(Model.)

G. LAUBE.

Car Heater and Ventilator.

No. 237,555. **Patented Feb. 8, 1881.**

Fig. 1.

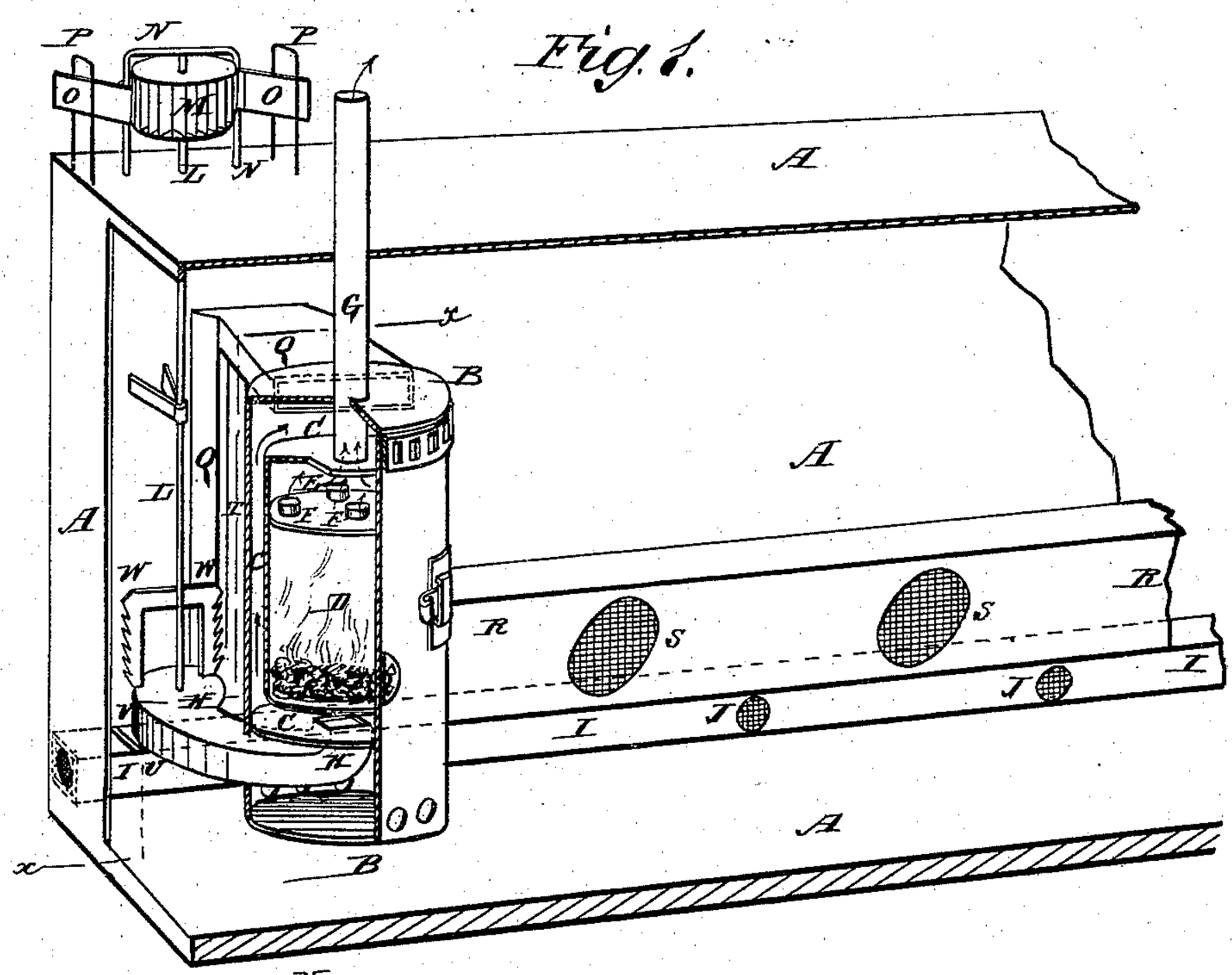
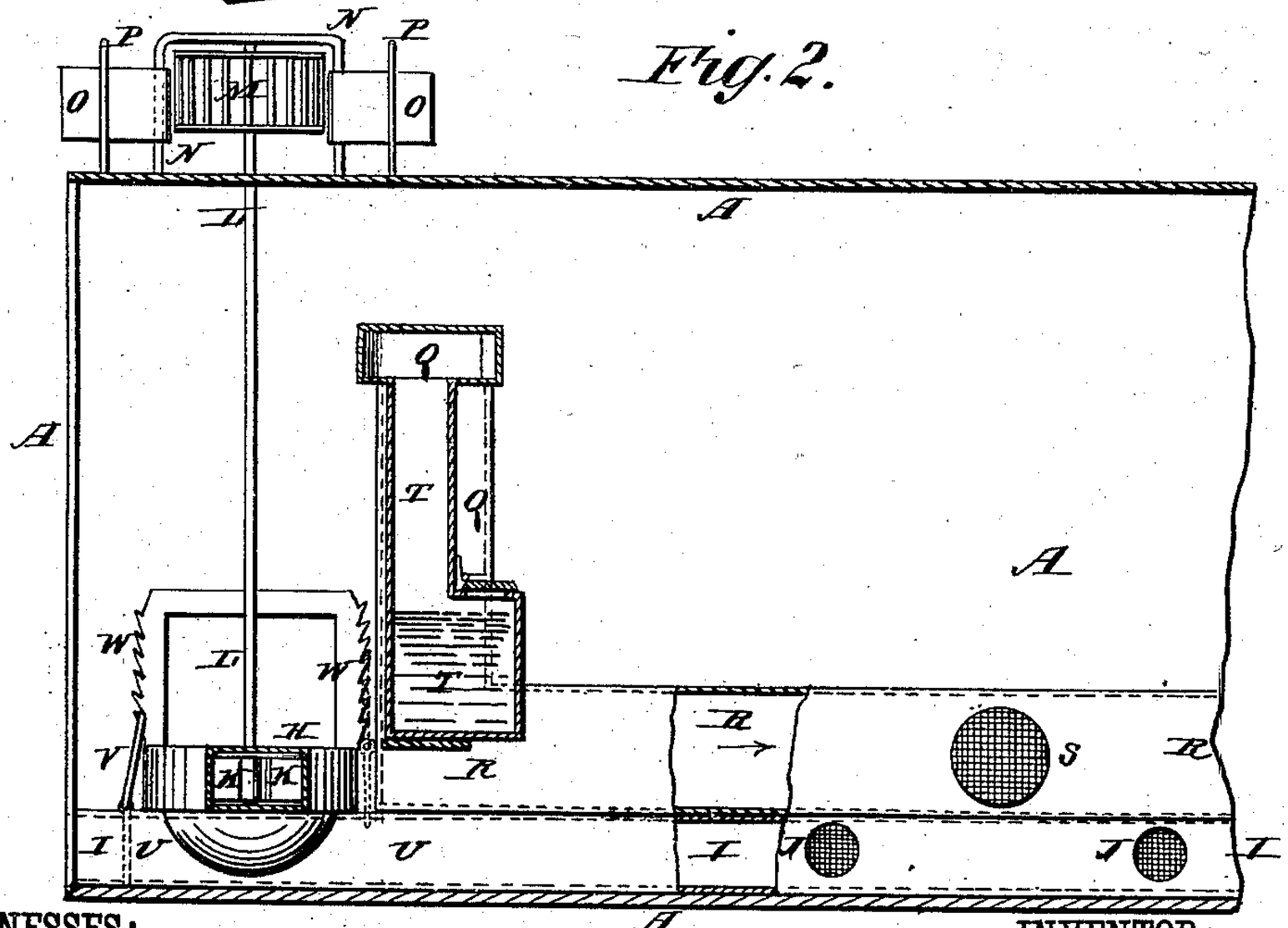


Fig. 2.



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CAR HEATER AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 237,555, dated February 8, 1881.

Application filed November 26, 1880. (Model.)

To all whom it may concern:

Be it known that I, GODFRIED LAUBE, of Wausau, in the county of Marathon and State of Wisconsin, have invented a new and Improved Apparatus for Heating and Ventilating Cars, of which the following is a specification.

Figure 1 is a perspective view of the improvement, partly in section. Fig. 2 is a side elevation, partly in section through the line *x x*, Fig. 1.

The object of this invention is to furnish an improved apparatus for heating cars, which shall be so constructed as to constantly reheat the air contained in the car, which will allow a supply of fresh air to be introduced into the car, when desired, which will allow the hot air to be moistened before being introduced into the car, and which can be used with advantage for heating rooms and buildings.

The invention consists in the combination of the inlet air-pipes, the fan-wheel, the vertical shaft, the wind-wheel, the stove having air-heating chambers, and the water-receiver; in the combination, with the stove having air-heating chambers, of the inlet air-pipes, the discharge-pipes, the fan-wheel, and the driving mechanism; in the combination, with the stove and the fan-wheel placed in the air-inlet pipe, of the vertical shaft and the wind-wheel; in the combination, with the stove, the fan-wheel, the vertical shaft, and the wind-wheel placed upon the top of the car, of the guide-plates and their stops; in the combination, with the air-pipe through which the air escapes from the air-heating chambers of the stove, of the water-receiver; and in the combination, with the stove, the air-inlet pipes, and the fan-wheel, of the dampers having bails or links, and the toothed standards, all as hereinafter fully described.

Similar letters of reference indicate corresponding parts.

A represents the body of a car. B represents the stove, which is made with double walls, forming an air-chamber, C, below the bottom, around the sides, and above the top, of the fire-chamber D. In the upper part of the fire-chamber D is formed a smoke-chamber, E, which has a number of openings or short pipes, F, in its bottom to admit the smoke and other products of combustion, and from which the smoke and other products of combustion escape through the pipe G, the said pipe G passing up through the top of the stove B and the top of the car A. The air to be heated is introduced into the air-chamber C, below the bottom of the fire-chamber D through a pipe, H, the outer end of which is connected with a pipe, I. The pipe I extends along the side of the car A, at or near the floor, and has openings J formed in it, between or beneath the seats, to admit the cool air from the car into the said pipe I. The openings J are designed to be provided with registers, so that the admission of air to the pipe I can be regulated as desired.

In the pipe H, at or near its point of junction with the pipe I, is placed a fan-wheel, K, which is attached to the lower end of a shaft, L. The shaft L passes up through a guide-bearing attached to the side of the car-body, and through the top of the said car-body. To the upper end of the fan-shaft L is attached a small wind-wheel, M, to which motion is given by the air as the car is drawn forward. The upper end of the shaft L revolves in and is supported in place by bearings in a bail or frame, N, attached to the top of the car A. To the side bars of the bail or frame N are hinged plates O, to guide the air so that it will strike the wings of the wheel M in the proper direction. The outer parts of the guide-plates O pass through wide staples P or between uprights attached to the top of the car-body A, to limit the movements of the said plates O and keep them from being forced out of position by the pressure of the air. With this construction the fan-wheel K will be revolved to force air into the air-chamber C of the stove B by the advance of the car, and will cease to work when the car stops.

If desired, the shaft L can be connected with the axle of the car by gear-wheels or by pulleys and bands, so that motion will be given to the fan-wheel K from the running-gearing of the car. The heated air from the air-chamber C of the stove B passes into the pipe Q, through which it passes into the pipe R. The pipe R passes along the side of the car A, and is provided with openings S, through which the heated air escapes into the car. The openings

S are designed to be provided with registers, so that the discharge of warm air into the car can be controlled as may be desired. With this construction, as the air in the car becomes cool it is drawn by the fan-wheel K through the pipe I and forced through the pipe H into the air-chamber C of the stove B, and then escapes through the pipes Q R into the car A. Between the stove B and the vertical part of the pipe Q is placed a water-receiver, T, the top of which opens into the horizontal part of the said pipe, so that the warm air will be moistened before being discharged into the car. The water-receiver T is provided with an offset having an opening in its top, closed by a cover, for convenience in putting in water; or the said water-receiver may be provided with a pipe or spout, through which the water can be poured into the receiver. The ends of the pipe I pass through the ends of the car A, and are covered with wire-gauze or other suitable material to keep out dust. The pipe I is supplied with a damper, U, upon each side of the pipe H, which dampers U slide in slots in the top of the pipe I, and have bails or links V attached to their upper ends to be hooked upon toothed bars W, secured to the pipe I or to some other suitable support, so that the said dampers can be supported in any position into which they may be adjusted. With this construction, by adjusting the dampers U, air can be drawn from the car, reheated, and again discharged into the car; or air from outside the car can be drawn in, heated, and discharged into the car, as may be desired. This construction adapts the apparatus to be used for ventilating cars, when desired, either with or without the application of heat.

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

1. An apparatus for heating and ventilating cars, constructed substantially as herein shown and described, consisting of the inlet air-pipes I H, the fan-wheel K, shaft L, and wind-wheel M, for forcing the air to the heater, the stove B, having air-heating chamber C, the discharge-pipes Q R, and the water-receiver T, as set forth.

2. In an apparatus for heating and ventilating cars, the combination, with the stove B, having air-heating chamber C, of the inlet air-pipes I H, the discharge-pipes Q R, the fan-wheel K, and the driving mechanism, substantially as herein shown and described, whereby the air is made to circulate through the car and the air-heating chamber of the stove, as set forth.

3. In an apparatus for heating and ventilating cars, the combination, with the stove B and the fan-wheel K, placed in the air-inlet pipe H, of the shaft L and the wind-wheel M, substantially as herein shown and described, whereby the fan-wheel is driven by the advance of the car, as set forth.

4. In an apparatus for heating and ventilating cars, the combination, with the stove B, the fan-wheel K, the vertical shaft L, and the wind-wheel M, placed upon the top of the car, of the guide-plates O and their stops P, substantially as herein shown and described, whereby the air is guided against the wings of the said wheel, as set forth.

5. In an apparatus for heating and ventilating cars, the combination, with the air-pipe Q, through which the air escapes from the air-heating chamber C of the stove B, of the water-receiver T, substantially as herein shown and described, whereby the heated air is moistened before being discharged into the car, as set forth.

6. In an apparatus for heating and ventilating cars, the combination, with the stove B, the air-inlet pipes I H, and the fan-wheel K, of the dampers U, having bails or links V, and the toothed standards W, substantially as herein shown and described, whereby the air-supply can be drawn from within or without the car, as set forth.

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Witnesses:
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