Dec. 27, 1932. H. H. McKEE 1,892,531

ICE AND BRINE TANK FOR REFRIGERATOR CARS

Filed Oct. 13, 1930 2 Sheets-Sheet 1

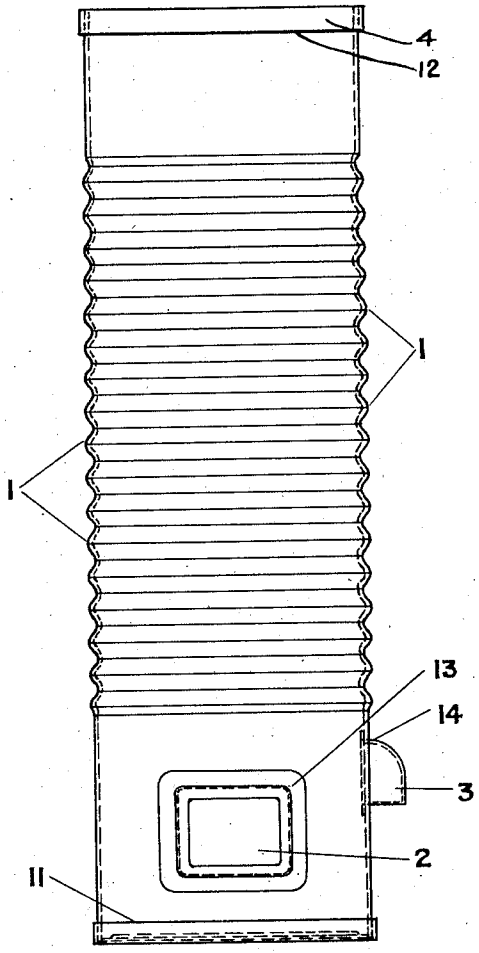


FIG-1

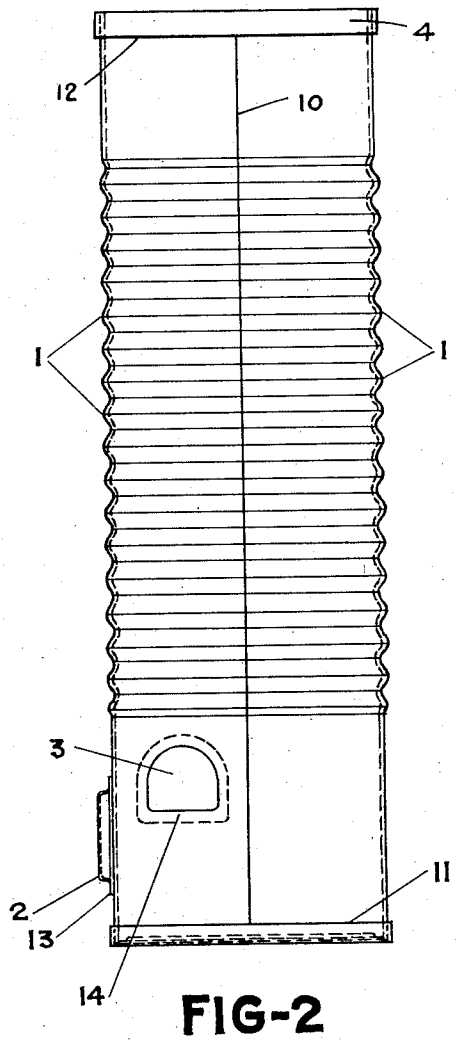


FIG-2

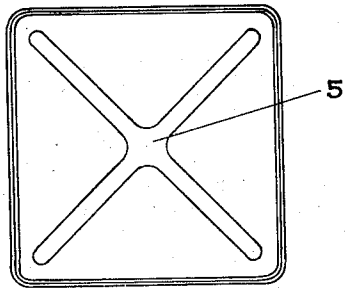


FIG-3



FIG-4



FIG-5

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ICE AND BRINE TANK FOR REFRIGERATOR CARS

Filed Oct. 13, 1930 2 Sheets-Sheet 2

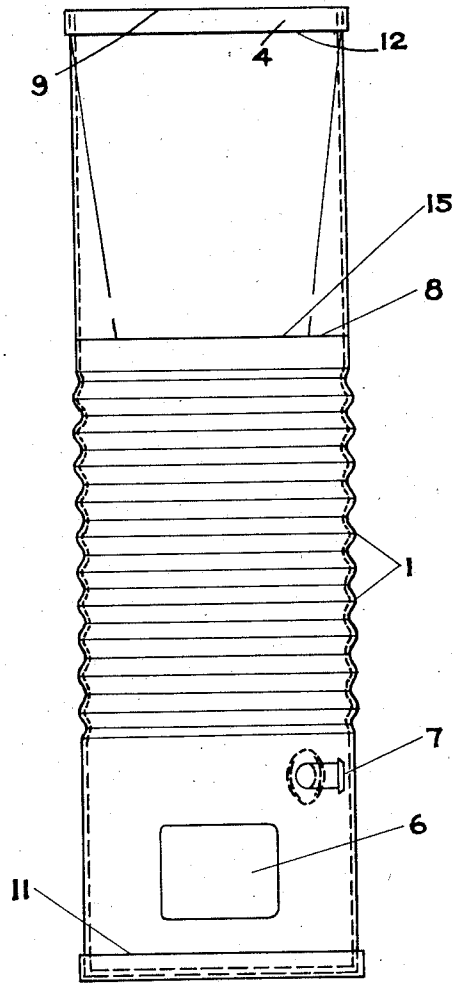


FIG-6

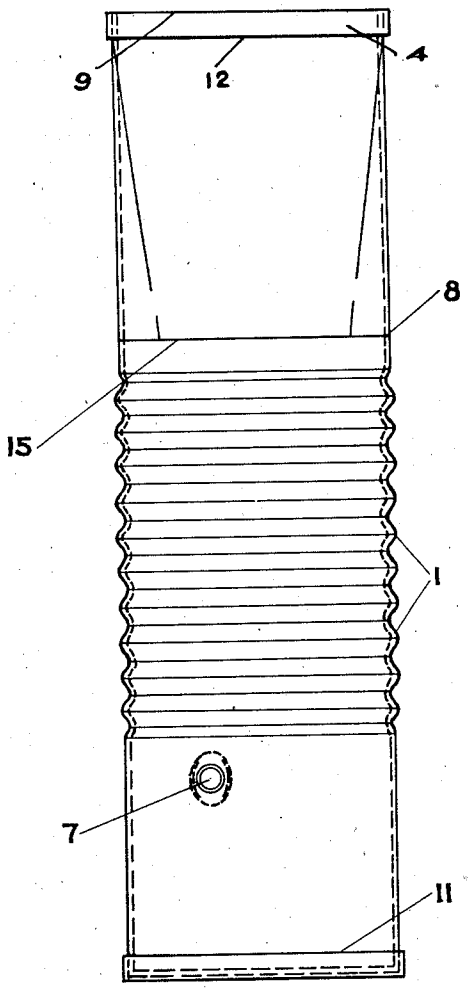


FIG-7

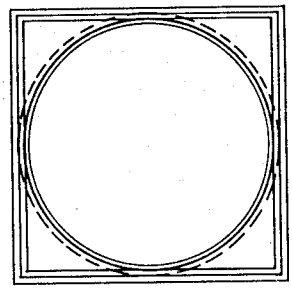


FIG-8

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1,892,531

UNITED STATES PATENT OFFICE

HARRY HENRY McKEE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INDUSTRIAL PATENTS CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

ICE AND BRINE TANK FOR REFRIGERATOR CARS

Application filed October 13, 1930. Serial No. 488,287.

My invention relates to improvements in refrigerator cars, and especially in ice and brine tanks for refrigerator cars.

One of the objects of my invention is to provide an ice tank having a maximum surface for its wall area in order to permit more rapid melting of the ice within the tank and consequent lower temperature in the car.

Another object of my invention is to provide a method for the efficient manufacture of such ice tanks. Another object of my invention is to provide a tank of great strength better fitted to withstand the strains and stresses to which it must be subjected in service. Unlike ice tanks or other refrigerating units used in stationary refrigerating plants, ice tanks used in refrigerator cars must be constructed with a view to withstanding the stresses and strains incident to the movement and handling of railroad rolling stock. Railroad rolling stock is subjected to rough handling, especially in switching and consequently considerable trouble is experienced with ice tanks for refrigerator cars constructed in the conventional manner.

My invention provides an ice tank of greater strength than the ordinary smooth wall tank. It has been proposed from time to time to provide corrugations or other breaks in the surface of ice tanks in order to secure greater surface, but two difficulties arise in this connection. In some cases the corrugations are of such size and shape as to cause accumulations of foreign material on the inside walls of the tank, resulting in a deleterious insulating effect. Another serious defect in such tanks has been that no means has been proposed to construct them with sufficient strength to render them serviceable in ordinary practice.

My invention may be produced in any of a variety of forms, but preferably in the form of the square tank as shown in Figures 1, 2 and 3, or the round tank as shown in Figures 6, 7 and 8. The round tank is simple in manufacture and tends to permit better circulation between the individual tanks of a battery. Similar reference numerals in several figures of the accompanying drawings which form a part of this specification refer to identical or similar parts in all the figures.

Figure 1 is a front elevation of a square tank provided with a plurality of non-angular corrugations as 1, the cross-section being shown by dotted lines; 2 and 3 are conventional types of cleanout fittings. It will be noted that the corrugations are carried down toward the bottom just far enough to permit of the mounting of such fittings on uncorrugated wall surface at the bottom of the tank. The corrugations may be carried to the top if desired, but I have preferred to show the tank with wall surface at the top uncorrugated for a sufficient distance to permit of the fitting of a ventilating device, such as is described in the co-pending application of Alexander H. Gaebler, Serial No. 358,254.

Figure 2 is a side elevation of the tank shown in Figure 1. It will be noted that the tank is provided with a top band four, which in practice I have constructed of steel two inches wide. The bottom of the tank shown in Figures 1 and 2 is illustrated in Figure 3, which is a plan view of the bottom showing pressed ridges in the form of the cross 5 which serves to strengthen the bottom.

Figure 4 is a detail in cross-section of corrugations 1.

Figure 5 is a detail in cross-section of one arm of cross 5.

Figure 6 is a front view of the round brine tank having provision as at 6 and 7 for cleanout and drainage.

In view of the fact that the conventional hatch for introducing ice is square, the round tank tapers up from 8 to the top from a circular cross-section at 8 to a square cross-section at 9.

Figure 8 is a plan view of the round tank shown in Figures 6 and 7, illustrating the square form at the top and the circular form at the bottom, the dotted line indicating the bottom band.

In practice, I have satisfactorily constructed tanks of both the round and square type with No. 16 gauge iron or steel with pressed steel fittings and bottom, in order to make a homogeneous weld, using No. 11 gauge pressed steel for the bottom, the pressed

steel brine retaining valves and cleanout collars and a two inch steel top band all being welded into one unit and galvanized as a unit after complete manufacture.

The line 10 in Figure 2 indicates a weld. Tanks are also welded at 11 and 12 as well as at the collars for the fittings as at 13 and 14. In the round tank the upper portion is welded to the circular portion at 15. This method of construction eliminates riveting, soldering, and lapped joints, which render a tank susceptible to leaks, and it also eliminates damage to the plating of galvanized iron in the process of fabrication. The corrugation of the side walls serves three very important purposes. In the first place, it eliminates buckling while the tank is being galvanized as a complete unit. In the second place, it strengthens the tank as a whole so as to withstand the strain and stresses of service, and it increases the radiating service of the entire tank by approximately 20%. The welding eliminates leaks caused by breaking joints due to vibration in the surface and tamping pole strains at icing stations. I have found that the most satisfactory corrugations are non-angular, substantially three-eighths (3/8) inch in depth and one and one-quarter (1 1/4) inches from crest to crest of adjacent corrugations.

It is understood that changes may be made in the design and construction of these ice tanks without departing from the spirit of my invention as described in the following claims.

I claim:

1. An ice tank for refrigerator cars comprising an upright tubular body member formed of sheet ferrous metal the meeting edges of which are welded, a ferrous reinforcing edge about the top of the tubular body and welded thereto, a sheet metal ferrous bottom member having upright flanged portions welded to the bottom portion of the tubular body and ferrous fitting members located on the outside of the tubular body and welded to the lower vertical side portions thereof, the tubular body being circumferentially corrugated intermediate its ends, the fitting members being secured to an uncorrugated section which is located between the corrugated section on the one hand and the flange of the bottom member on the other, the bottom member being provided with pressed in ridges for adding strength and rigidity to the tank structure, the exposed sections of the several ferrous parts being protected by suitable coating material.

2. An ice tank for refrigerator cars comprising an upright tubular body member formed of sheet ferrous metal the meeting edges of which are welded, a ferrous reinforcing edge about the top of the tubular body and welded thereto, a sheet metal ferrous bottom member having upright flanged portions welded to the bottom portion of the tubular body and ferrous fitting members located on the outside of the tubular body and welded to the lower vertical side portions thereof, the tubular body being circumferentially corrugated intermediate its ends, each fitting member being secured to an uncorrugated section which is located between the corrugated section on the one hand and the flange of the bottom member on the other, the exposed sections of the several ferrous parts of the tank being protected by suitable coating.

3. An ice tank as defined in the claim last preceding in which the extreme top portion of the tank is square in horizontal cross section but in which the corrugated section of the body is circular in horizontal cross section.

Signed at Chicago, Illinois, this 10th day of October, A. D. 1930.

HARRY HENRY McKEE.