

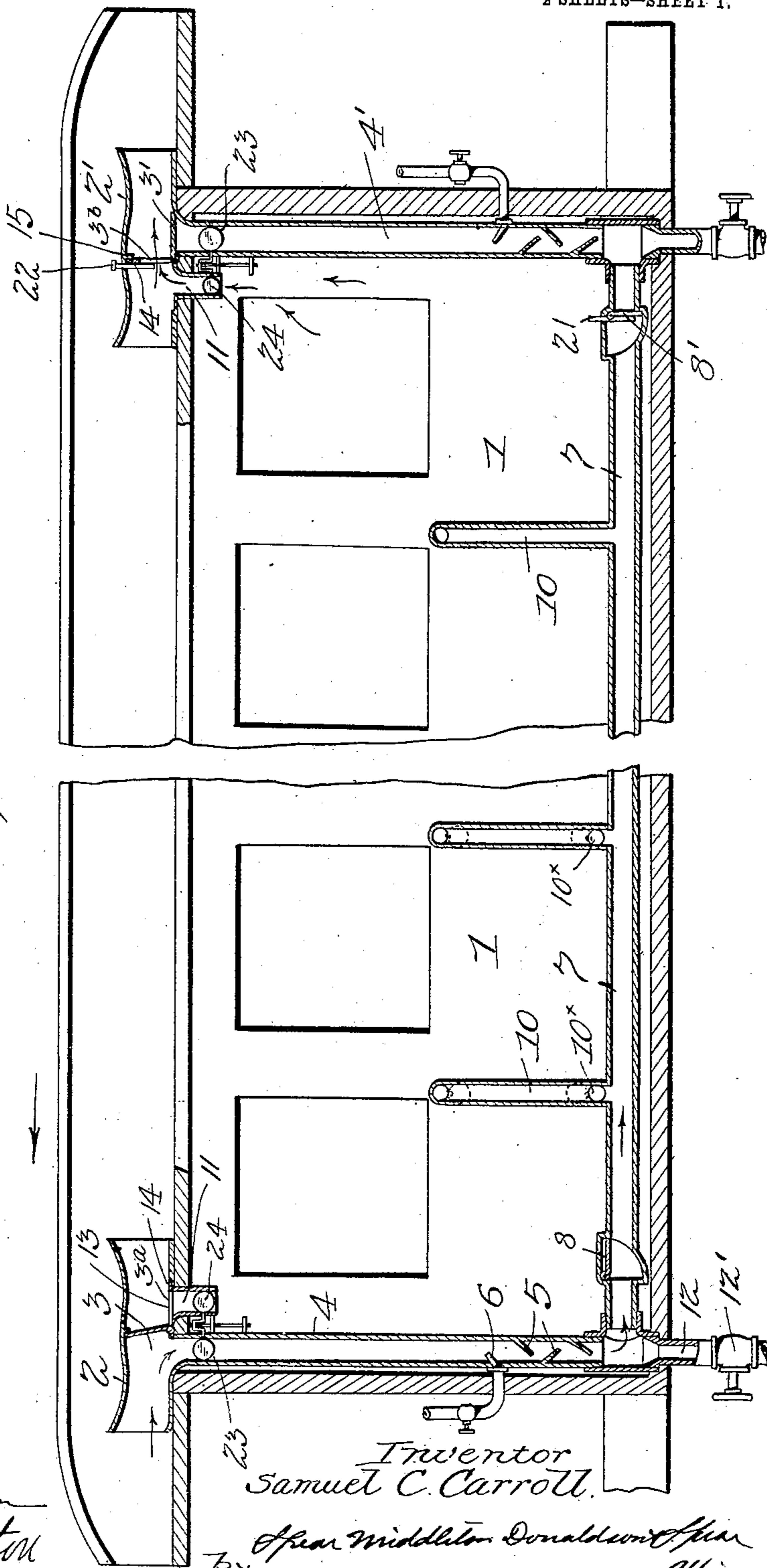
914,924.

S. C. CARROLL.  
CAR VENTILATOR.  
APPLICATION FILED OCT. 6, 1906.

Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Attest:

C. S. Middleton  
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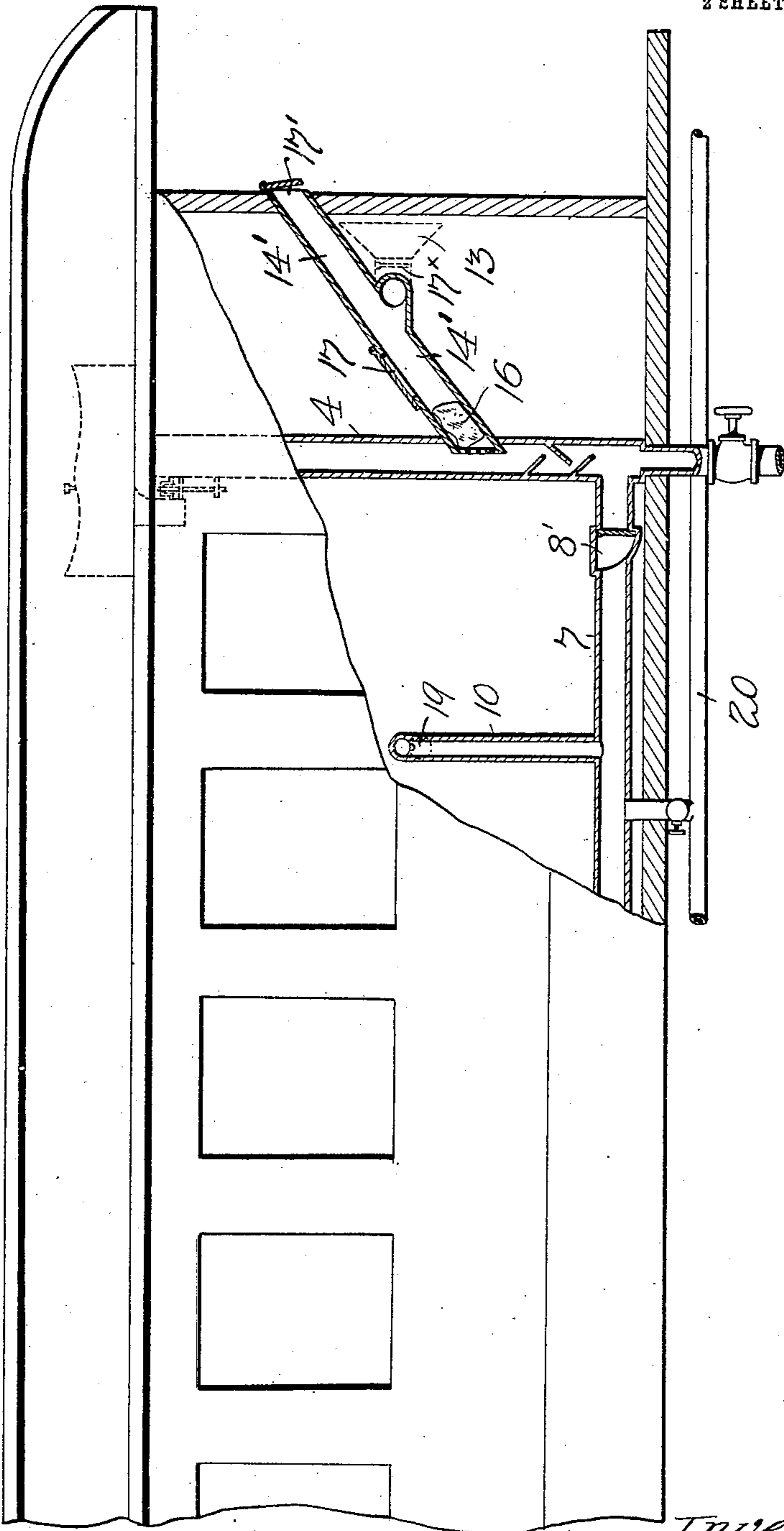
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2 SHEETS—SHEET 2.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

SAMUEL C. CARROLL, OF DALLAS, TEXAS.

## CAR-VENTILATOR.

No. 914,924.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed October 6, 1906. Serial No. 337,804.

*To all whom it may concern:*

Be it known that I, SAMUEL C. CARROLL, citizen of the United States, residing at Dallas, Texas, have invented certain new and useful Improvements in Car-Ventilators, of which the following is a specification.

My invention relates to ventilating, fumigating and disinfecting of cars and vehicles, but is particularly adapted for use in connection with railway coaches.

The object of the invention is to introduce into the car a supply of fresh air evenly distributed from one end of the car to the other and provide means of outlet for the air after it has passed through the car and performed its desired office of ventilating, fumigating and disinfecting as the case may be.

In carrying out my invention I provide means at the top of the car at each end to receive a supply of outside air according to the direction in which the car is moving and to direct the same downwardly at one end of the car and distribute it throughout the length of the car near the top of seat backs, the foul air passing out through the device at the opposite end of the car to the outer atmosphere. I provide means whereby the same result is attained whether the cars be moving in one direction or the other, the construction at one end of the car being similar to that at the other end and valves being provided to secure the proper direction of the air currents.

The invention consists in the features, combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

The accompanying drawing represents in Figure 1 a longitudinal sectional view of a car with my improvement attached thereto. Fig. 2 is a similar view showing additional features which may be embodied in the car.

In this drawing 1 indicates the car body, and 2 and 2' indicate means or collector boxes at each end of the car adapted to receive the outside air and to direct it into the car. Of course only two, four or eight of these collector boxes perform their function of receiving outside air at one time, the two or four receiving the outside air being determined by the direction of movement of the car, vehicle or boat.

I will describe the invention in connection with the receiving box 2 at the left hand end of the car and supposing the car to be moving in the direction of the arrow. The air entering the receiver 2 strikes against a flap

valve 3 which closes the direct passage through the receiver 2 and deflects the air into vertical pipes 4 extending down in the corners of the car to the floor thereof. This pipe has a series of deflector plates arranged in inclined position therein, these plates being near the bottom of the pipe and above these plates a spray nozzle 6 is arranged connected with an elevated tank for supplying water or disinfecting solution. From the lower end of the pipe 4 a pipe 7 extends along the floor of the car, this pipe having near its end a flap valve 8. This valve is pivoted at its upper end and falls by gravity, but under the pressure of the air passing through the pipe 4 and into the pipe 7 the valve opens as shown in the drawing and allows the air to enter the pipe 7 and to pass out therefrom through the branch pipes 10, being thus distributed along the wall of the car from one end to the other end thereof. While the car is moving in the arrow direction, the valves 8' at the opposite ends of the pipe 7 is closed by falling into their closed position automatically and being held closed by the pressure of air in the pipes 7. In this way the valves prevent the escape of air through the pipes 4' located at the opposite end of the car from the pipes 4 and being the counterpart of said pipes. The air passing through the interior of the car passes out through the discharge opening 11 which is provided by a nipple extending from the box or receiver 2' through the roof of the car. This nipple or discharge port lies on the opposite side of the pivot of the valve 3' from that of the opening leading to the pipe 4'. The valve is pivoted at its lower end and under the action of the discharge it will be thrown into the position shown at the right of the drawing leaving the space through the box 2' free and unobstructed for the passage of the air which passing over the opening of the nipple 11 serves to exhaust the air therefrom and create the necessary suction to draw the foul air from the car.

The spray 6 performs the function of precipitating any particles of dust or soot that may enter the pipe 4 and it is aided by the deflector plates 5. The particles of dust which are cleared from the air supply by the combined action of the spray and the inclined deflector plates fall into a pipe or receptacle 12, where they may collect and from which they may be discharged by opening a valve 12'. This receptacle 12 is axially

in line with the pipe 4 and the particles are thrown thereinto by the action of the air current and by their own weight. It will be noticed that the lowermost deflecting plate 5  
 5 inclines toward the outer wall of the pipe 4 away from the entrance to the pipe 7, so that any particles of dust or cinders will be thrown as far as possible away from the pipe 7 so as to insure their falling into the receptacle 12.  
 10 The spray may consist of water or a solution of disinfecting material and the vapor may be taken up by the air current and carried into the car to disinfect the same. The construction at the two ends of the car is substantially the same, one being substantially the reversal of the other, so that the action will be the same when the car runs in reverse directions.

The action of the valves is automatic. In  
 20 respect to the valves 8 8' they merely open under the pressure of the air current and close by their own weight. In respect to the valves 3' however, I provide means for automatically controlling them consisting of wings  
 25 3<sup>a</sup> 3<sup>b</sup> which are arranged at right angles to the valves and are washer shaped as at 13. These wings present surfaces at 14 for the air current to strike against when they are in upright position as indicated at the right of  
 30 the drawing. For instance, supposing the car is moving toward the right the pressure of air against the surface 14 will cause the wing to turn on its pivot and being rigidly attached to the valve 3' will raise the said  
 35 valve so as to let the air pass into the pipe 4'. The valve is washer shaped as described, so that should the car be moving toward the left and the air being discharged through the nipple or discharge opening 11 it will be free  
 40 to pass through the opening 13 and through the receiver box 2'. I may provide a suitable stop flange 15 in the receiver box for the wing and the valve to rest against when in raised position. It will be understood of  
 45 course when the valve is in elevated position, such for instance as shown at the left of the figure, and the car is reversed in its motion, the air pressure will throw the valve 3 downwardly to close the pipe 4 and the wing 3<sup>a</sup>  
 50 will then rise and remain in elevated position until the car is again moved leftwardly, when the air pressure against its exposed surface will replace the valve in the position shown at the left of said figure.

55 The spray is preferably arranged to direct the water upwardly, though I do not limit myself in this respect.

As shown in Fig. 2, I provide means for cooling the car artificially by the use of ice.  
 60 For this purpose I provide at each side of the car and at each end thereof a funnel 13 extending beyond the outer wall and connected with pipes 14' on the inner side of the car which extend downwardly from the end  
 65 of the car to connect with the vertical

pipes 4. The pipes 14' extend slightly within the pipes 4 so that ice at the ends of said pipes will be exposed to the air currents passing vertically through said pipes. Their ends are turned up or closed by a perforated  
 70 plate or screen so that these ends will serve as receptacles for ice as shown at 16, the ice being introduced through traps or hand openings 17 in the pipes, or it may be desirable to introduce the ice from outside the  
 75 car, as by the openings 17' in the end of the pipe 14'. These pipes 14 leading from the funnels are provided with valves similar to the valve 8—8' before described, one of said valves shown at 17. From this construction, it will be seen that the air entering the funnels 13 will pass over the ice and thence into the pipes 4 and the distributing  
 80 pipes 7, it being understood that I prefer to employ one of these distributing pipes along each side of the car. I may also employ four of the receivers 2 for each car or I may employ one or two receivers each arranged at the central portion of the roof at the end  
 85 of the car from which points distributing pipes may lead to both sides of the car. As shown in Fig. 2, I may also employ the vertical pipes 10 extending from the distributing pipes 7 upwardly to a point just above the backs of the seats where said pipes may  
 90 be provided with elbows facing outwardly and having openings controlled by any suitable form of damper or valve indicated conventionally at 19. I may also employ an air supply pipe 20, Fig. 2, connected with  
 95 the distributing pipes 7 at a point in between the valves 8—8' so that, while the car is in the station or while it is at rest, air may be supplied from the engine through a suitable air forcing apparatus. All of the flap valves  
 100 may be provided with suitable locking keys so that they may be kept closed in extremely cold weather. I have indicated one of these keys at 21. I may also employ suitable keys for holding the valves or gates 3—3' in position as indicated at 22.

Instead of employing the end of the pipe 14 as a holder for ice, a suitable fumigating material may be placed therein over which  
 115 the air passes.

It will be understood that all of the features described may be used in one and the same car.

At 23 Fig. 1, I show valves in the pipes 4—4' and nipples 11 controlled by thermostats shown in a conventional manner at 24 and adapted to open and close the valves when certain temperatures are reached.

The pipes 10 are preferably supplied with valves 10<sup>x</sup> near the floor so as to discharge  
 125 fresh air at these points.

I claim as my invention:

1. A car ventilator comprising a receiver at each end thereof open at both ends, a pipe extending from the receiver into the  
 130

car, said car having outlets at each end thereof, a distributing pipe extending along the car and having perforations, and automatic valves in the open ended receivers 5 whereby the air will be directed from the forward receiver according to the motion of the car into the said car and distributed through the distributing pipe and then discharged at the rear end of the car, substantially as described. 10

2. A car ventilator comprising a receiver at each end thereof, a pipe extending from the receiver into the car, a distributing pipe extending along the car and having perforations, and automatic valves whereby the air 15 will be directed from the forward receiver according to the motion of the car into the said car and distributed through the distributing pipe, said air being then discharged through nipples or openings into the box or receiver 20 at the opposite end of the car, the automatic valve at that end being now closed, substantially as described.

3. In combination, a receiver at each end 25 of the car, an automatic valve at each receiver, a down pipe leading from each receiver, a distributing pipe connected with the down pipes and extending along the car and having outlets into the car, a valve at 30 each end of the said distributing pipe, one of said valves being adapted to open and the other to close automatically under the air pressure, the said automatic valves being adapted to either close the passage through 35 the receivers or to close the upper ends of the down pipes, substantially as described.

4. In combination with a car, a receiver for the air at each end thereof, a pipe extending from each receiver into the car, discharge 40 openings from the car communicating with the receiver at each end, valves controlling the opening from the receiver to the pipe connected therewith and means connected with the said valves for rendering the same automatic, substantially as described. 45

5. In combination with the car, a receiver for the air at each end thereof, a pipe extending from each receiver into the car, discharge 50 openings from the car communicating with the receiver at each end, valves controlling the opening from the receiver to the pipe

connected therewith and means connected with the said valves for rendering the same automatic, said means consisting of perforated wings, substantially as described. 55

6. In combination with a car, vertical air pipes, the funnels having inclined pipes connected therewith, said inclined pipes projecting slightly into the vertical pipes and having means for holding material at said 60 projecting ends adapted to modify the air passing through the vertical pipes substantially as described.

7. In combination with a car having vertical air pipes, with automatic valves controlling the same, laterally extending funnels having pipe connections with the vertical pipes and valves therein closing automatically toward the outside substantially 70 as described.

8. In combination with a car means for collecting the air from the outside and distributing the same through the car, said means comprising down pipes and a horizontal pipe connecting them with valves in said 75 pipe closing toward the inlets of the down pipes and a pipe connected with said horizontal pipe at a point between the said valves and adapted to supply air from the engine while the car is at rest, substantially 80 as described.

9. In combination with a car, a receiver at each end thereof, a pipe extending from the receiver within the car, an outlet from the car at each end into the receiver, a valve at 85 each outlet, a valve in each of the pipes leading from the receivers and thermostat means for controlling the said valves, substantially as described.

10. In combination, an air distributing 90 pipe, receivers at the ends of the car connected to said distributing pipe, automatic valves in said pipe, and an air supply pipe connected with the distributing pipe at a point in between the said valves substantially 95 as described.

In testimony whereof, I affix my signature in presence of two witnesses.

SAMUEL C. CARROLL.

Witnesses:

W. H. BAKER,  
R. P. LINDSLEY.