Aug. 4, 1931. A. E. DAVENPORT 1,817,805

METALLIC CRATE

Filed April 5, 1929

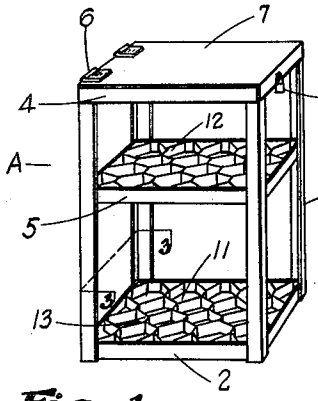


Fig. 1

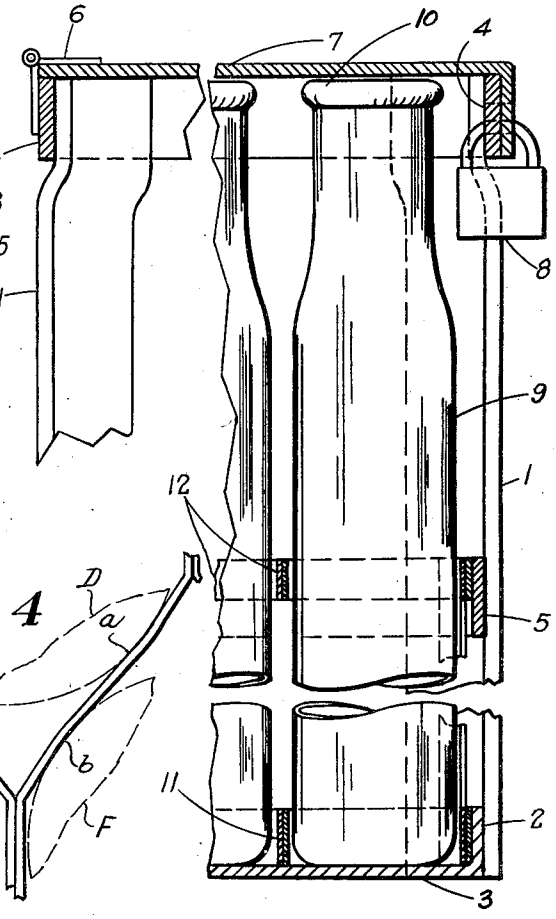


Fig. 2

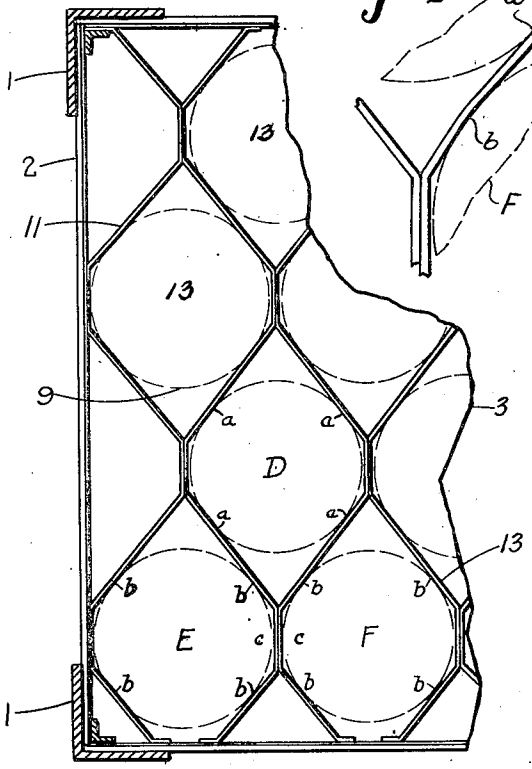


Fig. 3

Fig. 4

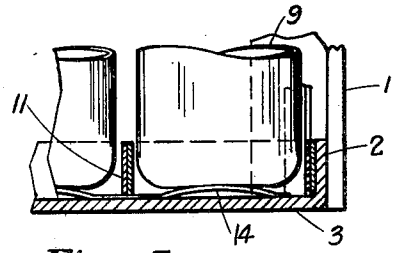


Fig. 5

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UNITED STATES PATENT OFFICE

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METALLIC CRATE

Application filed April 5, 1929. Serial No. 352,810.

This invention relates to improvements in metallic crates and has for its primary object the provision of light-weight, durable and efficient crate adapted for the handling and shipment of glass bottles particularly.

It is another object of the invention to so construct the crate as to effect the secure retention of the bottles in upright relatively spaced order therein, and wherein the crate has been designed to protect the bottles during handling and shipment to the end of preventing breakage of the bottles when the crate is subjected to severe shocks and jars.

A further object of the invention rests in constructing the crate so that the bottles may be viewed when positioned or retained therein and, further, to so form the crate that while it provides maximum mechanical strength and affords complete protection to the bottles, yet it is extremely light in weight in order to facilitate its manual handling.

With these and other objects in view, it will appear as the description proceeds that the invention consists in novel features of construction, combinations of elements and arrangements of parts hereinafter described and pointed out in the following description and claims.

In the accompanying drawings, which form a part of this specification:

Figure 1 is a perspective view of the improved shipping crate comprising the present invention,

Figure 2 is a vertical longitudinal sectional view taken through the crate,

Figure 3 is a horizontal sectional view on the plane indicated by the line 3—3 of Figure 1,

Figure 4 is a detail view showing the metal rack flexed in response to bottle pressures, and

Figure 5 is a detail sectional view of a modified form of the invention.

Referring more particularly to the drawings, the numeral 1 designates my improved crate in its entirety. In the specific embodiment thereof herein selected for illustrative and descriptive purposes, the crate is formed to include a plurality of vertically extending, relatively spaced, angle-bars or members 1. These members have their lower ends connected by welding or riveting with the upstanding marginal flanges 2 provided upon a horizontally extending metallic bottom plate 3. The upper ends of the members 1 are connected in a similar manner with a substantially rectangular frame 4 which, in combination with the leg members and the bottom plate 3, provide a rigid frame structure of requisite strength. The structure is further braced or reinforced by means of an intermediate frame 5, which is rigidly connected with the members 1 at positions intermediate of their length. The upper flange 4 carries hinges 6 along one side thereof, to which is connected a swinging metallic top plate 7, by which the open upper end of the frame structure is adapted to be closed during periods of storage or shipment, and to be opened for bottle removal purposes. The top plate 7 and the frame 4 are provided with openings permitting of the use of a sealing device 8 which prevents the cover from being surreptitiously raised, and avoiding tampering with the contents of the crate.

The crate is especially designed for holding elongated glass bottles. These bottles are indicated by the numeral 9, and although they may be used for any purpose, the said bottles are especially designed to receive lubricating oils of the kind employed in the lubricating of internal combustion engines. These bottles are of substantially uniform diameter throughout the major portion of their length and have their open upper ends closed by means of the customary crimped metallic caps 10. To retain these bottles in fixed spaced positions within the crate, I have provided a plurality of spacing racks 11 and 12. These racks are of identical construction and consist of flat metallic strips which are formed to provide a plurality of polygonal pockets 13. The side walls of these pockets may frictionally engage with the corresponding walls of the bottles 9 to confine the latter to fixed positions within the crate. The rack 11 is mounted immediately adjacent to the bottom plate 3, while the upper rack is disposed within the confines of the intermediate frame 5. These racks, there-

fore, engage with the lower portions of the bottles 9 and with the intermediate portions of the latter, and effectively prevent the bottles from striking one another when disposed within the crate. It will be observed that the pockets 13 are so situated that a maximum number of bottles may be retained within the crate. In other words, there is a compact grouping of the bottles to secure complete utilization of the cubical dimensions of the crate and yet this is accomplished in such manner as to provide for a proper relative spacing of the bottles to prevent the latter from striking one another during the handling of the crate.

The racks as shown in Figure 3, are formed from metal strips which are partly bent and arranged to prevent breakage of the bottles. For example, in Figure 3, the bottles have been indicated by the letters D, E and F. The bottle D contacts directly with the metallic strips at the points indicated at *a* and similarly, the bottles E and F contact with the side walls of the pockets 13 as indicated by the points marked *b*—*b*. These points are in spaced relation from the points *a*, and since the metallic strips forming the racks 11 and 12 are formed from a resilient material it follows that the side strips to a limited degree are permitted to bend or flex in response to bottle pressures. Thus the bottles do not directly impart thrusts to one another, but such thrusts are in the main absorbed through the resiliency of the metal strips. The adjoining bottles E and F, for example, do not come into direct contact with the strips at the points marked *c*—*c*, but are spaced apart an appreciable distance to admit of the flexing or resiliency above noted. This construction renders the crate well suited for the handling of glass bottles wherein care must be exercised to avoid breaking of the bottles when the crates are handled in a rough or careless way. In the modification disclosed in Figure 5, the bottom of the crate is provided with resilient seats 14 which cushion the bottles against longitudinally applied forces.

In view of the foregoing it will be seen that the present invention provides a crate of strong, substantial and durable construction, and yet one which is extremely light in weight so that it may be handled manually with convenience. The general proportions of the crate also tend to facilitate this feature. The bottles are securely retained when locked in the crate against relative movement, or at least against such movement that will tend to result in breakage or damage to the bottles. The crate may be employed as a medium for shipping or expressing a number of such bottles, and its construction is such as to render it acceptable to commercial carriers. Further, the crate may be employed for the display of bottles, since the sides thereof are open and permit the bottles to be readily viewed from an exterior standpoint. In automobile servicing stations the crate is particularly advantageous in use in that it permits oil in desired quantities to be compactly stored and yet to be conveniently accessible when needed. In this respect the crate avoids the use of oil drums and pumps heretofore largely used in the selling and handling of motor lubricating oils.

What is claimed is:

1. In a metallic shipping crate, a frame structure, spacing means rigidly mounted in a horizontal plane within said frame structure for maintaining in spaced relationship a plurality of vertically disposed substantially cylindrical bottles which are adapted to be contained within the crate, said spacing means being formed to comprise a plurality of thin, relatively flat angularly bent metallic strips relatively joined to provide bottle receiving pockets, each having a plurality of angular side walls, the said pockets being separated by a single thickness of resilient metal, the angular formation of the walls of said pockets being such that bottles positioned in adjoining pockets engage with the common wall between said pockets at points spaced longitudinally of said common wall, whereby said wall is permitted to flex between the bottle engaging portions thereof in response to handling forces.

2. In a metallic shipping crate, a frame structure, spacing means rigidly mounted in a horizontal plane within said frame structure and formed to include a plurality of angularly walled bottle receiving pockets, each of said pockets possessing a substantially diamond-shaped configuration whereby a substantially cylindrical body positioned in any one of said pockets will engage at four points with the walls thereof, the bottle engaging portions of said pockets being formed from relatively thin and resilient metallic strips, the joining portions of said pockets being separated by but a single thickness of said strips, the configuration of said pockets being such that bottles retained in adjoining pockets engage with the common wall separating them at longitudinally spaced points, whereby that portion of the wall lying between the bottle engaging portions thereof is permitted to flex in response to handling forces.

3. In a metallic shipping crate, a frame structure, spacing devices stationarily mounted in a horizontal plane within said frame structure, said spacing devices consisting of a plurality of adjoining substantially corrugated flat metallic strips arranged relatively and secured to said frame structure to produce a plurality of angularly walled pockets having substantially diamond-shaped configuration, said pockets be-

ing adapted for the reception of substantially cylindrical bottles, the bottle engaging walls of adjoining pockets being separated by a single thickness of said strips, the shape of said pockets being such that bottles contained in adjoining pockets engage with the single thickness of the strip separating them at points spaced longitudinally of the strip, whereby that portion of the strip lying between the bottle engaging portions thereof is permitted to flex in response to handling forces.

In testimony whereof I affix my signature.

ARTHUR E. DAVENPORT.