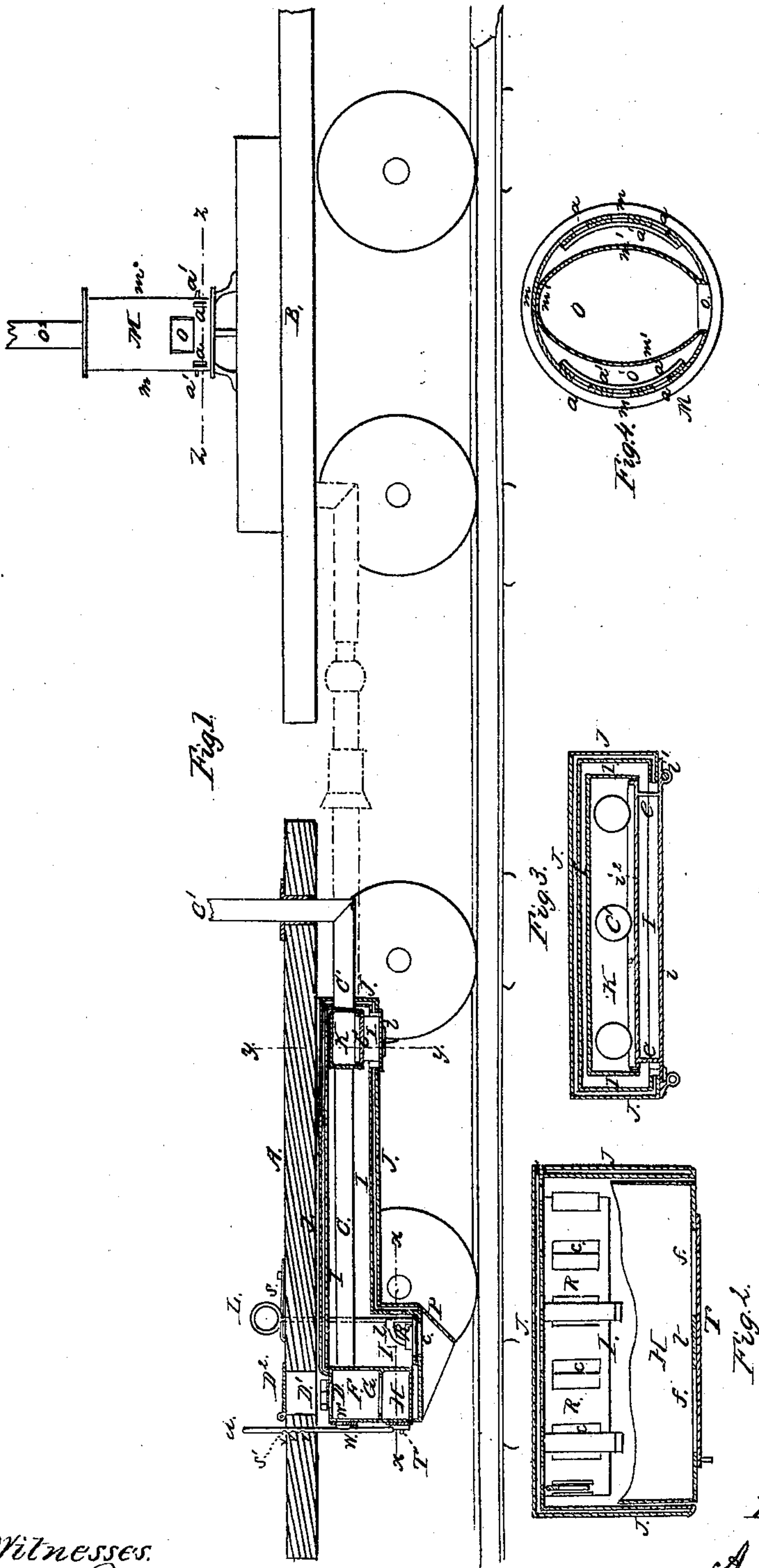


*A Week's  
Car Heater.*

N<sup>o</sup> 89,529.

*Patented Apr 27, 1869*



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# United States Patent Office.

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Letters Patent No. 89,529, dated April 27, 1869.

## HEATER AND VENTILATOR FOR RAILROAD-CARS.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, ASA WEEKS, of Minneapolis, in the county of Hennepin, and State of Minnesota, have invented a new and improved Heater and Ventilator for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section.

Figures 2, 3, and 4, are sections through the lines *x*, *y*, *z*, respectively.

This invention is an improvement upon the one patented by me January 5, 1869, No. 85,712. It differs from it also in the construction of the large heater, and the means for adjusting its "draught," and for cleaning it out when foul.

One great practical difficulty, hitherto experienced in the employment of the surplus heat of the locomotive, or in the use of a large heater on one car, for the purpose of warming the entire train, arises from the fact, that while the train is in motion, it creates sufficient wind-draught to keep the fires well burning, and to carry the heated air to every part of the train, but the moment that the cars stop, the draught comes to an end, or is greatly checked, the circulation of hot air is retarded, and the large furnace becomes practically worthless for heating the distant cars. The result is that the train, while standing at the station, becomes uncomfortably cold, and that, if it happens to be arrested by snow-drifts on the prairie, or at a distance from human habitations, the passengers are in danger of freezing. On the other hand, if the railroad companies are obliged to place a stove in each car, for use on such occasions, the expense would be so great that the large heating-apparatus would never be introduced.

My present invention is designed to obviate all these difficulties, and to provide a single apparatus, which can be used to heat the whole train, from a single heater, attached to one of the forward cars, and when the train is not in motion will furnish the means for building a fire in each car separately.

In the drawings—

A is the car, to which a large furnace is attached, and B, a car coupled to it, and heated from the large furnace, by means of a system of conducting-pipes, similar to those described in my former patent.

F is the fire-chamber.

G, the grate.

H, the ash-pit.

D, the cover of the fire-chamber.

D<sup>1</sup>, the opening through the floor of the car through which to introduce the fuel.

D<sup>2</sup>, the cover to such opening.

O C, the horizontal smoke-pipes.

O', the flue.

I, the hot-air chamber surrounding the smoke-pipes, &c.

J, a jacket around the hot-air chamber, to prevent undue radiation of heat therefrom.

K, the box extending across the apparatus, into which the pipes O empty the smoke, and from which the smoke is conducted away by a flue, O'.

These parts, except the jacket J, are all constructed, in the main, like the corresponding parts described in my former patent.

The whole furnace itself, or the front wall of the same, like the former one, is adapted to be removed in hot weather, so that the apparatus may be then employed as a ventilator.

In addition to all these parts, I now employ the devices, which I will proceed to describe, and in the use of which important advantages are to be had over anything heretofore employed for a similar purpose.

In the first place, in order to obviate the difficulty described at length above, I employ, in each of the cars, a supplementary drum, M, having double walls, *m m'*.

The inner chamber, O, is adapted to be used as a common air-tight wood-stove; but this chamber and the chamber O', between the inner and outer walls, communicate with a smoke-pipe, O<sup>2</sup>.

The drum is provided with a door, *o*, and a series of holes, *a a*, in the outer wall, near the bottom, covered with a register-slide, *a'*.

The spaces O O' communicate with each other only at the upper end of the drum, so that when the openings *a a* are closed by the register, the only draught into the drum must be through the door, but when the register is open, there is a draught through the holes *a a*, and thence up over inner wall *m'* into the flue.

In my former invention, I arranged the hot-air registers along the floor, or at the lower edge of the sides or ends of the cars. I now propose to arrange them near the roof of the car, so that they will discharge the warm pure air into the upper part of the room, and make it force the impure air out of the car, near the floor.

When the cars are running, the register *a a*, near the floor, is left open, and the impure air passes through it, and escapes up the flue O<sup>2</sup>.

When the cars are not running, the register is closed, and a fire is built in the inner chamber, O, which serves to heat the car.

It will be observed that the outer wall *m* is cylindrical, while a section of the inner wall, in the line *y y*, is elliptical. This enables the two walls to be fastened together along the lines of contact, so that they mutually support and strengthen each other, and produce a very firm, strong drum.

The great advantage of the improved drum herein



described is in its discharging the impure air near the floor, thus allowing the upper part of the car to be filled at all times with pure, fresh air, and obtaining the full benefit of its warmth.

I am aware that the principle is not new. I do not lay any claim to the principle, but only the device employed to give full effect to it, as herein set forth.

A second improvement upon my former apparatus consists in providing a door, *i*, which can be opened upon its hinges, *i*<sup>1</sup>, as shown in figs. 1 and 3.

This door is, by means of short studs, *e e*, connected with a plate, *i*<sup>2</sup>, which opens and closes the bottom of the box K.

When the door *i* is closed, it closes the plate *i*<sup>2</sup> against the box, and prevents the escape of smoke, soot, &c., therefrom. When the box becomes foul with soot, cinders, ashes, &c., it can be readily cleansed by opening the door *i*.

A rod may be attached to the door, and extend up through the floor of the car, so that the attendant can open the door from within the car, while the train is in motion, or it may be left to be opened by any ordinary latch or lock-arrangement, while the train is at the station.

I also provide openings, *e e*, to allow the cool fresh air to enter the chamber I, therein to be heated for use; and in connection therewith, a deflecting flange, P, to catch and deflect the air through the openings, as the train moves along.

I attach a register-plate, R, figs. 1 and 2, above the openings, to regulate the draught of air through them, and slide the register back and forth, to open and close the air-passages, by means of a vertical spindle, L, connected to it by an arm, *l*.

I provide a spring, *s*, by the side of the rod L, and pressing against it so as, by friction, to prevent the latter from turning, and allowing the register to open or close by the jarring of the train.

In order to regulate the air-draught into the fire-chamber F, I make the draught-holes *f f* equal in number on each side of the centre of the front door of the chamber, and attach a plate, T, to said door, by means of a pivot-pin, *t*.

The plate is so constructed and arranged, that by rocking it on its pivot, it may be made to open or close holes *f f*, to any required degree. It can be thus rocked by means of a vertical rod, *u*, extending up into the car.

A series of notches, *v v v*, are cut in the side of the rod near the floor, and, in connection with them, a spring, *s*<sup>1</sup>, is employed, which, springing into the one at the surface of the floor, locks the rod and the plate T in any required position.

Directly in front of the pipes C C a horizontal opening, *w*<sup>1</sup>, is made in the front wall of the furnace, which opening is closed by a metallic plate, *w*, of suitable form, secured in position by eccentric buttons, or hooks, attached to the wall, and operating in connection with the detachable plate. The object of this arrangement is to provide the means for cleaning out the smoke-pipes when they become foul. The plate having been removed, the open ends of the pipes are exposed, and they can be very readily and conveniently cleaned.

Having thus described my invention,

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

1. The within-described arrangement of the deflector P, opening *e*, register R, rod L, fire-chamber F, and chamber E, as and for the purpose specified.

2. Providing the door *i e i*<sup>2</sup>, to allow the box K to be cleaned, when employed in combination with my improved car-heater, in the manner described.

3. The supplementary heater M, constructed and adapted to operate in connection with my improved heater, for the double purpose of heating and ventilating the cars, in the manner substantially as herein set forth.

4. The opening *w* and plate *w*, when arranged in the front wall of the furnace, with relation to the open ends of pipes C C, in the rear wall, substantially as and for the purpose described.

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Witnesses:

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