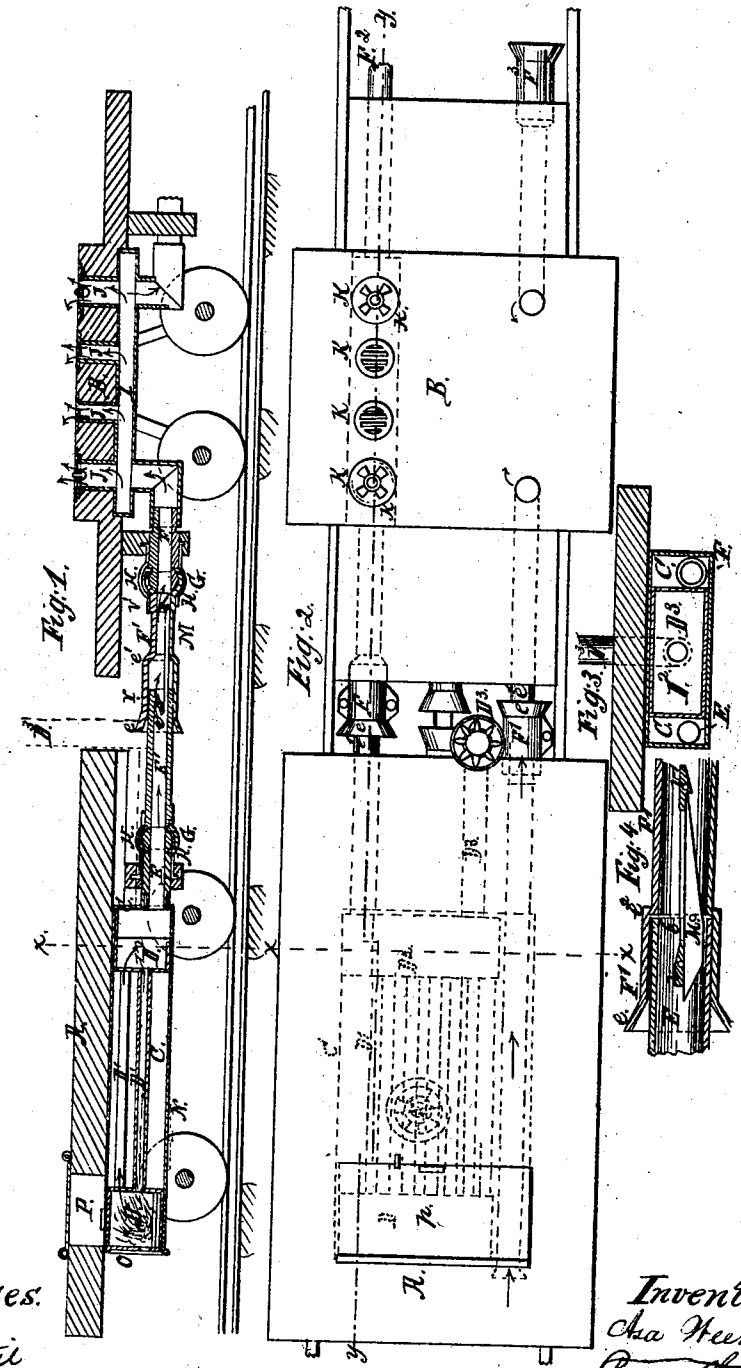
A. WEEKS.

RAILROAD CAR HEATER.

No. 85,712. Patented Jan. 5, 1869.



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RAILROAD-CAR HEATER.

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 Railroad-Car Heater and Ventilator; 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 through line *y y* of fig. 2.

Figure 2 is a plan.

Figure 3 is a cross-section through line *x x* of fig. 1.

Figure 4 is a detached view, showing the automatic apparatus for regulating the valves of the hot-air pipes.

The object of this invention is to provide an apparatus for warming and ventilating railway-cars in winter, and cooling and ventilating them in summer, the apparatus being so constructed that it is cheap, convenient to manage, and economical in operation, and can be applied to a whole train without any difficulty arising from the coupling and uncoupling of the cars. To this end,

The invention consists in the employment of a furnace and smoke-flues surrounded with a jacket for collecting the hot air, and connected with a set of pipes for conducting the hot air to the several cars, and a set of registers for regulating its admission into them.

The hot-air pipes are constructed in a peculiar manner, so as to form a flexible "telescopic" joint between the cars, and are provided with dampers of a peculiar construction, which automatically close when the cars are uncoupled, and thereby prevent the escape and waste of the hot air.

When the cars come together or are separated, the pipes of each car automatically couple or uncouple with those of the adjoining cars.

The furnace and enclosing hot-air jacket are so constructed that in summer the furnace can be removed, and the jacket will then serve to intercept the cool air as the train moves along, which will be conducted by the pipes and distributed to the several cars by the registers in the manner above described.

The whole apparatus is underneath the cars, out of the way.

The furnace may be carried by the tender, or by a car next in rear of the tender, employed for the purpose.

Having thus described the general principles of my improved heating and ventilating-apparatus, I will now proceed to describe the details of its construction and operation.

In the drawings—

A is the car, which supports the furnace, and

B is one of the passenger-cars of the train.

D is the furnace, placed in the forward end of a hot-air chamber, C, and provided with smoke-flues, D^1 D^1, extending through the chamber C, (coiled, convoluted, or otherwise, at pleasure,) and terminating in a box, D^2, at the rear end of the chamber, from which the smoke, &c., is discharged into the open air, above the cars, by means of a smoke-stack, D^3.

From the hot-air chamber a pipe, E E′, on each side of the centre of the car, extends sufficiently far from the end of the car, under the platform, to couple with a similar pipe, F F^1, connected with the other cars.

The end of the pipe on one side of a car is made flaring or funnel-form, as seen at *e*, and on the other side is made straight, as seen at e^1, the whole being so constructed that however the several cars may come together, a straight pipe will always be confronted by one having an expanded mouth, so that the pipes will couple without difficulty.

The pipes having the expanded mouth are enlarged at their outer ends from the point e^2, and fit, as nearly as possible, air-tight around the ends of the other pipes, so as to make a telescopic or sliding joint, accommodating itself to the motion of the cars as they run more or less closely together.

Then, in order to accommodate the pipes to the pitching of the cars to one side or the other, I make each pipe in two parts, E E′ or F F^1, connected by a ball-and-socket joint, G, and I attach to both the upper and under side of the part E, (or F, as the case may be,) a bent curved spring, H, extending over the ball-and-socket joint, and having its end projecting down into a mortise or groove in the part E′, (or F^1.)

The two springs hold the part E′ (or F^1) in a straight line with the part E, (or F,) when the cars are uncoupled, and insure the proper connection of the pipes when the cars come together.

The pipe F F^1 terminates in a wide shallow hot-air chamber, I, extending under the floor of the car, directly beneath the seats, and provided with a series of short pipes, J J, which discharge the hot air into the cars under the seats, so as to keep the feet of the passengers warm.

Registers, K K, are provided, each composed of a fixed upper plate and movable notched under plate, and a spring, *k*, attached to the frame or floor of the car, and pressing against the edge or periphery of the under plate, in such a manner as to keep the latter from being opened or closed too far by the jar of the cars.

The air that is introduced from chamber I into the body of the car, for the purposes of general warmth and ventilation, may be carried up at the four corners of the car, and delivered through registers, which shall be provided with lock and key, so that they can be opened to such extent as those in charge of the car shall deem advisable, and locked securely in that position.

Instead of using the short pipes J J, the chamber I may be covered only by the floor of the car, and

under the seats a metallic lattice-work floor may be employed, or a neat wooden floor having small openings, so that a sufficient supply of hot air may be introduced under the seats, for the purpose above referred to.

From the end of chamber I, opposite to that to which the pipes F F are connected, extend two pipes, F^2 F^3, the counterparts of F F', communicating with the next car.

It is necessary that when a car is dropped from the train the ends of the pipes E E', F F', &c., should not remain open, and I accordingly provide each pipe with a pivoted damper-valve, *v v'*, weighted at its lower end or pivoted above its centre, so as to close the pipe automatically when not held open in some way.

In order to provide means for automatically opening the valve when the cars come together, I pivot a bar, M, to the inside of pipe F F', at or near the point where it is enlarged, and having a long inner and a short outer arm, the latter weighted so as to rest upon the bottom of the enlarged part of the pipe.

When the cars come together, the edge of pipe E E', entering F F', runs under the bevelled end of the bar, and raises it, lowering the opposite end of the bar.

As the opposite end is lowered, it turns valve *v'* on its pivot, being connected to its upper side by a joint or cord, and opens pipe F F' in the manner represented in fig. 4. At the same time the large end of bar M runs against the lower edge of valve *v*, and turns the latter on its pivot, opening the pipe E E', as shown in the same figure.

When the furnace is used, air is admitted to chamber C through a large register, N, under the chamber. This register may also have the spring-brake attachment described above, and may be provided with a lever or other means by which it can be opened or closed from within the car A.

The front side O, of chamber C, is a door which may be opened, and fastened open, or removed altogether, when necessary. In the summer it will be desirable to remove said door and take out the furnace, smoke-flues, &c., and leave the apparatus in that condition, when, as the trains are in motion, large quantities of cool, clear air will be intercepted by the open mouth of chamber C, and forced back through pipes E E' F F' into the cars, serving to ventilate and cool them.

Should the furnace-chamber C, &c., be carried by a car specially provided for the purpose, and should it be considered undesirable, in that case, to run such a car when the furnace is not in use, an open vessel for intercepting the cool air, in shape somewhat resembling the chamber C, or in the shape of an open funnel, might be located in front or alongside of the locomotive smoke-stack, and, by means of conducting-pipes running alongside of or under the engine and tender, might be connected to pipes similar to E E' F F', on the rear end of the tender. In this way the clearest and best air could be taken up and distributed to all the cars, and they could be shut up so as to avoid altogether the cinders, smoke, and dust that are so annoying, in the summer-season, in cars as now constructed.

The furnace may be fed through an opening, P, in the floor of car A, provided with a door, *p*, and the car A may be warmed directly from the hot-air chamber beneath it. This apparatus can be employed, as is evident from the above description, for the purpose of warming and ventilating all kinds of cars in use upon railways.

In adapting my improved apparatus to old cars, a hot-air space might be provided above their floors, on each side of the walk or aisle, by constructing a wide, shallow box along each side of the floor, and placing the car-seats, &c., upon such box, as a floor. Instead of the furnace D, constructed as described, a coil of pipe might be inserted in the jacket, through which a current of steam from the engine-boiler might be made to pass for the purpose of generating hot air.

Many other modifications of the form of the furnace might be suggested, but I deem the forms above described to be, on the whole, the simplest and best.

Having thus described my invention,

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

1. In connection with pipes E E' F F', connected between the cars by a ball-and-socket joint, as described, the arrangement of the two flat springs, H H, each being attached to one of the connected pipes, and extending over the joint and along in contact with the upper or under side of the other pipe, substantially as shown and specified.

2. The combination of the pivoted arm M with the valves *v v'*, the latter being arranged in the pipes E' F', in the manner set forth and shown, and the whole operating as and for the purpose herein specified.

3. The arrangement and combination of a spring with the fixed plate and the movable plate of an air-register, K, substantially as herein described, and for the purpose specified.

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Witnesses:

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