND STACKING TRAY

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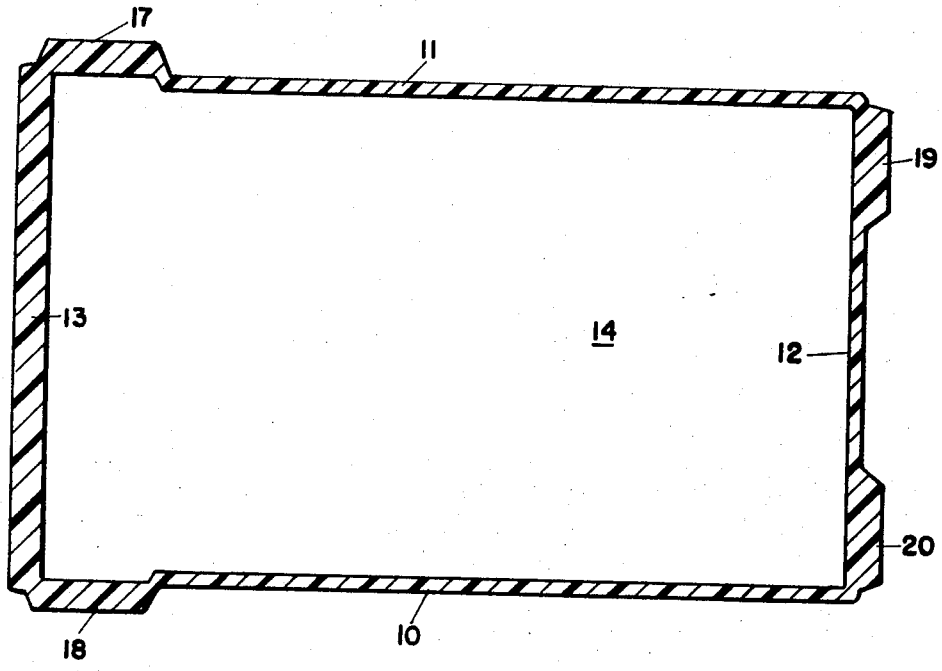


FIG. 6

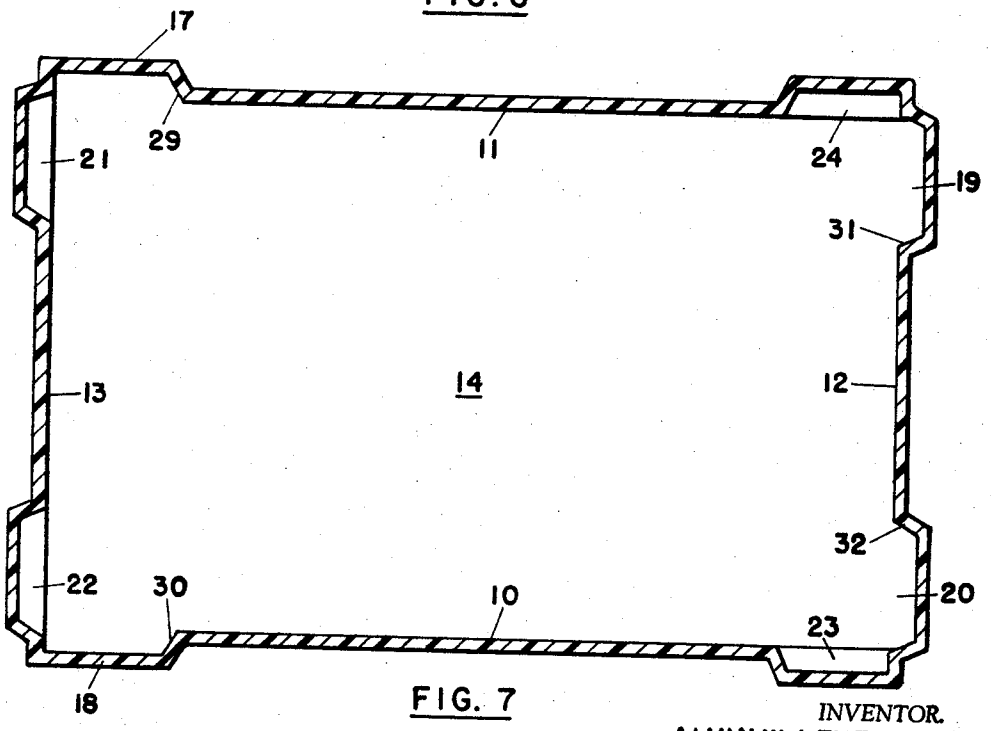


FIG. 7

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NESTING AND STACKING TRAY

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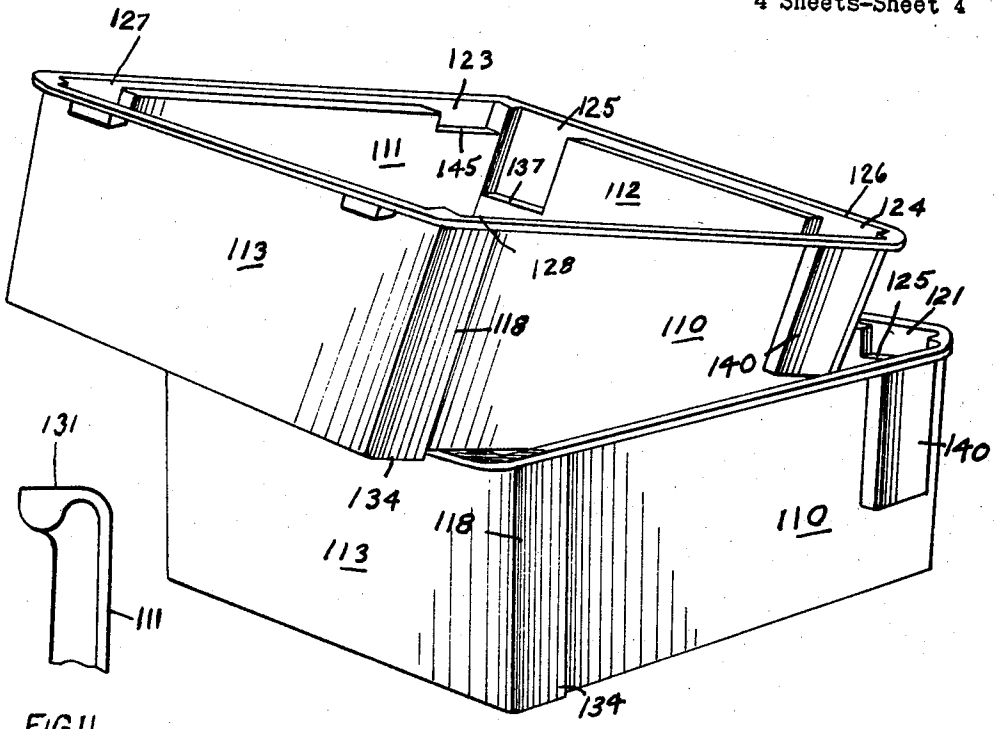


FIG. 11

FIG. 9

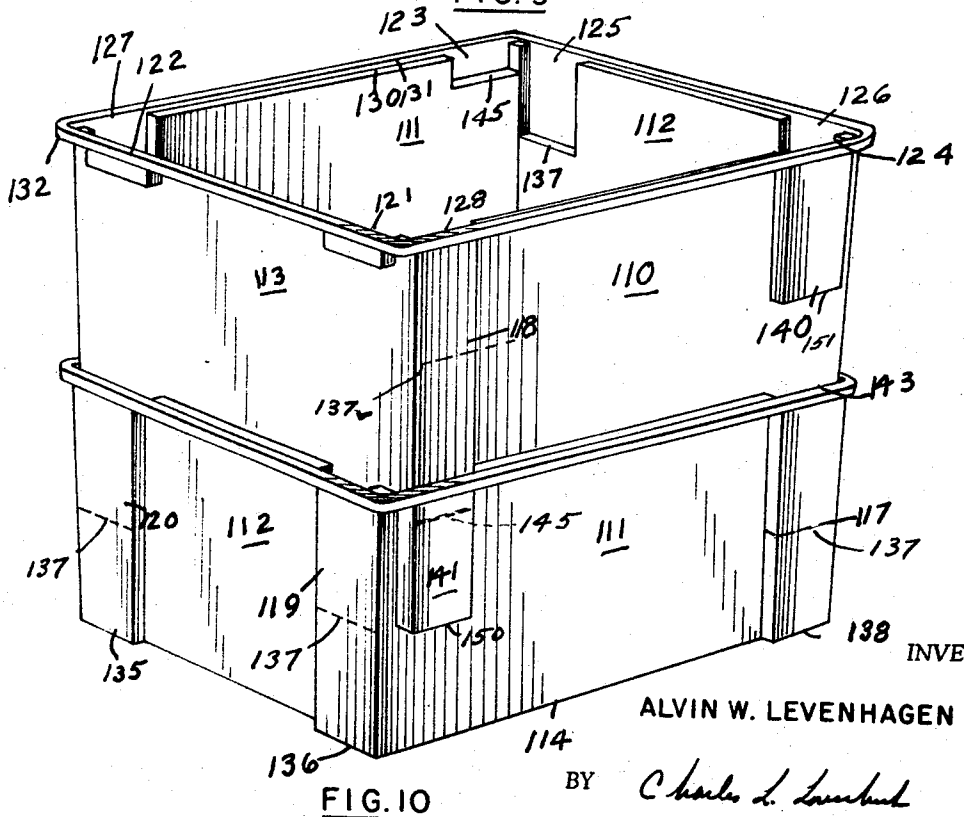


FIG. 10

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United States Patent Office 3,409,169 Patented Nov. 5, 1968

3,409,169

NESTING AND STACKING TRAY

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Continuation-in-part of application Ser. No. 480,606, Aug. 18, 1965. This application Oct. 12, 1967, Ser. No. 683,058

4 Claims. (Cl. 220—97)

ABSTRACT OF THE DISCLOSURE

The container is made up of four planar walls made of relatively thin material and has four long legs that are integrally attached to the walls and extend from the top to the very bottom thereof. These long legs have an upwardly facing shoulder about midway between the top and the bottom of the container. Four short legs are attached to the sides of the box, likewise adjacent corners, and these short legs terminate at the bottom in a downwardly facing shoulder approximately midway between top and bottom of the container and an upwardly facing shoulder is formed at the upper end of the leg adjacent the rim of the box; thus, the long leg will rest on the upper end of the short legs during stacking and the log legs will nest in the pockets formed at the upper end of the long legs during nesting.

This application is a continuation in part of application, Ser. No. 480,606, filed Aug. 18, 1965, now abandoned.

This invention relates to a stackable and nestable container. Containers of the nestable and stackable type are often constructed so that in one position, an upper container will nest within a lower container for storage purposes and when the upper container is rotated one hundred eighty degrees, it will stack vertically on the lower container. Containers of this type have been constructed with both the end walls and side walls made of various designs to permit stacking of identical shaped containers.

Most of these containers are not fully satisfactory. In some such containers, adapters or bumpers have been attached to the end walls of the containers to permit stacking. The addition of the bumpers to the end walls of the containers increases the cost of the container as well as increasing the number of parts and the manufacturing time. Various other structures of nesting and stacking containers have been devised.

The present invention is directed to a stackable and nestable four walled container in which two of the four walls of the container are disposed at substantially ninety degrees to the other two walls. Pockets are formed at the upper part of one end in two of these sides, and legs are formed in the opposite ends of the pockets in the two sides at the opposite ends from the pockets. Thus, when the containers are stacked, the lower ends of the legs rest in the pockets, and when the containers are nested, the lower ends of the legs are received in the convolution formed by a corresponding leg on a like container.

It is, accordingly, an object of the present invention to provide an improved stackable and nestable container.

Another object of the invention is to provide a stackable and nestable container wherein both side walls and end walls are disposed substantially ninety degrees to the bottom thereof and the side and end walls have improved means to provide nesting and stacking.

Still another object of the invention is to provide a stackable and nestable container which is simple in construction, economical to manufacture, and simple and efficient to use.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

FIG. 1 is a top view of a stackable and nestable container according to the invention;

FIG. 2 is a side view partly in cross section showing the container of FIG. 1, the section being taken on line **2**—**2** of FIG. 1;

FIG. 3 is an end view of the container;

FIG. 4 shows three of the containers stacked one on top of the other;

FIG. 5 shows three of the containers nested in each other;

FIG. 6 is a longitudinal cross sectional view taken on line **6**—**6** of FIG. 3;

FIG. 7 is a longitudinal cross sectional view taken on line **7**—**7** of FIG. 3;

FIG. 8 is a vertical cross sectional view taken on line **8**—**8** of FIG. 1;

FIGS. 9 and 10 show another embodiment of the invention; and

FIG. 11 is a longitudinal partial sectional view of another embodiment of the invention.

Now with more specific reference to the drawings, the containers or trays shown each have first and second side walls **10** and **11** and end walls on third and fourth sides **12** and **13** integrally attached and rising up from the bottom **14**. The side walls and end walls are disposed at approximately ninety degrees to the bottom; however, they taper upward at approximately two degrees to form a draft in order to enable them to be removed from a mold in accordance with good practice and in order to make them readily removable from each other. The walls **10**, **11**, **12** and **13** may be considered to be the first, second, third, and fourth walls, respectively, of the container.

The tray terminates at its upper edge in a rim. The rim extends outwardly at **30**, then upwardly and outwardly at **31**, and terminates in an enlarged rim portion **32** that has the reinforcing rod insert **16** imbedded therein.

Spaced pockets **21** and **22** are formed in wall **13** and pockets **23** and **24** are formed in walls **10** and **11**, respectively. These pockets extend down below the outward portion **30** of the rim and form an upwardly facing seat **25**. These seats receive the legs **17**, **18**, **19**, and **20**, and the lower ends **26** of these legs rest on the seat **25** when the trays are stacked.

Legs **17**, **18**, **19**, and **20** are formed in sides **10** and **11** and end **12**, respectively. These legs are formed by providing thickened portions **33**, **34**, **35**, and **36** in the end **12** and the sides **10** and **11**, respectively. These thickened portions are recessed providing pockets as shown in FIG. 2 at **19**, to receive a corresponding leg of a similar tray when the trays are stacked. The recesses terminate at their bottoms in an upwardly facing shoulder **37** on which the lower end of a leg of a corresponding tray rests when the trays are nested. It will be noted that the material below the recesses is thickened to provide a rigid leg-like support for the trays when the trays are nested.

Thus, it will be seen that the lower ends of the legs rest on the shoulders **25** when the trays are stacked and rest on the shoulders **37** when the trays are nested.

In the embodiment of the invention shown in FIGS. 9 and 10, long notches **125**, **126**, **127**, and **128** are formed in the inside surfaces of sides **112**, **111**, and **110** respectively. These long notches have a depth approximately

equal to the thickness of the long legs **117**, **118**, **119**, and **120**; that is, the distance that the long legs extend outward from the outer surfaces of the sides **110**, **111**, and **112** is approximately equal to the depth that the notches extend outward into the side walls. These long notches terminate in upwardly facing shoulders **137** disposed approximately three-quarters to half way from the upper rim of the container and the bottom.

Short legs **140** and **141** are integrally attached to the outside surface of sides **110** and **111** at the opposite ends thereof from long legs **117** and **118**. Short legs **140** and **141** are spaced in from end **112** slightly so that they will nest in notches **123** and **124** when the containers are nested. The lower ends of the short legs may rest on shoulders **145** when the containers are nested. The sole purpose of the legs **140** is to keep the container from becoming jammed should it happen that the containers be mis-stacked, or mis-nested. The short legs do not necessarily rest on the shoulders **145**, but they will however fall within pockets **123** when the trays are nested.

Long legs **117**, **118**, **119**, and **120** are received in notches **125**, **126**, **127**, and **128** when the containers are nested and the lower ends of these long legs rest on shoulders **137**. The lower ends of short legs **140** and **141** rest on shoulders **145** when the containers are nested. When the containers are stacked, the lower ends of legs **117**, **118**, **119**, and **120** rest on shoulders **145**. Short notches **121** and **122** are formed on the inner surface of end **113**. These notches have shoulders **146** on which the lower ends **135** and **136** of legs **119** and **120** rest when the containers are stacked.

Bosses **134** and **135** are formed on the outside of side **113** opposite notches **121** and **122**. Rim **132** extends entirely around the open top of the containers just outside the surfaces that define the notches. Thus, a slight horizontal ledge **130** and a vertical ledge **131** is formed between the notches by the rim.

In the embodiment of the invention shown in FIG. 11, an alternate design is shown wherein sides similar to sides **110**, **111**, and **112**, and **113** of the previous embodiment extend upwardly to the very top of the container, then outwardly to form an enlarged rim portion **131**. That is, the rim portions that would be equivalent to rim portions **130** and **131** in the embodiment shown in FIG. 10 are one and the same.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel as is commensurate with the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A container to be stacked vertically or nested with a container of similar shape and size comprising:
- a generally rectangular bottom,
- a first side wall,
- a second side wall,
- a third side wall,
- and a fourth side wall,
- said side walls being attached together and to said bottom forming an open topped container,
- said first side wall and said second side wall having a first long leg integrally attached to its outer surface adjacent one end, and extending from its top edge to its bottom edge, said first long legs terminating at their lower end in a downwardly facing surface flush with the lower surface of said bottom,

- said first side wall and said second side wall each having a first short leg integrally attached to its outside surface at the end thereof opposite said first long legs and extending from the top edge of said first and said second side wall downward,
- two second long legs integrally attached to the outside of said third side wall and extending from the upper edge to the lower edge and terminating in a downwardly facing surface flush with the lower surface of said bottom,
- a first long notch in each of said first side wall and said second side wall on the inside thereof directly inside said first long legs and extending from said top edge to a position approximately halfway to three-quarter way to said bottom and terminating in an upwardly facing shoulder,
- a first short notch in said first side wall and a first short notch in said second side wall on the inside thereof opposite said first short legs, said first short notches terminating in an upwardly facing shoulder,
- a second long notch in said third end on the inside thereof extending from the upper edge to a position approximately half way to three-quarter way to said bottom and terminating in an upwardly facing shoulder,
- two second short notches in said fourth side on the inside surface thereof adjacent the upper edge, said second short notches terminating in upwardly facing shoulders,
- when said container is nested with a similar container, said first and said second long notches being adapted to receive first long legs and second long legs of said similar container with the lower ends of said first long legs resting on said shoulders,
- and said second long notches being adapted to receive second long legs with the lower ends of said long legs resting on said shoulders,
- and the lower ends of said long legs being adapted to rest on said upwardly facing shoulders in said short notches when said containers are stacked.

2. The container recited in claim **1** wherein:
- said first short legs extend downwardly and terminate approximately halfway to three-quarter way between the upper edge and the lower edge of said first and said second side and terminate in a downwardly facing shoulder,
- said shoulder on said first short legs being adapted to rest on said upwardly facing shoulder in said first short notch when said containers are nested.

3. The tray recited in claim **2** wherein a rim extends completely around said container:
- said rim extending outward from said side walls,
- the inner edge of said rim being flush with the outer surface defining said notches.

4. The container recited in claim **1** wherein:
- bosses are formed in the outer surface of said fourth wall directly opposite said second short notches.

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