(No Model.)

J. F. HANRAHAN.

REFRIGERATOR CAR.

No. 407,862. Patented July 30, 1889.

Fig. 1.

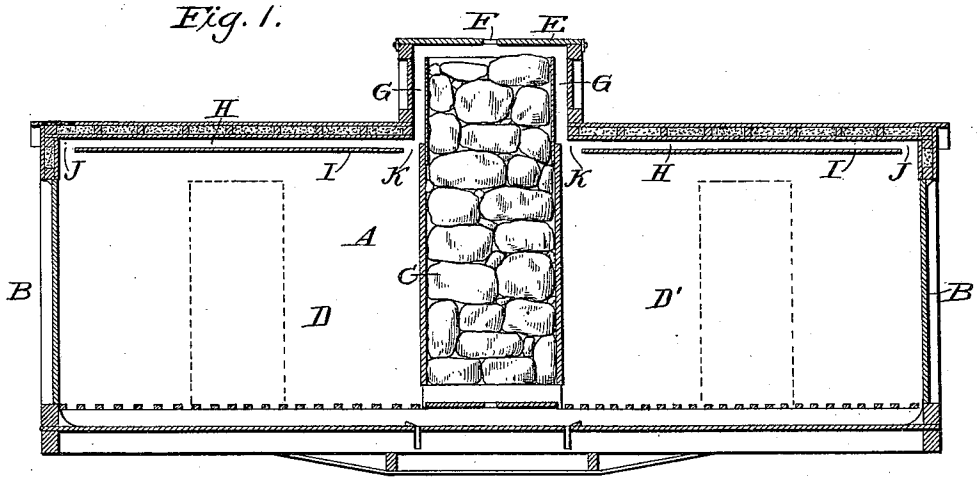


Fig. 2.

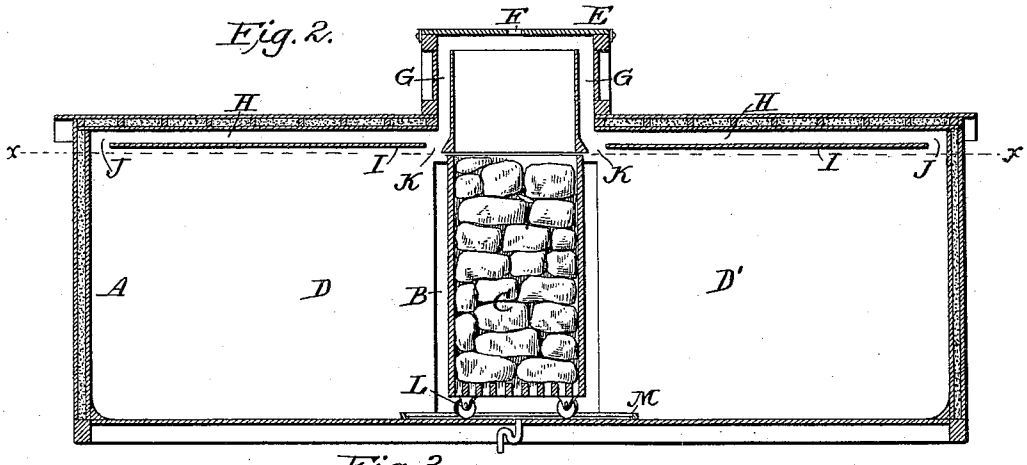
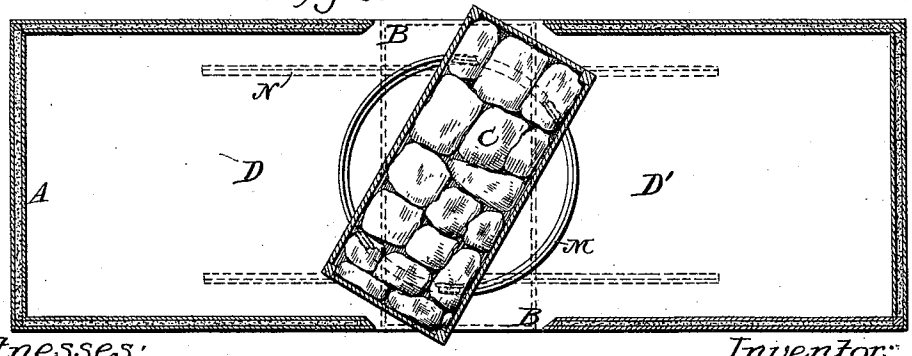


Fig. 3.



Witnesses:

James F. DeHamel

Horace A. Dodge.

Inventor:

Joseph F. Hanrahan,

by Dodges & Sons,

Attys.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH FRANCIS HANRAHAN, OF OTTAWA, ONTARIO, CANADA.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 407,862, dated July 30, 1889.

Application filed October 1, 1888. Serial No. 286,829. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH FRANCIS HANRAHAN, of Ottawa, in the county of Carleton, Ontario, and Dominion of Canada, have invented certain new and useful Improvements in Refrigerator-Cars, of which the following is a specification.

My invention relates to refrigerator-cars; and it consists, first, in a novel construction of the same, whereby a uniform and equable distribution and utilization of the cold-air currents is secured; and, second, in a novel arrangement of the ice-chamber, whereby the loading and unloading of the car is facilitated.

In the drawings, Figure 1 is a longitudinal vertical sectional view of a car provided with my improvements; Fig. 2, a sectional view showing the preferred arrangement of ice-chamber, and Fig. 3 a horizontal sectional view on the line *x x* of Fig. 2.

A indicates the car as a whole, provided at the ends or sides with doors B, by opening which access may be had to the interior of the car. The construction of the frame and body of the car is a matter that may be varied considerably without affecting the invention; but in any event it will be found advisable to make the body practically non-conducting, as shown in Letters Patent No. 392,204, granted to me November 6, 1888.

C indicates the ice chamber or receptacle placed midway between the ends of the car. This receptacle or chamber extends from side to side of the car and from the roof to the floor, approximately, thereby dividing the car into two refrigerating-chambers D D′—one at each end, as shown in Figs. 1 and 2—this arrangement of the central ice-chamber being found to be better than where the ice-chambers are located at both ends.

The chamber C is open at its lower end, and also open at its upper end, which latter projects upward into a raised or elevated top or box E, projecting above the roof of the car, and provided with an air-inlet F at its top. This box E is separated or set away from the walls of the chamber C to form passages G, which communicate at their lower ends with horizontal passages H, formed by a diaphragm or partition I, set away a distance from the roof of the car, as shown in Fig. 1. These diaphragms do not extend the entire length of the refrigerating-chambers, but are made shorter to form at each end of the car inlets J, communicating with passages H, and inlets K, communicating with the lower ends of passages G, as shown in Fig. 1.

The arrangement of flues at the base of the ice box or chamber is the same as that represented in my patent, No. 392,204, before noted, and no claim is made herein to such an arrangement, as it is there specifically claimed.

By placing the ice-chamber in the center of the car the ice may be placed in more compact form and will last longer than if it were divided into two bodies and one placed in each end of the car. Again, the two currents of cold air leaving this chamber meet with no obstruction and do not affect each other, and as the temperature at each end of the car is the same a continuous circulation is secured, the cold air reaching the end of the car before becoming warm.

In Fig. 1 the ice-chamber is represented as being fixed in position, in which case the doors should be at the ends of the cars or in the sides at both sides of the ice-chamber, as represented in dotted lines.

Another arrangement is that shown in Figs. 2 and 3, in which the ice-chamber is adapted to be swung or turned horizontally, this arrangement permitting the application of the invention to ordinary cars having doors at the center of the sides. This is an important feature, and the combination, with a car having doors at the center of its sides, of an ice-chamber such as shown is new with me, I believe.

The chamber C is provided with wheels L, which advisedly run in suitably-grooved rails M on the car-floor. When it is desired to load the car, the ice-chamber is moved or turned to the position shown in Fig. 3, from an inspection of which it will be seen that access may be had to each of the refrigerating-chambers D D′ through the doors B. After the car is loaded the chamber C is swung back to its normal position, indicated by dotted lines in Fig. 3. In this arrangement it will be necessary to cut off the upper end of the ice-chamber and make it fixed relatively to the top E. (Shown in Fig. 1.) An inferior equivalent of this arrangement of the ice-chamber would be to substitute for the

curved track two straight rails N, (indicated by dotted lines in Fig. 3,) upon which the ice-chamber may be moved to either side of the doors.

The ice-chamber may be provided with suitable devices for locking it in position.

The top of the box E will be hinged so as to permit ice to be placed within the ice-chamber.

It is obvious that in lieu of ice mechanical cooling agents may be employed; but as these are the recognized equivalents of ice I do not deem it necessary to show them.

I am aware that it is not broadly new to mount the ice-chest of a refrigerator upon wheels; that it is not broadly new to secure an ice-chest in a car so that it may be readily removed, and, finally, that it is not broadly new to provide a car with a box-top and mount an ice-box therein.

Having thus described my invention, what I claim is—

1. In a refrigerator-car, the combination, with the body provided at or about the center with an upwardly-projecting box or hood E, of the ice-chamber C, supported upon the floor and extending upward into the box, but separated therefrom on all sides to form passages G, and diaphragms I set away from the roof of the car to form passages H, communicating with the passages G, whereby a perfect circulation of the air in both ends of the car is attained.

2. In combination with a car provided with an upwardly-projecting box or hood E, a two-part ice-chamber C, extending into said box and separated therefrom to form passages G, the upper part of said ice-chamber being fixed in position, and the lower part being movable relatively to the other part and to the car, all substantially as shown.

3. In combination with car A, having doors B in its sides midway between its ends, and also having a box or hood E, a track located in front of the doors, and a two-part ice box or chamber extending from the floor up into the hood, the upper part of the ice-box being fixed in position, all substantially as shown.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOSEPH FRANCIS HANRAHAN.

Witnesses:

ALEXANDER COLTER.

MICHAEL O'TOOLE.