Nov. 21, 1950 W. L. RAWN, JR 2,530,481

MILK CRATE

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Fig. 1.

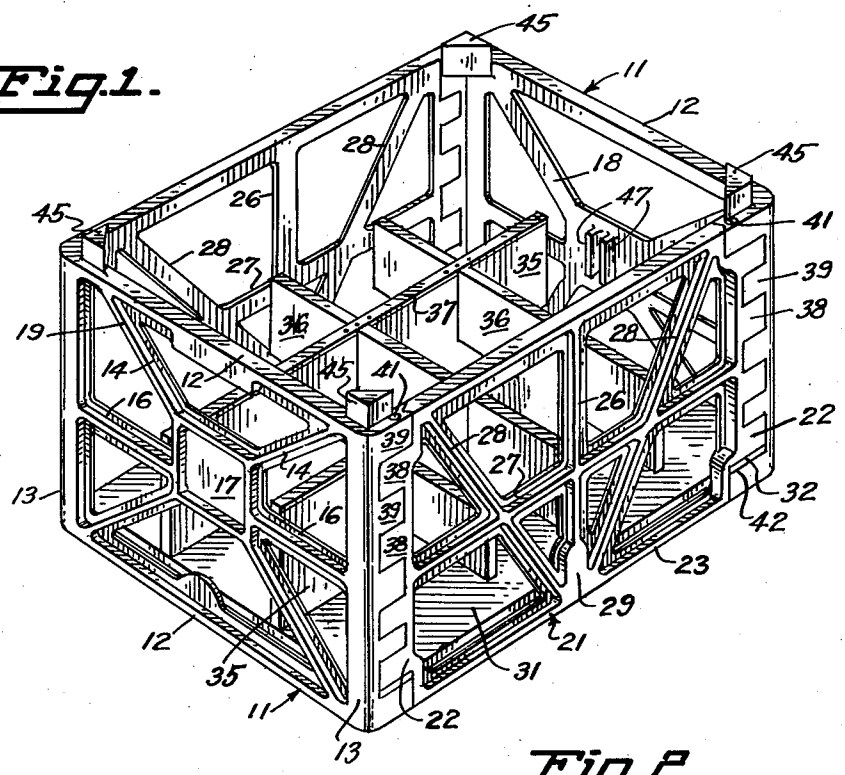


Fig. 2.

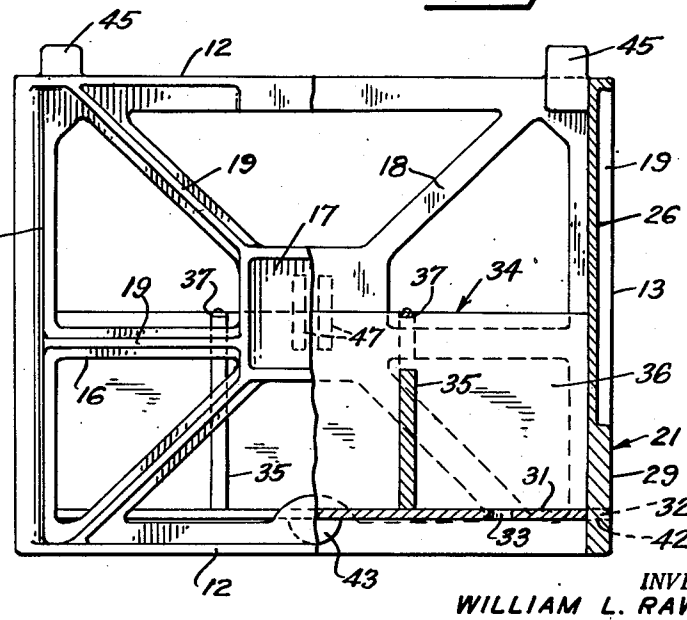


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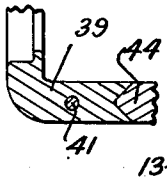


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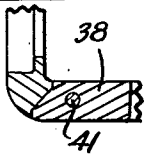
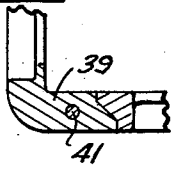


Fig. 7.



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Fig. 3.

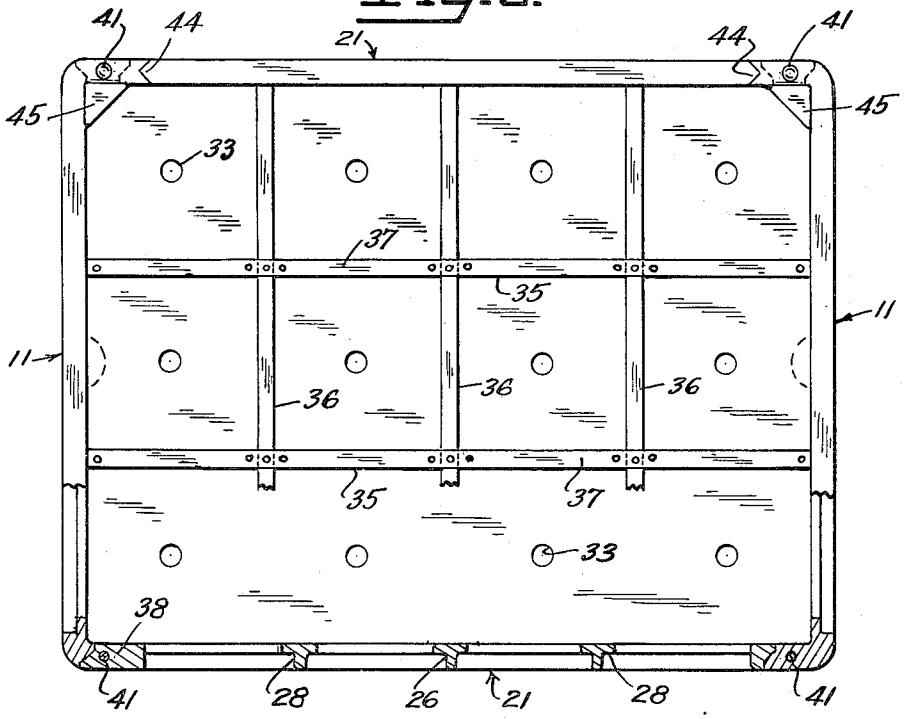
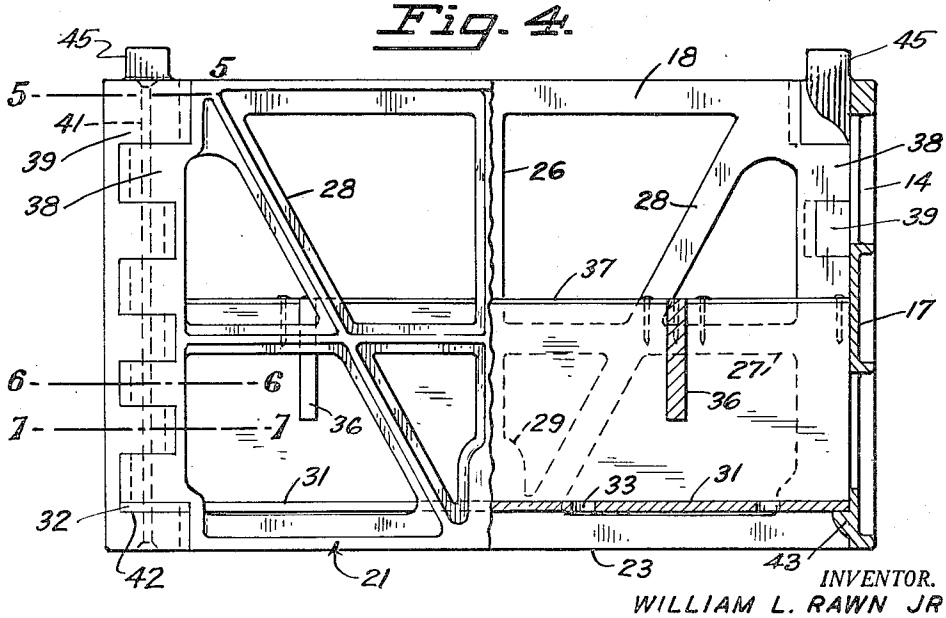


Fig. 4.



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Fig. 8.

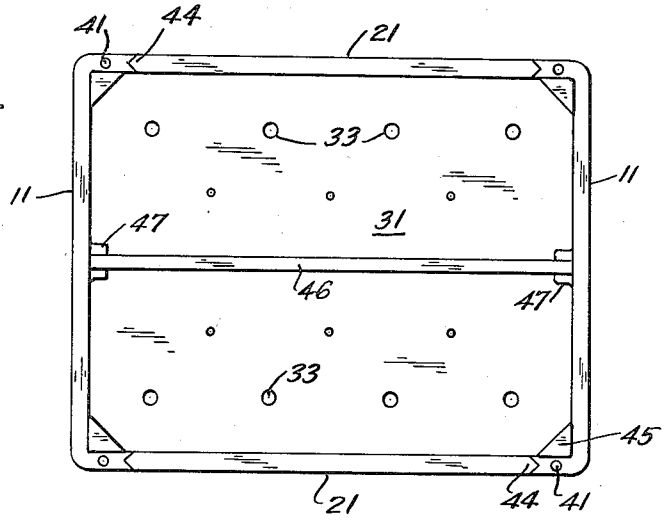


Fig. 9.

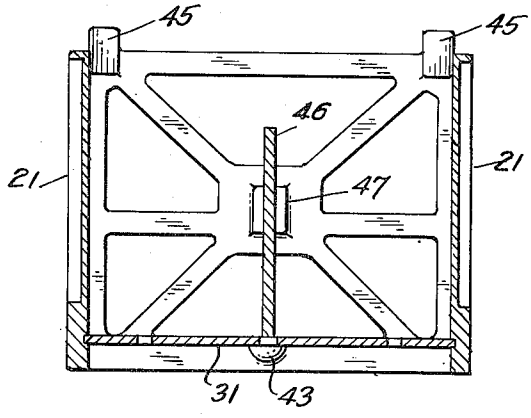
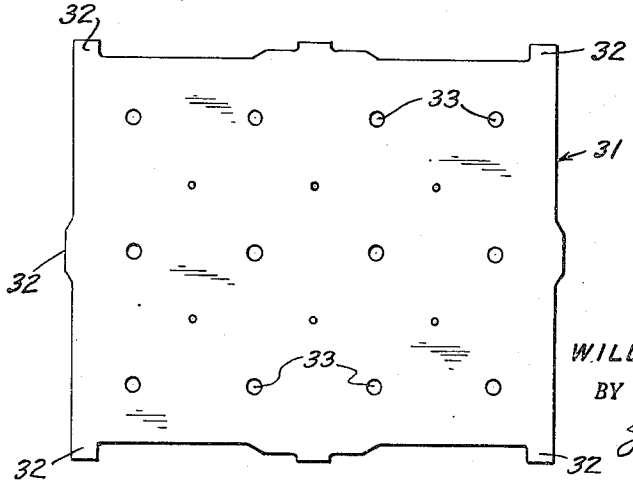


Fig. 10.



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MILK CRATE

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Application November 5, 1945, Serial No. 626,592

5 Claims. (Cl. 220—76)

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This invention relates to crates, which are useful for carrying a multiplicity of milk bottles as well as other articles.

Objects of the invention are to provide durable crates able to withstand long and often repeated use and yet are very light in weight; to make them of metal having a low specific gravity, such as magnesium, to afford a high degree of durability and lightness; to make them of parts which are easily made as by die casting or otherwise, which can be easily and quickly assembled, and which are so shaped as to make the assembly thereof quick and easy; and other objects will be apparent on reading this specification.

The preferred embodiment of the invention is illustrated on the accompanying drawings, on which Fig. 1 is an isometric view of a completely assembled crate; Fig. 2 is an end elevation thereof, partly in section; Fig. 3 is a plan view thereof partly in section; Fig. 4 is a side elevation thereof, partly in section; Figs. 5, 6 and 7 are sectional views of details taken on the lines 5—5, 6—6, and 7—7, respectively, on Fig. 4. Fig. 8 is a plan view of a modification of the invention; Fig. 9 is a sectional view in end elevation of the modification of the invention disclosed in Fig. 8; and Fig. 10 is a plan view of the bottom plate employed in the crate of the invention.

The crate is preferably but not necessarily rectangular. The end pieces 11 are preferably similar to each other, each forming an end of the crate as well as the two adjacent corners. The ends are preferably open having a frame comprising upper and lower horizontal frame members 12, vertical side members 13, diagonal bracing members 14, and a horizontal bracing member 16, the bracing members all converging to form a central plate 17. Each frame and bracing member has a flat innner face 18 and exteriorly of the crating a tapered reinforcing rib 19. All the parts of each piece form an integral unit which can be die cast in one operation. The side edges of the end pieces are, at right angles to the main portions of the ends to form square corners, and lie in the planes of the side pieces 21.

The sides comprise vertical frame members 22, horizontal frame members 23, a central vertical member 26, a central horizontal member 27, and diagonal bracing members 28 converging at the middle of the lower section adjacent the broadened flat portion 29. The portion 29 affords supporting means for the bottom tray to be referred to, and is broadened for the purpose of increased strength. The side pieces are each an

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integral unit and may be die cast as such, similarly to the end pieces. Also similarly thereto, each part of the side pieces has a flat inner face and an exterior rib conforming in contour to the member of which it is a part. In the exemplification shown, the sides are substantially longer than the ends, and the cross ribs thereon are arranged differently than on the shorter ends.

A bottom plate or tray member 31 is provided to support the articles to be carried in the crate. The bottom plate 31 is generally rectangular in shape (see Fig. 10) to conform to the shape of the crate and is provided with a series of projections 32 at each of its corners and in the mid-section of each of its sides, i. e. intermediate its ends. These projections are designed to serve as means for supporting plate 31. A series of holes 33 of any convenient size or shape are made in plate 31 for the purpose of affording drainage of any moisture that tends to collect in the bottom of the crate from drainage off the bottles or other sources.

In the form of the invention shown in Figs. 1 to 4 a divider member 34 serves to separate and permit lateral support of the bottles to be transported. The member 34 comprises a pair of flat strips 35 extending the length of the crate and which are adapted to interfit with a series of similar members 36 arranged at right angles thereto and which cooperate to form the desired lateral supporting and dividing means. The strips 35 and 36 are preferably of wood because of economy, but other materials having the required structural strength may also be employed. In the exemplification shown the cross-members 36 do not extend to the bottom of the crate, but instead terminate a few inches thereabove. The strips 35, however, extend to the bottom plate 31 and are fastened thereto by nailing or any other satisfactory means. Metal strips 37, also desirably of magnesium extend across the tops of strips 35 along their entire length and are securely fastened thereto so as to also fasten interfitted strips 36 to provide a practically integral unit of member 34.

The ends of the side pieces 21, and the ends of the end pieces 11, which lie in the same planes as the side pieces, are opposite and may abut each other. The ends of the former have projecting lugs 38, and the ends of the latter have projecting lugs 39, the lugs on each fitting into the spaces between the lugs on the other. Pins, bolts or rivets 41 extend through the assembled lugs and hold them and the side and end pieces in place. The projections 32 adjacent the corners

of bottom plate 31 fit between adjacent pairs of lugs 38, 39, the latter being dimensioned to afford room therefor. The projections 32 intermediate the corners of plate 31 are adapted to project into grooves 42 in side pieces 21 and to rest on abutments 43 in end pieces 11, respectively.

For the purpose of assembling the end and side pieces at the proper angle, generally a right angle, the end of the uppermost lugs 39 have an angular concavity 44 which is preferably V-shaped, the abutting portion of the side piece being shaped to fit therein.

The pin 41 and the V-shaped ends of abutting parts compel the assembly of the abutting parts in a straight line end to end, and the angulated shape together with the pin 41 prevent relative angular movement of adjacent sides and ends. Additional means to prevent this are provided. For example, as seen in Fig. 7, relative angular movement in one direction is prevented, and as seen on Fig. 8 such movement in the other direction is prevented. The crates built according to this invention will hold the milk bottles or other articles securely.

The open ends of the crate provide hand holds, as do the open sides, for carrying the crates. They may be stacked one upon the other for which purpose lugs 45 may be provided at the top, at the corners or at other suitable positions.

In the modification embodied in Figs. 8 and 9 the divider member 34 may be dispensed with and a single vertically disposed plate 46 parallel to sides 21 and of any desired height may be inserted to serve as a spacer for two double courses of paper cartons or the like. The height of the spacer is preferably less than that of the cartons for the purpose of ease of packing and unpacking. The spacer is held in place by vertical guides 47 or similar means in the portions 17 of the ends 11. This arrangement also provides a desirable means for carrying cartons and similar packages.

Although the invention has been illustrated as a ribbed or trussed structure, solid flat plates of wood, metal, or other durable materials may also be used. However, the structure shown in the drawing is particularly useful because the component parts can be manufactured at low cost and are of good strength.

It is to be understood that while I have described in detail one preferred form of apparatus of this invention, that this invention is not in any way limited to the specific form of apparatus shown but includes within its scope whatever changes fairly come within the spirit of the appended claims.

I claim:

1. A crate structure for milk bottles and the like comprising side and end pieces, said end pieces having integral, right angular extending and spaced lugs and said side pieces having integral, planar spaced lugs interlocking with the spaced lugs of said end pieces, certain of the lugs on said end pieces having wedging end engagement with said side pieces and pins projecting through aligned apertures in said interlocking lugs whereby the said ends and side pieces are locked together and the normal shearing stresses on said pins reduced.

2. A crate structure for milk bottles and the like comprising side and end pieces, said end pieces having integral, right angular extending and spaced lugs and said side pieces having integral planar spaced lugs interlocking with the spaced lugs of said end pieces, certain of the lugs on said end pieces having wedging end engagement with said side pieces, a bottom member having projections engageable with the interlocking lugs on said end and side pieces and securing means thrust through said projections, and said interfitting lugs, whereby said end and side pieces are held together.

3. A crate structure for milk bottles and the like comprising side and end pieces, said end pieces having integral, right angular extending and spaced lugs and said side pieces having integral planar spaced lugs interlocking with the spaced lugs of said end pieces, certain of the lugs on said side pieces having wedging end engagement with said end pieces and pins projecting through aligned aperture in said interlocking lugs whereby the said ends and side pieces are locked together and the normal shearing stresses on said pins reduced.

4. A crate structure for milk bottles and the like comprising side and end pieces, said end pieces having integral, right angular extending and spaced lugs and said side pieces having integral planar spaced lugs interlocking with the spaced lugs of said end pieces, certain of the lugs on said side pieces, having wedging end engagement with said end pieces, a bottom member having projections engageable with the interlocking lugs on said end and side pieces and securing means thrust through said projections and said interlocking lugs whereby said end and side pieces are held together.

5. A crate structure for milk bottles and the like comprising side and end pieces, said end pieces having integral right angular extending and spaced lugs and said side pieces having integral planar spaced lugs interlocking with the spaced lugs on said end pieces, certain of the lugs on said end pieces having wedging end engagement with said side pieces and certain of the lugs on said side pieces having wedging end engagement with said end pieces and pins projecting through aligned apertures in said interlocking lugs whereby the said ends and side pieces may be locked together.

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