

(No Model.)

2 Sheets—Sheet 1.

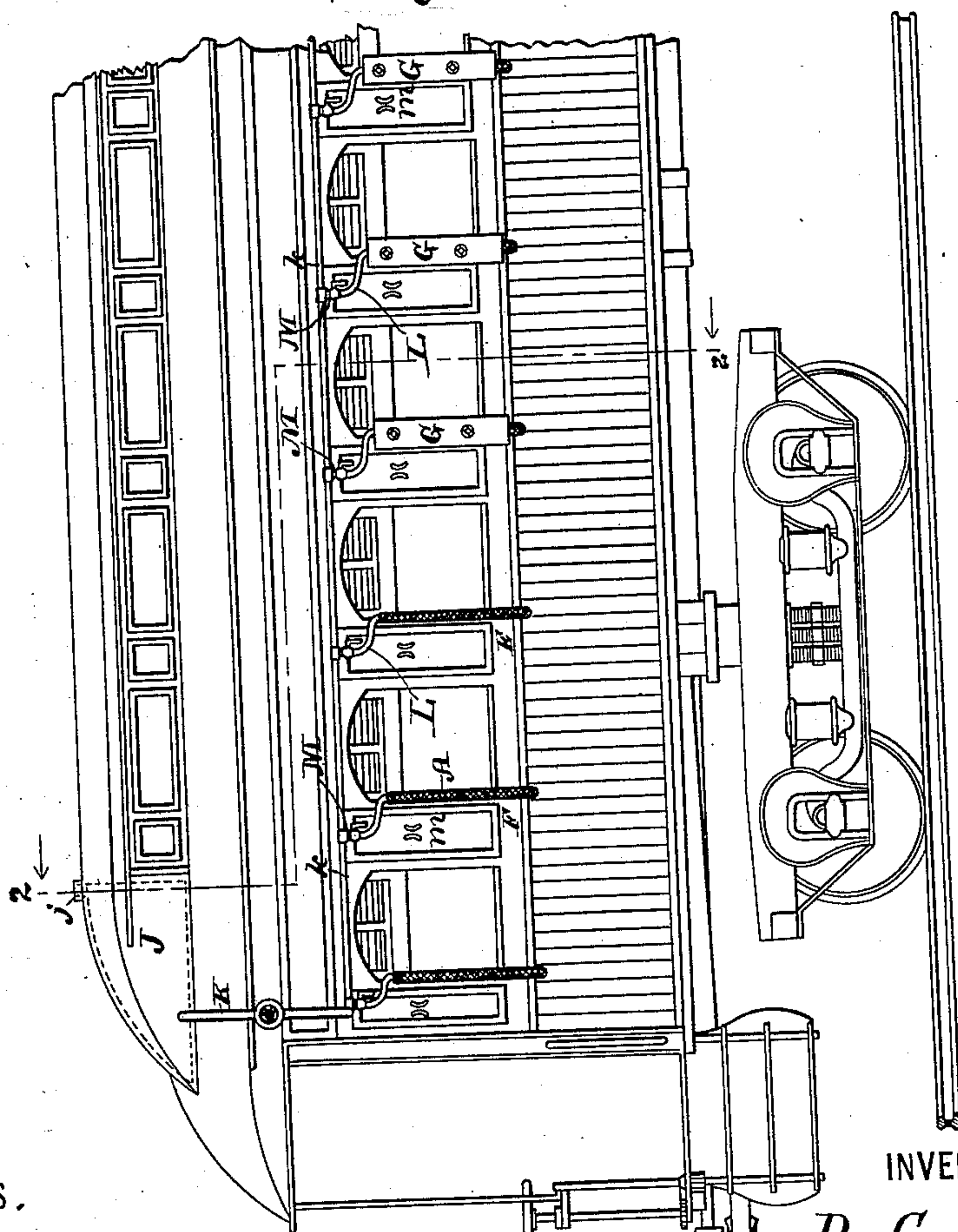
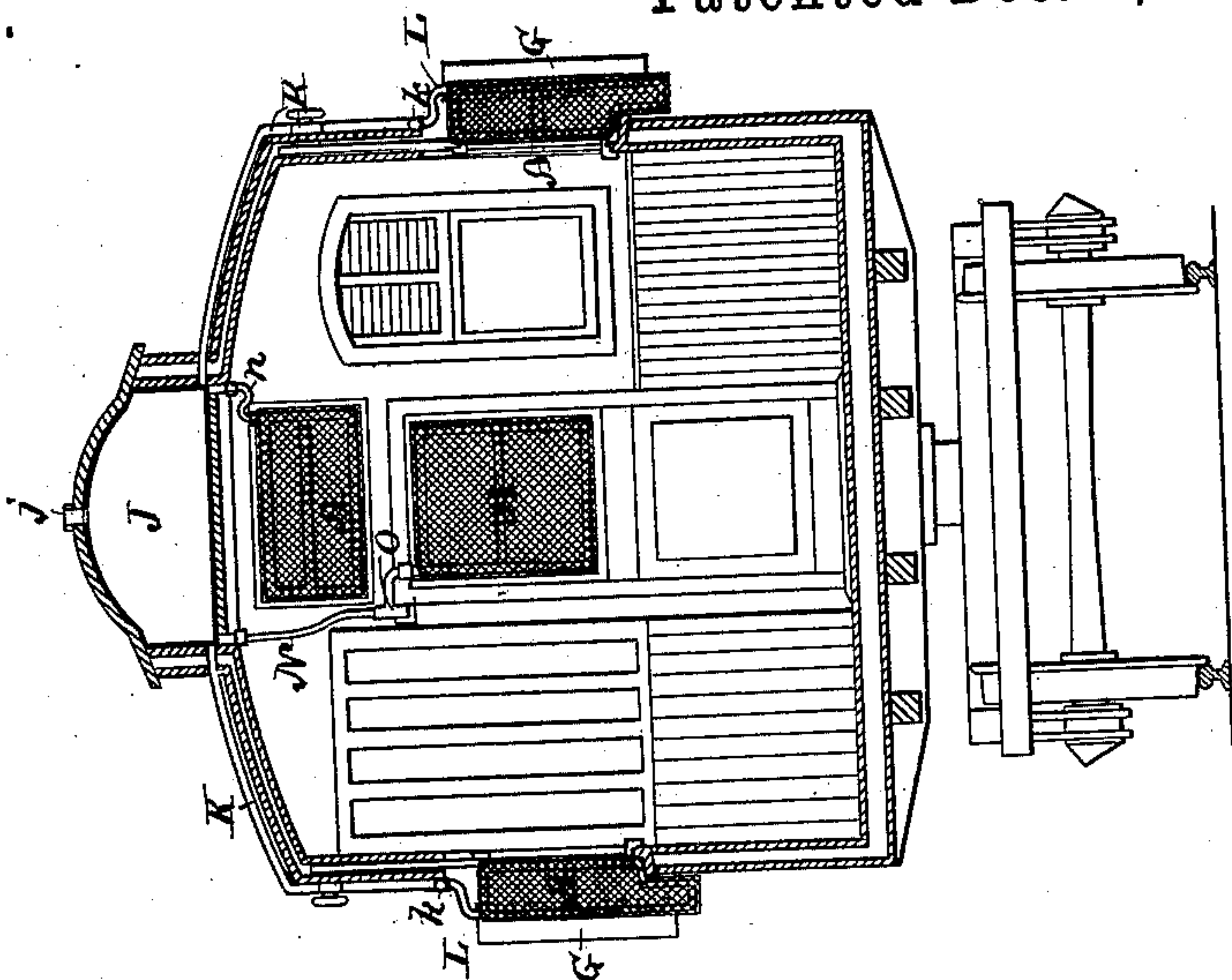
D. G. PROCTOR.

AIR PURIFYING, COOLING, AND VENTILATING DEVICE FOR RAILROAD
CARS OR BUILDINGS.

1888

No. 393,924.

Patented Dec. 4, 1888.



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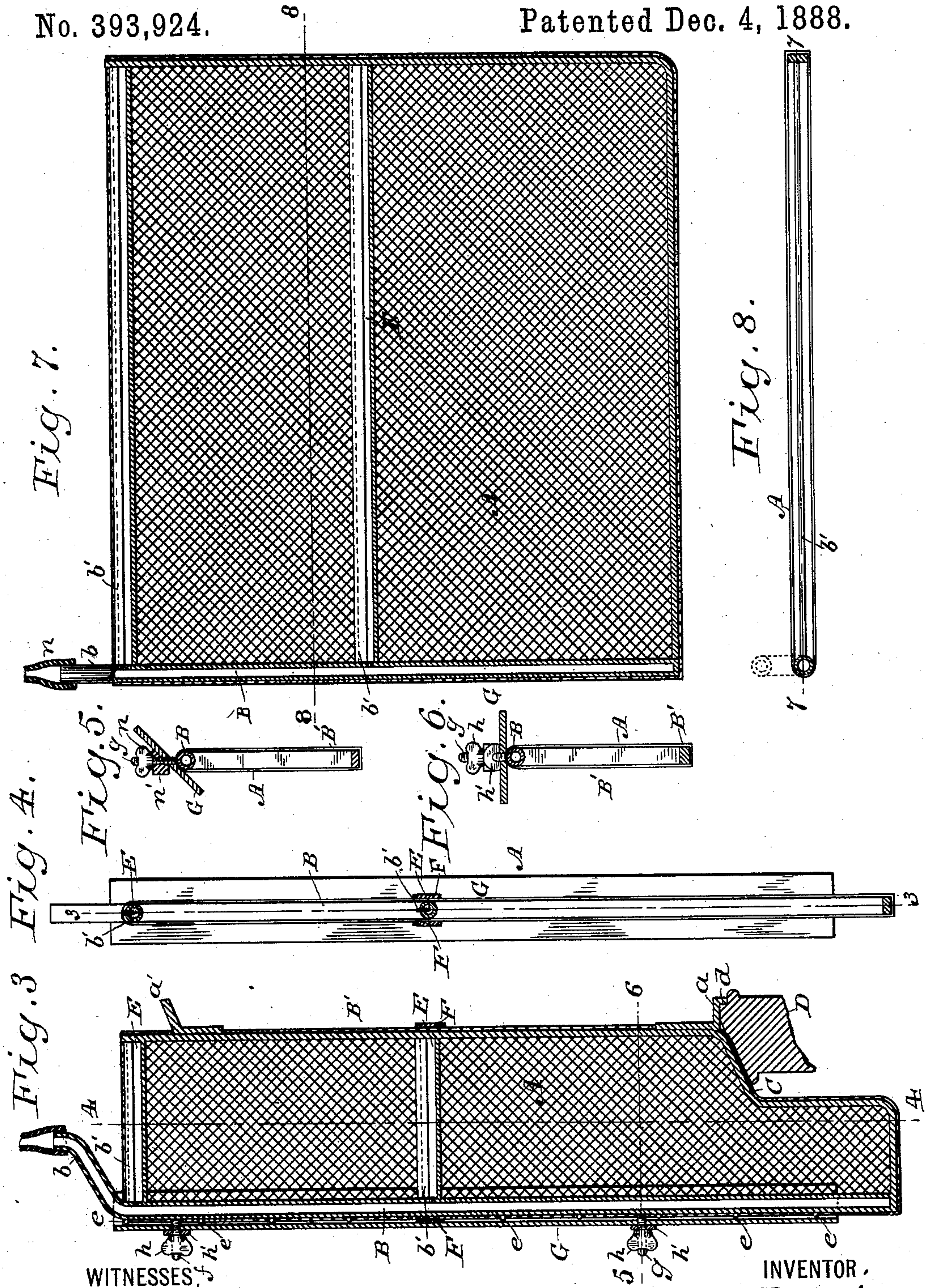
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WITNESSES,
H. C. Newman,
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UNITED STATES PATENT OFFICE.

DAVID G. PROCTOR, OF WASHINGTON, DISTRICT OF COLUMBIA.

AIR PURIFYING, COOLING, AND VENTILATING DEVICE FOR RAILROAD-CARS OR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 393,924, dated December 4, 1888.

Application filed November 19, 1887. Serial No. 255,619. (No model.)

To all whom it may concern:

Be it known that I, DAVID G. PROCTOR, of Washington city, in the District of Columbia, have invented certain new and useful Improvements in Air Purifying, Cooling, and Ventilating Devices for Railroad-Cars or Buildings, of which the following is a specification.

My invention relates to improved devices of the class designed for use in warm weather mainly, though chiefly applicable to the windows of railroad-cars to prevent access of dust, cinders, &c. The devices are in part applicable generally to windows.

My main objects are not only to purify the air entering into a car by freeing it of cinders, dust, &c., but to cool the thus purified entering currents of air and also to control the direction of these entering currents.

My improvements consist, as hereinafter specifically claimed, in a peculiar screen and frame therefor, in the manner of detachably securing the screen in place, and in certain combinations of devices whereby the screen is kept moistened by a supply of water, and provision made for shutting off the supply of water when not using the screen, and for properly directing the currents of air entering at the car-windows to insure coolness and thorough ventilation, and other ends attained.

The accompanying drawings show a suitable embodiment of my improvements.

Some of these improvements may be used without the others, and details may be varied in some respects without departure from my invention.

Figure 1 is a side elevation of a portion of a railroad-car of ordinary construction with my invention applied thereto. Fig. 2 is a view, partly in end elevation and partly in vertical section, on the lines 2 2 of Fig. 1. Figs. 3 to 8, inclusive, show details on enlarged scales. Fig. 3 is a view, partly in elevation and partly in section, on the line 3 of Fig. 4, showing a screen in place at the side window of a car with an attached deflector for directing the current of air entering at the window. Fig. 4 is a view, partly in elevation and partly in section, on the line 4 of Fig. 3. Figs. 5 and 6 show sections on the line 5 6 of Fig. 4, with the deflector in different positions. Fig. 7 is a view, partly in elevation and partly in section, on the line 7 of Fig. 8, showing a screen to be substituted for the car-transom or win-

dow-sash over the door at the end of a car; and Fig. 8 is a section on the line 8 of Fig. 7.

Although shown and described as applied to steam-propelled railroad-cars, my improvements, or some of them, may advantageously be applied elsewhere—as, for instance, to the windows and doors of dwelling-houses, public buildings, &c.

The screen proper, (the covering for the screen-frame,) A, is composed of suitable reticulated textile fabric. Any appropriate reticulated absorbent material may be used. The openings or meshes of the screen may be about one-eighth of an inch in size, and even a coarser-meshed screen may be used. I do not, however, wish to confine myself closely to the size of the openings in the fabric. They must be large enough to allow of the passage of air with but little obstruction. The screen A incloses the frame upon and around which it is stretched and detachably secured in suitable way. The screen is thus made double or composed of two thicknesses of fabric, one at either side of the frame. The upright screen-frame is tubular in part, has water supplied to it, and is provided with water-outlets, by way of which the water passes to the screen and keeps it moist.

As shown, the screen-frames for the side windows of a car are each constructed as follows: A water-receptacle is formed by a tube, B, constituting the outer upright of the frame. The inner upright, B', of the frame is bent at C near its lower end, so as to be inclined correspondingly with the window-sill D. For a horizontal sill the shoulder C would be horizontal. The upper end, b, of the outer upright is open and curves inwardly. Below the shoulder C the frame is made narrow and projects down lower than the sill. The frame is suitably supported at its inner edge. In this instance it is provided with a hook-ended supporting lug or clip, a, near the lower end of the inner upright, B', laterally to which it projects, and near the upper end of this upright there is provided another supporting-lug, a'. The lower supporting-lug, a, engages the rib or sash-bead d of the window-sill D, and the window-sash when raised rests upon the upper supporting-lug, a'. When relieved of the weight of the sash, the frame may be moved from one side of the window to the other either by sliding it along the sill or lifting it from one position to the

other. The lower supporting-lug, *a*, is not absolutely necessary, as I have found that the weight of the sash upon the lug *a'* holds the shoulder *C* in place upon the window-sill.

5 Hollow cross-bars *E* (in this instance two of them) are connected at their opposite ends with the frame-uprights *B B'*. These cross-bars of the frame are in the form of tubes open at top from end to end. These cross-

10 tubes are arranged at suitable distances apart, the upper one, as shown, being at the top of the frame, and the other about one-third way or somewhat more the length of the frame from the top. The number and relative po-

15 sitions of the cross-bars may be varied, although I prefer the construction shown. The interior of each cross-bar has communication with the interior of the tubular frame-upright by a minute opening in the upright.

20 A very small opening is provided in order to prevent the supply of an excess of water to the cross-tubes. To regulate the supply of water from the cross-bars to the reticulated absorbent screen in proper way, the cross-bars

25 are provided with suitable porous material through which the water issues from the top openings of the cross-bars. As shown, the top openings are supplied with strips *b'*, of felt, asbestos paper, or other suitable porous

30 filling material through which the water will percolate with sufficient freedom and yet not issue in jets or unequally. As in this instance shown, the reticulated fabric constituting the screen *A* is detachably secured to its

35 frame after being placed around it by lugs *e* on the tubular upright entering meshes in the lapping upright edges of the screen. The opposite portions of the screen may be sewed together or otherwise connected at top and

40 bottom. In this way provision is made for quickly attaching and detaching the screens, which is important, as the screens may thus be removed for washing when they become soiled and clogged with cinders, &c., and other

45 screens substituted for them. If preferred, however, the screens may be cleansed without detaching them from the frames, the whole being dipped into water and rubbed or agitated therein.

50 The screen at its opposite sides comes in contact with the cross-bars of the frame and the wetting of the screen by the water issuing from the bars is insured. To insure contact of the screen with the cross-bars, a clamp,

55 preferably an elastic band, *F*, passed around the frame outside of the screen at a cross-bar, serves to press the screen against the bar, and thus facilitates the wetting of the screen.

An adjustable upright deflector, *G*, for di-

60 recting the currents of air entering at the car-window is removably secured to the outer edge of the screen-frame, so as to project forward therefrom. As in this instance shown, the deflector is attached midway its width to the

65 outer edge or tubular upright of the frame, so as to bear against the screen, securing lugs *e* by means of threaded lugs *f g* near the up-

per and lower ends of the outer upright of the screen-frame and rigidly secured thereto, which lugs pass loosely through holes in the 70 deflector and are provided with thumb-nuts *h* and washers *h'*, which are inclined on their inner faces for half, or somewhat more than half, their diameter, the remainder of the inner faces of the washers being parallel with 75 their outer faces. In this way it will be seen the deflector may be turned horizontally about its vertically-jointed connection with the frame and be clamped either at a right angle with the screen, Fig. 6, or at an angle deter- 80 mined by the angle of the incline of the inner faces of the washers. (See Fig. 5.) The deflector projects both to the front and rear, or from both sides of the screen, in order that it may perform its function with the car run- 85 ning either end foremost, or whether the screen is at one end or the other of the window-sill, it being of course understood that the screen is supported at that side of the window next the end of the car which for the 90 time being is the front end. The deflector may quickly be removed by detaching the nuts and washers *h h'*. The screen may then readily be separated from the frame. By ex- 95 tending the screen downward below the shoulder or incline *C* entrance to the windows of upwardly-inclined currents without contact with the screen is prevented.

Water to moisten the screen enters the screen-frame at the upper end of its tubular 100 upright, being supplied in suitable way, in this instance as follows: A water-reservoir, *J*, upon the roof of the car at its end, provided with an inlet-opening, *j*, by way of which to fill it, is connected by the pipes *K* with the 105 main supply-pipes *k* extending along the sides of the car above the windows. The pipes *K* are provided with cocks to regulate and cut off the flow of water. Flexible branch supply-tubes *L* connect with the main supply- 110 pipes above and centrally between the windows. The upper end of each branch tube is fitted to a coupling, *M*, provided with a cock to regulate and cut off the flow of water to the branch tube. When the branch supply- 115 tubes are not in use, they are secured in clamps *m*, formed each by two lugs at the sides of the car between the windows. The flexible tubes are compressed by being forced between the lugs of the clamps, and are thus held 120 against accidental displacement.

As will readily be understood, when the screens are shifted from one end to the other of the window-sills the branch supply-tubes have to be disconnected and readjusted to 125 screens next to those with which they were respectively before connected.

It will be seen from the above that provision is made for independently supplying the 130 respective screens with water, while the connections for supplying water are such as not to interfere with the ready adjustment of the screens.

The screen shown by Fig. 7 is adapted to

be used in lieu of a sash in the transom or window over the door at the end of a car. (See Fig. 2.) This screen is substantially the same as that above fully described, except that it is longer in proportion to its height, has not the narrowed lower end, has no deflector, and is not provided with the sash-supporting lug. Water is conducted to this transom-screen by a short flexible supply-pipe, *n*, having suitable connection directly with the reservoir, or the connection might be by way of either of the main supply-pipes.

A screen essentially similar to the transom-screen, excepting in dimensions, may be substituted for the window-sash of a car-door, as shown in Fig. 2. The flexible water-supply pipe *N* is shown as directly connected with the water-tank; but it might obviously be indirectly connected therewith by way of one of the main supply-pipes. The pipe *N* at its lower end is connected in obvious way with a turning faucet, *O*, such as commonly used in connection with stationary wash-stands, and this faucet connects with the tubular upright of the screen-frame adjacent to the hinged edge of the door. The connection of the supply-tube with the faucet is vertically over or in direct line with the joints in the hinges of the door. The arrangement is such that when the car-door is opened the faucet is turned into position to cut off the supply of water, while it is adjusted to turn on the supply of water when the door is shut.

By my improvements it will be seen that not only is air permitted to enter in ample quantities at the windows and properly directed in so entering, but that by keeping the screens wet the air is cooled, injury of the screens by burning is prevented, and the flying cinders, &c., are much more readily arrested than by dry screens, because of the ready adhesion to the wet screens of the cinders, dust, &c. By suitable and obvious alterations in shape and minor details the screens may be adapted for application to windows and doors generally, the water being supplied to the frame-tube in any convenient way.

I claim as of my own invention—

1. The screen-frame having the tubular water-receiving upright and the cross-tubes, one above another, connecting with the upright and from which the water issues, substantially as and for the purpose set forth.

2. The combination, with the screen-frame to which water is supplied and from outlets in which the water issues, of the reticulated absorbent screen arranged over the frame and in contact with the water-outlets and to the inner surface of which water is supplied, substantially as and for the purpose set forth.

3. The combination of the screen-frame having the tubular upright and a cross-tube to which water is supplied, and from which cross-tube the water issues, and the reticulated absorbent screen secured about the frame, substantially as and for the purpose set forth.

4. The combination of the upright screen-frame supported at its inner edge, the screen, and the upright deflector supported at the outer edge of the screen-frame and projecting horizontally therefrom, substantially as and for the purpose set forth.

5. The combination of the upright screen-frame supported at its inner edge, the reticulated absorbent screen, and the horizontally-projecting adjustable deflector supported by the screen-frame, to the outer edge of which the deflector is vertically jointed, substantially as and for the purpose set forth.

6. The screen-frame having the tubular water-receiving upright and the open-topped hollow cross-bars, one above another, communicating with the upright and into which water passes from the tubular upright, substantially as and for the purpose set forth.

7. The combination, with the screen-frame having a cross-tube to which water is supplied and from which the water issues, of the reticulated absorbent screen about the frame, and the clamp by which the screen is held in contact with the cross-tube, substantially as and for the purpose set forth.

8. The screen-frame provided with a cross-tube with a top opening and having the porous material for checking the outlet of water, substantially as and for the purpose set forth.

9. The upright screen-frame provided at its outer edge with the lugs, one above another, for supporting the deflector, substantially as and for the purpose set forth.

10. The combination of the screen-frame having the tubular upright and provided with cross-tubes, one above another, to receive water, and having water-outlets, the absorbent screen, and the tube by way of which water is supplied to the tubular upright of the frame, substantially as and for the purpose set forth.

11. The combination of the water-reservoir upon the car-roof, the main supply-pipes extending along the sides of the car above the windows, the flexible supply-tubes connected by couplings with the main supply-pipes, and the screen-frames provided with tubes and water-outlets and with which the flexible supply cross-tubes connect, substantially as and for the purpose set forth.

12. The combination of the screen-frame provided with cross-tubes and water-outlets, the absorbent screen, the flexible tube connected at one end with the screen-frame, and the main supply-pipe, with which the opposite end of the tube connects by way of a coupling provided with the water cut-off, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

D. G. PROCTOR.

Witnesser:

C. M. NEWMAN,
LLOYD B. WIGHT.