

(No Model.)

W. E. EASTMAN.
REFRIGERATOR CAR.

No. 502,661.

Patented Aug. 1, 1893.

Fig. 1.

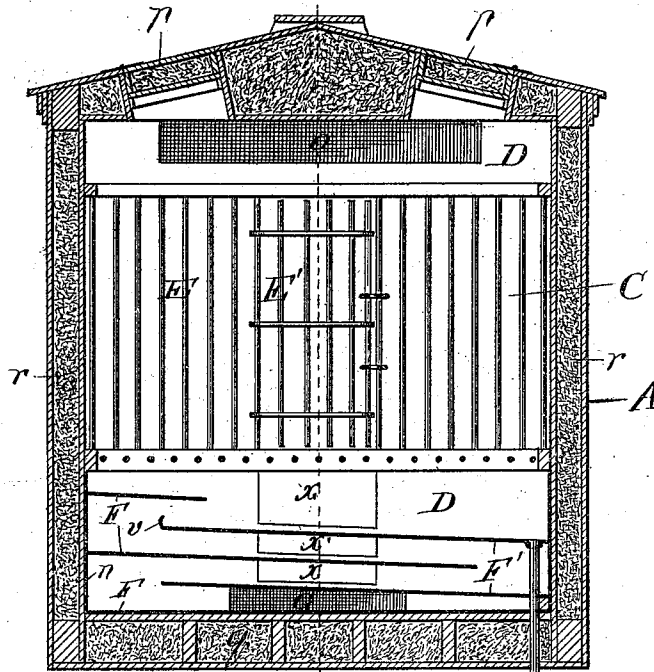
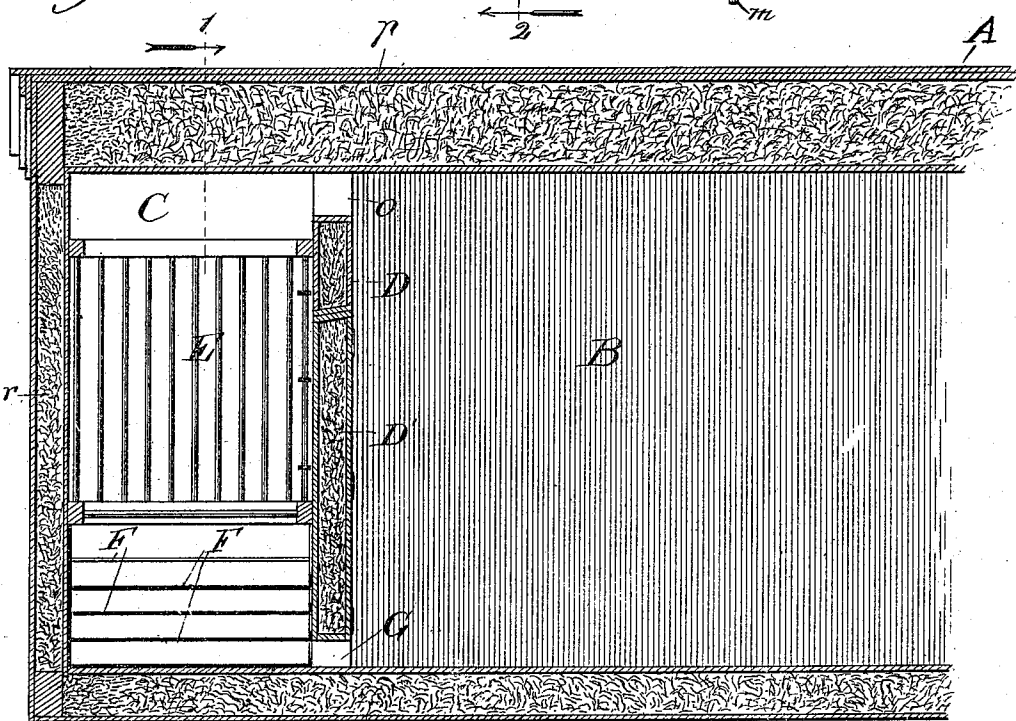


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM E. EASTMAN, OF BOSTON, MASSACHUSETTS.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 502,661, dated August 1, 1893.

Application filed August 22, 1892. Serial No. 443,763. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. EASTMAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Refrigerator-Cars, of which the following is a specification.

My invention relates to an improvement in the mechanism of a refrigerator-car involving the general construction of cold-producing means and principle of operation in refrigeration set forth in Letters Patent of the United States No. 469,296, granted me on the 23d day of February, 1892.

Reference to the aforesaid patent will show a car, suitably insulated as to its walls, floor, roof and interior partitions and containing a storage-chamber for the material (perishable merchandise) to be maintained cold and an ice storage-chamber communicating with the merchandise storage-chamber through the upper part of the partition separating the two and with the base of the ice storage-chamber through a flue extending longitudinally along the base of the car from the ice-chamber to or about to the center of the merchandise storage-chamber. A purpose of the flue feature, in leading the air cooled and moisture-laden by contact with the ice in passing through the ice-chamber on its way to the adjacent end of the flue, is to subject the air to the higher temperature surrounding the flue and, by the ensuing expansion of the air in its route without accretion of moisture thereto, lessening the proportion of moisture it carries to the volume of the air. As putrefaction of such matter as that contained in the merchandise storage-chamber is caused by the combined influence of air, heat and moisture, reduction of the proportion of either or any two of these excitant elements to decomposition (in the present instance of the heat and moisture) accordingly reduces the tendency to decomposition.

The feature of rarefying the moisture-laden cooled air in the aforesaid patent may be provided for otherwise than by forcing it through the conduit referred to, which involves the construction of an addition on the bottom of the car which it is desirable to dispense with. My object is to provide other and simpler means for that purpose, and this I accomplish

by providing a course or conduit in the base of the ice-chamber opening directly into the merchandise storage-compartment and formed of the desired length preferably by a series of alternating partitions, as hereinafter described.

In the accompanying drawings, Figure 1 is a view in cross-sectional elevation of the refrigerator-car provided with my improvement, the section being taken at the line 1 on Fig. 2 and viewed in the direction indicated by the arrow, and Fig. 2 is a section taken at the line 2 on Fig. 1 and viewed as indicated by the arrow.

A is the car, which may be constructed in all respects like, or substantially like that described in the aforesaid patent, except as to the air-conduit detail; and it therefore involves the insulated walls *r*, floor *q* and roof *p*, the merchandise storage-chamber B and an ice-chamber C communicating with the chamber B through an opening *o* in the upper portion of the partition D, in which may be a door D'. In the chamber C is supported an ice-rack E, which may contain a door E', coinciding with the partition-door D', to permit access to the ice from the chamber B. Below the ice-rack E in the base of the chamber C are shelves F, formed preferably of insulating material, such as wood, extending from the lining (as zinc) *n* at one side of the car toward, but short of the wall at the opposite side of the ice-chamber; and with these alternate similar shelves F' extending from the opposite side of the car. These shelves should extend the full length of the chamber C (in the direction lengthwise of the car) and may incline, as shown, for a purpose hereinafter described; and where they join the partition D, I prefer to cut, above each, a portion of the partition-lining *n* away, as represented at *x*, *x'*, *x''* in Fig. 1, so that when the door D' is opened, access may be had through the opening thus afforded for cleaning the shelves. As shown, the second from the top of the series of shelves is turned up or flanged at its outer end, as at *v*, to prevent oscillation of the car from throwing off it water that may drip thereon from the ice and for the escape of which a drip-pipe *m* is provided. Below the lowermost shelf F' in the base of the partition D, (though it might be below the latter)

preferably at the longitudinal center of the car, is an opening G leading from the ice-chamber into the chamber B. If, as shown in my aforesaid patent, there be provided an ice-chamber at each end of the compartment B they may both be constructed like the chamber C herein described. As will be seen, the air which enters the ice-chamber from the chamber B through the opening o, passes through the ice-supply in the rack E, thereby being rendered cold and taking up moisture. From the ice the air traverses the course between the shelves F, F', elongated by its circuitous or zig-zag construction, which may be of any desired length according to the number of shelves employed. Owing to the higher temperature of the chamber C in its base portion than in its ice-supply, the air in passing to the outlet G along the circuitous flue afforded by the shelves, expands, thereby increasing in volume without, however, increasing the amount of moisture with which it is laden. Hence when the air enters the chamber B it affords a refrigerant, being still quite cold, carrying but little moisture in proportion to its volume, which is the object to be accomplished.

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

1. In a refrigerator-car, the combination with the intercommunicating merchandise and ice-storage-chambers of a circuitous air flue in the ice storage-chamber having its two or more contrarily directed turns located below the plane of the ice-supply and leading into the base of the merchandise storage-chamber, substantially as and for the purpose set forth.

2. In a refrigerator-car, the combination with the merchandise and ice storage-chambers B and C communicating through an opening o and separated by a partition D, of a circuitous air flue in the base of the chamber C formed with the alternating, oppositely inclining shelves F, F' all located below the ice supply, a drip pipe m leading from the upper end of the uppermost shelf F', and an outlet G in the base of the partition, through which the flue opens into the chamber B, substantially as and for the purpose set forth.

WILLIAM E. EASTMAN.

In presence of—

J. W. DYRENFORTH,
M. E. WINN.