

No. 682,872.

Patented Sept. 17, 1901.

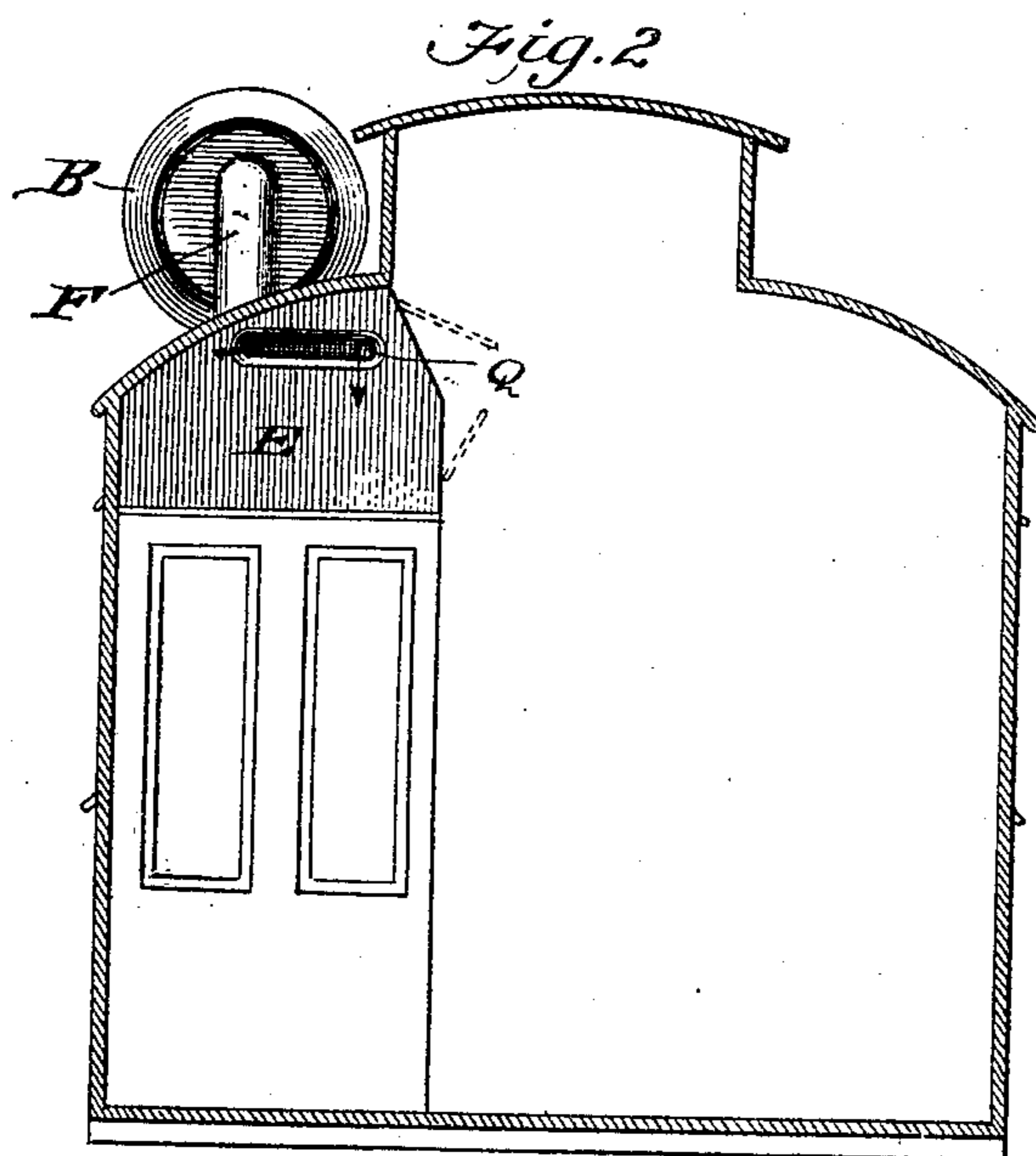
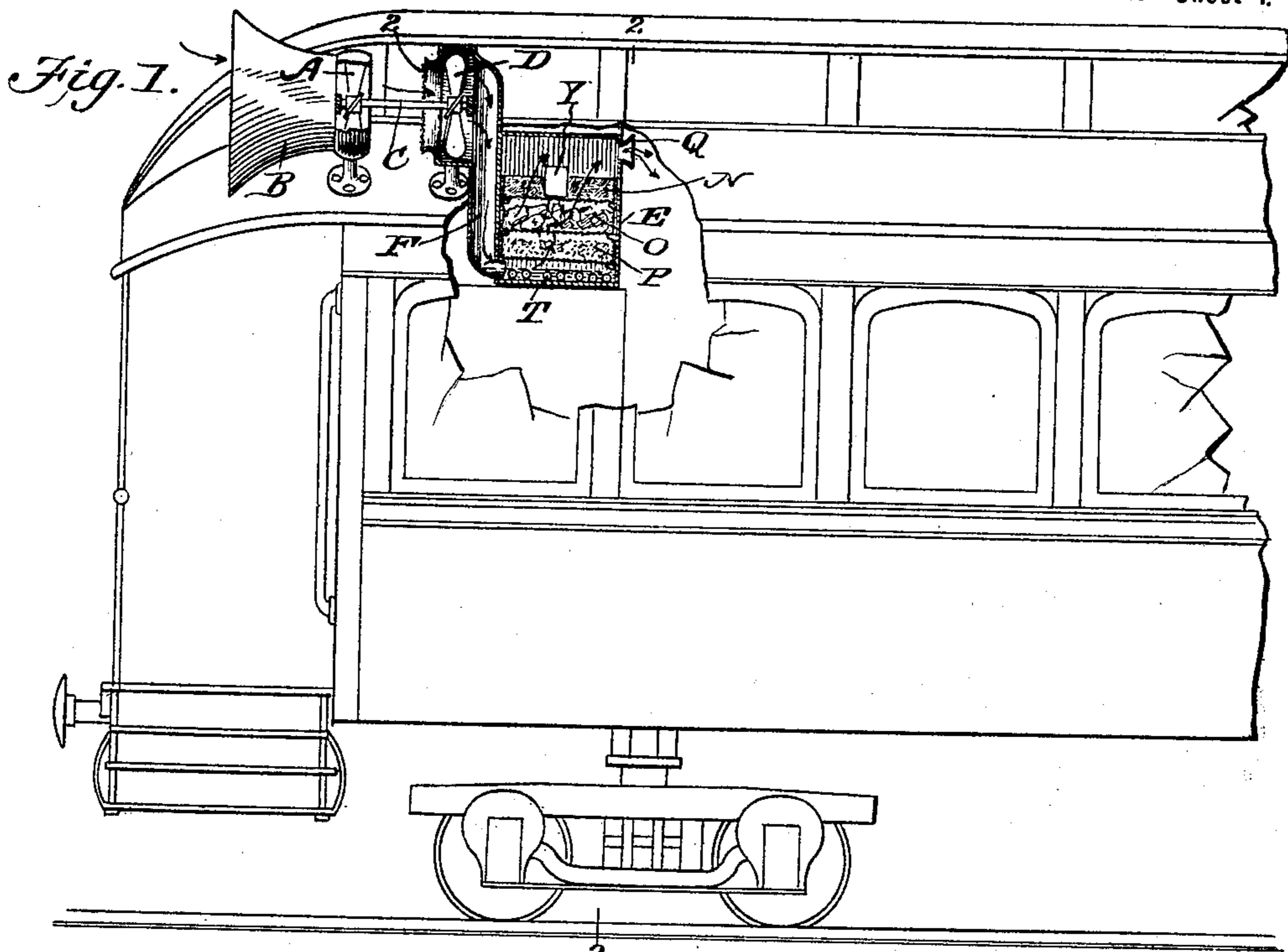
F. L. JOBSON.

RAILROAD CAR VENTILATING APPARATUS.

(No Model.)

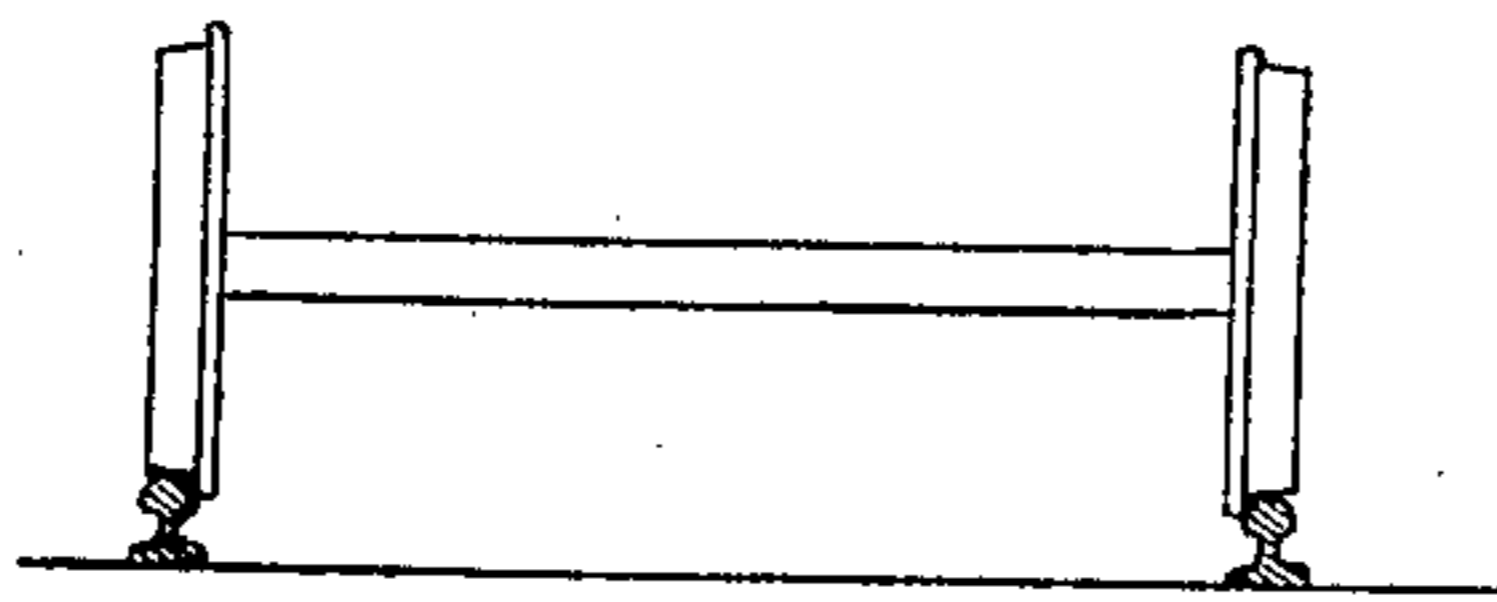
(Application filed Sept. 18, 1900.)

2 Sheets—Sheet 1.



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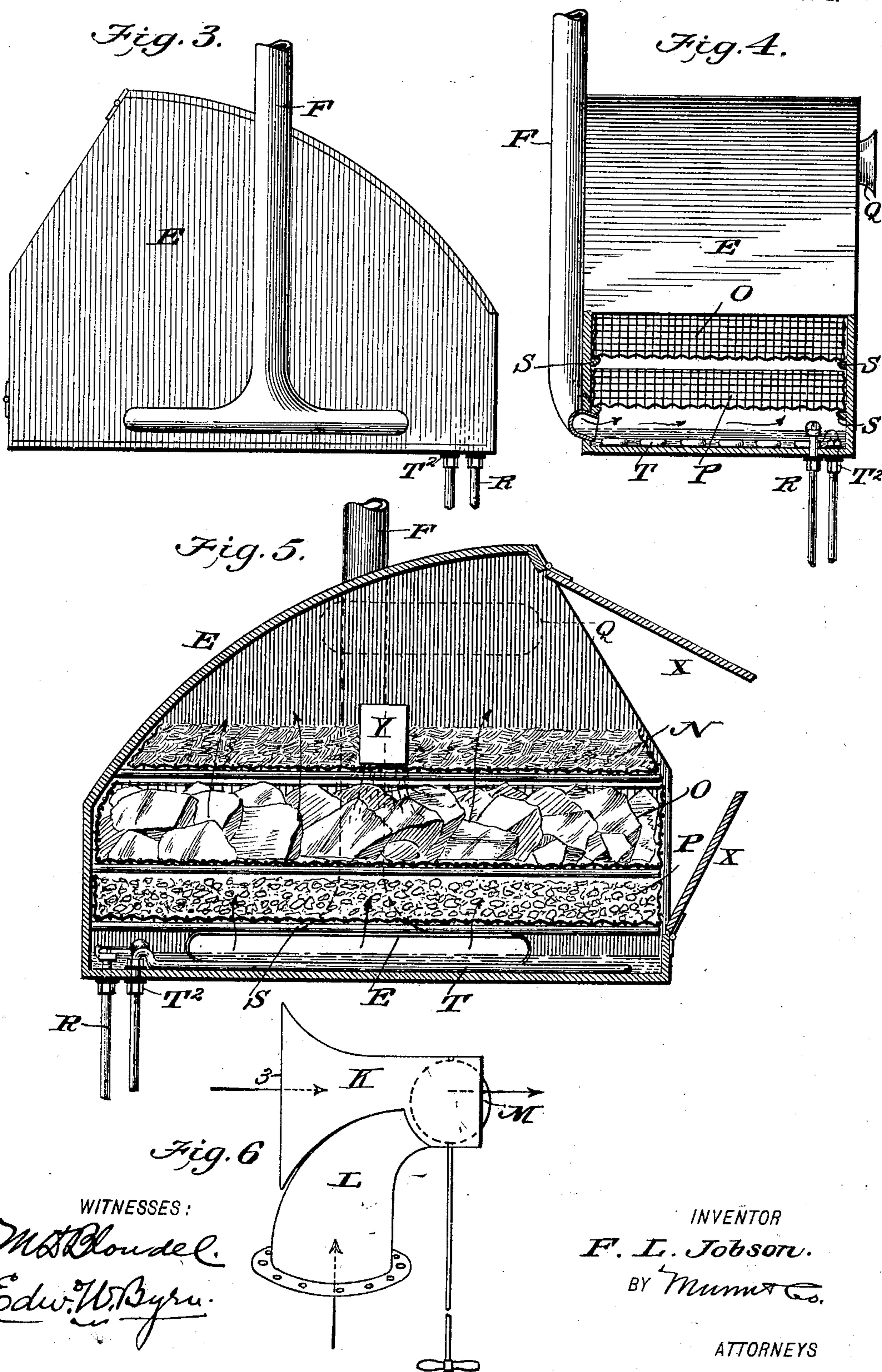
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

FRANK LEE JOBSON, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-HALF TO
ALGERNON SIDNEY BUFORD, OF SAME PLACE.

RAILROAD-CAR-VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 682,872, dated September 17, 1901.

Application filed September 18, 1900. Serial No. 30,392. (No model.)

To all whom it may concern:

Be it known that I, FRANK LEE JOBSON, of Richmond, in the county of Henrico and State of Virginia, have invented a new and
5 useful Improvement in Railroad-Car-Ventilating Apparatus, of which the following is a specification.

My invention is designed as an improvement in car-ventilating apparatus, by which
10 air gathered from the motion of the train into the open mouth of a funnel-shaped hood on the end of the car is there utilized in actuating a fan operating as the motor of an attached suction-fan with blades so constructed
15 and adapted as to draw in and force fresh air into and through a filtering, cleansing, and temperature-regulating chamber, where it is rendered pure, sanitary, and comfortable by the removal of all floating dust, cinders, and
20 noxious gases through the action of the several devices located and employed therein for the purpose, and thence is passed into and distributed in the interior of the car.

My invention consists in the peculiar construction, adaptation, and arrangement of
25 the several devices employed and their combination to effect the ends in view, as above stated, and designed with reference to effectiveness, economy of space, and convenience
30 of access, as hereinafter more fully described with reference to the drawings, in which—

Figure 1 is a side view, partly in section, of my invention applied to the front end of a car. Fig. 2 is a transverse section of the
35 same on line 2 2. Figs. 3, 4, and 5 are respectively a front view, a side view, partly in section, and a cross-section of the filtering and purifying chamber; and Fig. 6 is a detail drawing of a discharge-ventilator for the
40 car, hereinafter more fully described with reference to said drawing.

The ventilating apparatus is located in diagonal positions at each end of the car, and consists of a motor-fan A, put in motion and
45 controlled by the impact of the air gathered in the movement of the car in a funnel-shaped hood B, opening on the outside of the car in the direction of the car movement. Attached to said motor-fan in its rear by a short ball-
50 bearing shaft C is a suction-fan D. This

suction-fan draws air from the exterior through an open ventilator 2, covered with wire-gauze, and is connected with a filter-box E and forces the air so drawn in and under its control through an air shaft or pipe
55 F to the bottom of the filter-box, which is supplied with water to the depth of two or three inches, the air-current forced to it passing in above the water-level and over the whole water-surface. The filter-box, con-
60 structed on the plan of a refrigerator-box, is insulated with a view of excluding extreme temperatures of heat or cold, as conditions of temperature may indicate or require, and may be lined on the interior with
65 iron, zinc, or copper. On the bottom of the filter-box is arranged a coil of steam-pipe T, connected with the steam heating-pipes of the car, for the purpose of warming the water and incidentally the air passing over it
70 in extreme cold weather when so desired. This coil is at all times submerged in the water. An inch or two above the steam-coil and just above the water-surface are placed three
75 separate wire baskets or trays to contain materials, as follows—viz., N to contain asbestos, O to contain broken ice, and P to contain broken pumice-stone or other equivalent filtering materials. Each of these baskets is
80 sustained on lugs S and can be taken out for cleansing or replenishing with fresh materials without obstruction at the side of the box having double doors X. In the center of
85 the basket marked N is the tin box Y, with perforated bottom, to contain caustic soda or other equivalent absorbent of noxious fumes. The caustic soda sifts out of the bottom of the box from the vibration of the car and distributes itself through the filtering material, where it takes up all carbonic-acid-gas and
90 sulfur fumes.

Q shows the air-inlet, through which air purified and, when desired, regulated in temperature escapes to the interior of the car.

R is an overflow-pipe with a float-valve attached, so that when the water from ice-drippings rises above the desired point or level the float-valve will automatically discharge all surplus water. If desired, the inlet-pipe Q
100 can be lengthened, so as to discharge the air

into the car at any height from the floor of the car deemed most practicable or desirable for comfortable circulation.

T² is a connection of the main steam-pipes of the car with the coils in the box for the purpose of regulating temperature, as elsewhere stated. This connection is made with a union with heavy gum washers on either side of the bottom of the box. The object of this union connection is to enable the coils to be easily removed from the box in order to cleanse the box whenever deemed necessary.

In Fig. 3 is shown the air-shaft F, passing down on the outside of the box and attached thereto. As the air-shaft enters the bottom edge of the box it spreads into a T-shaped form to more uniformly distribute the air on the surface of the water. The size and shape of the filter-box are made so as to conform to the roof of the car. The air is forced through the air-shaft F down on and over the surface of the water in the bottom of the filter-box, and thence up and through the pumice-stone, ice, and asbestos into the interior of the car through the air-inlet in the upper side of the filter-box. There is also an auxiliary discharging-ventilator K, Fig. 6, to be placed in the roof of the car at opposite sides and on the opposite end of the car from the suction-fan and filter-box, as above described. This discharging-ventilator has a funnel-shaped mouth 3, facing forward, which intersects with an open downward-curved shaft L from the interior of the car, thereby forming a siphon which gradually withdraws the impure air from the interior of the car and at the same time renders it impossible for air from the exterior to enter the car from this point. This discharging-ventilator is provided with a damper M, which is closed when the car is reversed.

If during the temporary prevalence of very heavy wind-currents from the rear of the train or otherwise any deficiency of power to drive the propeller as designated should occur, it is contemplated and designed to provide for an attachment to the car-axle sufficient to supply such deficiency.

During the passage of a car through a tunnel all deck-ventilators may be closed and the suction-fan and filter-box continue to supply fresh air to the interior, cleansed of its solid floating impurities, as also of its offensive and unwholesome carbonic and sulphurous gases. If for any reason it be found desirable to use air from the interior instead of the exterior of the car for transmission through the suction-fan and filter-box, this will be provided for by an additional air-inlet with damper leading from the interior of the car to the suction-fan. In such case the suction-fan will take air from the interior of the car and return it to the same through the filter and temperature-regulating devices. The process of thus replenishing the interior of the car with a constant supply of pure fresh air of comfortable temperature, thoroughly

cleansed of all solid and gaseous impurities, is the practical result and aim sought to be obtained by the invention.

In pointing out more clearly the distinguishing features of my arrangement of the air-forcing devices I would state that the placing of the motor-fan A and the air-suction and driving fan D on the same shaft in concentric relation, but within detached casings, is an important feature, since the air that passes into the filter is doubly energized—first, the natural motor effect of fan A on fan D, which causes the latter to suck from the front and force to the rear, and, secondly, the impact of air through the open side of the fan-casing at 2 from the motion of the train, the rearward current entering independently at 2. This causes the air entering the car from the mere advance of the train to be sufficiently energized to overcome the resistance which a filter involves without the use of separately-operated pumps or blowers. Another distinctive feature of my invention is to be found in the T shape of the inlet air-pipe where it enters the bottom of the filter. This gives a broad, even, and thin sheet of air over the surface of the water, which avoids the powerful blowing and spattering of the water, distributes the air evenly over a large surface, and also prevents the water from ever entirely sealing or covering the inlet end of the air-pipe and obstructing or retarding the introduction of air, as it is liable to do from the lateral lurching of the train and the swashing of the water from side to side.

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

1. In a car-ventilating apparatus, a rotary shaft arranged longitudinally with the car and having on the same two sets of fan-blades, the front one being a motor-fan to be acted on by the air-currents, and the rear one a driven suction-fan, a gathering-hood inclosing the motor-fan, and a separate and detached casing inclosing the suction-fan, said casing being entirely open on the front side concentrically with the shaft, whereby the motor-fan is made to turn the suction-fan, and the intake of air for the suction-fan is promoted by having its opening facing to the front substantially as described.

2. In a car-ventilating apparatus, a rotary shaft arranged longitudinally with the car; and having on the same two sets of fan-blades, the front one being a motor-fan to be acted on by the air-currents, and the rear one a driven suction-fan, a gathering-hood inclosing the motor-fan, a separate and detached casing inclosing the suction-fan, said casing being entirely open on the front side concentrically with the shaft, and an air-filtering and temperature-regulating chamber arranged to communicate with the outlet from the suction-fan, and having a discharge-opening into the car substantially as and for the purpose described.

3. In a car-ventilating apparatus, an air-purifying and temperature-regulating chamber having in its bottom a water-tank with a water-regulating float-valve and also a heating-coil, a series of detachable trays arranged
5 above the water-tank for containing ice and filtering material, a box or receptacle arranged in the upper part of the chamber for containing purifying chemicals, doors arranged on
10 the side of the chamber to permit the charging of the trays, and an inlet-pipe of inverted-T shape having its lower broad end opening horizontally below the trays and above the water-level, and an outlet-opening arranged
15 in the upper part of said chamber substantially as described.

4. A discharge-ventilator K for a car consisting of a funnel-shaped hood 3, a curved shaft portion L opening down into the car,
20 said shaft and hood being connected together

at their small ends with a common confluence, and terminating in a horizontal pipe, and a damper M arranged in the pipe and having a handle extending down into the car substantially as and for the purpose set forth. 25

5. In an air-purifying filter for a railway-car, the combination with a chamber having a water-tank in its lower portion with level-regulating devices, and filtering devices
above; of an air-inlet pipe having at its lower 30 end a T shape with a horizontally-extended entrance-mouth opening into the water-tank just above the level of the water, and below the filter devices, substantially as and for the purpose described.

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Witnesses:

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