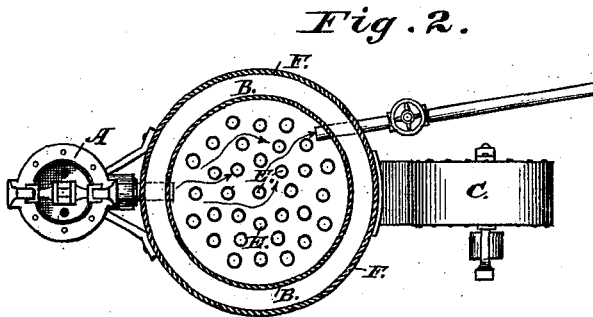
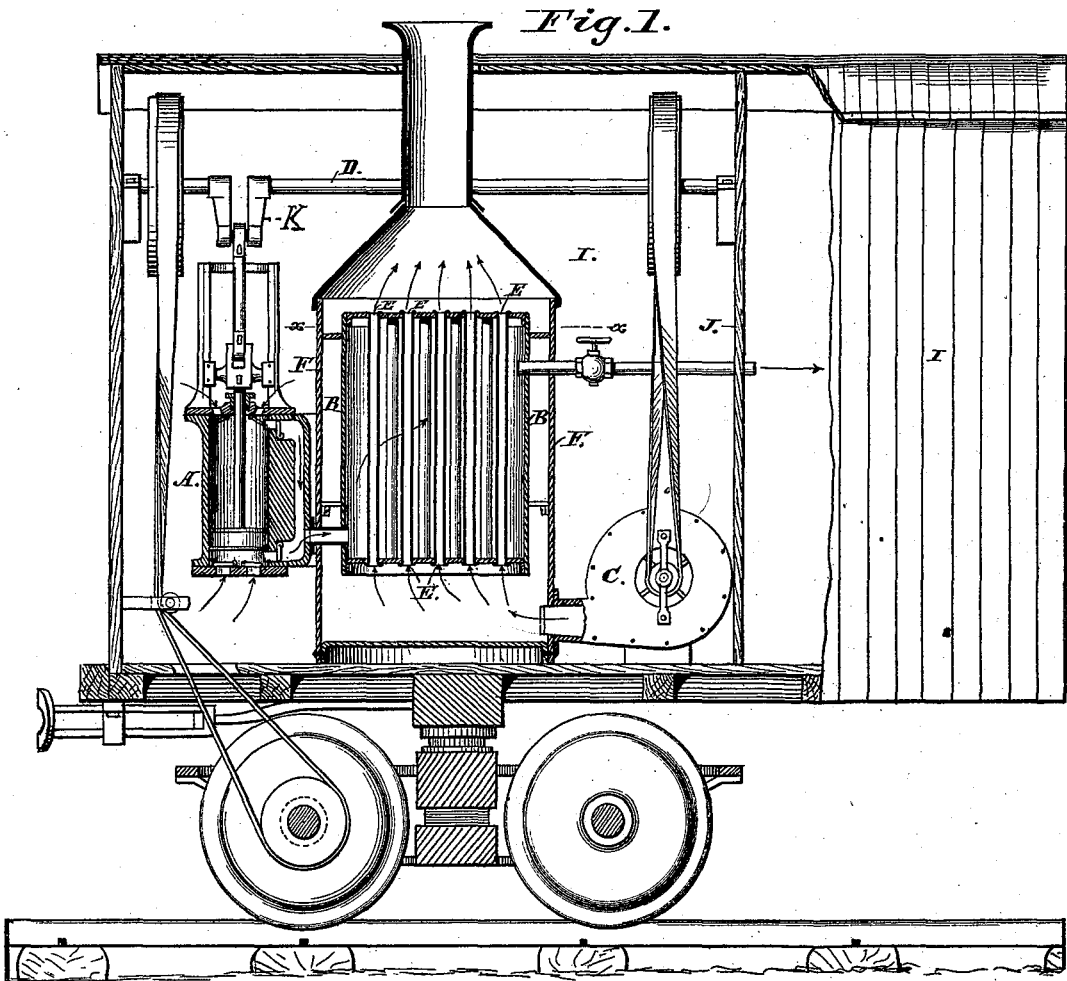


J. E. WINANTS.  
REFRIGERATING-CAR.

No. 173,198.

Patented Feb. 8, 1876.



*Attest:*  
*Amos Kappeler.*  
*James B. Jones.*

*Inventor.*  
*Josiah E. Winants,*  
*By Benjamin Duerfee*  
*Attorney.*

# UNITED STATES PATENT OFFICE.

JOSIAH E. WINANTS, OF WILMINGTON, NORTH CAROLINA.

## IMPROVEMENT IN REFRIGERATING-CARS.

Specification forming part of Letters Patent No. **173,198**, dated February 8, 1876; application filed January 12, 1875.

*To all whom it may concern:*

Be it known that I, JOSIAH E. WINANTS, of the city of Wilmington, county of New Hanover, State of North Carolina, have invented a new and original Improvement in Refrigerating-Cars, of which the following is a specification:

The object of this invention is to provide a means for cooling a car for the transportation of perishable articles. It consists in applying to an ordinary freight-car a peculiar construction, whereby the heat contained in the cooling medium, after compression, is carried away by a current of air carried through or around the compression-chamber, all as hereinafter described.

It is well known that when air is compressed to a density of two or more atmospheres, there is evolved a quantity of heat in proportion to its pressure or density, which must be absorbed, and that, upon being released under pressure, it again absorbs heat and produces a degree of cold in proportion to its former density.

Heretofore the method of absorbing the heat evolved from compressed air has been by the application of water.

It will be at once apparent that the application of water to a cooling apparatus of the nature above alluded to, in a railroad-car, is not practicable, as the means for a constant supply of cool water is not available. It is proposed to substitute common air as a cooling medium, instead of using water, as above stated.

Referring to the drawings—in which Figure 1 is a vertical section of an ordinary freight-car, showing the arrangement of the air-cooling apparatus; Fig. 2 is a plan section of the cooling apparatus taken on the line *x x* of Fig. 1—

A is the compressing air-pump. B is the receiver for holding the condensed air. C is the blower or fan. D is the shaft for driving the air-pump and fan, and receiving its motion from a belt connecting it with the axle of the car H, or any independent power. E E are pipes

passing through the heads of the drum or receiver. F F is a wooden casing surrounding the drum or receiver, with an escape-pipe to the open air. I is the car, with partition J dividing it into two parts.

The air-pump A being set in motion by operation of the band on the shaft D, through the crank K, the air is forced into the receiver B to the pressure of two or more atmospheres. At the same time motion from the shaft D is imparted, through a band, to the blower or fan C, supplying air to the outside surface, and through the pipes E of the receiver or drum B, and within the wooden casing F, in the direction of the arrows, as shown in the drawing.

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

1. The combination, with a receptacle provided with an air-compression chamber, of an air-forcing mechanism, whereby a current of air is passed over or around such chamber to carry away the heat evolved by condensation, substantially as described.

2. The combination, with a receptacle provided with a chamber for holding compressed air, of an air-condensing mechanism for filling such chamber with condensed air, and an air-forcing mechanism, whereby a current of air is passed over or around such chamber, as and for the purposes specified.

3. The combination, with a receptacle provided with a chamber for compressed air, of a condensing mechanism, an air-forcing mechanism, and an expansion-chamber, the several parts being constructed and arranged substantially as described, whereby the compression chamber is filled with compressed air, and the heat evolved by condensation is carried away, and the air afterward expanded, as and for the purposes set forth.

JOSIAH E. WINANTS.

Witnesses:

BENJ. DURFEE,

WM. H. APPLETON.