

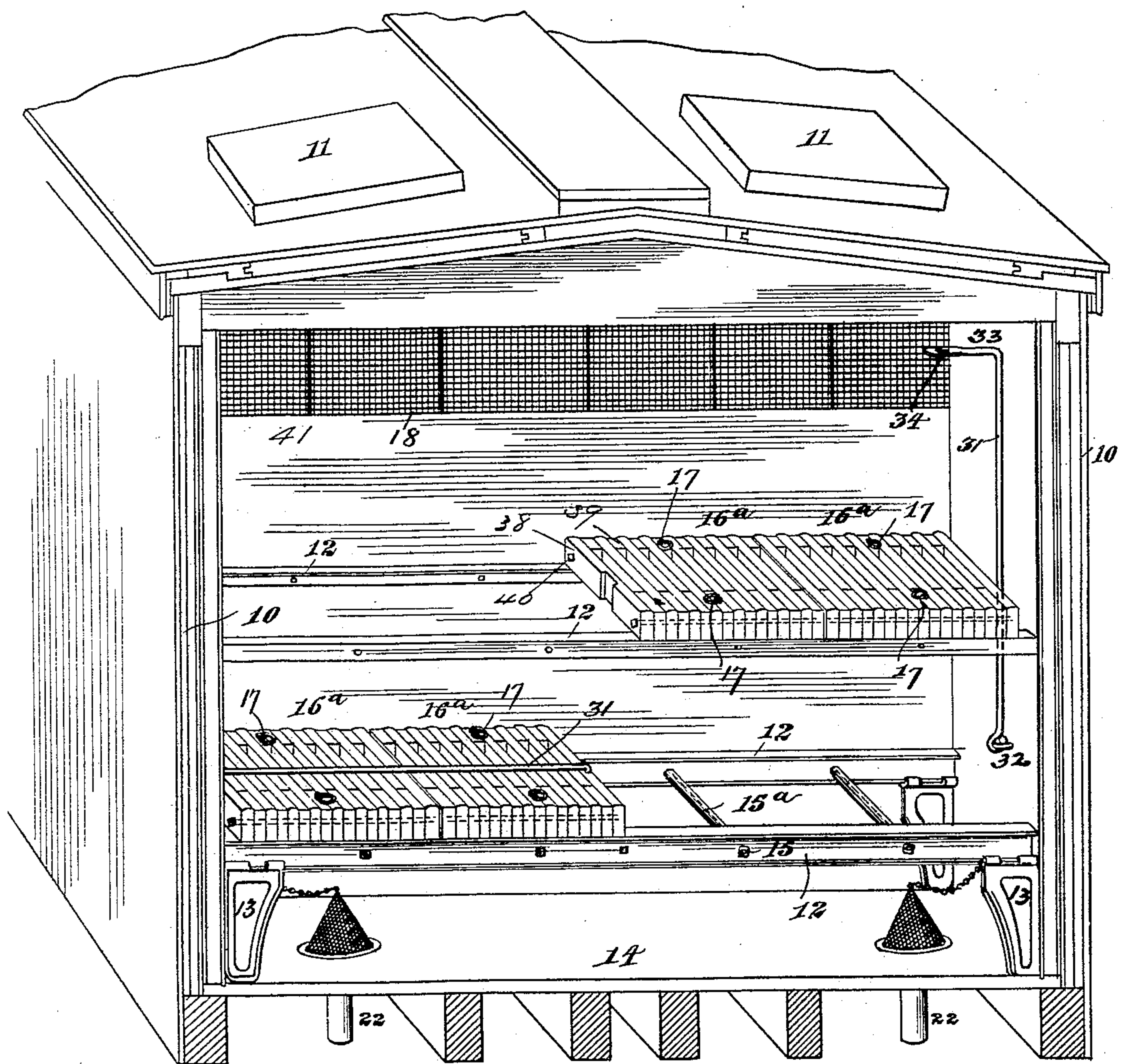
T. B. KIRBY.
ICE TANK FOR REFRIGERATOR CARS.

(Application filed Oct. 22, 1897.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses,
J. D. Mann,
Frederick Goodrum

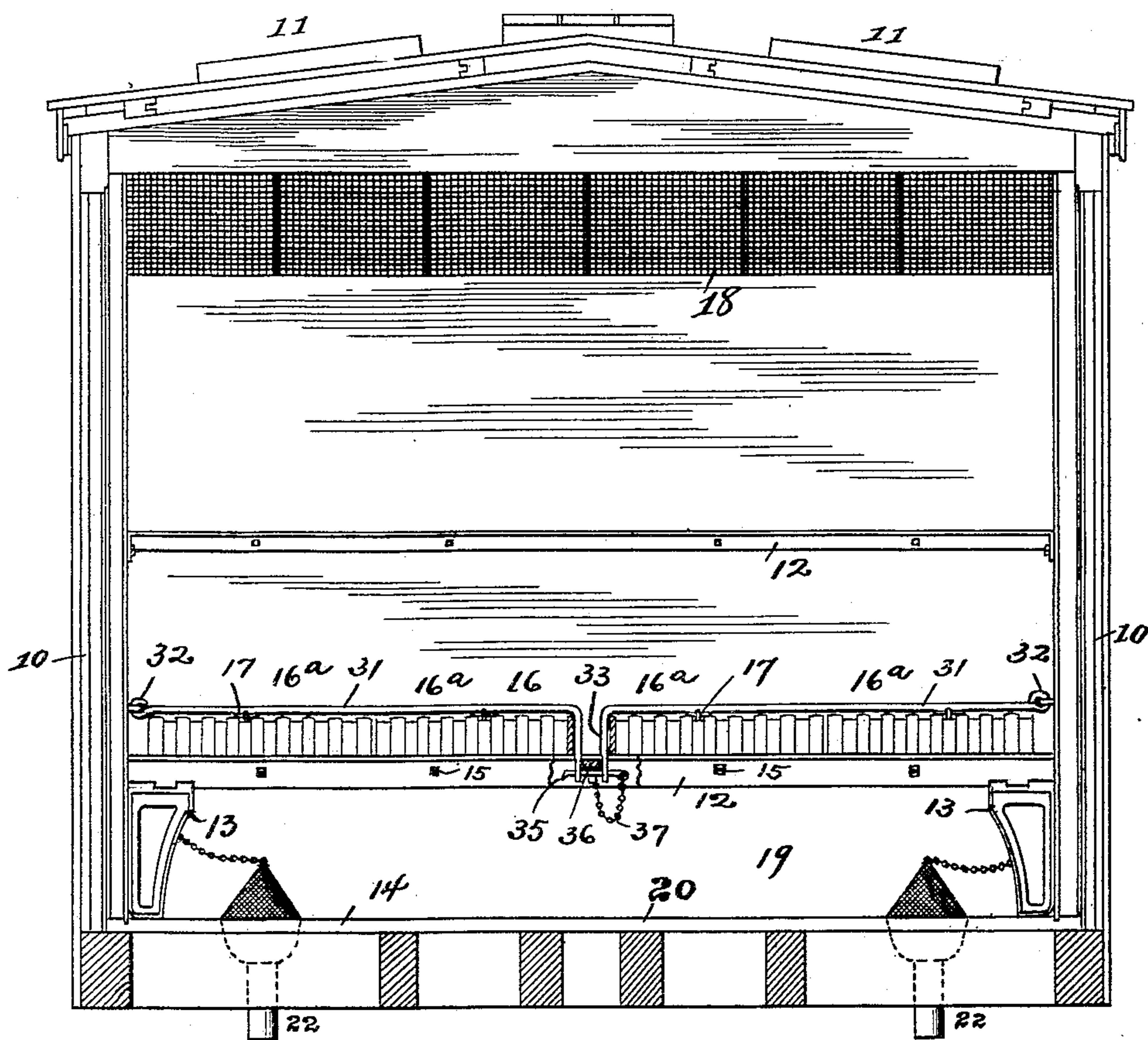
Inventor,
Thomas B. Kirby
By Official, Fowler & Luthman,
Attys.

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Fig. 2.

Witnesses,
J. S. Mann.
Frederick Goodrum

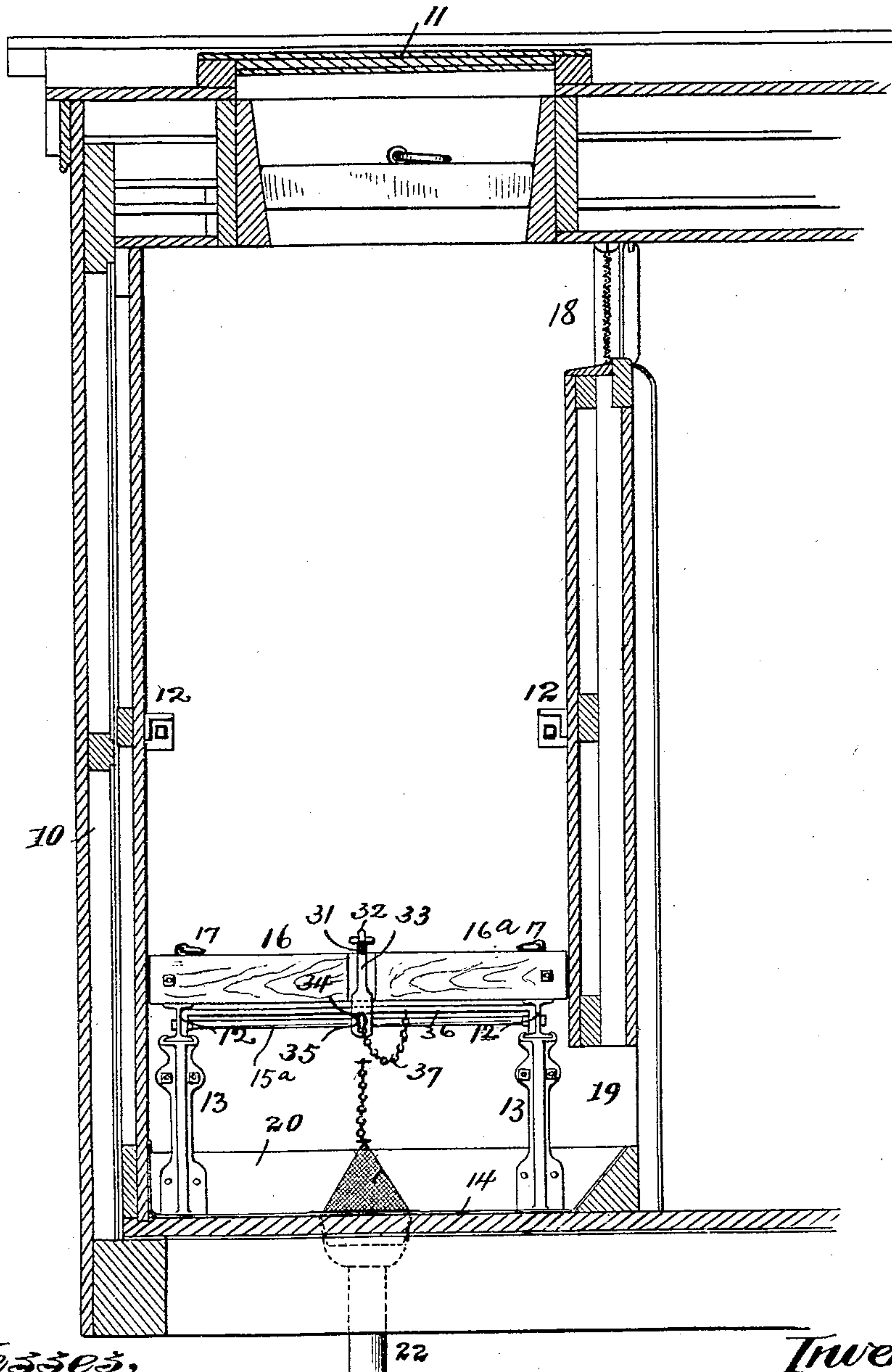
Inventor,
Thomas B. Kirby,
by Offield, Powell & Littlejohn,
Attys.

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Fig. 3.

Witnesses,

J. J. Mann
Frederick Goodrum

Inventor,

Thomas B. Kirby,
By Offield, Fowler & Luthicum,
Attys.

UNITED STATES PATENT OFFICE.

THOMAS B. KIRBY, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARMOUR & COMPANY, COPARTNERSHIP OF PHILIP D. ARMOUR, JONATHAN O. ARMOUR, AND PHILIP D. ARMOUR, JR., OF CHICAGO, ILLINOIS.

ICE-TANK FOR REFRIGERATOR-CARS.

SPECIFICATION forming part of Letters Patent No. 704,197, dated July 8, 1902.

Application filed October 22, 1897. Serial No. 656,087. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. KIRBY, of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Ice-Tanks for Refrigerator-Cars, of which the following is a specification.

This invention relates to ice-tanks for refrigerator-cars, and has for its principal object to provide a construction whereby such ice-tanks may be adapted to carry varying amounts of ice in different portions of the journey and at different seasons of the year, or, in other words, whereby the cubical capacity of the portion of the tank containing the ice may be varied, this variation being accomplished by increasing or decreasing the distance of the floor of the tank from the top thereof, so as to always carry the ice near the top of the tank in order to effect adequate refrigeration of the entire interior of the car whatever the amount of ice carried may be.

To this and other minor ends my invention consists in certain novel features and details of construction, which will be hereinafter described, and then particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of one end of a refrigerator-car having my improvements applied thereto, the end of the car and ice-tank being removed and the movable floor being shown partly in its upper and partly in its lower position. Fig. 2 is a view of the same in end elevation, the movable floor being shown in its lower position. Fig. 3 is a vertical sectional view transversely through the ice-tank.

In the said drawings, 10 represents a refrigerator-car, which may be of the usual construction, provided with an ice-tank extending across the car transversely at each of its ends and having the usual ice-holes in the car-roof, provided with covers or closures 11. Within each ice-tank I provide at two or more distances or points above the bottom of the tank two or more groups or sets of fixed supports, and in the present instance I have shown these supports as composed of beams 12, extending transversely of the car and lon-

gitudinally of the ice-box immediately adjacent to the front and rear walls of said box. The lower beams are preferably metallic I-beams supported upon cast-metal brackets 13, resting on the car-floor 14 and secured, if desired, to the walls of the tank, while the upper pair of beams are preferably of angle-iron and supported in the manner indicated by bolting them directly to the sides of the ice-tank. I have shown the lower pair of beams as connected by bolts 15, passing through tubular stays 15^a.

16 indicates the movable floor, which is preferably constructed in independently-movable sections and which in the present instance I have shown as composed of four such sections 16^a, the number being deemed desirable for the reason that the sections are thereby made of such a size and weight that they may be conveniently handled in the manner herein-after described. A greater or less number of sections may, however, be employed, or the movable floor may be made in a single piece. I have shown the sections as composed of a plurality of slats 38, running longitudinally of the car, spaced apart a suitable distance by interposed blocks 39 at the ends of the slats and connected by bolts 40, running through the slats and blocks at each end of each section. This construction is particularly adapted for use in connection with supports running transversely of the car, as in the construction shown; but it may obviously be modified, and any suitable form of floor may be substituted for that shown. To facilitate handling of the floor, I provide the same or each section thereof with suitable rings or other hand-grasps 17, and I prefer to provide each section with such a ring at both its front and its rear end, as shown.

The ice-tank is provided in the usual manner with a warm-air inlet 18, communicating with the interior of the car at its upper end and with a cold-air outlet 19, establishing a similar communication with the interior of the car at its lower end. This construction is obtained by means of a fixed partition 41, which extends transversely of the car near each end thereof and forms the inner transverse wall of the ice-box, said partition ter-

minating short of the roof and floor of the car, and thereby providing the inlet and outlet passages for the air. The floor of the tank is provided with the usual drip-tray 20 to catch the water as it falls from the melting ice.

This drip-tray is provided with one or more screen-covered waste-outlets 22, two being shown in the present instance, one near each end of the tank. Inasmuch as the specific form and construction of these outlets constitutes no part of my present invention, the same need not be more particularly described.

The apparatus thus described is adapted to be employed in the following manner: When for any reason it is desired to employ only a comparatively small quantity of ice in the tank, the movable floor 16 thereof is placed and rests upon the upper support 12 in the tank, as shown in dotted lines in Fig. 2, and the space in said tank above said floor may be filled with ice, which by reason of its elevated position in the tank will effectually cool the interior of the car both with respect to its upper as well as to its lower portion. When, on the other hand, it is desired to increase the amount of ice carried in the tank, the floor 16 or the sections thereof may be tilted or caused to assume a vertical or approximately vertical position, and thereby be lowered or passed down between the upper supports and caused to rest upon the lower supports in the manner shown in full lines in Fig. 2 of the drawings, thereby increasing the capacity of the tank in an obvious manner. It frequently occurs in the use of such cars that the tanks are partly filled with ice at one point of the journey and subsequently entirely filled at some other point, where ice is more accessible or cheaper. The sectional construction of the movable floor which I have described is particularly adapted for use under these circumstances, since in such a case, the tank being first loaded when the floor is resting on the upper supports, when it is desired to entirely fill the tank the ice therein may be moved laterally, so as to rest on that section or those sections at one side of the car—as, for instance, those sections shown resting upon the upper supports in Fig. 1 of the drawings. The remaining section or sections having thus been cleared of ice may be tilted and lowered to rest upon the lower supports in the manner already described and as shown in Fig. 1 of the drawings, when the ice from the upper section or sections may be transferred to the lower section or sections and the section or sections thus freed of ice lowered to the lower supports, whereupon the entire tank may be filled with ice, the transfer of the movable floor from the upper to the lower supports being thus effected without removing the ice from the tank and without wasting any portion thereof.

I prefer to make the movable floor in four sections, for the reason that the sections are thereby constituted of such dimensions and

weight that they may be readily handled in the operation of transferring the floor from one position to another; but it is obvious that this feature of my invention will be embodied in a floor of any number of sections.

By reason of the construction which I have described I am enabled to dispense with the use of a supplementary floor, such as heretofore has been employed for the purpose of diminishing the cubical capacity of the ice-tank, and am thereby enabled to obviate the first cost of such a floor and the expense of hauling the same, while at the same time the space in the ice-tank which would otherwise be occupied by such supplementary floor may be employed for the purpose for which it is chiefly desirable to use it—to wit, the storage of ice.

I prefer to employ supports extending transversely of the car in the manner indicated in the construction shown in the drawings; but it is obvious that these supports may be otherwise arranged. It is also obvious that although I have shown only two sets or groups of supports, whereby the movable bottom may be adjusted to two different positions only, a greater number of sets or groups of supports may be employed, so as to give a greater range of adjustment to the movable bottom. Moreover, although I have employed the phrase “sets or groups” as applied to the supports of the movable bottom it is obvious that these elements may be made in a single piece, thereby constituting a single support for each different position of the movable bottom.

While the floor-sections are detached from and freely movable with respect to the ice-tank and supports for the purpose of permitting them to be shifted from one position to another, it is in practice found desirable to provide means for locking the sections of the floor in position to prevent unauthorized access to the interior of the car. For instance, it is found that when the ice-tank is empty and the car is being used as a ventilated car, as is frequently the case, by opening or partially opening the covers or closures 11 of the ice-holes access is had to the interior of the tank through these holes, and one or more of the floor-sections being lifted up the interior of the car is reached through the cold-air outlet 19 and the contents thereof partially or wholly removed. In order to prevent this, I provide locking-rods 31, hinged at 32 to the ice-tank and having their inner ends 33 bent at a right angle and adapted to pass downward between two of the floor-sections or between the slats thereof and provided with a slot or aperture 34. A locking-pin 35 is adapted to pass through the apertures 34, said pin passing underneath a transverse locking-bar 36, to which the pin 35 may be connected by a chain 37 in order to prevent its becoming mislaid or lost. When it is desired to lock the floor-sections in position, the rods 31 are swung down into the po-

sition shown in Fig. 2 and there secured by passing the locking-pin through the apertures thereof below the locking-bar 36. This can be accomplished from the interior of the car by reaching through the opening 19, and when the floor-sections are thus secured in position they cannot be lifted up for the purpose of gaining access to the interior of the car, nor is their locking mechanism accessible from the ice-tank. When not in use, the locking-rods 31 may be swung up against the sides of the tank, as shown at the right of Fig. 1.

I claim—

1. In a refrigerator-car, the combination, with an ice-tank, of a lower support consisting of I-beams extending transversely of the car and suitably connected, and brackets supporting said beams, and other supports lo-

cated above the lower supports and consisting of angle-bars secured to the sides of the tank, and a movable floor adapted to rest on either of said supports and to be tilted to pass between the same, substantially as described.

2. In a refrigerator-car, the combination, with an ice-tank and supports therein, of a movable floor composed of separate sections adapted to rest on said supports, locking-rods hinged to the tank-walls adjacent to said supports and having apertured ends adapted to pass downward through said floor, a locking-pin adapted to be inserted through said apertures, and a fixed locking-bar above said locking-pin, substantially as described.

THOMAS B. KIRBY.

Witnesses:

FREDERICK C. GOODWIN,
IRVINE MILLER.