

No. 721,556.

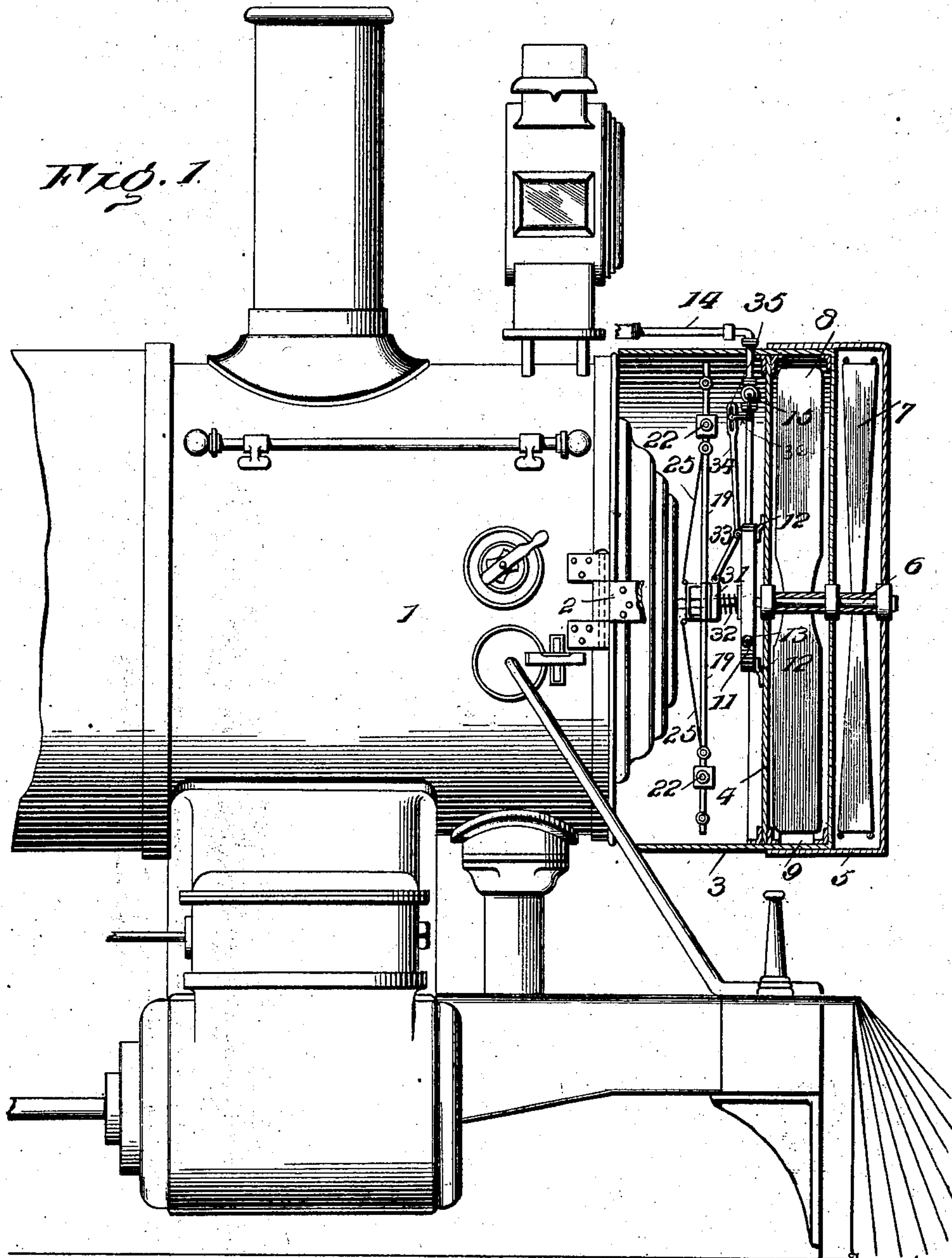
PATENTED FEB. 24, 1903.

A. T. FOX.
CAR VENTILATOR.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor

Albert T. Fox

Witnesses

*My friend
Harry L. Knight*

By

Knight Bros

Attorneys

No. 721,556.

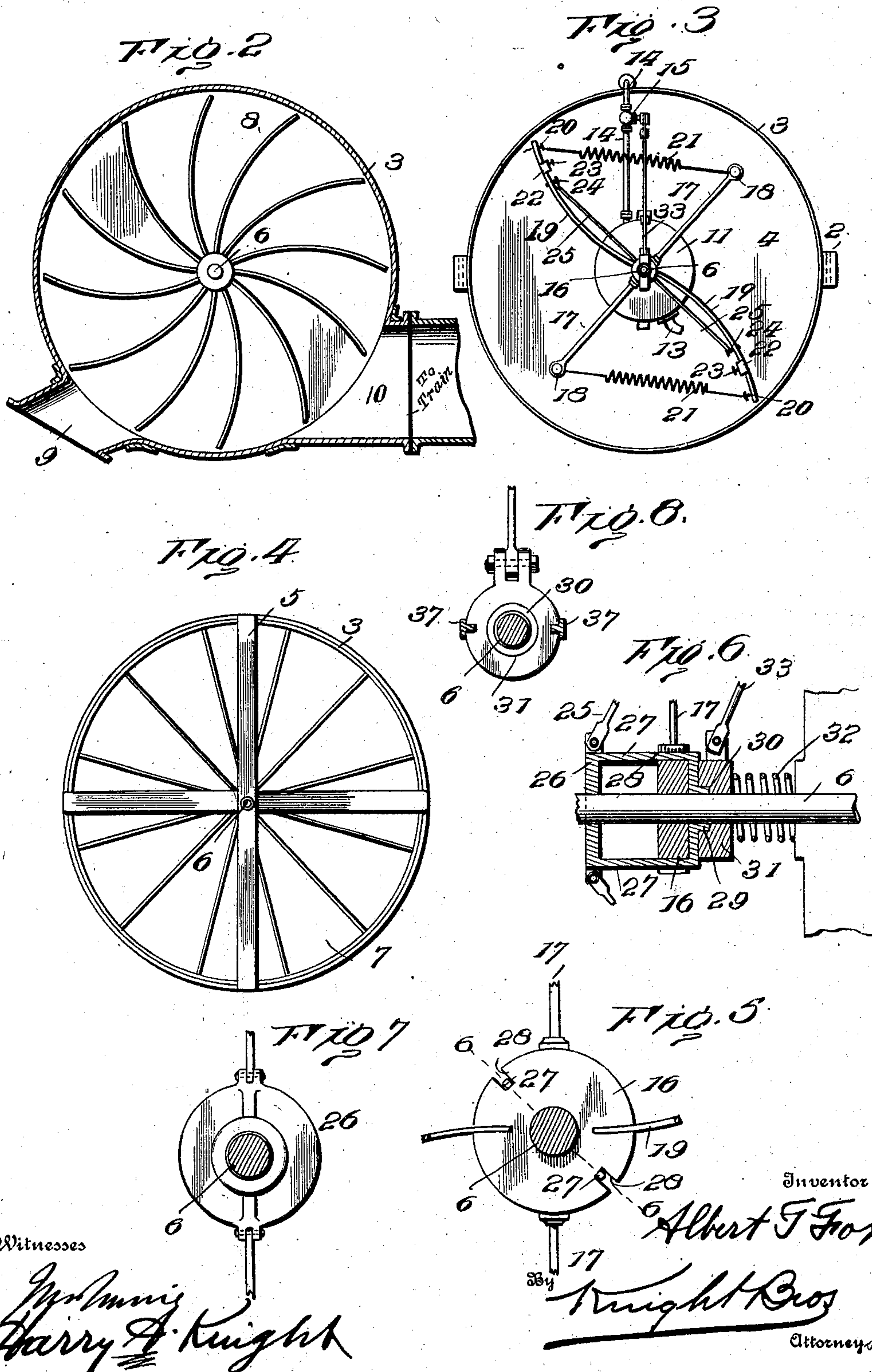
PATENTED FEB. 24, 1903.

A. T. FOX.
CAR VENTILATOR.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ALBERT T. FOX, OF DULUTH, MINNESOTA.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 721,556, dated February 24, 1903.

Application filed May 13, 1902. Serial No. 107,069. (No model.)

To all whom it may concern:

Be it known that I, ALBERT T. FOX, a citizen of the United States, and a resident of Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Car-Ventilators, of which the following is a full, exact, and clear description.

The objects of my invention are therefore to provide an apparatus by which pure air can be supplied to cars from a point in front of a locomotive, to provide an apparatus which will be automatically regulated and one which will require no attention from the engineer of the locomotive, to provide an apparatus which is simple of construction and one which may be applied to and removed from a locomotive without removal of any of the parts of the locomotive.

Further objects of my invention are to provide many improvements in details of structure, as will fully appear in the following description and claims, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of my improved apparatus mounted in a suitable casing applied to the front end of a locomotive. Fig. 2 is a sectional view through said casing, showing the air-pump, air-intake, and the air-outlet to the distributing-pipe. Fig. 3 is a view from the inner end of the casing, showing the engine mounted therein. Fig. 4 is a view of the fan at the other end of said casing, showing the open frame in which the fan is housed. Fig. 5 is a detail view of the hub of the steam-supply-valve regulating mechanism. Fig. 6 is a sectional view of Fig. 5 on the line 6-6 thereof, and Figs. 7 and 8 are detail views of other parts of my apparatus.

1 represents a locomotive, to the front end of which is secured by hinge-joints 2 a circular casing 3, having a partition 4 therein and carrying at its outer end a circular open frame 5. Carried by and extending centrally within the casing 3 and frame 5 is a shaft 6, having suitable bearings, and on the outer end of which is a rotary fan 7, rigidly secured thereto. Centrally located on the shaft 6 and within the casing 3 is a rotary air-pump having curved buckets 8. Immediately beneath the rotary pump is an air-intake 9 and an air-outlet 10 in the casing 3, the outlet 10 being

adapted to receive a suitable flexible or other connection with a suitable distributing-pipe (not shown) by which the air is distributed throughout the train. The distributing-pipe may be secured beneath or on top of the cars and connected with pipes leading into the cars against deflectors, whereby the air is distributed throughout the interior of each car.

11 is a rotary engine of any suitable type supported by brackets 12 on the partition 4 and connected to the shaft 6.

13 is the exhaust-port of the engine 11.

14 is a steam-pipe adapted to supply steam to the rotary engine 11 and having therein a valve 15, controlled automatically by mechanism now to be described.

The automatic valve-controlling mechanism is as follows: Near the inner end of the shaft 6 is rigidly secured and positioned on said shaft a hub 16, having diametrically opposite rigid arms 17, with eyes 18 at their outer ends for purposes later described. Between the arms 17 in the periphery of the hub 16 and also diametrically opposite to each other are spring-arms 19, having set-screws 20 on their outer ends and connected to the arms 17 by tension-springs 21, which are secured in the eyes 18 and to the set-screws 20. The springs 21 tend to bend and draw the spring-arms 19 toward the arms 17.

22 represents weights adjusted by means of set-screws 23.

24 represents set-screws on the arms 19, preferably located immediately below the weights 22 and to which are attached straps 25, leading to a slidable frame formed with a perforated rear disk 26 and forwardly-projecting arms 27, passing through grooves 28 in the hub 16, the outer ends of the arms being bent downwardly and formed into a perforated disk 29, having a projecting face. The slidable frame is mounted on the shaft 6, and the disk 29 thereof engages a circular recess 30 in a thimble 31, carried by the shaft 6 and pressed outwardly by the spring 32.

33 is an upwardly-extending arm pivoted at its lower end to the thimble 31 and rigidly secured at its upper end to a lever 34, having a slot 35 slidably engaging a pin secured to the outer end of a bell-crank lever 36, connected to the valve 15.

37 represents a pair of guides engaging

suitable slots in the side of the thimble 31 to prevent oscillating movement thereof.

The operation of my device is as follows: The rotary pump is adapted to be operated
 5 by either the fan 7 or the rotary engine 11, or both. When the train is in motion or when the train is not in motion but there is a strong head wind, the fan 7 will be operated, and by reason of its being connected to the shaft 6
 10 will operate the rotary pump, also rigidly connected to said shaft. The hub 16 being also connected to the shaft 6 rotates with the rotary pump and the fan 7, rotating at the same time the arms 17 and the spring-arms 19,
 15 which latter having the weights 22 positioned on their outer ends as the speed of the shaft increases overcome the tension of the springs 21 and straighten. The straightening of the arms 19 tends to draw the straps 25 in-
 20 wardly, forcing the slidable frame also inwardly to engage the thimble 31 to press the spring 32 and operate through the arm 33 the lever 34 to shut off the steam-supply to the rotary engine by closing the valve 15 in the
 25 pipe 14. It will thus be seen that the regulation of the pump-operating mechanism is automatic. In the event that the train is running with a strong wind or in the event that the train is at a standstill and there is an insuffi-
 30 cient amount of head wind to operate the fan 7 the spring 32 is allowed to force the thimble 31 outwardly, operating the lever 34 to open the valve 15 to admit steam to the rotary engine 11 and the thimble 31 at the same time
 35 pressing outwardly against the arms 27 of the slidable frame, thereby forcing outwardly the straps 25. At the same time the springs 21 overcome the spring-arms 19, bending said arms into the position hereinbefore described.
 40 When steam is admitted to the rotary engine by the valve 15, said engine is operated to rotate the shaft 6. It will thus be seen that when there is insufficient wind to operate the fan 7 the rotary engine 11 will be automati-
 45 cally brought into operation and that when there is sufficient wind to operate the fan 7 the engine 11 will be automatically thrown out of operation. This arrangement provides for a continuous current through the outlet 10 and
 50 to the pipes for distributing pure air to all parts of the train. Any suitable means may be used for such distribution; but I prefer to employ a tin pipe extending over the roofs or beneath the cars and having flexible connec-
 55 tions between the same, which pipe may have suitable relief-valves and cut-offs and may be supplied with suitable means for heating the air within the same.

I am aware that it is not broadly new to
 60 provide means for catching air at a point in front of the locomotive and distributing such air to different parts of a train. I therefore do not claim, broadly, an apparatus of this sort.

65 Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a car-ventilating apparatus, the combination with a rotary pump, of a wind-wheel operating said pump, of an engine adapted
 70 also to operate said pump, means throwing said engine into and out of operation, and means distributing the air supplied by said pump.

2. In a car-ventilating apparatus, the com-
 75 bination with a rotary pump, of a wind-wheel operating said pump, of a rotary engine adapted also to operate said pump and means controlled by the operation of said pump for
 80 throwing said engine into and out of operation.

3. In a car-ventilating apparatus, the combination with a rotary pump, of a wind-wheel operating said pump, of a rotary engine
 85 adapted also to operate said pump and means automatically controlling the supply of steam to said engine.

4. In a car-ventilating apparatus, the combination with a suitable casing, of a shaft running through said casing, of a rotary pump
 90 mounted upon said shaft, of a wind-wheel mounted upon said shaft, of a rotary engine also mounted upon said shaft, and means automatically regulating the supply of steam to
 95 said engine.

5. In a car-ventilating apparatus, the combination with a suitable casing positioned on
 100 the front of a locomotive, of a shaft extending through said casing, of a rotary pump positioned on said shaft, of a wind-wheel positioned on said shaft and adapted to operate
 105 said pump, of a rotary engine also positioned upon said shaft, of a governor positioned on said shaft and adapted to regulate the supply of steam to said engine.

6. In a car-ventilating apparatus, the combination with a suitable casing, of a shaft extending through said casing, of a rotary pump
 110 positioned on said shaft, of a wind-wheel positioned on said shaft and adapted to operate said pump, of a rotary engine also positioned on said shaft, of suitable steam-pipe connection with said engine, a valve in said pipe, a lever
 115 controlling said valve and a governor controlling the operation of said lever.

7. In a car-ventilating apparatus, the combination of a suitable casing, of a shaft extending through said casing, of a rotary pump
 120 positioned upon said shaft, a wind-wheel mounted upon and driving said shaft and operating said pump, of a rotary engine also operating said pump, and a governor controlling the supply of steam to said engine, said governor comprising a hub positioned upon said shaft, rigid
 125 arms seated in said hub, spring-arms also seated in said hub, suitable weights on the ends of said spring-arms, suitable tension means connecting the end of a spring-arm with the end of a rigid arm, a slidable frame extending through said hub and straps secured to said
 130 frame and spring-arms and adapted upon the straightening of said spring-arms to slide said frame inwardly to actuate a steam-supply valve.

8. In a car-ventilating apparatus, the combination with a suitable casing having inlet and outlet openings, of a shaft extending through said casing, a rotary pump positioned upon said shaft, wind-wheel operating said pump, a rotary engine also adapted to actuate said pump, and means for automatically throwing said engine into operation upon failure of the wind-wheel to operate, said out-

let-openings adapted to be connected to suitable means of distribution to the cars of a train.

The foregoing specification signed this 5th day of May, 1902.

ALBERT T. FOX.

In presence of—

J. J. DWEEGER,
DAVID M. DEVERE.