

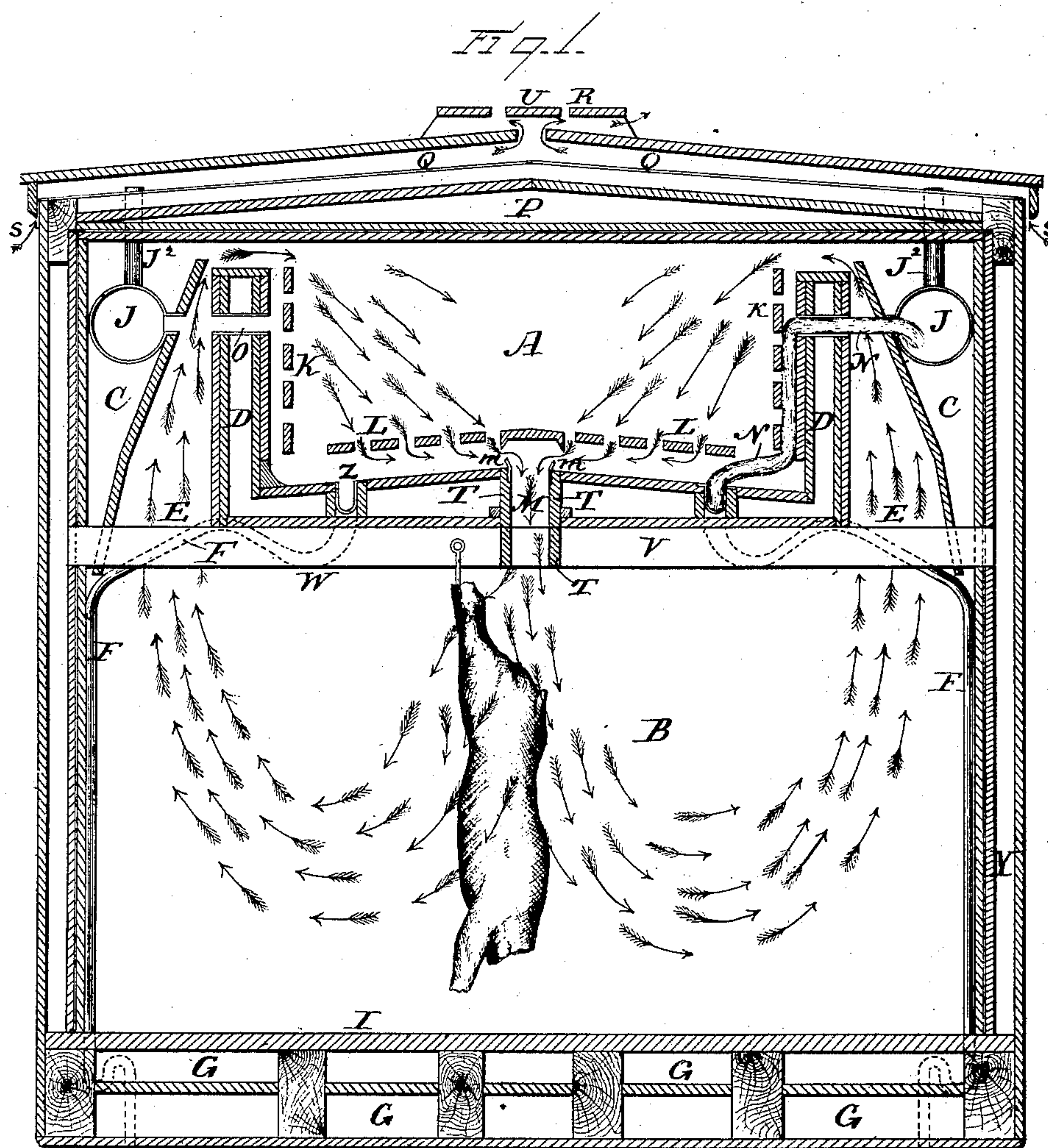
(No Model.)

W. L. COOK.
REFRIGERATOR CAR.

2 Sheets—Sheet 1.

No. 367,600.

Patented Aug. 2, 1887.



Witnesses:
E. H. Hudeman,
J. J. Masson.

Inventor:
Willard L. Cook
by E. E. Masson
att'y.

(No Model.)

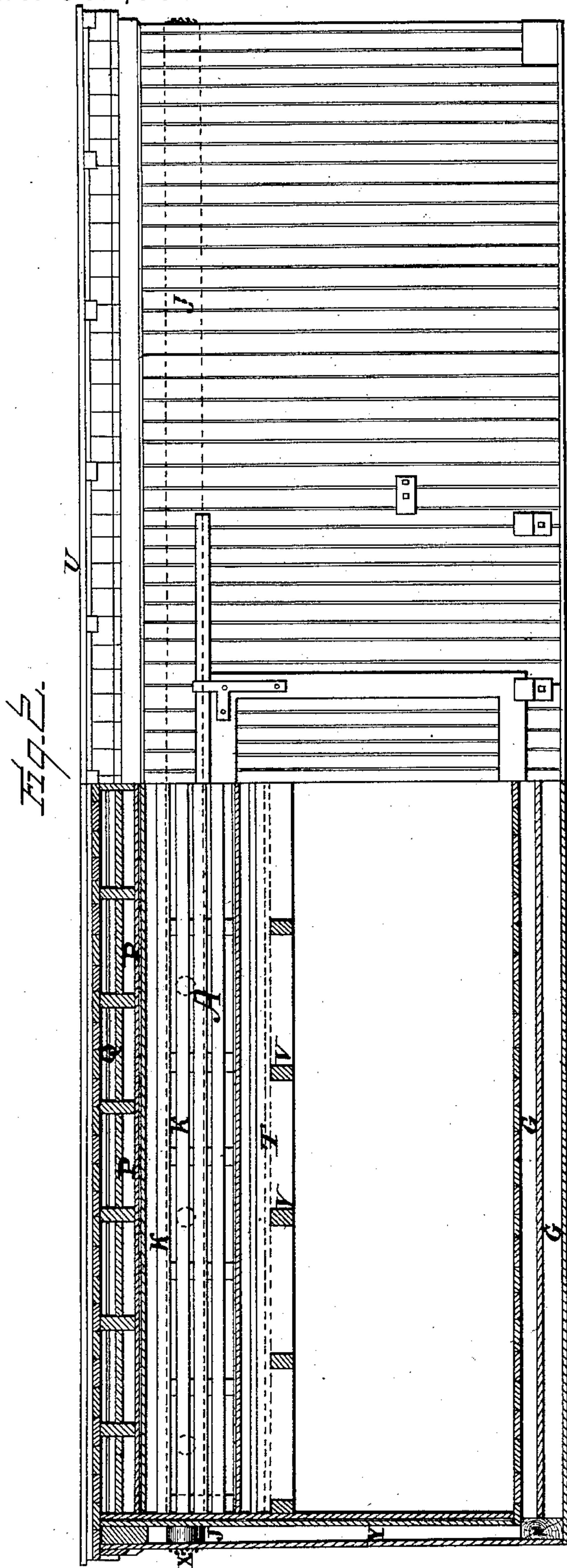
2 Sheets—Sheet 2.

W. L. COOK.

REFRIGERATOR CAR.

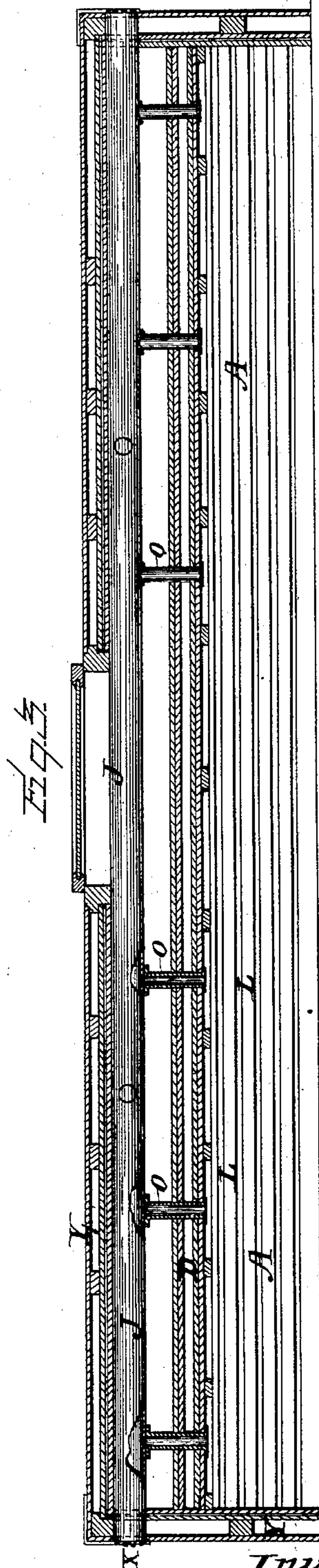
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UNITED STATES PATENT OFFICE.

WILLARD L. COOK, OF OMAHA, NEBRASKA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO COLLINS F. NEWTON, WILLIAM S. WING, CHARLES N. PRATT, AND HOWARD A. WORLEY, ALL OF SAME PLACE.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 367,600, dated August 2, 1887.

Application filed December 14, 1886. Serial No. 221,551. (No model.)

To all whom it may concern:

Be it known that I, WILLARD L. COOK, a citizen of the United States, residing at Omaha, in the county of Douglas, State of Nebraska, have invented certain new and useful Improvements in Refrigerator-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a practical car for the transportation of meats, fruits, &c., liable to decay through contact with heated air, and provide for the preservation of the contents of cars in case of detention while in transit, and also for removing the moisture of the air in the car. I accomplish these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical section of a car constructed in accordance with my invention. Fig. 2 shows one half of the same in side elevation and the other half in longitudinal section. Fig. 3 represents a horizontal section of one half of the car, showing the ice-chamber, the roof of the car being removed.

A represents the ice-chamber; B, the storage-compartment or preserving-room; C, the longitudinal pockets for holding the flues J; D, a non-conducting air-space under and around the ice-chamber; E, a warm or ascending air flue outside of said air-space; F, drip-pipes from the ice-chamber with trap in upper or in lower end; G G, dead-air spaces between the sills of the car; I, flooring of car. K and L are slats on the side and bottom of ice-chamber A; M, cold or descending air flue in the bottom of the ice-chamber; N, wicking or other like capillary material lying against the sides of the ice-chamber and entering tubing O, through which it passes across the air-chamber D into the air-flue J, the latter having vertical pipes J² leading into the passages Q above the dead-air space P in the roof over the ice-chamber. Said air-passages Q extend from the openings S near the eaves to the central outlet, R, in the roof. T are longitudinal strips forming the sides of the cold-air flue M; U, the running-board on top of the car; V, cross-timbers or joists for supporting the ice-chamber and suspending-hooks upon which to

hang meats; W, traps in the drip-pipes leading from the drip-troughs Z in the bottom of the ice-chamber; X, wire gauze or netting over the ends of the air-flues J; Y, air-space between the sides and lining of car.

When in use, the ice-chamber is filled with ice through hatchways in the roof, and the tubes O filled with wicking or other moisture-conducting material, the spaces between the fibers acting as capillary tubes. The warm air around the ice becoming condensed descends through the flue M, and the warmer air in the storage-compartment B rises through the warm-air flue E, imparting some of its moisture into the wicking N and also upon the ice within the ice-chamber A. The moisture of the air, having become eliminated by contact with the wicking N and the ice in ice-chamber A, passes downward through the cold-air flue M and directly to the bottom of the compartment B, the air in the car thereby being kept in circulation and taking the course indicated by the arrows shown in Fig. 1. The cool-air current, passing downward through the center of compartment B, forms a wall between the two sides of compartment B, thereby causing the air to rise through the warm-air flues E and into the ice-chamber A. The object of the drip-pipes F is to aid in relieving the trough from an unusual supply of dripping in case the wicking N may at times need aid in relieving the ice-chamber and troughs of moisture formed by the drippings from the ice or through condensation. It is also designed to have these tubes filled with wicking N in sufficient number and size, whether constructed cylindrical or rectangular in form, to carry off from the ice-chamber A all dampness or impurities in the air.

The office of the air-flues J is to afford means of rapid evaporation of the moisture and water which ascends through the wicks, this rapid evaporation causing a more active absorption of moisture from the ice-pan, cooling the wicks and causing condensation thereon of the moisture ascending with the warm-air current in the flue E, and producing as a secondary result a cooling effect in the chamber B. The evaporation on the upper

ends of the wicks is caused by the currents of air passing lengthwise through the tubes J while the car is in motion, and the function of the tubes J² is to produce a nearly similar current and evaporation while the car is standing still.

The ends of the air-flues J are to be covered by wire netting or gauze X of sufficient fineness to allow air to pass into flue J without admitting sparks or smoke in case the car is attached immediately to the locomotive drawing the train. The sides T of the air-flue M project downward a sufficient distance to prevent warm air in compartment B (which may arise to the ceiling of compartment B) from coming in contact with the cooler air passing downward through air-flue M. The upper edges of this flue have small cleats *m* extending above the floor of the ice-chamber, and the central slat, L, is of such a width that its edges overhang beyond the cleats *m*, so that no dripping can fall through the flue M into the storage-chamber. This is necessary in connection with the capillary tubes for the perfect working of the device, as the principal design is to produce perfect circulation of dry air, which is greatly aided by the partitions T being constructed as described.

Having now fully described my invention, I claim—

1. In a refrigerator, the combination of the ice-chest in the top thereof, drip-troughs, and a cold-air flue in the bottom of said chest, and capillary conductors entering said troughs and lying against the interior of the walls of the ice-chest and passing through them, substantially as and for the purpose described.

2. In a refrigerator, the ice-chest in the top thereof, the cold or descending air flue in the center, and warm or ascending air flues on the sides of said ice-chest, the drip-troughs in the bottom of said chest, and the capillary con-

ductors having their lower ends within said troughs and lying against the interior of its walls and passing through them and through the warm-air flues, substantially as and for the purpose described.

3. The combination of the frame of a refrigerator, the ice-chest in the top thereof, the drip-troughs in the bottom of said chest, the cold or descending air flue in the center, and warm or ascending air flues on its sides, with capillary conductors having one end in the drip-troughs in the interior of said chest and passing through its walls, substantially as and for the purpose described.

4. The combination of the frame of a refrigerator, the ice-chest in the top thereof, the cold or descending air flue in the center and warm or ascending air flues on its sides, and horizontal pipes J on the outside of the warm-air flues, with capillary conductors having one end in the interior of said chest and passing through its walls and warm-air flues, and having the opposite end within the pipes J, substantially as and for the purpose described.

5. The combination of the frame of a refrigerator-car, the ice-chest in the top thereof having the central portion of its floor higher than its sides, a cold-air descending flue in the center having cleats *m* on each side extending above said floor, and said flue extending beyond the bottom of the hollow walls of said ice-chest, with drip-pipes in the sides having capillary material entering therein and extending up against the walls of the ice-chest, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLARD L. COOK.

Witnesses:

J. S. SHROPSHIRE,
W. J. CARROLL.