A. BOOTH.

REFRIGERATING CAR.

No. 107,217. Patented Sept. 13, 1870.

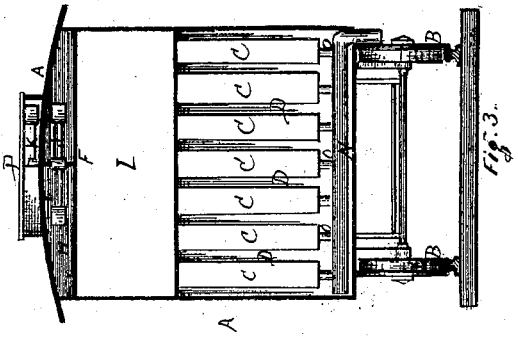

Fig. 3.

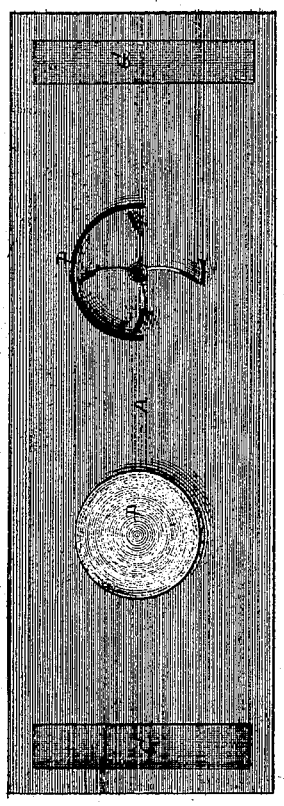

Fig. 2.

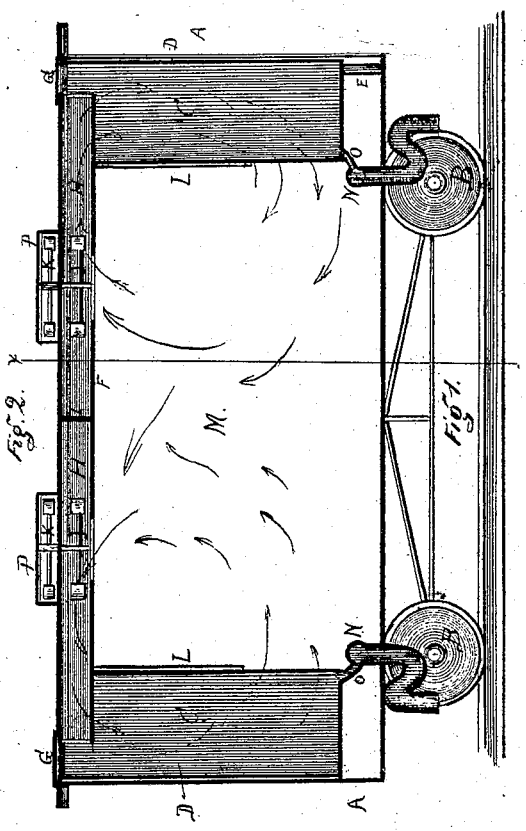

Fig. 1.

Witnesses:

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ALFRED BOOTH, OF CHICAGO ILLINOIS.

Letters Patent No. 107,217, *dated September* 13, 1870.

IMPROVED REFRIGERATING CAR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ALFRED BOOTH, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Refrigerator Car, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a longitudinal section of a railroad car provided with my improvements in refrigerators;

Figure 2 is a top plan view of the same; and

Figure 3 is a transverse section in the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

My invention has for its object to provide an improved method for preserving vegetable or animal substances by refrigeration, more effectually, and at less expense than it has heretofore been done; and

It consists in the arrangement of devices for forcing a current or circulation of air over the metallic surfaces of one or more air-tight ice-receptacles or tanks arranged within a railroad car, the hold of a vessel, a chest, box, or apartment of a building, thence through the provision-chamber and back to the ice-receptacles, continuing the operation indefinitely, whereby the ice is preserved within the receptacles and the provisions treated with cold dry air.

In the accompanying drawing my invention is represented as applied to a railroad car, of which—

A is the body, mounted upon wheels, B, in the usual manner.

Across one or both ends of the car is arranged a series of ice-receptacles or tanks, C, in such a manner as to leave spaces, D, between and behind them for the circulation of air.

They are each supported from the bottom of the car by short props or rods, E, and their upper ends extends to and are connected with the ceiling F of the car.

Toward the end of the car each receptacle is provided with a short tube which extends through the roof of the car, and the series of tubes at each end is covered with a hatch, G, from the outside, as shown in fig. 2.

The space between the ceiling and roof of the car is divided into two air-chambers, H, one on each side of the central transverse portions I, and each chamber is provided with a horizontal fan, J, whose shaft extends through the roof of the car to receive the radial vanes K.

If but one series of ice-receptacles is employed but one fan will be necessary, and the air-chamber need not extend the entire length of the car.

The operation is as follows:

The car being set in motion in either direction, the action of the exterior air upon the vanes rotates the fans J, causing the air within the car to be drawn through the openings in the ceiling immediately beneath the fans, and forced through the spaces D between the ice-receptacles, in contact with the sides of the latter, as shown by the arrows, fig. 1.

Upon the inner faces of each series of tanks a deflecting-plate, L, is secured, extending from the ceiling downward upon the tanks nearly half-way.

This plate serves to guide the air, so that it must traverse nearly the entire length of the tanks before escaping into the interior of the car.

The receptacles are filled with ice and salt, or other freezing mixture, from the top of the car, by removing the hatches, and the vegetable or animal substances to be preserved by refrigeration are arranged within the chamber M, in any convenient manner.

The air being forced through the spaces D between the filled ice-receptacles, is brought in contact with the metallic surfaces of the latter, and is thoroughly cooled and dried before escaping into the provision-chamber.

After passing over and among the substances to be preserved it is again drawn into the air-chamber H by the fan, and the operation repeated. By this means a constant circulation of cold air is forced through the provision-chamber.

N is a horizontal pipe, arranged transversely of the car, in front of and a little below the ice-receptacles, to which it is connected by short pipes, O, to receive the water melted from the freezing mixture or ice, and discharge it through the bottom or side of the car.

The discharge-end of the pipe N is provided or formed with a "goose-neck," to hold a packing of water, for the purpose of preventing the introduction of air to the ice-receptacles.

P are protectors, arranged upon the roof of the car immediately over the wind-vanes, with one or more sides removed to direct the air properly against said vanes.

If preferred, the vanes may be arranged through the side of the car, instead of through the top, with equal effect, or the vanes may be dispensed with and the fans driven by suitable connections from one of the axles of the wheels B.

I am aware that ice-receptacles are employed within railroad cars through which air is forced in direct contact with the ice, but this method of refrigerating is objectionable, from the fact that the air becomes charged with moisture and causes the ice to melt rapidly, thereby rendering the use of refrigerating cars exceedingly expensive.

By my invention this objection is avoided, as the

ice-receptacles are made air-tight, to preserve their contents, and the air cooled and dried by being forced over their exterior metallic surfaces.

Having thus described my invention,

What I claim as new and desire to secure by Letters Patent, is—

The arrangement of the series of air-tight ice-receptacles, as described, in combination with the deflecting-plate L, fan J, air-chamber H, and discharge-pipes O N, constructed as described, all as herein set forth.

A. BOOTH.

Witnesses:

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