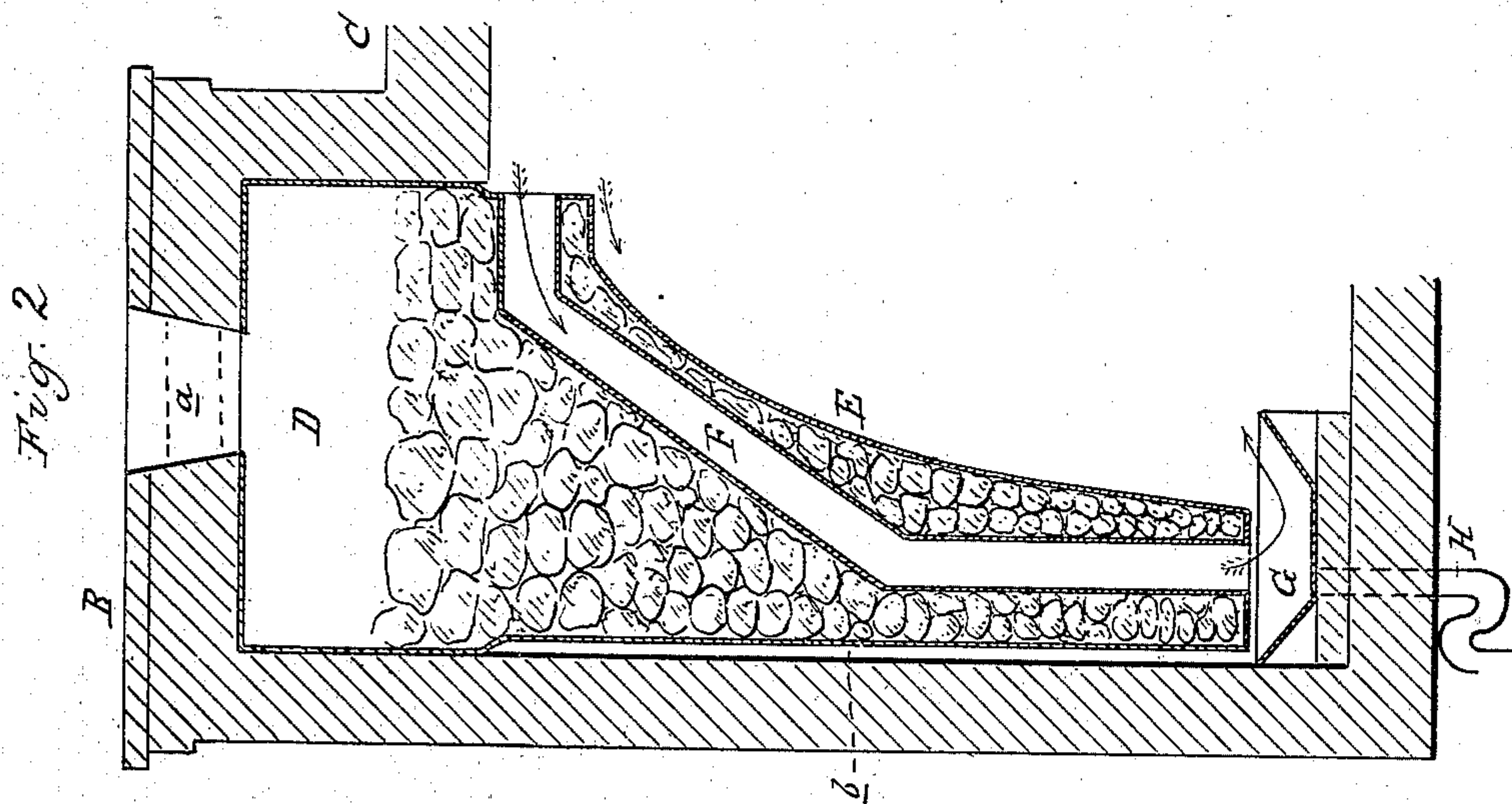
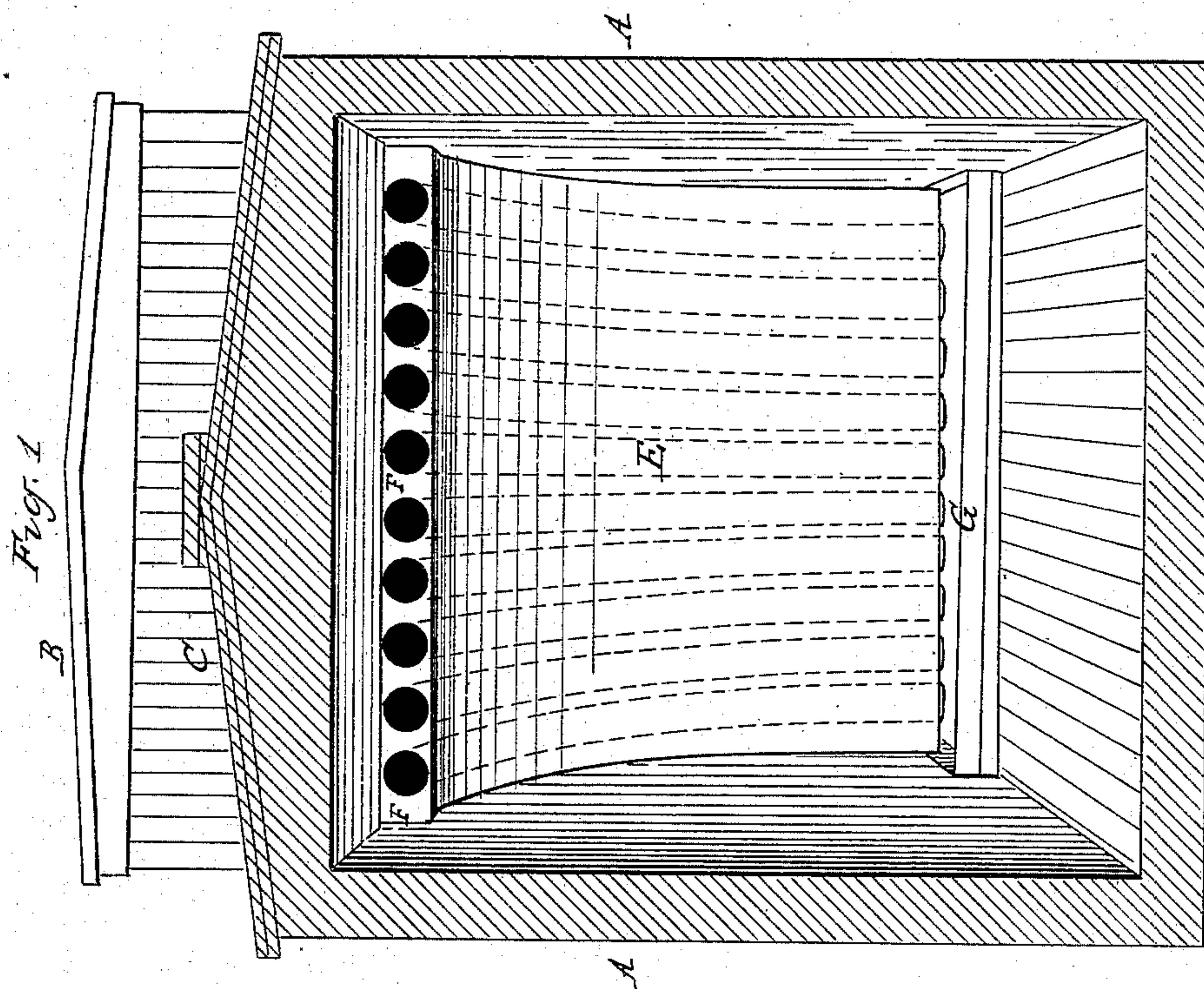


(No Model.)

D. W. DAVIS.
REFRIGERATOR CAR.

No. 272,124.

Patented Feb. 13, 1883.



Attest:
A. Barthel
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Inventor:
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UNITED STATES PATENT OFFICE.

DAVID W. DAVIS, OF DETROIT, MICHIGAN.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 272,124, dated February 13, 1883.

Application filed August 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. DAVIS, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Refrigerator-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

The nature of this invention relates to certain new and useful improvements in the construction and operation of refrigerators, especially adapted to be employed in the construction of railway-cars, rooms on vessels and in buildings, and for portable refrigerators or preserving-chambers, where it is desired to keep the temperature at a low point.

It is desirable in this class of refrigerators that there should be a circulation of air within them, and the greater this circulation the better are the results produced; and it is also important that this circulation be automatic and without the admission of air from outside when the device is in operation, for such admission of the outside air to produce the circulation requires a much greater expenditure of the refrigerants to reduce the temperature of the air so admitted to the temperature required in the device to produce the best and most economical results.

The object of this invention is therefore to so construct a refrigerator that when in use all outside air is excluded, a very perfect and large circulation of the air within is obtained, and the best results produced with the minimum expenditure of ice or other refrigerants.

The invention consists in the peculiar construction and arrangement of parts by means of which the beneficial results above described are produced, as more fully hereinafter described.

Figure 1 is a perspective view of the inside of a railway-car containing my improvements. Fig. 2 is a vertical section of the same through the center of one of the air-tubes.

In the accompanying drawings, which form a part of this specification, A represents the walls of a railway-car, which is constructed in the usual way of building the walls of a refrigerator-car or preserving-chamber. At one end of the car the roof B is raised above the

roof, C, proper of the car, and the space thus created is inclosed on all sides to form a magazine, D, for the storage of refrigerating material, which is fed therefrom to the receptacle below as required, and in the same way that coal is fed from a magazine in the stove to the fuel-consuming chamber beneath. This magazine is provided with an opening, *a*, closed by a tightly-fitting cover thereto, through which the necessary refrigerating material is inserted. Below this magazine is the receptacle E, preferably made of galvanized iron, and its form is shown in Fig. 2. This receptacle is so secured in place that a space, *b*, is left between it and the walls of the room for a free circulation of air about the receptacle.

F represents a series of pipes or tubes opening into the top of the room through the front wall of the magazine, just below the top proper of the car and, extending downward through the receptacle, pass through the bottom of the same, as shown in Fig. 2.

G is a drip-pan extending across the car underneath the bottom of the receptacle, and H is a trapped drip-pipe, which leads through the floor of the room, to allow the water of condensation to be discharged while air is prevented from entering through said drip-pipe.

As by this construction a more perfect and automatic circulation is obtained than is had in other devices for a similar purpose, it is self-evident that a less amount of room is required in the receptacle; hence it is only necessary that a car be provided with only one of my receptacles, so that much more room is left for storage purposes, and, as the circulation is automatic, it makes no difference in the result which end of the car is advanced.

In practice the car is filled with fresh meat, for instance, and the doors tightly closed against the admission of air from the outside. The receptacle and magazine is filled with ice alone, or ice and salt, or other refrigerating material, and the opening through the top of the magazine tightly closed. The ice in the receptacle rests against its walls and surrounds the pipes leading through said receptacle, so that the air within the pipes and adjacent to the outside of the receptacle-walls becomes very cold. This increases the gravity of the air,

which falls along the surface of the receptacle-walls and out at the bottom of the pipes, thereby forcing, by displacement, the air from the upper part of the room, and which is of a less gravity, against the receptacle-walls and into the top of the pipes, where in turn it becomes very cold, and likewise falls, displacing and forcing through the same route, in turn, all the air in the room, and thereby keeping up a constant circulation. By this circulation the moisture created by evaporation from the meat is carried into the pipes and onto the outer surface of the receptacle, where it is congealed in the shape of hoar-frost, so that the air in the room will be found perfectly dry at all times when the device is in operation.

It will be readily seen that my radiating-surface is materially increased by the employment of the circulating-pipes, whereby the saving in room hereinbefore referred to is gained.

It will be observed that by forming the ice-box D so that it will be above the body of the car or refrigerator there is room for a storage of a large quantity of ice above the pipes F, so that the tops of the pipes can be very readily kept covered.

I am aware that it is not new to provide ice-boxes with pipes through which the air circulates, as shown in the Patent No. 108,386, of 1870, and I am also aware that it is not new to provide cars with raised ice-boxes, as that

is shown in the Patent No. 171,491, of 1875, and others; but in none of these with which I am acquainted do the boxes raised above the car have an extension running downward into the bottom thereof, adapted to receive the ice as it becomes small enough to descend therein or contain pipes having both ends opening into the preserving-chamber and extending through the ice, so as to keep the air in circulation without its coming in contact with the ice.

What I claim as new is—

The refrigerating-car herein described, consisting of the ice-magazine D, extending from near the floor of the refrigerating-chamber to a point above the roof of the car to form an ice-receptacle above said roof, and across each end of the car to form a refrigerating chamber, E, the series of pipes, F, leading from top to bottom of the chamber E, and passing through the magazine, so as to be entirely surrounded by the ice, and to have a portion of their length serve as a support for the ice in the body of the magazine above the roof, and to have other portions inclined and approach sufficiently near the sides of the chamber to force the ice to feed down gradually, as set forth.

DAVID W. DAVIS.

Witnesses:

H. S. SPRAGUE,
E. W. ANDREWS.