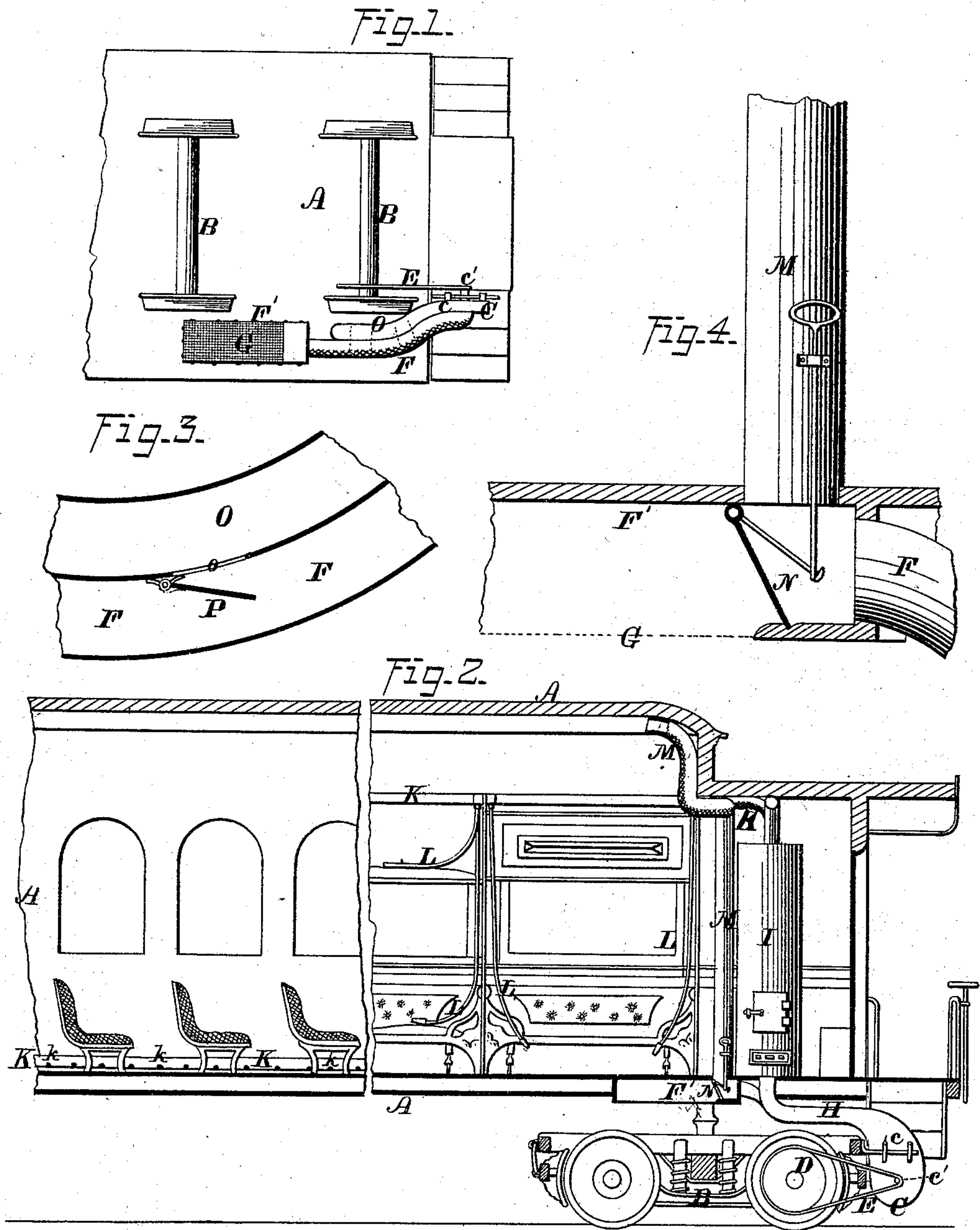


E. S. JENISON.
CAR-HEATER AND VENTILATOR.

No. 177,847.

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WITNESSES-
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UNITED STATES PATENT OFFICE.

EDWARD S. JENISON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN CAR HEATERS AND VENTILATORS.

Specification forming part of Letters Patent No. **177,847**, dated May 23, 1876; application filed February 10, 1876.

To all whom it may concern:

Be it known that I, EDWARD S. JENISON, of Chicago, in the county of Cook and in the State of Illinois, have invented certain new and useful Improvements in Apparatus for Heating and Ventilating Cars, &c.; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view of the lower side of a car provided with my improved apparatus for warming and ventilating its interior. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is an enlarged vertical section of the air-supply tube; and Fig. 4 is a horizontal section of the relief-valve for connecting the supply and pressure chambers.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable public and private buildings, cars, steamers, &c., to be warmed and ventilated in a thorough and convenient manner; and, to this end, it consists, principally, in ventilating and heating apparatus, in which air is supplied to each person through a separate duct or channel, substantially as and for the purpose hereinafter shown. It consists, further, in heating and ventilating apparatus in which air is delivered to individuals through flexible or movable tubes, substantially as and for the purpose hereinafter set forth. It consists, further, in heating and ventilating apparatus in which air is thrown downward toward the floor in jets, substantially as and for the purpose hereinafter shown and described. It consists, further, in heating and ventilating apparatus in which a portion or the whole of the air-supply may be drawn from the upper portion of the room or rooms that are being heated or ventilated, substantially as and for the purpose hereinafter specified. It consists, further, in heating and ventilating apparatus in which the mechanism for setting in motion the air is provided with a relief-valve, through which air may pass from the delivery-pipe to the supply-pipe whenever the pressure exceeds a given amount, substantially as and for the purpose hereinafter shown.

While my invention is applicable wherever

rooms are occupied for public or private purposes, its operation and advantages will be the same, in principle, in each case; and, for illustration, it will be sufficient to show its application in one instance, which, for convenience, is a railway-carriage.

In the annexed drawings, A represents the body of a railway-carriage constructed in the usual manner, and supported at each end upon a truck, B. Beneath the platform, at one end of the carriage A, or at some other suitable point, is placed a pressure-fan, C, which is inclosed within a suitable casing, c, and is driven from a band-wheel, D, that is attached to one of the wheels or axles of the truck B by means of a belt, E, which passes around said band-wheel, and around a pulley, c', that is secured upon the end of the fan-shaft. From one side of the fan-casing c an air-supply pipe, F, extends upward and toward the center of the carriage, and terminates in a box, F', which is made open at its lower side, and at such point is covered by a screen, G, that is composed of woven fibrous material. From the upper side of the fan-casing c an air-delivery pipe, H, extends upward to a conveniently-located heater, I, while from the latter a pipe, K, extends along each side of the carriage A to the opposite end of the same, and at each seat—or, if a sleeping-car, at each berth—is provided with small pipes L and L, which extend to points within convenient reach of the occupants of said seats or berths. The pipes L and L may be wholly or in part constructed from rubber or other flexible material, or, if desired, may be made of metal; but, in either case, each should be capable of having its end moved to any portion of the seat or berth, so as to enable each occupant to direct the current of air from said pipe upon any portion of the person.

When not in use by a passenger the pipes L and L will naturally hang downward, and cause the currents of air to impinge upon the floor, by which means the lower portion of the room will be thoroughly warmed, and will receive an abundant supply of pure air.

While it is desirable that the constant inward flow of air to the car should not be checked, it is not at all times necessary that all of the air passing through the fan should

be drawn from without, as a portion of the same may be taken from the upper portion of the interior of said car, where the air is comparatively pure. To effect such object a pipe, M, passes from the upper portion of the interior of the car A downward to, and is connected with, the air-supply pipe F at any suitable point between its outer end and the fan C. At the point of connection between the vertical and horizontal pipes F and M is pivoted a valve, N, which is capable of being turned so as to partially or entirely close either of said pipes.

When the valve N is placed so as to close the pipe F, all air entering the fan C will be drawn through the pipe M from the interior of the car; while, by reversing the position of said valve, the entire supply of air will come from the exterior of said car. By arranging said valve at any point between its extremes the fan will draw air from both the exterior and interior of said car, the proportion from each pipe F and M corresponding to the degree in which they are unobstructed by said valve. As the speed of the fan corresponds to the velocity with which the car is moving the pressure of air within the pipes will vary in like degree, so that if said fan is capable of supplying the desired pressure when said car is moving at a moderate speed an increase in the velocity of the latter will cause too much pressure, and render the apparatus less effective. To remedy such difficulty a chamber, O, is provided upon one side of the supply-pipe F, and at one end communicates with the fan-casing, and at another point is provided with an opening, o, through which air may pass to said pipe. The opening o upon the side of the pipe F is inclosed by a valve, P, which is held in position with a yielding pressure by means of a spring, weight, &c.; and such pressure is graduated so as to cause said valve to remain closed, while the air within the delivery-pipes does not exceed the maximum pressure; and, to open and permit air to pass from the chamber O and fan-casing whenever said pressure is exceeded, the result being that the air enters the car at a nearly-uniform velocity. It is found that the fibrous screen G entirely excludes dust and cinders, and frees air entering the supply-pipe from these pests of travelers.

When not necessary to warm the air before admitting it to the car the heater may still form part of the delivery-duct; or, if desired, a separate pipe may extend from said duct below said heater to a point above the same,

and be provided with suitable valves for changing the current of air when necessary.

It will be seen that the means employed for affording a supply air to each individual enables said air to be used with greater advantage to the person controlling each delivery-tube, and with less discomfort to those near him, than would be possible if said air was admitted from a register or other fixed opening, and that thereby the comfort of each passenger is more perfectly under his control than would otherwise be the case.

For general use it will probably be desirable to dispense with the individual delivery-pipes L and L, and extend the main delivery-pipe K along each side of the car near the floor, and provide it with small openings k and k, as seen in Fig. 2, so as to cause all of the air to be thrown outward and downward to said floor.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. Ventilating and heating apparatus in which air is supplied to each person through a separate duct or channel, substantially as and for the purpose shown.

2. Ventilating and heating apparatus in which air is delivered to individuals through flexible or movable tubes, substantially as and for the purpose set forth.

3. Ventilating and heating apparatus in which air is thrown downward toward the floor in jets, substantially as for the purpose shown and described.

4. Ventilating and heating apparatus in which a portion or the whole of the air-supply may be drawn from that contained within the upper portion of the room or rooms being ventilated and heated, substantially as and for the purpose specified.

5. Ventilating and heating apparatus in which the mechanism for setting in motion the air is provided with a relief-valve, through which air may pass from the delivery-pipe to the supply-pipe whenever the pressure exceeds a given amount, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of February, 1876.

EDWARD S. JENISON.

Witnesses:

SAMUEL B. MUNSON, Jr.,
AARON F. BATES.