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W. L. SMITH ET AL

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COLLAPSIBLE CONTAINER FRAME

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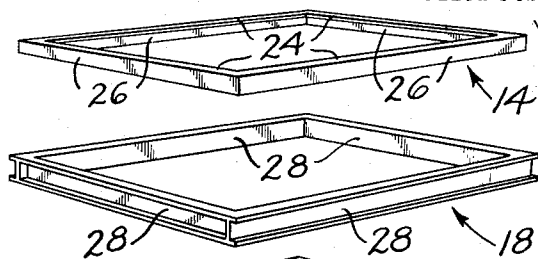


Fig. 1.

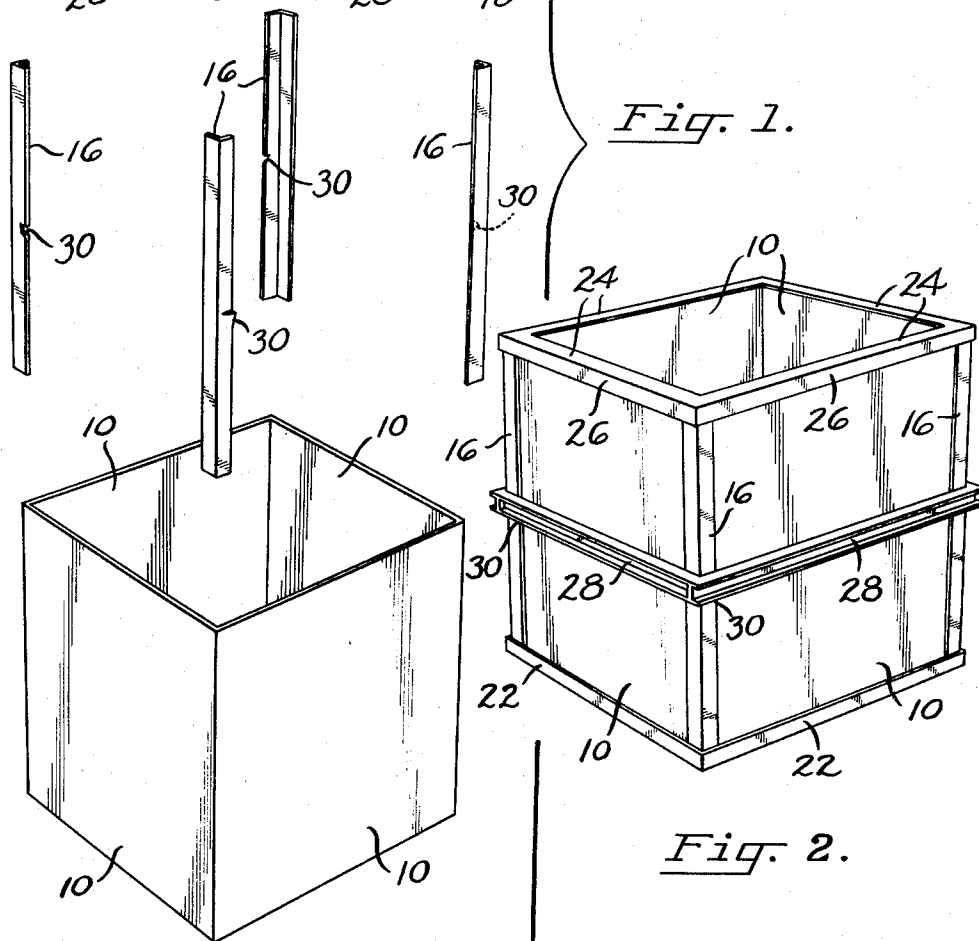
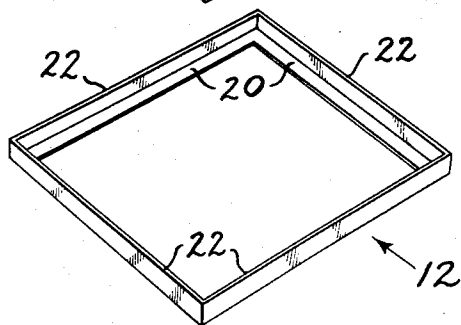


Fig. 2.



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COLLAPSIBLE CONTAINER FRAME

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This invention pertains to containers, and relates particularly to the novel construction of a collapsible frame for reinforcing inexpensive light weight containers.

The present invention has particular utility in the transport and storage of fresh produce preliminary to packaging as frozen produce for the retail trade. It has been a general practice heretofore in this industry that fresh produce intended for packaging and freezing be delivered to the cannery in bulk or in large wooden boxes. The produce then is washed, graded, sliced, or otherwise processed, and then repacked in large wooden boxes for temporary cold storage preliminary to final packaging in conventional small frozen food packages for the retail trade.

Thus it is required of the produce farmer and the cannery not only to maintain a large supply of wooden boxes, but also to provide adequate storage space therefor, even when empty. Moreover, it is a general practice in cannery operation to process and package only certain types of produce at a given cannery. Thus, it is necessary to ship certain types of produce to distant canneries and it has been a practice heretofore to package and ship such produce in fifty pound cartons. This procedure adds not only the cost of cartons which are destroyed after the single use, but also the cost of labor and machinery for such repackaging.

Accordingly, it is a principal object of the present invention to provide a collapsible frame by means of which a collapsible light weight container may be employed for the transport and storage of large volumes of produce and other materials.

It is another important object of this invention to provide a collapsible container frame which may be assembled and disassembled with speed and facility.

A further important object of the present invention is to provide a collapsible container frame which is characterized by being completely devoid of positive interconnections for the several parts.

Still another important object of this invention is a provision of a collapsible container frame in which the several parts are held in firm and rigid assembly by the outward force of the produce or other material contained within the collapsible container.

A still further important object of the present invention is the provision of a collapsible container frame which is of simplified construction for economical manufacture and which may be collapsed to minimum size for most efficient storage and transport.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is an exploded perspective view of a collapsible container frame embodying the features of the present invention and showing the manner in which the same is assembled for supporting a collapsible container; and

Figure 2 is a perspective view of the collapsible con-

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tainer frame, showing the same in assembled condition and supporting a container therein.

The collapsible container frame of the present invention is intended primarily for use to reinforce light weight collapsible containers, such as conventional cardboard cartons. The container illustrated in the drawing is intended primarily for the transport and storage of fresh produce, as exemplified hereinbefore. Accordingly, the container is constructed of inexpensive light weight material, such as cardboard, and includes the upstanding interconnected side walls 10 and end tabs which are adapted to overlap to form a closed bottom for the container. Although the container illustrated is not provided with a top closure, it will be understood that such may be provided, as desired, in manner well-known in the art. The container may be collapsed to minimum size by folding along the interconnecting edges of the side walls and end closure tabs, as will be understood.

Since the light weight collapsible container described hereinbefore is structurally incapable of supporting its volume of fresh produce and of being handled by conventional means of transport, it is necessary to reinforce the same. In accordance with the present invention, such reinforcement is provided in the form of a collapsible frame.

The collapsible frame of this invention includes a bottom frame section 12, a top frame section 14, a plurality of vertical legs 16, and an intermediate frame section 18.

In the preferred embodiment illustrated, the bottom frame section is constructed from lengths of angle iron interconnected at their ends, as by welding, to form a rectangular frame which provides an inwardly directed peripheral base flange 20 and an upwardly directed outer peripheral wall 22. The inner dimensions of the peripheral wall are slightly larger than the outer dimensions of the bottom end of the container, whereby to receive the latter therein for support on the peripheral base.

The base flange 20 may be formed as a solid bottom closure, if desired, although the construction illustrated is preferred because of the lesser weight thus afforded.

The top frame section 14 is of similar construction, being formed of lengths of angle iron joined at their ends to form a rectangular frame having an inwardly directed peripheral top flange 24 and a downwardly directed outer peripheral wall 26. The inner dimensions of the peripheral wall are slightly larger than the outer dimensions of the top end of the container, whereby to be received thereover.

As in the case of the base frame 12, the top flange 24 may be formed as a solid top closure, if so desired.

Each of the vertical legs 16 preferably is provided in the form of a length of angle iron, the length of which is substantially the same as the height of the container. These legs are adapted to be positioned at one end in the corners of the rectangular base frame 12 and at their opposite end in the corners of the rectangular top frame 14, and to extend vertically along the corners of the container to maintain the latter in proper rectangular shape.

The intermediate frame section 18 is constructed of lengths of structural material, such as the channel irons illustrated, interconnected at their ends to form a rectangular frame. The intermediate, closed section 28 of the channel irons face inwardly. The inner dimensions of the intermediate frame are chosen to conform substantially with the inner dimensions of the peripheral wall of the base and top frame sections. In this manner the intermediate frame section may be received slidably about the upstanding legs, with the latter positioned in the corners of the intermediate frame section.

Means is provided for positioning the intermediate frame section at the desired position intermediate the

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ends of the vertical legs. In the embodiment illustrated, such means is provided conveniently and economically by means of a lug 30 formed by striking outwardly a segment of the angle iron forming each leg. These lugs project outwardly from the legs at the same distance intermediate the ends of the legs, to form abutments for the intermediate frame.

The assembly of the collapsible container and frame for the exemplified use of transporting and storing fresh produce, is as follows: The base frame 12 is placed upon a pallet designed, for example, to accommodate the projecting arms of a lift truck. The light weight container then is erected to its rectangular form, and the bottom end thereof is placed upon the base flange 20 within the confines of the peripheral wall 22. Each vertical leg 16 then is placed against a corner of the container and pushed downwardly between the container and peripheral wall 22 to seat within the corners of the base frame 12. The intermediate frame 18 then is slid downwardly about the upstanding legs, into abutment with the outwardly projecting lugs 30. The top frame 14 then is positioned upon the upper ends of the legs, with the latter positioned at the corners of the top frame.

Although produce may be filled directly into the container as thus assembled, it is a general practice to provide a moisture proof liner for the container. Such a liner may be provided in the form of a flexible bag, preferably made of synthetic plastic and conforming substantially to the shape of the container, but preferably somewhat longer in order to form a top closure. In any event, when the container is filled with produce, the outward pressure exerted thereby on the container walls forces the vertical legs 16 outwardly into firm frictional contact with the corners of the bottom, top and intermediate frame sections. Thus, the collapsible frame is maintained in positive, rigid assembly due to the outward pressure exerted by the contained produce, and the assembly then may be transported and handled in accordance with conventional procedures and equipment, with facility and complete safety. The produce filled container assemblies may be stacked vertically one upon another in accordance with accepted practice of storage and shipping.

When the produce has been removed from the container, and it is desired to collapse the assembly for return shipment or temporary storage, the procedure of assembly described hereinbefore is substantially reversed. Thus, the top frame section is removed from the upper ends of the vertical legs, the intermediate frame section then is removed upwardly from its position of abutment with the lugs, and the vertical legs removed from the corners of the container and base frame section. The container then is removed from the base frame section and collapsed to minimum size. The bottom, top and intermediate frame sections, together with the vertical legs, then may be grouped together in a package of minimum dimensions.

From the foregoing it is believed to be apparent that the present invention provides for the safe, efficient and economical storage or transport of produce or other ma-

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terials, by affording the use of light weight collapsible containers of inexpensive construction. This is achieved through the use of a collapsible frame which provides a firm and rigid assembly completely devoid of positive interconnections for the frame elements such as bolts, latches, etc. In this manner assembly and disassembly of the frame may be made with maximum speed and facility.

It will be apparent to those skilled in the art that various changes in the structural details described hereinbefore may be made without departing from the scope and spirit of this invention. Accordingly, it is to be understood that the foregoing description is primarily illustrative of the invention and is not to be considered as limiting the scope thereof.

Having now described my invention and the manner in which the same may be used, what I claim as new and desire to secure by Letters Patents is:

1. In combination with a collapsible one piece rectangular container having flexible side walls which bulge outwardly under the force exerted thereon by the contents of the container, a collapsible reinforcing frame therefor comprising a rectangular base frame section having an inwardly directed base flange freely supporting the bottom end of the container and an upwardly directed outer peripheral wall freely surrounding the bottom end of the container side walls, a rectangular top frame section having an inwardly directed top flange freely overlying the upper end of the container and a downwardly directed peripheral wall freely surrounding the upper end of the container side walls, a plurality of legs extending freely between and freely engaging the top and base frame sections at the corners thereof in abutment with the inner surfaces of the outer peripheral walls of said sections, the legs also extending along the outer surfaces of the container side walls at the corners thereof for reinforcing the latter, an abutment projecting outwardly from each leg intermediate the ends of the latter, and a rectangular intermediate container reinforcing rigid frame section freely surrounding the legs and resting upon the abutments, the frame sections and legs being secured together frictionally by the outward force exerted on the legs by the bulging of the flexible container side walls by the contents of the container.

2. The combination of claim 1, wherein the abutment on each leg comprises an outwardly struck segment of the leg.

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