

Aug. 23, 1927.

C. A. WOOLSEY ET AL

1,639,873

GRATE

Filed Nov. 12, 1923

2 Sheets-Sheet 1

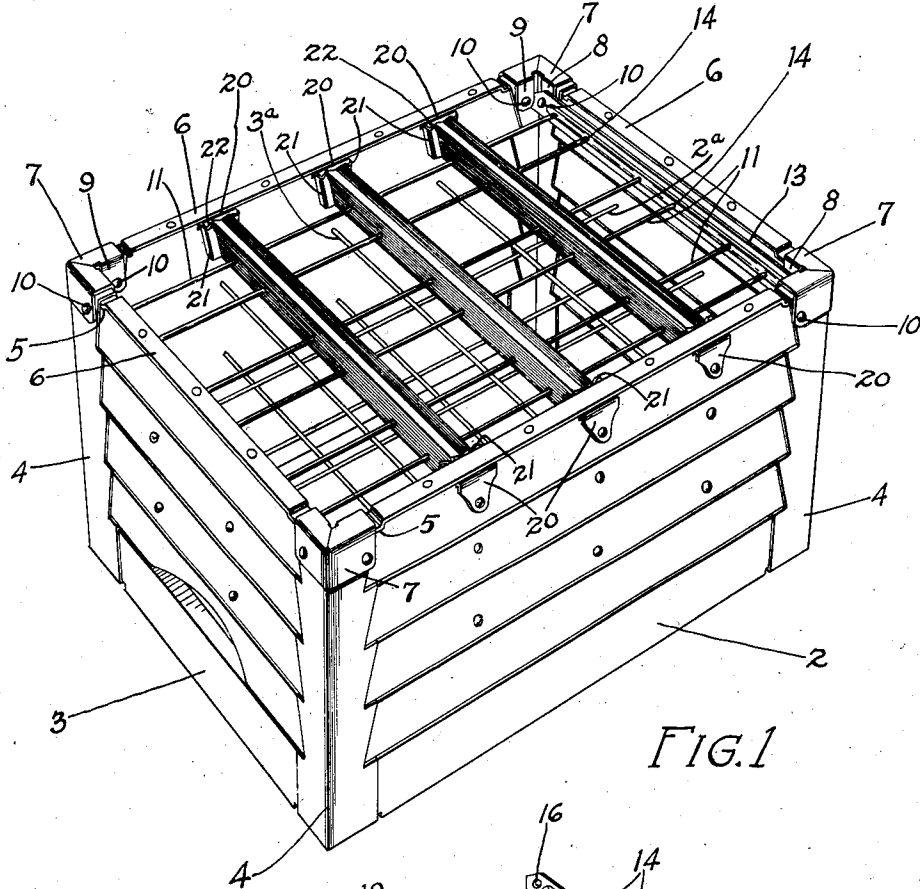
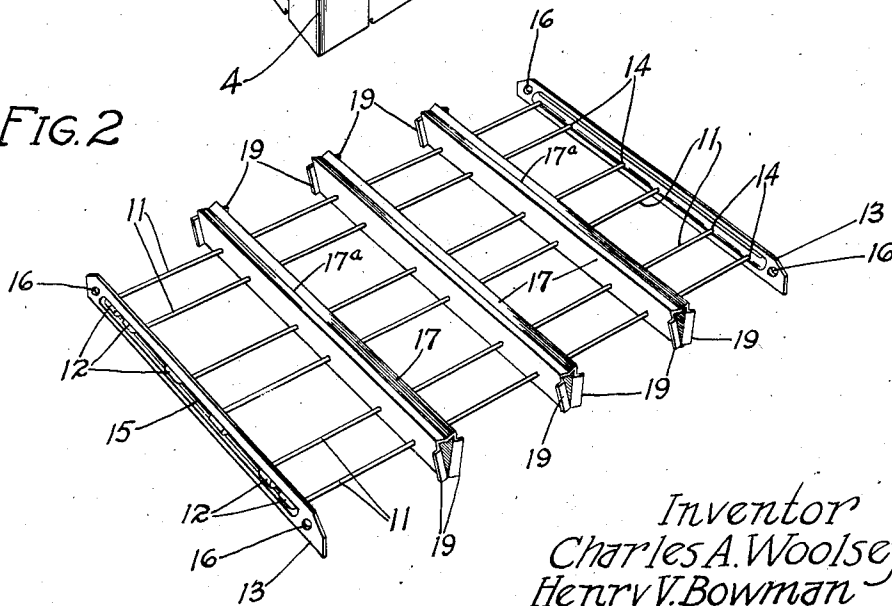


FIG. 1

FIG. 2



Inventor
Charles A. Woolsey
Henry V. Bowman
By *Paul & Moore*
Attorneys

Aug. 23, 1927.

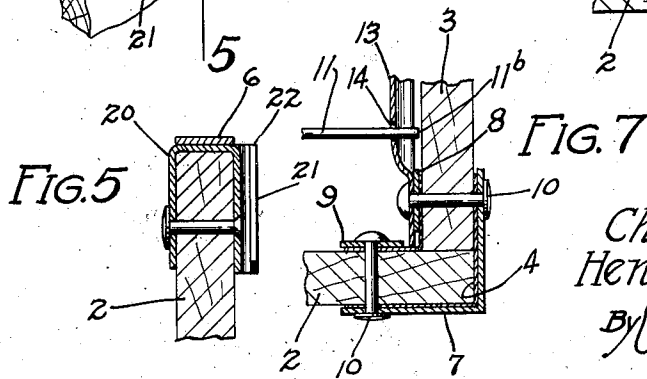
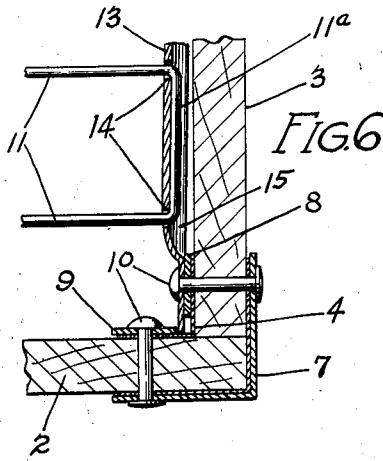
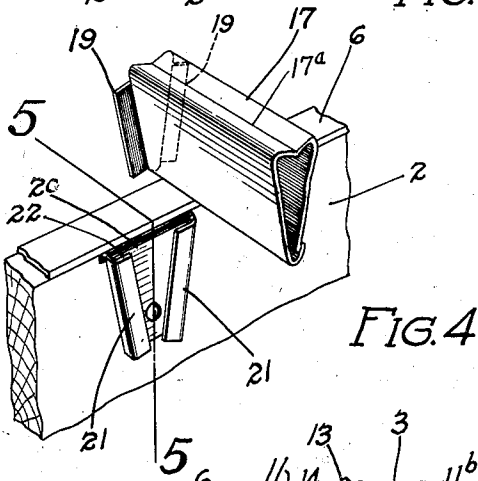
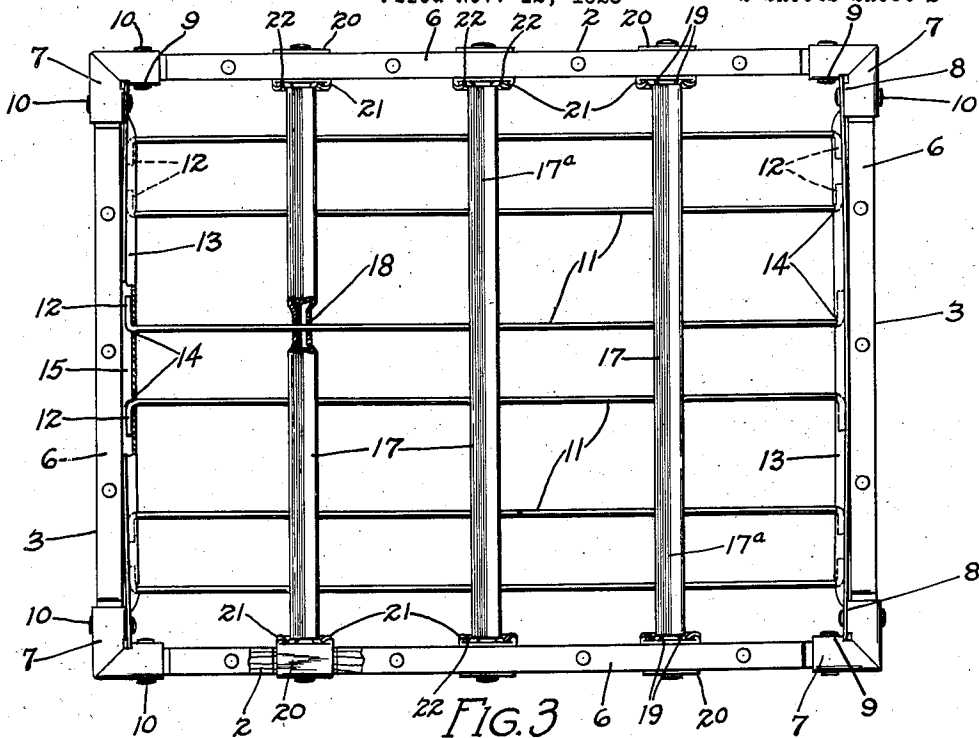
C. A. WOOLSEY ET AL

1,639,873

GRATE

Filed Nov. 12, 1923

2 Sheets-Sheet 2



Inventor
Charles A. Woolsey
Henry V. Bowman
By Paul, Paul & Moore
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES A. WOOLSEY AND HENRY V. BOWMAN, OF MINNEAPOLIS, MINNESOTA, ASSIGNORS TO NORTHWESTERN COLLAPSIBLE CARRIER CO., OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

CRATE.

Application filed November 12, 1923. Serial No. 674,358.

Our invention relates to crates adapted generally for transporting articles from place to place and particularly designed for use as a bottle crate. Crates of this character are used for shipping bottled milk and returned to the shipper when empty, the crates being handled many times in transit both ways and subjected to more or less rough usage and necessarily have to be of strong and durable construction. The crates are piled one upon another and it is customary to move a stack or tier of the crates from place to place on a platform or in a warehouse by means of a two-wheeled baggage truck, the lower end or projecting nose of the truck being thrust in under the bottom crate preparatory to lifting the stack. It has been found that crates of ordinary construction become damaged in the bottom or crushed by the pressure of the nose of the truck thereon and sometimes this damage is so severe that the crate is wholly unfit for further use. Sometimes, damage to the bottles contained in the crate results from the lifting of a stack of them on the nose of the truck.

One object, therefore, of our present invention is to provide a crate of the character described having a grid or skeleton construction in the bottom of such a nature that it will withstand the pressure of the nose of the truck thereon and allow the stack of crates to be moved from place to place without damage. In crates of this kind having the transverse rods or grid construction in the bottom, it has been customary to perforate the lower walls of the crate and anchor the rods therein. This is objectionable as the perforations tend to weaken the walls and considerable time and labor is required in securely anchoring the rods in the walls.

A further object of our invention therefore is to provide a means for mounting the grid device in the bottom of the crate which will eliminate the necessity of perforating the walls of the crate to the extent heretofore found necessary and provide a means for securing the grid which will allow its convenient removal in case of breakage or for any other purpose.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a perspective view of a crate embodying our invention in an inverted position;

Figure 2 is a perspective view of the grid removed from the crate;

Figure 3 is a plan bottom view showing the manner of securing the members of the grid in the crate;

Figure 4 is a perspective view showing in detail the manner of anchoring the cross-bars in the side walls of the crate;

Figure 5 is a sectional view on the line 5-5 of Figure 4;

Figure 6 is a horizontal sectional view of the corner of the crate showing the means for securing the end rails of the grid;

Figure 7 is a detail sectional view showing a modified form of rod.

In the drawing, 2 and 3 represent the side and end walls of the crate composed preferably of a series of narrow slats placed edge to edge, but these walls may be made each in a single piece if preferred. At the corners, the side and end walls are secured together and braced by the angle corner irons 4 and on the bottom at the corners recesses 5 are formed in the lower edges of the walls and said lower edges are covered and protected by metallic runners 6 secured to the walls by suitable means and having their ends bent to fit into the recesses 5. Corner irons 7 are provided fitting the walls of the crate in the angles at the corner and seated in the recesses on the reinforcing runners therein. These corner irons have upwardly extending ears 8 and 9 secured to the walls by suitable means such as rivets 10. The interior of the crate is divided, as usual in devices of this kind, into a series of vertical pockets by means of longitudinal and transverse rods 2^a and 3^a.

The grid or skeleton construction which

we prefer to place in the bottom of the crate comprises a series of longitudinally arranged rods 11. Substantially right angle bends 12 are formed in the ends of these rods and rails 13 have holes 14 therein to receive the ends of said rods, and longitudinal grooves 15 wherein the bent ends of the rods are adapted to lie, the grooves being of sufficient depth to receive the ends of the rods and allow the rails to fit snugly against the end walls of the crate; said rails being preferably flat as indicated in Figure 2. The walls of the grooves also serve to brace and stiffen the plates and resist bending strain thereon. The ends of the rails have holes 16 to receive the inner ends of the corner iron rivets so that the same rivets may be employed for securing the corner irons and the grid rails to the end walls of the crate. There are preferably four of these rivets and if it is desired to remove the grid at any time the heads of these rivets may be cut off and the end rails readily removed from the crate.

For the purpose of stiffening the middle portion of the grid and providing a strong non-yielding surface to receive the nose of the baggage truck or other means employed for moving the crate from place to place, we provide a series of crossbars preferably three in number, though a greater or less number may be employed as desired. These rods as shown in Figure 4 are preferably made of a folded sheet of metal 17, the material being bent longitudinally with the edges of the plate overlapping and formed wedge-shaped in cross section providing a hollow truss member, the walls of which will resist the pressure of the nose of the baggage truck thereon. The walls of the bars have holes 18 therein to receive the rods 11. These holes being preferably near the upper edges of the bars so that there will be no opportunity for the nose of the truck or other lifting means to contact with and bend the rods; the pressure of the lifting means being entirely sustained by the walls of the crossbars. The lower walls of the crossbars are preferably bent inwardly to form a longitudinal depression 17^a to further brace the bars against a bending or crushing pressure.

At each end of the crossbars, we provide laterally extending flanges 19 which following the edges of the side walls converge from their lower to their upper ends and on the side walls of the crate, we provide hangers 20 having wedge-shaped sockets therein to receive the ends of the bars and the flanges 19. We prefer to form these hangers of sheet metal with inwardly turned lips 21 spaced from the middle portion of the plate to form the sockets as described and when the parts of the crate are assembled, the ends of the bars will be thrust into the socket of these hangers and be

wedged therein and when the bars are firmly seated in the hangers, the edges 22 of the lips 21 will be bent in over the flanges 19 as indicated in Figure 3 thereby locking the crossbars securely in the hangers and cooperating with the rivets of corner irons to hold the grid securely in the bottom of the crate against the weight of its load or contents.

To remove the grid from the crate, the edges 22 may be turned back from the sockets releasing the bars and then when the corner rivets are removed the grid can be easily detached from the crate without in any way mutilating or disturbing the side walls or corner connections.

As shown in Figure 6, we may join adjacent rods by a continuous loop 11^a or as shown in Figure 7, each rod may have straight ends 11^b fitting loosely within holes in the supporting plates.

We have shown a simple inexpensive means for securing the ends of the bars in the crate but do not wish to confine ourselves to this construction or to the particular form of the bars as these details may be modified in various ways and still be within the scope of our invention.

We claim as our invention:

1. The combination with a crate, of a grid mounted in the lower walls thereof, and comprising cross bars having wedge-shaped ends and correspondingly shaped sockets on the walls of said crate to receive said ends, the under surfaces of said bars being stiff and unyielding and adapted for engagement of the nose of a lifting truck therewith.
2. The combination with a crate, of crossbars fitting between the lower walls thereof and composed of sheet metal plates folded to form hollow bracing members provided at their ends with laterally extending flanges, and hangers secured to the walls of said crate and having sockets therein to receive the ends of said bars and said flanges.
3. The combination with a crate, of crossbars fitting between the lower walls thereof and composed of metallic members provided at their ends with laterally extending flanges, hangers secured to the walls of said crate and having sockets therein to receive the ends of said bars and said flanges, said hangers having lips thereon adapted to be folded over the flanges of said bars for locking them in said hangers.
4. The combination with a crate, of a grid comprising rods interposed between the lower walls of said crate, and plates having hollow ribs wherein the ends of said rods are seated, said plates fitting against the walls of said crate on the inside, and rivets passing through said walls and through holes in said end plates for locking them in said crate.
5. The combination with a crate, of a grid

comprising rods having bent ends, plates having holes therein and longitudinal grooves intersecting said holes to receive said bent ends and brace said plates, said plates fitting the surfaces of the inner walls of said crate and rivets for securing said plates to said walls.

6. The combination with a crate having reinforcing means at the corners, and corner irons at the bottom, of a grid fitting between the lower walls of said crate and comprising plates seated against said walls and having holes therein, rivets passing through said corner irons and through said plates for securing them in position, and rods having their ends anchored in said plates and extending across the bottom of the crate.

7. The combination with a crate, of a grid comprising bars interposed between the side walls of the crate and spaced apart, said bars comprising sheet metal plates folded longitudinally to form hollow members triangular substantially in cross section, the wider portions of said bars being at the bottom and having longitudinal depressions therein for stiffening the walls thereof, the ends of said bars having tapered flanges thereon to enter correspondingly shaped sockets in said walls, and means connecting said bars with the end walls of the crate, the lower wider portions of said bars being substantially flush with the lower edges of the crate walls and presenting rigid bearing surfaces for contact with a lifting truck.

8. A container comprising side and end walls, angle brackets fitting the corners of the container at the bottom, metallic strips and rivets passing therethrough and through said brackets and the adjacent wall for securing them together, a bottom for said container comprising longitudinal members seated in and supported by said strips, and cross members intersecting said longitudinal members and having their end portions seated in the adjacent container walls, and readily separable therefrom by downward pressure when the rivets of said metallic strips are severed.

9. A container having side and end walls and metal strips secured to two of the opposite walls and having hollow ribs extending longitudinally thereof, and a metallic grid comprising rods having their ends fitting within sockets in said hollow ribs at intervals, and cross members engaging said rods and having their ends seated in the opposite

walls of the container, said cross members resisting the upward thrust of a moving truck thereon.

10. The combination with a suitable container, angle brackets fitting the corners thereof at the bottom, metallic strips secured to said angle brackets and the adjacent wall of the container and having longitudinal ribs formed thereon, and metallic longitudinal and transverse members interposed between said strips and supported thereby and by the container walls.

11. A container having angle irons fitting the corners thereof at the bottom, metallic strips secured to said angle irons and the end walls of the container and having hollow ribs formed thereon, and a metallic grid comprising longitudinal and cross members interposed between said metallic strips, the longitudinal members having their ends seated in the ribs of said strips and the cross members of said grid engaging said longitudinal members and terminally secured to the opposite walls of said container.

12. A container having its walls connected at the corners by angle brackets, a grid frame comprising longitudinally ribbed connector elements terminally secured to said angle brackets and the walls of the container, cross members having their ends secured to the side walls of the container and parallel substantially with said connector elements, and adapted to resist vertical pressure and a series of rods passing through said cross members and seated at their opposite ends in the ribs of said connector elements.

13. An all-metal crate bottom comprising opposing related parallel strips having outstanding hollow longitudinal reinforcing ribs, each having rod-receiving openings, a grid element intermediate the rib strips in the plane thereof providing a plurality of transverse members parallel with the strips adapted to be terminally secured to the opposite crate walls and providing lower faces adapted to receive and resist the thrust of a moving truck thereon, and a series of rods passing through said cross members and seated at their opposite ends in the rib openings of said strips.

In witness whereof, we have hereunto set our hands this 8th day of November, 1923.

CHARLES A. WOOLSEY.
HENRY V. BOWMAN.