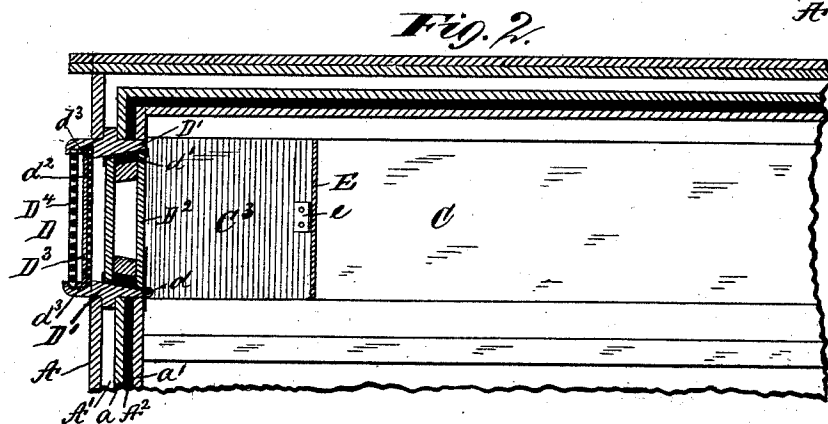
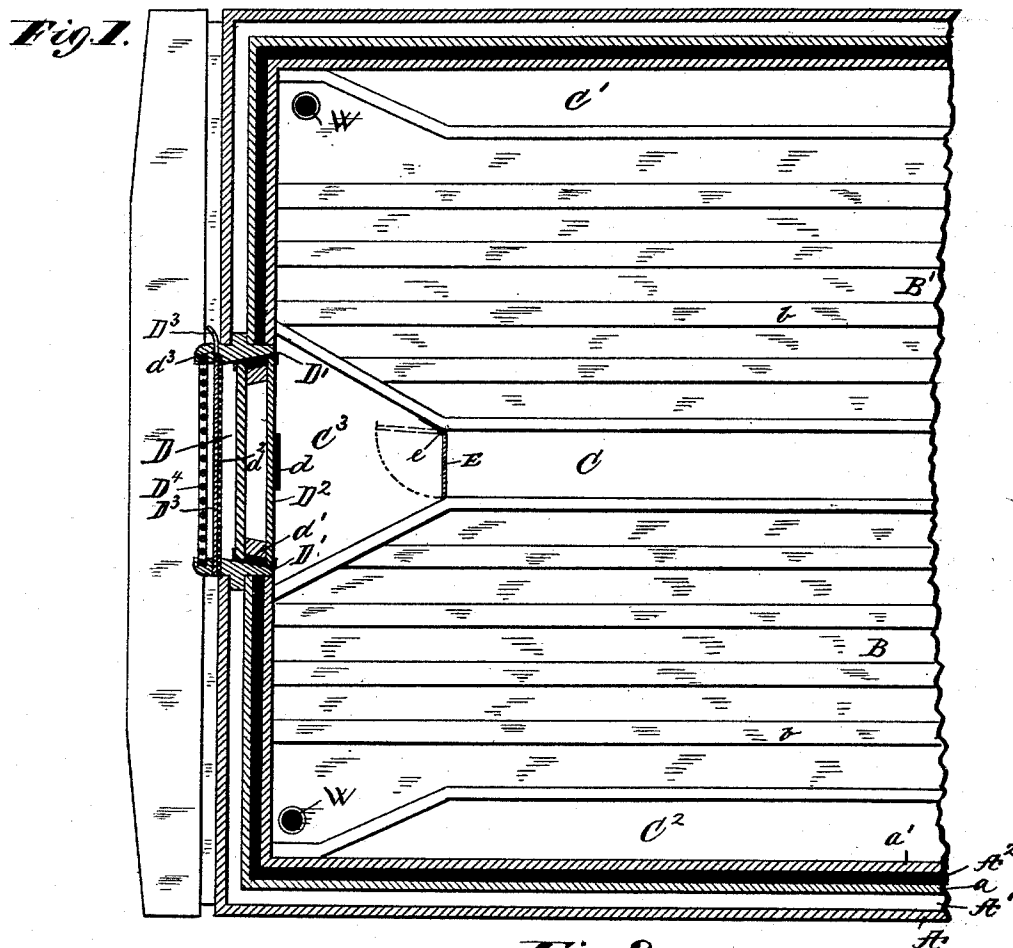


(No Model.)

H. C. GOODELL.
VENTILATED REFRIGERATOR CAR.

No. 483,551.

Patented Oct. 4, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY CARR GOODELL, OF ATCHISON, KANSAS.

VENTILATED REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 483,551, dated October 4, 1892.

Application filed February 1, 1887. Serial No. 226,172. (No model.)

To all whom it may concern:

Be it known that I, HENRY CARR GOODELL, of Atchison, in the county of Atchison and State of Kansas, have invented certain new and useful Improvements in Ventilated Refrigerator-Cars or Cold-Storage Rooms; and I hereby declare the following to be a full and clear description thereof.

The object of this invention is to construct a cold-storage or transportation room, especially such as are used in railway transportation, in such manner that the storage or goods compartment may be ventilated by the admission of fresh air from the outside, at the same time providing means for controlling and regulating said ventilation.

The nature of my invention is clearly set forth in the subjoined description and claims.

The invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional plan of a portion of a railway-car or similar structure provided with my improved ventilating devices. Fig. 2 is a sectional elevation of the same.

The general construction of the storage or transportation room is quite similar to structures heretofore patented and used by me (reference is here made to my patent, No. 300,596) for refrigerating-cars, &c. It has an outer wall A, with inner walls a and a' , which together form insulating-chambers A' and A^2 around all the sides of the inclosed storage-compartment. The outer insulating-chamber A' , I leave open to form an air-insulator to the compartments within, and the inner chamber A^2 , I fill with some suitable insulating material, like charcoal, lamp-black, mineral wool, or other good non-heat-conducting material.

As in my former structures of a similar character, I place at or near the top of the refrigerating-compartment two ice-boxes B and B', with a central air-duct (formed by the side walls of the ice-boxes B and B') between them, and similar air-ducts C' and C² at the sides of the said ice-boxes and between them and the outer side walls A a a' , as shown clearly in Fig. 1. The ribs b form the rack at the bottoms of the ice-boxes on which the ice is laid.

At or near the corners of the ice-boxes or in other convenient locations are placed

outlet drainage-pipes W, properly trapped, through which the meltage from the ice in the boxes B and B', respectively, escapes.

As in the structures formerly invented and used by me, the ice-boxes B and B' are placed at or near the top of the car or compartment, as above described, and the storage-room is placed below them, and the whole structure arranged so that the warm air of the storage-room will rise up through the central air aperture or duct C, and thence pass through the ice-boxes, where it will become cooled, and then again descend to the storage-room below through the side apertures or ducts C' and C².

The ice-boxes B and B', as used in this invention, instead of being of uniform width throughout their entire length, have their sides parallel for only a portion of their length, and the inner side of each box B and B', at a point marked e , runs diagonally from the main portion of said inner side toward the outer side of the car, in consequence of which construction the portion of each ice-box between said point e and the end of the car is narrower than the main portion, and the corresponding portion of the central duct C is widened into a flaring or wedge-shaped duct C³.

To replenish or reinforce the currents of air so passing through the several compartments of this structure with fresh and pure atmospheric air from the outside of the structure, I place at one or each end of the structure air-inlets or ventilators of the following description:

An air-inlet D through the walls A a a' is constructed with beveled jamb-pieces D', forming the frame-work of the said aperture and adapted to receive the bevel-edged door D², the thickness of which is about equal to the thickness of the two inner walls a and a' and the space between them, more or less. The said bevel-edged door D² is hinged at d to the bevel-faced jamb-piece D' and arranged to close air-tight in its said frame D' by means of soft or yielding packing-strips d' , formed of leather, felt, canvas, or any suitable material. The outer face of the opening D is covered with a fine wire-gauze screen d^2 to prevent the ingress of dust or other objectionable materials along with the air, and also with a sliding door D³, which is arranged to slide in rab-

bets or ways d^3 , formed in the jamb-pieces D' or secured to the outer wall A . An outer heavy grating D^4 is secured to the outside of the outer wall A , so as to protect the screen d^2 and the sliding door D^3 from injury. The opening D and door D^2 are preferably placed opposite the end of the central duct C , the end of which next the door is widened out into a flaring or wedge-shaped duct C^3 , as herein-
 5 after described, of sufficient size for the said door D^2 to open inwardly into it.

At the point e where the parallel-sided central duct C merges into the flaring duct C^3 is a diaphragm-gate E , which is hinged to the side wall of one of the ice-boxes, so that it may be thrown transversely across the end of the parallel-sided duct C and effectually prevent the entrance of air thereto from the doorway D , in which case the incoming air is
 15 necessarily forced downward into the storageroom below the ice-boxes; but if said diaphragm-gate E is turned backward against the side of the flaring or wedge-shaped duct C^3 , as shown in dotted lines in Fig. 1, the incoming current of air is allowed to pass into the central duct C .

In refrigerator-cars as heretofore constructed and in use no provision is made for such a perfect system of thorough ventilation as is provided for in this invention. Heretofore the doors and other apertures have been located in the sides of the car, and the only circulation and ventilation attainable were those which would follow the result of a vacuum produced by the longitudinal rectilineal movement of the car, and consequently the circulation and ventilation were imperfect; but when the doors and other apertures are located in the ends of the car, as in this invention, and also as described in my application, Serial No. 226,171, filed on the same date herewith, all the current and circulation of air, whether great or small, must necessarily always be in line with the line of travel of the
 35 car, and consequently a perfect system of ventilation is secured.

The operation of my invention is as follows: If it is desired to prevent the outside air from entering the refrigerating-compartment, the door or doors D^2 (as the refrigerat-

ing structure may have one, two, or any number of ventilating air-inlets D) are tightly closed in the jambs D' , the packing d' forming an air-tight joint. If, however, it is desired to ventilate the refrigerating-compartment, the doors D^2 are opened and the sliding doors or valves D^3 are moved in their ways d^3 , so as to admit through the air-inlet D a greater or less volume of air, as desired. If it is desired to have the current of air pass through the central duct C , the diaphragm-gate E is opened and the air is then free to pass through said duct C . If it is desired to have the current of air pass directly into the storage-compartment without passing through the duct C and ice-boxes $B B'$, it is only necessary to shut the diaphragm gate or door E , which as it closes the entrance to duct C will deflect the current of air downward directly into the storageroom.

Having described my invention, I claim—

1. In a refrigerator-car, an ice-chamber in the top of the car, comprising two ice-boxes with a passage between them extending longitudinally of the car, a storage-chamber beneath the ice-chamber, valved air-inlet openings in the end walls of the car, substantially in line with the central passage, and an interposed valve or gate independently operated between the said passage and the air-inlet opening for deflecting the current admitted, substantially as described.

2. In a refrigerator-car, an ice-chamber in the top of the car, comprising two ice-boxes with a passage between them extending longitudinally of the car, a storage-chamber beneath the ice-chamber, valved air inlet and outlet openings in the end walls of the car, a flaring extension of the central passage between the ice-boxes, and a supplemental valve arranged between the air-inlet opening and the said central passage, substantially as described.

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

HENRY CARR GOODELL.

Witnesses:

E. L. RICHARDS,
 WM. E. RICHARDS.