

E. E. HARGREAVES.
VENTILATING RAILWAY-CARS.

No. 174,811.

Patented March 14, 1876.

Fig. 1.

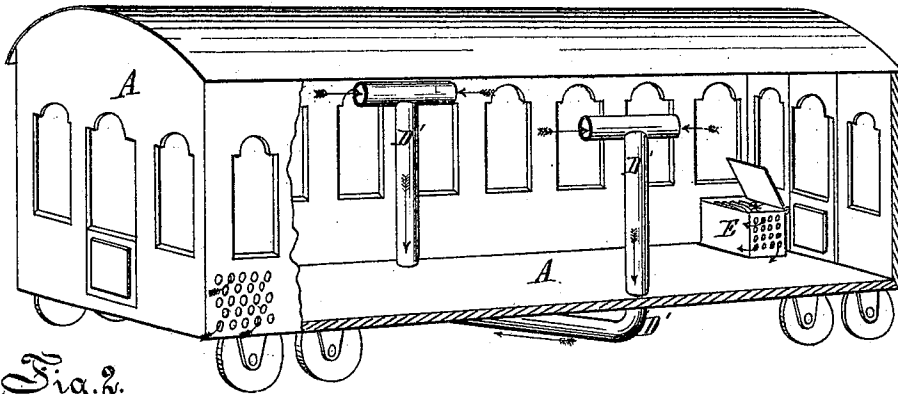


Fig. 2.

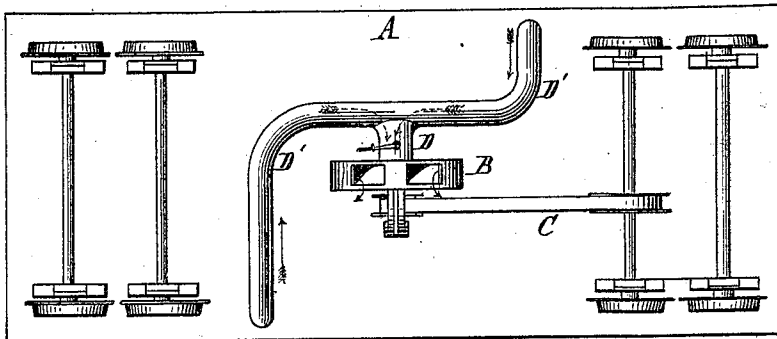


Fig. 3.

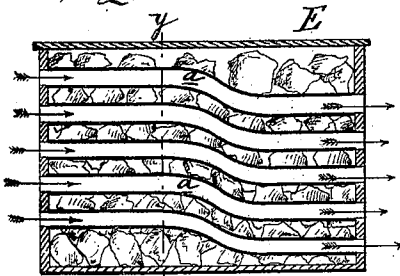
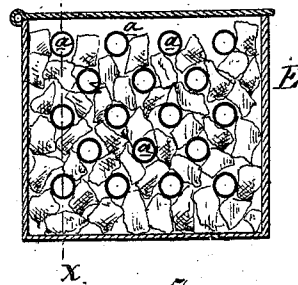


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD E. HARGREAVES, OF SARNIA, CANADA.

IMPROVEMENT IN VENTILATING RAILWAY-CARS.

Specification forming part of Letters Patent No. 174,811, dated March 14, 1876; application filed February 9, 1876.

To all whom it may concern:

Be it known that I, EDWARD E. HARGREAVES, of Sarnia, in the county of Lambton and Province of Ontario, Canada, have invented an Improvement in Ventilating and Cooling Railway-Cars, of which the following is a specification:

My invention has for its object to ventilate a railway passenger-car by removing the air from within it by means of an exhaust-fan located underneath it, driven by a belt from a pulley on one of the adjacent axles, and at the same time to cool the influent currents of fresh air. The cooling of the influent currents I prefer to accomplish by placing a tight box in one corner of the car, at each end thereof, through which box air-tubes pass horizontally, communicating with the outer air through the side of the car, their inner ends opening into the body of the car. The box may be either filled with a refrigerating mixture of ice and salt, or the air-tubes may serve as a grate to support blocks of ice, so that in either case the air drawn into the car will be lowered in temperature as it passes through the tubes.

Figure 1 is a perspective view of a passenger-car, (without the seats,) portions of the walls being broken away to show the internal arrangement. Fig. 2 is a bottom plan, showing the exhaust-fan and pipes. Fig. 3 is a cross-section of one of the air-tube chests at *x x*. Fig. 4 is a cross-section of the same at *y y*.

In the drawing, A represents the body of a passenger-car, beneath which is located an exhaust-fan, B, adapted to operate equally well when rotated in either direction, which fan is driven by a belt, C, from a pulley on one of the adjacent axles. D is the suction-pipe of the fan, from which two branch pipes, D' D', lead to opposite sides of the car, rising through the floor thereof, and extending inside the car nearly to the top, where it terminates in a T-branch, open at both ends, as shown. At each end of the car, in one corner thereof, there is placed a box, E, provided with a tight-fitting cover. Through the ends of this box pass metallic air-tubes *a*, the several rows of which nearly fill the box, the up-

per row serving as a grating to support blocks of ice placed in the box; or the latter may be filled with a mixture of ice and salt, or other refrigerating material, which will surround the tubes and reduce them in temperature to a low degree. The outer ends of the tubes communicate with the external atmosphere through the side of the car, and should be provided with suitable screens to exclude dust and cinders, while the inner ends of the tubes communicate with the interior of the car. When the car is in motion the action of the fan will exhaust the air from it, taking the heated impure air from the upper part thereof, which is replaced by an equal volume of fresh air drawn in through the tubes *a* in the boxes E at each end, and during hot weather the influent air-currents can be cooled as described, so as to render travel a pleasure, if not a luxury during the heated season.

It is essential to the proper operation of this ventilating apparatus that the doors and windows of the car be kept closed, at least while the car is in motion. The time required to change the volume of air in the car may be regulated by a valve in the main suction-pipe D, which valve can be operated from the inside of the car. During cold weather this arrangement for ventilating the car must be changed, so as to take the foul air out of the car at or near the floor, and means must be provided for warming the influent air-currents, which forms the subject-matter of a separate application for Letters Patent.

What I claim as my invention is—

The means for ventilating and cooling a railway-car, substantially as described, consisting of a refrigerating-box at each side of a car, having rows of air-tubes passing through it and through the side of the car, in combination with an exhaust-fan and pipes for removing or exhausting air from the upper part of said car, substantially as described.

EDWARD E. HARGREAVES.

Witnesses:

H. S. SPRAGUE,
EDWARD BARTHEL.