(No Model.)

# C. E. ROBBINS.

## FILTERING VENTILATOR FOR CARS.

No. 514,277. Patented Feb. 6, 1894.

Fig. I.

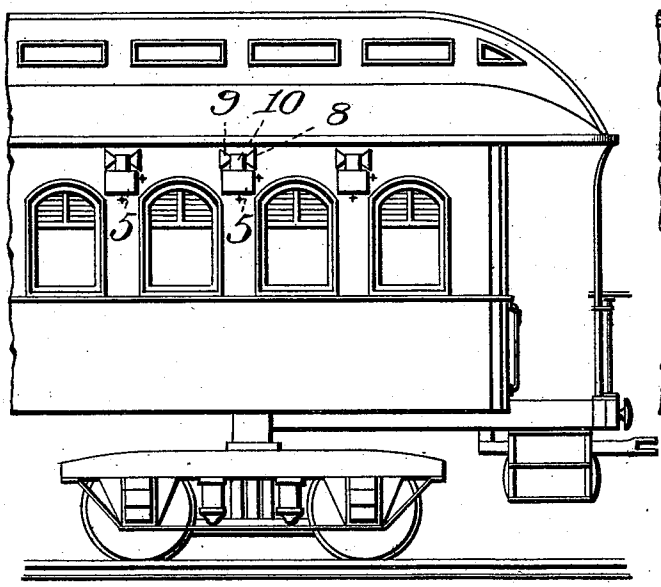



Fig. II.

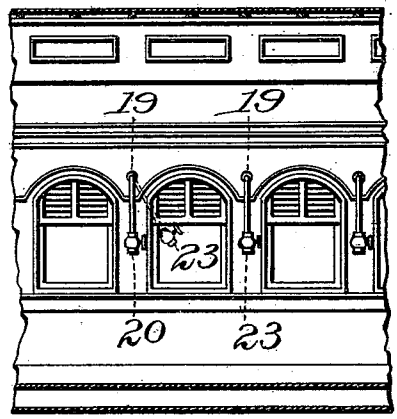



Fig. III.

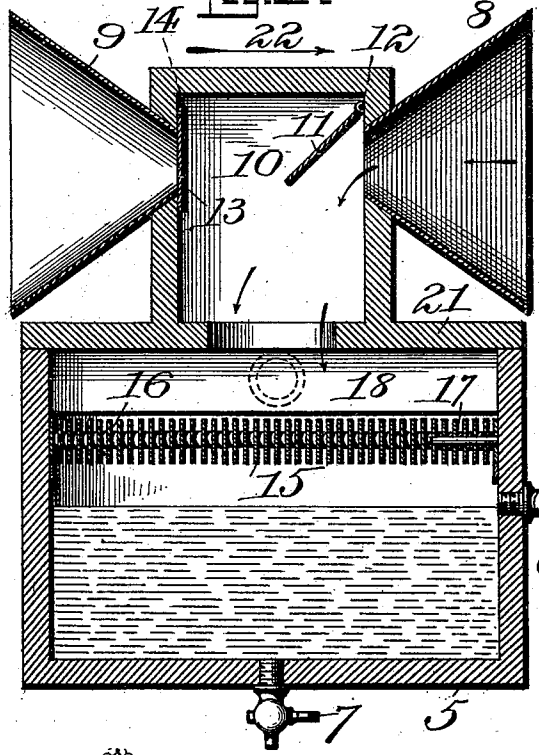
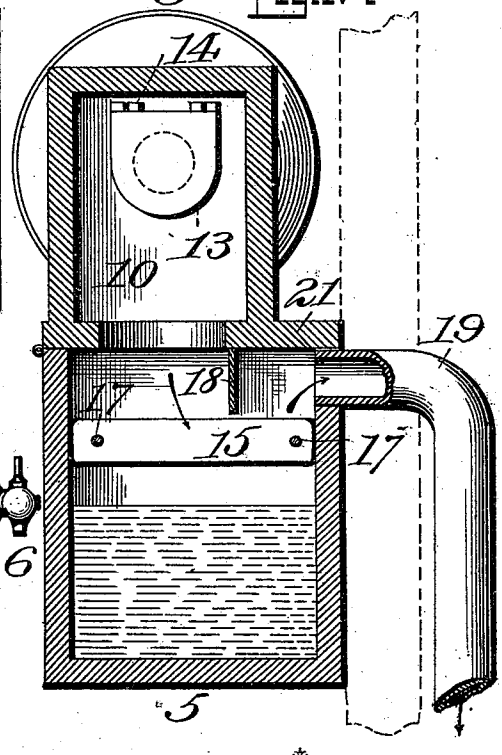



Fig. IV.

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## FILTERING-VENTILATOR FOR CARS.

SPECIFICATION forming part of Letters Patent No. 514,277, dated February 6, 1894.

Application filed November 22, 1892. Serial No. 452,806. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES EDWARD ROBBINS, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Filtering-Ventilators for Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of devices which are used for ventilating and for filtering the air for railway cars, and its object is to provide means whereby the traveling movement of the car will force air into the car; means whereby dust, smoke and cinders will be filtered from the air in its passage into the car, and means whereby these objects will be accomplished automatically whether the car be run one end first or the other.

To this end my invention consists in the construction and combination of parts forming a "filtering ventilator for cars" hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I, is a side elevation of a portion of a passenger car, showing the location and exterior appearance of my filtering ventilator attached thereto. Fig. II, is an elevation of a portion of the inner side of a car showing a part of my ventilator. Fig. III, is a longitudinal vertical section through the body of my ventilator on a larger scale. Fig. IV, is a transverse vertical section at the line $x$ of Fig. III.

5 represents a tank which is intended to be partly filled with water, and 6 is an overflow cock located at the proper height for the top of the water, and it is used to draw the water down to that level when the tank is filled.

7 is a discharge cock entering the bottom of the tank. This cock is adapted to draw off all the water whenever it is desirable to empty the tank.

8 and 9 represent two trumpet-shaped openings or mouths, facing in opposite directions, and communicating at their inner end with a chamber 10 which opens into the tank 5 above the water.

11 is a valve hinged at 12 within the chamber and adapted to close by gravity against the throat of the mouth 8.

13 is a valve hinged at 14 within the chamber to close the inner end or throat of the opening 9. The tank 5 with the chamber 10 and mouths 8 and 9 are all shown as located upon the outside of the car, but it is only necessary to this invention that the mouths 8 and 9 be located at the outside of the car at any convenient point of the side, top, or bottom thereof, and that the chamber 10 shall form communication between the mouths 8 and 9 and the tank 5, and the tank may be located outside or inside of the car.

15 is a screen removably located within the tank a little distance above water level. This screen consists of a series of plates 16 preferably of sheet metal fixed upon two rods 17, and located in a vertical position at a little distance apart, and entirely across the tank.

18 is a partition extending longitudinally of the tank in a vertical position from the top of the tank down to the screen. The inlet chamber 10 communicates with the tank at one side only of the partition 18, and 19 represents a delivery-pipe communicating with the tank above the screen at the opposite side of the partition 18 from the inlet chamber.

20 is a valve in the delivery-pipe 19, whereby the flow of air into the car may be regulated.

21 is a lid covering the tank 5 and adapted to be raised or removed therefrom for the purpose of opening the tank to fill it, or to remove the screen for cleaning.

The operation is as follows: The tank having been filled with water to the level of the overflow cock 6, and the screen and the lid returned to their places, if the car be run either way air will be pressed into that one of the mouths 8 or 9 which faces forward. In the drawings the car is supposed to be moving in the direction of the arrow 22, Fig. III, and the air pressing in at the mouth 8 against the valve 11 opens the latter and is directed thereby in a current downward through the screen 15 to the top of the water in the tank. At the same time the normal tendency of the

valves to remain closed is aided in the valve 13 by the action of the air coming in at mouth 8 and prevents exit of the air through the mouth 9, so the air will be forced beneath the partition 18 and be discharged through the delivery-pipe 19. The movement of the car causes the water in the tank to be frequently slopped up through the screen, and the air being forced through the screen thus wet, is freed from any particle of smoke, dust, cinders or other floating matter, such foreign matter being caught by and sticking upon the sides of the wet screen plates. If the water were so high in the tank as to be constantly between the screen plates the air could not pass, but the water being below the screen is caused by the usual movement of the car in traveling to slop up often enough to dampen the plates and to wash off the dust which accumulates thereon, and such accumulation settles in the bottom of the tank from which it may be withdrawn at the end of a route, or at any other suitable time, by means of the discharge cock 7. Should the screen become so dirty that the water will not clean it by the light slopping movement described the screen may be removed from the tank and be washed in any convenient manner.

It will be seen that this device is always ready for operation whether the car faces one way or the other, as the air being forced into either mouth will close the valve of the other and find its own exit within the car, and in its passage to the interior of the car it is filtered from all foreign substances.

The delivery-pipe 19 might be hung so as to swing as indicated in dotted lines 23, or the pipe may be of india-rubber or other flexible material so that its delivery end may be swung to any convenient point for the benefit of any passengers who may desire to feel the direct current of air.

There may be many small ventilators for each car, or one large one may be so arranged as to answer the purpose; and the inlet of air to the car, instead of being through pipes 19 hanging in sight, may be through common registers in the casing of the car, passages corresponding to the pipe 19 leading to such registers from the ventilators.

It would be a great boon to those who travel in closed cars to be always provided with fresh air filtered from all impuries as described.

This filtering device may be so proportioned as to require no care except that which may be given by the usual car-cleaner at the end of the route.

A common wire screen substituted for my screen of plates would not be an equivalent thereof because the fine wire meshes would soon be clogged by bits of leaves and other matter gathering upon the top, while my screen plates are so located as to form long openings through which such matters as float in the air may readily be washed into the tank below.

This device is automatic, effective, simple and inexpensive.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination in a ventilator for cars of a water tank; a screen comprising a series of plates located side-by-side in a vertical position over the water space in the tank; a vertical partition above the screen dividing that portion of the tank into two compartments, and passages for admitting outdoor air into one compartment and for discharging the filtered air from the other compartment, substantially as described.

2. The combination in a ventilator for cars, of a tank having water in its lower portion and a screen having plates located above the water in vertical positions forming narrow openings between the plates through which the water may slop to wash them by the action of the car, substantially as described.

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

CHARLES EDWARD ROBBINS.

Witnesses:
ANDREW JOHNSON,
CURRAN DAVIDSON.