2 Sheets—Sheet 1.

J. S. LINSLEY.

VENTILATING, WARMING AND COOLING RAILROAD-CARS.

No. 186,012. Patented Jan. 9, 1877.

Fig. 1.

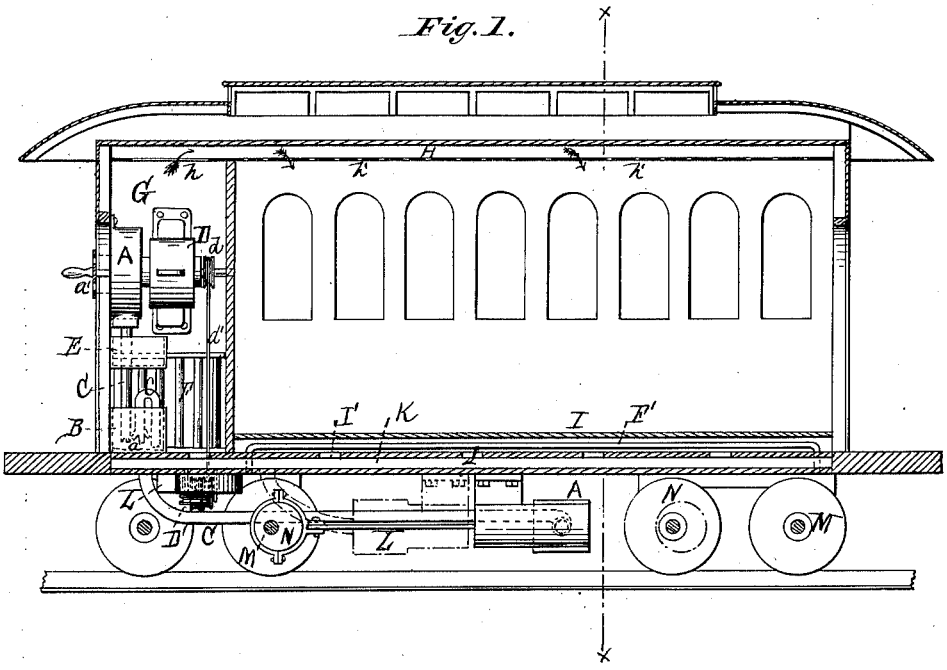
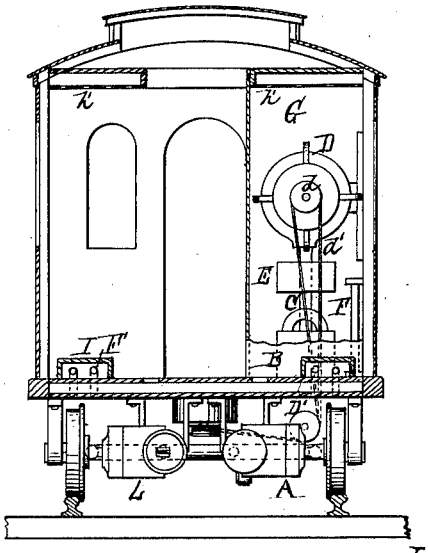


Fig. 2.



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John R. Jones.

Inventor:
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per Edwin James
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2 Sheets—Sheet 2.

J. S. LINSLEY.

VENTILATING, WARMING AND COOLING RAILROAD-CARS.

No. 186,012. Patented Jan. 9, 1377.

Fig. 3.

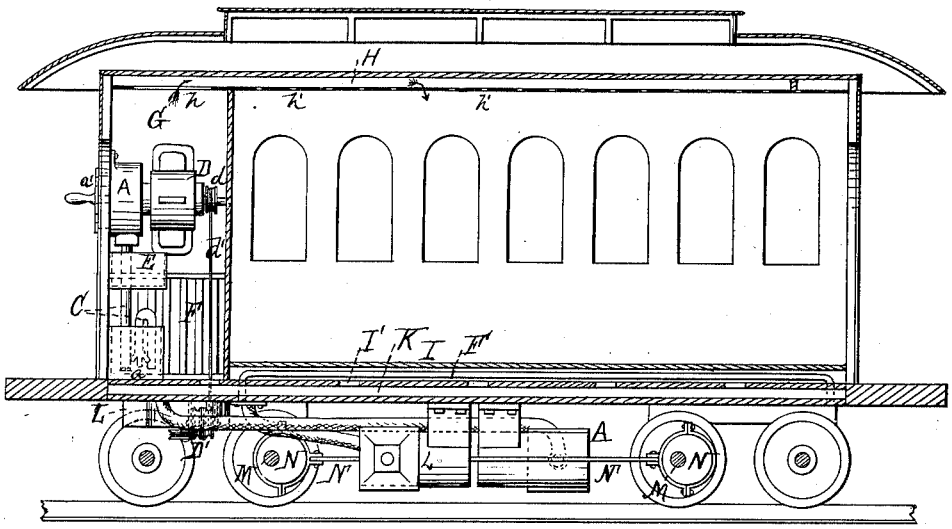
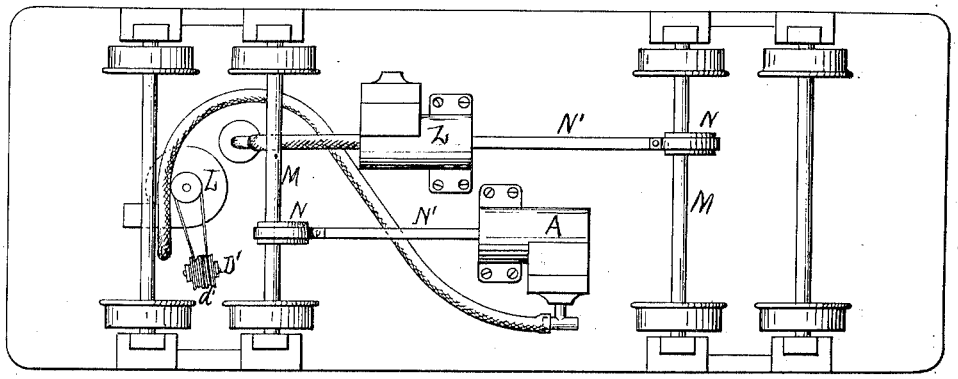


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN S. LINSLEY, OF NEW YORK, N. Y.

IMPROVEMENT IN VENTILATING, WARMING, AND COOLING RAILROAD-CARS.

Specification forming part of Letters Patent No. **186,012**, dated January 9, 1877; application filed September 5, 1876.

To all whom it may concern:

Be it known that I, JOHN S. LINSLEY, of the city, county, and State of New York, have invented an Improved Method of Ventilating, Warming, and Cooling Railroad-Cars; of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon, making part of this specification, in which—

Figures 1 and 3 are longitudinal sectional views of a car. Fig. 2 is a cross-section on the line *x x*, Fig. 1. Fig. 4 is a bottom plan view.

The object of my invention is to render, in the manner and by the means as hereinafter stated, the interior atmosphere of a railroad car constantly fresh, pure, and of an even or uniform temperature, and of the degree requisite for inhalation, and free from hot or cold currents; also, to wholly prevent the entrance of dust, smoke, or cinders within such car, and to produce at all times the appropriate degree of temperature requisite for thorough ventilation and the comfort of the passengers of such railroad-car.

These objects are secured and these results attained by the following means: First, by a pneumatic supply pump or pumps, which may be rotary blowers or piston-pumps communicating with a tempering-chamber in each and every railroad-car, and connected by suitable apparatus with an electro-engine or other independent motor, so that the tempered air may be supplied both while the car is in motion and at rest; second, by a water-tank constructed in the tempering-chamber of each car, through which the air is forced by means of a collecting-tube to receive the air from the pump to cleanse it of all impurities, dust, smoke, and cinders, said tube being serrated at the end which enters the water-tank; third, by a tempering-chamber constructed in one corner of a railroad-car, such chamber to contain steam or hot-water coils for heating purposes, and an ice-box for cooling purposes; fourth, by a distributing-chamber in the upper part of each and every car, communicating with the tempering-chamber and having numerous small apertures in the floor of the same to admit air to the interior of such car; fifth, by a pneumatic exhaust pump or pumps, which may be rotary blowers of piston pumps, communicating with a foul-air chamber beneath the car, and which pumps or blowers may be attached to the bottom of the car, and connected by suitable apparatus with the motor operating the pneumatic supply pumps or blowers of the tempering-chamber, or any other independent motor which may be used, or connected by suitable apparatus with the wheels or axles of the car, and operated by the same; sixth, by a foul-air chamber beneath the car, communicating with the interior of the car by means of apertures in the floor. Such apertures may be provided with grating or registers.

The construction and operation of my invention are as follows: A is the supply-pump or rotary blower. B is the water-tank, located in one corner of the tempering-chamber G. C is the air-tube, running through the ice-box E, and connecting the supply-pump A and water-tank B, and having one end serrated, as shown at *a*, Figs. 1 and 3. This end *a* is immersed in water in the tank B, to break the air-bubbles and to purify and cleanse the air before being distributed through the car. D is an electro-motor, connected on one side with the supply-pump or rotary blower A, for the purpose of operating the same. A pulley, *d*, may be secured to the electro-motor D, and communicate with the pulley D′ by means of the belt *d′*. This pulley D′ may be made to operate the rotary exhaust-blower L. E is the ice-box, located in the tempering-chamber G for the purpose of cooling the air therein, and F are the coils of steam, hot water, or hot-air pipes. G is the tempering-chamber, located at one end of the car, and may be constructed of any suitable material. This chamber may be constructed of double walls or partitions for use as a refrigerator for cooling the air in hot weather. H is the distributing fresh-air chamber, which extends around the top of the interior of the car, and is provided with numerous perforations, *h′*, in the floor of the same. Air is admitted to the fresh-air chamber H from the tempering-chamber G through the orifice *h*, and distributed throughout the interior of the car through the perforations *h′*, as shown by the arrows. Through this chamber

H is received and distributed the tempered air from the tempering-chamber G, thus diffusing the air gently and uniformly throughout the interior of the car. I is the foot-warming-box, which contains the steam, hot-water, or hot-air pipes F'. In the floor of the car are apertures I I', opening into the foul-air chamber K which is attached to the bottom of the car, and underneath the same. This chamber K communicates with the exhaust-blower or air-pump L, for the purpose of withdrawing the foul air from the chamber K. M M are the axles of the car, and N N are eccentrics secured to the same. These eccentrics are connected with the exhaust-pump L and the air-pump A by means of the rods N' N'. In this case the air-pump and exhaust-pump are both attached to the bottom of the car and underneath the same, as shown in Fig. 4. *a' a'* are openings in the air-chamber A for the admission of the outside atmosphere.

The operation is as follows: When in operation, the doors, transoms, and all windows should be closed perfectly tight to prevent the entrance of dust, smoke, or cinders, and to allow free and full action to the air-pumps or blowers. The supply-pump A forces in a certain quantity of fresh air, and the exhaust-pump L withdraws a quantity of foul air sufficient for the purposes herein claimed. The fresh air is purified by being passed through the water in the tank B, and warmed or cooled to the requisite degree—say, 60° to 75° Fahrenheit—in the tempering-chamber G, from which it is communicated to the distributing-chamber H, and by means of the perforated floor of which it is diffused through the interior of the car, and is driven through the apertures I' I' into the foul-air chamber K, and thence to the external air by the air-exhaust pump L.

The air-pump may be operated by the electric engine or other motor independent in its action, or by the apparatus connected with the car wheels and axles.

To allow the requisite amount of ventilation in the car in cold weather it will be desirable to keep the pavement of the foot-warming box I at a temperature of about 98° Fahrenheit.

The water-tank B, or water therein, may be cleansed of its impurities by any convenient means, and the water in the ice-box E may be drawn off into the tank B.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a car ventilator, heater, and cooler, a rotary blower or air-pump, A, and exhaust blower or pump L, operated by means of an electric engine, D, or other independent motor, substantially as herein described.

2. In a car ventilator, heater, and cooler, the tempering apparatus, consisting of the air-pump or rotary blower A, air-tube C, whose serrated end *a* enters the water in the tank B, contained within the chamber G, electric engine D, and tank B, the whole constructed and arranged to operate substantially as described.

3. In a railroad-car, the tempering-chamber G, constructed as described, distributing-chamber H, provided with perforations *h'*, foul-air chamber K, and exhaust-pump L, the whole constructed and arranged to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN S. LINSLEY.

Witnesses:
KIMBALL C. ATWOOD,
MARY W. LINSLEY.