

A. W. ZIMMERMAN.

REFRIGERATOR CAR.

No. 172,546.

Patented Jan. 18, 1876.

Fig: 1.

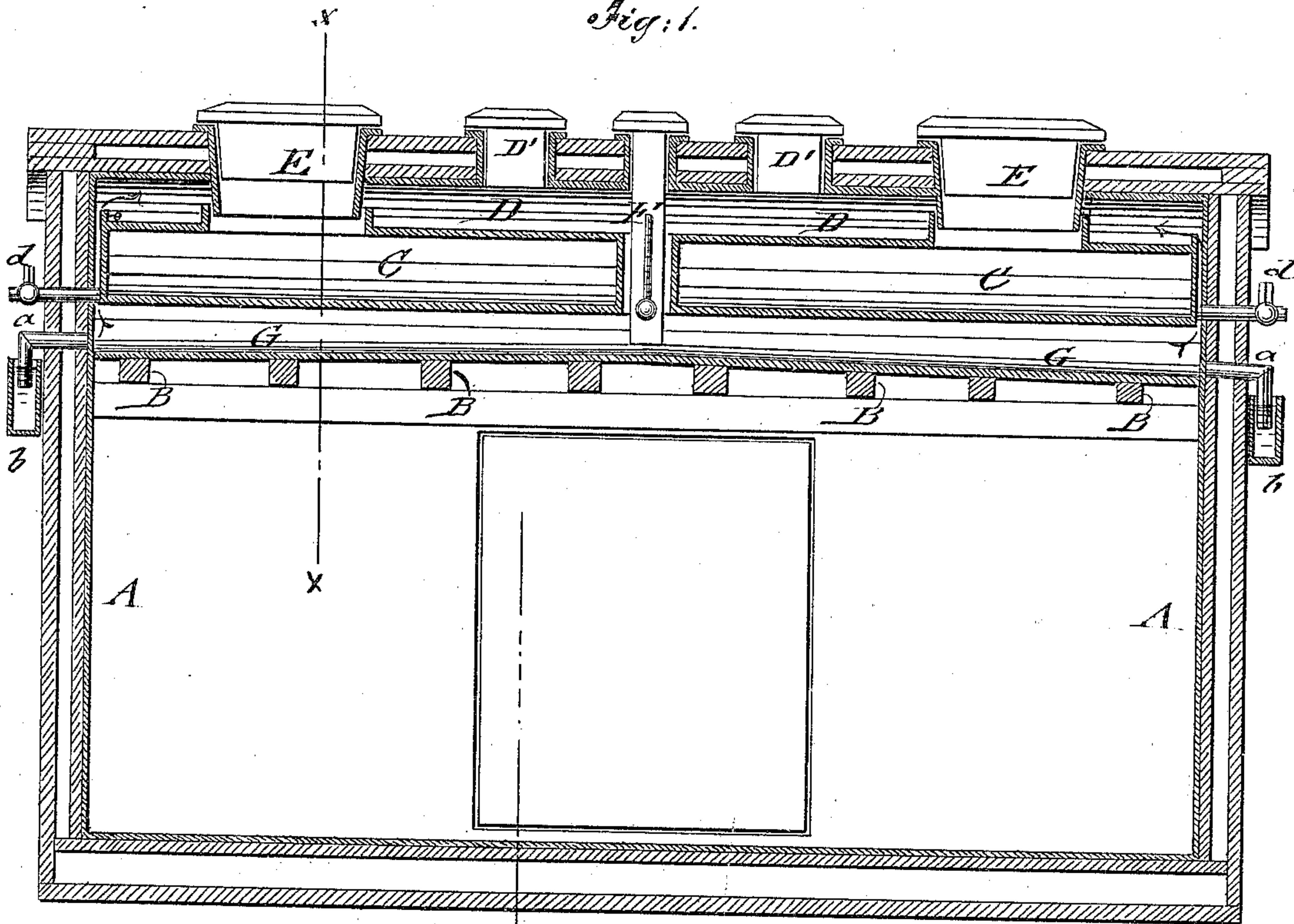
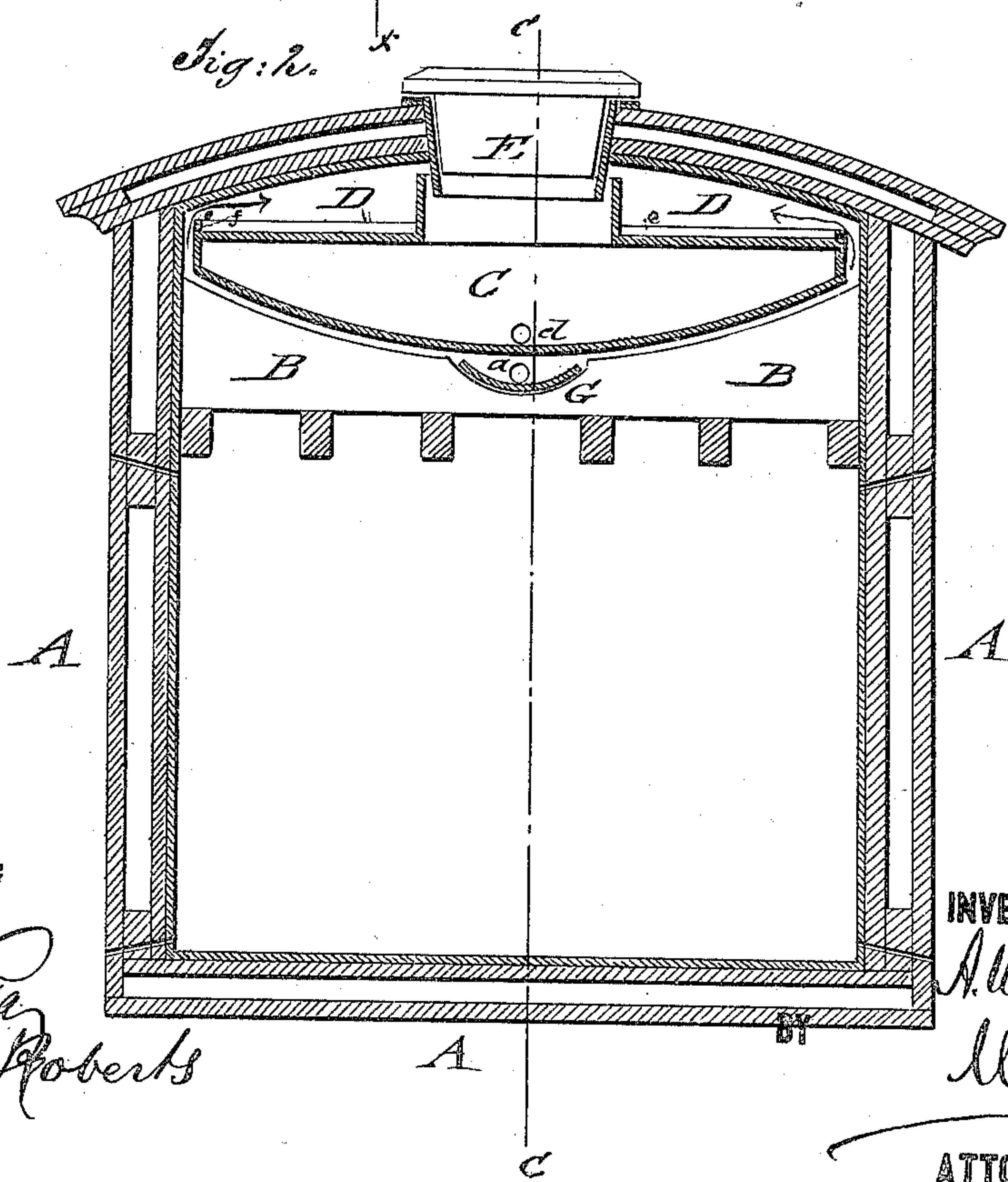


Fig: 2.



WITNESSES:

Chas. Nida  
Alex F. Roberts

INVENTOR:

A. W. Zimmerman  
Hunt & Co

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ARNOLD W. ZIMMERMAN, OF DENISON, TEXAS, ASSIGNOR TO SAMUEL PILLSBURY, OF NEW YORK CITY.

## IMPROVEMENT IN REFRIGERATOR-CARS.

Specification forming part of Letters Patent No. 172,546, dated January 18, 1876; application filed August 14, 1875.

*To all whom it may concern:*

Be it known that I, ARNOLD W. ZIMMERMAN, of Denison, in the county of Grayson and State of Texas, have invented a new and Improved Refrigerator-Car, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section on line *c c*, Fig. 2, of my improved refrigerator-car; and Fig. 2 a vertical transverse section of the same on the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to improvements in refrigerator-cars for preserving fresh meats, vegetables, and other perishable articles while transporting them over great distance; and it consists of an ice-receptacle at the top of the car, provided with flat top and curved or inclined bottom.

Above the ice-receptacle an air-space is formed, that communicates, by side spaces, with the main part of the car, for conveying the warm air and vapors to the ventilators above the air-space. The condensed moisture is collected by a longitudinal inclined trough below the lowest part of the ice-receptacle, to be conveyed to the outside. The ice-water of the receptacle is drawn off by end pipes and stop-cocks.

In the drawing, A represents a car, house, or common refrigerator, to all of which my improved construction is applicable. At the top of the car A is supported on lateral pieces B the ice-receptacle C, of galvanized iron, which is made of one or more sections, as found most convenient. The ice-receptacle C has a flat horizontal top with flanged edges *e*, and a curved or inclined bottom part. An air-space, D, is formed between the top of the car and the upper side of the receptacle, with doors E passing through car-roof, and air-space for filling the ice into the ice-receptacle. A thermometer, F, extends also through an opening of the top of the car either down to the side of the receptacle, or into the intermediate space between two sections of the same, to indicate, on being withdrawn, the temperature within the car. A space of about an

inch in width between the sides of receptacle C and the walls of the car forms the communication between the main part of the car below the receptacle, and the air-chamber above the same. The air-chamber D has ventilating-doors D' at the top of the car.

The meat or other articles are hung, packed, or otherwise stored in suitable manner below the ice-receptacle, with the cold air passing continually in downward direction to the center of the car, while the warmer air and vapors rise along the sides, and pass through the communicating space, up into the air-chamber.

The moisture carried up with the warmer air condenses on the cold surface of the ice-receptacle, and is conveyed along the curved or inclined under side of the same to the lowermost part of the same, from where the drippings are conveyed by a trough, G, which is arranged in longitudinal direction, and at suitable inclination, to the end walls of the car, passing, by pipes *a*, to the outside of the same. The moisture condensing at the top part of the ice-receptacle is also conveyed along the projecting flanges *e* and drip-holes *f* of the same to the troughs and the outside of the car.

The downward-curved ends of the pipes *a* terminate in cups *b*, filled with water, which allow the exit of the condensed moisture from the inside of the car without admitting the entrance of any warm air from the outside.

The ice-water of the ice-receptacle may be drawn off from time to time by means of connecting-pipes and stop-cocks *d* at the outside of the car.

The side doors of the car, the doors of the ice-receptacle, and of the ventilating air-space, also the car-walls, are made in the customary manner of non-conducting materials. The large top and bottom surface of the ice-receptacle keeps up the continuous circulation of the air by cooling off the rising warm air, while the air-space serves, besides the cooling action, also to render the influence of the sun on the top of the car less perceptible by being, in effect, an additional non-conductor of heat.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In refrigerator-cars, the ice-chamber C, having a curved or rounded bottom and a flat top, and the medium or central drip-trough G arranged thereunder, combined with the roof and body of the car, as set forth, forming an air-chamber, D, at the top and air-channels at the sides of the car, as and for the purpose described.

2. The ice-chamber C, having a flat top, perforated edge, flange *ef*, and curved bottom, in combination with the car-body and drip-trough G, as and for the purpose set forth.

ARNOLD W. ZIMMERMAN.

Witnesses:

J. M. COOK,

T. C. DISMUKE.