Oct. 5, 1943. J. A. MARTIN ET AL. 2,330,982

CARBOY CRATE

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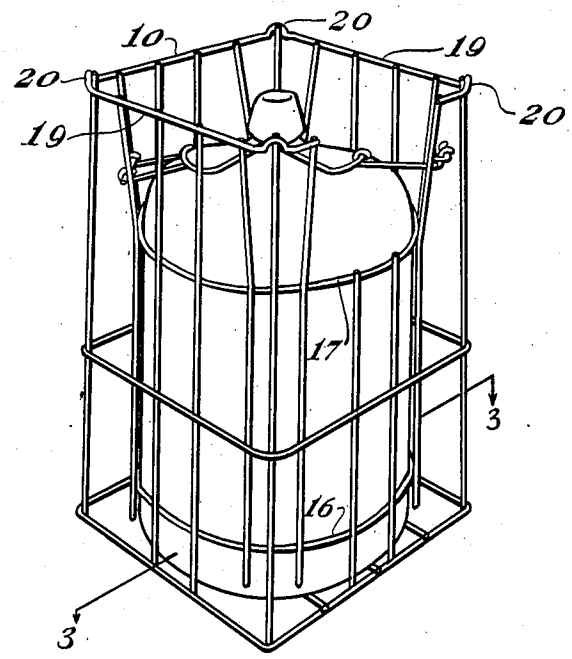

Fig. 1

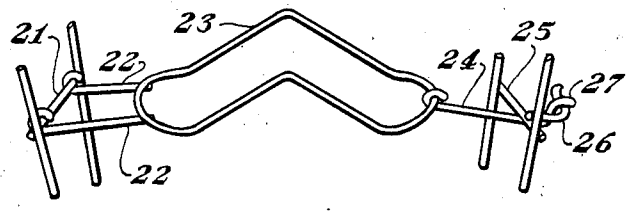

Fig. 2

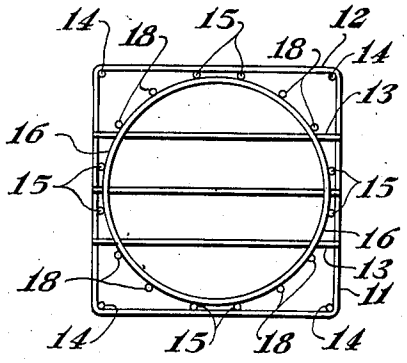

Fig. 3

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CARBOY CRATE

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4 Claims. (Cl. 220—19)

This invention relates to protective shipping crates for carboys and the like.

The conventional wooden carboy crates are bulky, heavy, easily broken at the corners, and incapable of being stacked one on another for economy of storage or cartage space. In their usual form they are wooden boxes, substantially cubical, from which the neck of the carboy protrudes, either unprotected or capped by an unsatisfactory cover, usually triangular in vertical section. The conventional crate for a standard 12-gallon carboy, suitable for shipment in interstate commerce, weighs about 40 pounds, as compared with a weight of about 24 pounds for the empty carboy alone, and weights of from 80 to about 180 pounds, more or less, for the contents. The wooden crate then may amount to 62.5% of the shipping weight of the empty container on its return trip for refilling, and from about 16% up to as much as 27% of the gross weight of the filled package. Similarly, the volume displacement of a conventional wooden crate for a 12-gallon carboy is about 4.5 cubic feet while that of the carboy is only about 1.8 cubic feet, or only 40% of the cubage actually required in present shipping practice. Remembering that, for example, 27 such crates require 27 times the floor space of one, during shipment, instead of nine (3-high), the waste incident to their continued use is readily apparent. Yet another disadvantage of the wooden crates now in use is the fact that they provide no convenient means whereby the carboy can be removed therefrom.

It is, accordingly, an object of the present invention to provide a novel shipping crate for carboys and the like which has a low ratio of dead weight to pay load, a low ratio of overall volume to carboy volume, and which may be stacked economically one on another without requiring dead or unproductive floor space. Another object is to provide a crate as aforesaid which permits easy access to and removal of the carboy itself without destruction or weakening of the crate. A further object is to provide such a crate which permits of constant observation of the liquid level in the carboy without, at the same time, exposing the bottle to breakage hazards in transit or handling due to collision with other articles. Still another object is to provide such a crate which not only affords protection but also provides convenient hand-holds for tilting the carboy or for moving the crate. Other and related objects will become apparent from the following description of a preferred embodiment of the invention.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the article hereinafter fully disclosed, and set forth in the appended claims, the annexed drawing and the following description setting forth in detail but one embodiment of the invention.

In the said annexed drawing:

Fig. 1 is a perspective view of the preferred form of the invention, showing a carboy in position therein;

Fig. 2 is a detail of the yoke whereby the carboy is held in place in the crate; and

Fig. 3 is a plan view of a section taken along the plane of lines 3—3 in Fig. 1, the carboy being omitted.

In the embodiment illustrated in the drawing, the invention consists in a steel or other metallic open framework crate slightly smaller at the top than at the bottom comprising an outer frame of rectangular cross-section and, secured thereto an inner frame of circular cross-section together with a bottom grid to support the carboy, a yoke to secure the same within the crate, and, at each of the upper four corners of the rectangular frame, at a height above the top of a carboy of the intended size, an upstanding ear or lug whereby successive tiers of such crates are prevented from slipping when stacked compactly one above the other. One vertical side of the frame is preferably left open at the top to provide a port through which liquids may be poured freely from the carboy for any desired use. The entire crate may, if desired, be dipped in a rubber or other plastic composition further to protect the carboy

Referring now to the drawing, the new crate 10 has a square base 11 consisting of a suitably bent and welded steel rod 12 overlaid with a plurality of rods 13 welded to the frame member 12 and disposed parallel to one another, forming a supporting grid for a carboy. At each of the corners of base 11 is welded an upright rod 14 of a length slightly greater than the height of the intended carboy, and tilted slightly from the vertical so that the upper extremities of rods 14 define a square smaller, by at least twice the thickness of the framework rods, than the square of the base 11. At each side of the base 11, and welded to the base frame member 12 is a pair of parallel upright rods 15, of the same length on three sides, and parallel on all sides to the corner uprights 14. Above the rectangular base 11, at each of two different heights therefrom, and concentrically dropped with respect to the imaginary vertical axis thereof, are two rings, 16 and 17, bent from rods of the same approximate gauge

as that of the rest of the crate framework. Rings 16 and 17 are horizontally disposed and welded to each of rods 15, thereby uniting the rectangular outer frame and the cylindrical inner frame. On one side of crate 10, rods 15 are cut off at the point where they pass horizontal ring 17, thus leaving a decanting port, as previously mentioned. Between sets of rods 15, and disposed about the perimeter of rings 16 and 17, are four pairs of rods 18 each welded to each of rings 16 and 17, and extending below ring 16 but not to the upper plane of the grid formed by horizontal rods 13. Rods 18 each extend above ring 17, flaring outward from their respective junctions therewith to intersect the perimeter of the square formed by the upper ends of straight rods 14 and 15. The upper ends of rods 18, and those of three pairs of rods 15 are cut to form a horizontal plane above the uppermost level which would be reached by a carboy contained in the crate 10. The upper ends of rods 14 may be cut at the same level, though preferably these rods 14 are cut at a level from ½ inch to 1 inch or so higher than are rods 15 and 18. The four corner rods 14, the eight outwardly flaring tie-rods 18, and the three pairs of rods 15 which extend to the top are each welded to a rod 19 which is substantially horizontally disposed and bent to form a full three sides and to define a part of the fourth side of a rectangle. The balance of the fourth side of said uppermost rectangular member is preferably omitted to complete the decantation port previously mentioned and provided for by the foreshortening of one pair of rods 15. In a preferred embodiment, wherein rods 14 extend above the level of the upper ends of rods 18, the frame member 19 is so-formed at its junctions with rods 14 to make upstanding ears or lugs 20 which, because of the slight inward tilt given to rods 14, define a square just smaller than that defined by frame member 12 outlining the base of the crate. Other like crates can then be stacked above the one described, the base 11 of one being in engagement with the ears 20 of the one below, and thus being anchored against slippage.

There remains to be described a suitable yoke, whereby a carboy may be prevented from any appreciable vertical motion within the crate. Such a yoke is illustrated in Figs. 1 and 2, and consists essentially of a hinge portion, a loop portion, and a lock, preferred embodiments of which are those shown. The yoke is preferably disposed diagonally of the crate, being hinged from a cross-bar 21 disposed between members of one pair of rods 18 at a point above ring 17 and at a height near that of the shoulder of a normal carboy of the capacity for which the crate is adapted. Hinge members 22, swivelled on rod 21, are suitably welded to a loop member 23 of a size to pass over the top of a carboy and of a contour to rest on the shoulders thereof. Loop 23 is locked in place over a carboy by means of hook 24, swivelled from loop 23 at a point opposed to the point of attachment of hinge members 22. Hook 24 is passed under rod 25, which is a counterpart of rod 21, welded similarly to a pair of rods 18. To one of these rods 18, just above rod 25, is welded a curved lock-stop 26. The curved end 27 of hook 24, then, is passed under rod 25, and is slipped between this rod and stop 26, thus holding a carboy from vertical motion.

A crate constructed according to our invention and of a size to carry a 12-gallon carboy weighs only 20 pounds and occupies only 4.4 cubic feet, without there being any protruding bottle neck. There is, then, a considerable saving in weight and in volume over the older wooden crates, and the further advantage that the present crates can be stacked one above the other for maximum efficient utilization of storage or cartage space.

It is to be understood that various modifications may be made in the structure shown without departing from the essential features of the present invention. To illustrate, the base 11 may be made of a light angle iron instead of rod 12, having a corrugated sheet metal carboy support instead of the grid formed by rods 13 in the illustrated embodiment. Similarly, other numbers of rods may be employed instead of the precise number described, and they may be somewhat flattened, or oval, instead of being circular in cross-section. Further, the yoke member may comprise other types of hinge, loop and lock than those shown. Also, the stacking ears may be formed at the bottom of the crate, especially on large crates, so that the apron of a hand truck can be run thereunder for moving the crate readily.

The invention has been discussed with respect to carboys of 12-gallon capacity. The crates of the invention have also been made and used with equal success of sizes to handle 5- and 6-gallon carboys and jugs. Various types of bottles, jugs, and crocks are, of course, adapted to being transported in the crates herein described.

Having now particularly described the invention, and one specific manner in which the article comprising the same may be constructed, we claim:

1. As an article of manufacture, a metallic carboy crate comprising a plurality of upright rods, of a length greater than the height of a carboy, welded to a plurality of horizontally disposed tie rods bent in rectangular form, to provide an outer framework of rectangular plan; a plurality of other upright rods welded to a plurality of horizontally disposed rings to provide an inner framework of circular plan, said rings being of a size to circumscribe a carboy and to inscribe the rectangular outer frame, and being welded to such of the vertical members of the outer frame as are adjacent the points of tangency between the circular inner frame and the rectangular outer frame; a bottom grid to support a carboy within the crate; and a yoke to secure the same therein.

2. As an article of manufacture, a metallic carboy crate comprising: a rectangular outer framework, consisting of a plurality of horizontally disposed tie rods bent in rectangular form, four upright rods connecting the said rectangular tie rods and welded within the angles thereof, forming substantially a rectangular parallelepiped, and four pairs of upright rods, extending upward from the bottom rectangular tie rod, each being of a length to join at least two of the rectangular tie rods, and being disposed one pair on each of the substantially vertical plane faces of the parallelepiped, one on each side of the center of said face; an inner framework of circular plan, consisting of the first said four pairs of upright rods further joined to a plurality of horizontally disposed tie rings, and four other pairs of substantially vertical rods welded to said rings and disposed symmetrically about the rings with respect to the first said four pairs of rods, and extending upwardly and outwardly from the upper of said

rings to join the uppermost horizontal rectangular tie rod, completing the interconnection between said inner frame of circular plan and said outer frame of rectangular plan; a plurality of parallel rods horizontally disposed across the lowermost rectangular tie rod to form a supporting grid for a carboy; and, a yoke disposed at a height within the crate to secure a carboy therein.

3. The crate as claimed in claim 2, wherein one of the first said pairs of upright rods extends only to the uppermost horizontal tie ring and wherein the uppermost horizontal rectangular tie rod defines only three full sides and but parts of the fourth side of the square top of the crate, the remainder of said fourth side above the said shortened upright rods being open, thereby to provide a decantation port in said crate.

4. A metallic carboy crate including: An outer frame of rectangular cross section comprising a plurality of upright members of a length greater than the height of a carboy joined to a plurality of horizontally disposed tie members bent in rectangular form; an inner frame of substantially circular cross section inscribing said outer frame and comprising a plurality of upright members joined to a plurality of horizontally disposed tie members; such of the said upright members of the outer frame as are adjacent points of tangency being joined to the horizontally disposed tie members of the said inner frame; a bottom grid to support a carboy within the crate; and, a yoke to secure the carboy therein.

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