

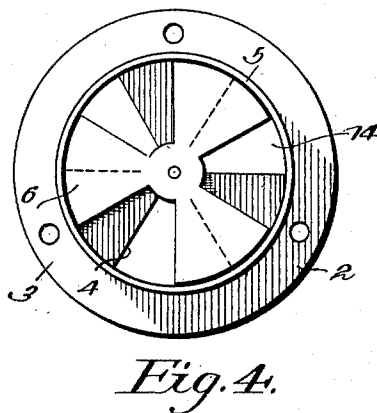
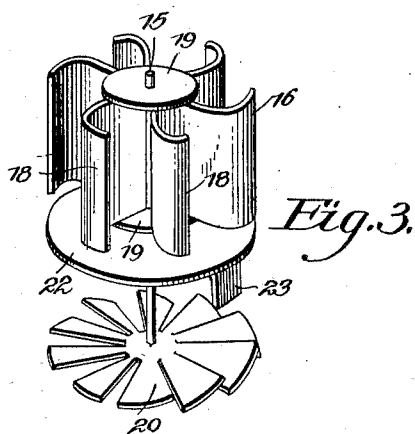
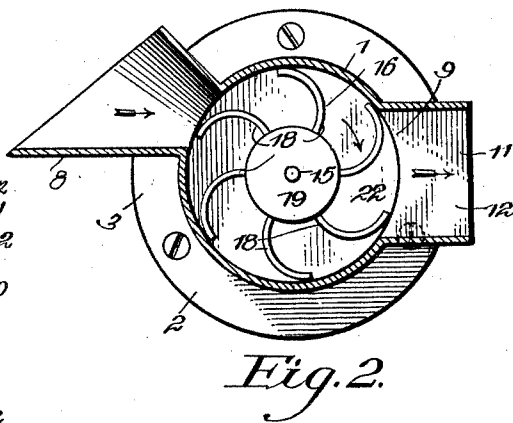
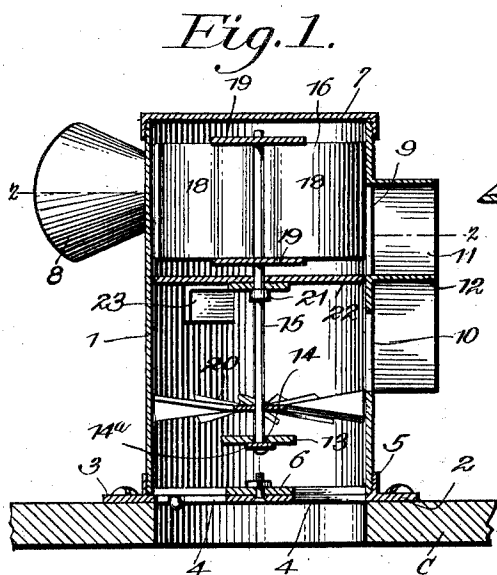
No. 759,877.

PATENTED MAY 17, 1904.

C. P. GOODSPEED.
CAR VENTILATOR.

APPLICATION FILED MAY 18, 1903.

NO MODEL.



Witnesses
E. H. Stewart
Dexter Morton

C. P. Goodspeed, Inventor.
by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES PERRY GOODSPEED, OF SALT LAKE CITY, UTAH.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 759,877, dated May 17, 1904.

Application filed May 18, 1903. Serial No. 157,725. (No model.)

To all whom it may concern:

Be it known that I, CHARLES PERRY GOODSPEED, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and useful Car-Ventilator, of which the following is a specification.

This invention relates to car-ventilators, and more especially to the type of car-ventilators in which a wind-wheel operated by the forward movement of the car imparts motion to an exhaust-fan which withdraws foul air from the interior of the car and causes fresh air to enter the car through suitable apertures, such as windows and doors, to replace the foul air removed by the exhaust-fan.

The object of the invention is to provide a ventilator of the type described in which the action shall be positive and effective in removing the foul air from the car, in which means will be provided for regulating the rate of exhaust, and which shall effectively prevent the entrance of cinders, smoke, rain, or snow into the car through the apertures provided for the outward passage of the foul air.

With the objects above stated and others in view, which will appear as the invention is better understood, the same consists in the construction and combination of parts hereinafter described, illustrated in the accompanying drawings, forming a part of this specification, and having the novel features thereof pointed out in the appended claims, it being understood that changes may be made in the form, proportions, and exact mode of assemblage of the elements described and shown without departing from the spirit of the invention or sacrificing any of its advantages.

In the drawings, Figure 1 is a view in vertical section longitudinally of the car through the ventilator. Fig. 2 is a horizontal section through the ventilator on the line 2 2 of Fig. 1. Fig. 3 is a detail view in perspective of the ventilator-shaft, the wind-wheel, the fan, and other structures associated therewith. Fig. 4 is a plan view of the base-plate with the upwardly-projecting flange and the cut-off valve associated with said base-plate.

Corresponding parts are designated by the

same characters of reference throughout the various views in which they appear.

The invention as disclosed consists, generally speaking, in a casing preferably of cylindrical form adapted to be attached to some portion of the car, ordinarily the top, and having at the top a chamber in which is rotatably mounted a wind-wheel adapted to be operated by the relative movement of the air caused by the forward travel of the car and a lower chamber communicating with the interior of the car and having mounted therein an exhaust-fan for removing foul air from the car.

Referring to the drawings for the more specific details of construction, 1 designates a cylindrical casing containing a wind-wheel and an exhaust-fan.

2 designates a base upon which the casing 1 is supported. The base comprises a plate 3, having a plurality of openings 4 and a collar 5, disposed at right angles to the plate, as shown. The plate 3 is attached to some portion of the car C, preferably at the top, by means of screws or other fastening means extending through openings provided for that purpose near the periphery of the plate, and the flange 5 is directed outward. Attached to the plate 3, at the center thereof, is a rotatable cut-off valve 6, having a number of wings corresponding to the openings in the plate 3 and forming means whereby the area of said openings may be diminished to control the escape of air from the car.

The casing 1 is screw-threaded at the bottom and engages with the corresponding threads cut on the inner surface of the collar 5, this form of connection between the base 2 and the casing 1 permitting the casing to be turned so as to face toward either end of the car, as may be desired. At the top the casing 1 is provided with a cap 7, which is preferably screwed upon the upper end of the casing, as shown. On one side near the top the casing is provided with a funnel 8, which when the car is in use should be directed forward. On the side of the casing almost directly opposite the funnel is an aperture 9 of preferably rectangular form, and immediately beneath aperture 9 is a similar aperture 10,

separated from the aperture 9 by a small space. Over both of the apertures 9 and 10 is arranged a hood 11, and a horizontal partition 12 is placed within the hood at the lower margin of aperture 9.

Near the bottom of casing 1 is provided a transverse bar 13, having in the middle thereof an opening 14, forming a socket, the bottom of which is closed by a spring 14^a, secured to the lower side of said bar 13.

Mounted within the casing 1 and having the lower end thereof engaging the socket 14 in bar 13 is a shaft 15, disposed vertically and having attached thereto near the top a wind-wheel 16, consisting, preferably, of a plurality of blades 18 of the configuration best shown in Fig. 3. The blades 18 are rigidly attached to plates or disks 19, provided above and below said blades and rigidly secured to shaft 15. Near the lower end the shaft 15 has attached thereto an exhaust-fan 20, consisting of a plurality of blades formed from a single disk and so inclined that when rotation is imparted to the shaft in the direction indicated by the arrow in Fig. 2 the motion produced in the fan 20 will tend to draw air upward through the openings 4 in plate 3. Between the fan and the wind-wheel there is provided on the shaft 15 a stop 21, above which is loosely journaled upon the shaft a plate 22, having secured to the lower surface thereof a pair of spring-lugs 23. The plate 22 is of such diameter that it will pass readily downward within the casing 1, and the spring-lugs 23 serve to hold it against rattling in the casing when in position. The socket 14 in transverse bar 13 and the plate 22 serve to keep the shaft in vertical position, so that the fan 20 and the wind-wheel 16 may rotate freely within the casing without coming into contact with the side wall thereof.

In assembling the parts of the ventilator for service the base 2 is attached to the top of a car C, the casing 1 is screwed into position upon the base 2, the funnel being directed forward, and the wind-wheel and fan, with the shaft to which they are attached and the disk journaled thereon, are introduced within the casing, the lower end of the shaft being fitted into the socket 14, as above explained. The cap at the top of the casing is then screwed on, holding the parts in proper position, and the apparatus is ready for operation as soon as the car is set in motion. When the car starts forward, the air entering the funnel impinges upon the blades of the wind-wheel and causes it to rotate in the direction indicated by the arrow in Fig. 2. The rotation of the wind-wheel, which is rigidly attached to the shaft, produces rotation at the same rate in the fan in the lower chamber of the casing, and the motion of the fan, as already explained, draws air upward through the openings in the base of the ventilator and causes it to pass outward through the opening 10 at the rear of the cas-

ing 1. As the speed of rotation imparted to the wind-wheel 16 will increase with the speed of the car and the rate of exhaust from the interior of the car may therefore become more rapid than is desirable, the cut-off valve is provided above the base-plate of the ventilator to partially close the openings in said base-plate and limit the rate at which the air can be drawn upward through said openings.

As the plate 22 completely separates the chambers containing the wind-wheel and exhaust-fan, respectively, there is no possibility of hail, rain, or cinders, which enter the casing 1 through the funnel, being introduced into the car through the openings in plate 3; but instead such small particles for the most part pass outward through the aperture 9 at the rear of the casing.

Additional means for preventing the entrance of undesirable matter from the outside into the car through the openings in the base-plate is provided in the hood 11, which covers apertures 9 and 10 and is provided with the partition 12 between said apertures. By providing this hood 11 the particles which might be drawn into the aperture 10 at the rear of the casing are prevented from entering, and the partition between the apertures 9 and 10 prevents any of said particles escaping through the aperture 9 from passing downward into aperture 12.

Owing to the fact that the action of the ventilator causes the exhaust of foul air and the introduction of fresh air at the various crevices and other openings in the car rather than a strong blast at one point, the ventilation of the car which results is unaccompanied by drafts of disagreeable violence, and the purification of the air within the car is carried on continuously and effectively.

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

1. The combination in a car-ventilator, of a casing having at the bottom a chamber communicating with the interior of the car, at the top a chamber having in its front an aperture for the admission of air, apertures at the rear of said casing leading into both of said chambers, a rearwardly-projecting hood over said rear apertures, an exhaust-fan in the lower chamber, a wind-wheel in the upper chamber, and driving connections between said wind-wheel and said fan.

2. The combination in a car-ventilator, of a cylindrical casing closed at the top and open at the bottom, a removable partition disposed transversely in the casing and dividing it into upper and lower chambers, the lower chamber having communication with the interior of the car and the upper chamber having an aperture in the front thereof for the admission of air, a shaft rotatably mounted in said casing, an exhaust-fan rigidly associated with said shaft and located within the lower cham-

ber, a wind-wheel rigidly associated with said shaft and located within the upper chamber, and openings in the rear of said casing leading into both said chambers for the escape of air from the casing.

3. A car-ventilator comprising a cylindrical casing adapted to be attached to the top of a car and to have communication with the interior of the car, a transverse partition in said casing dividing it into upper and lower chambers, a shaft rotatably mounted within said casing and extending through both of said chambers, a wind-wheel in the upper chamber, an exhaust-fan in the lower chamber, both said wind-wheel and said fan being rigidly associated with said shaft, a cut-off valve at the bottom of said casing to control the escape of air from the car, air-escape apertures at the back of said casing opening into both of said chambers, a hood over both of said air-escape apertures, and a partition in said hood between said air-escape apertures.

4. A car-ventilator comprising a cylindrical casing adapted for attachment to the top of a car and to have communication with the interior of the car, a transverse bar rigidly secured in said casing near the bottom thereof and having an opening midway between its ends to form a socket for a shaft, a spring secured on the under side of said bar and forming the bottom of the socket, a removable cap on said casing, and a removable structure within the casing comprising a shaft, a wind-wheel rigidly attached to said shaft near the upper end, an exhaust-fan rigidly attached to the shaft near the lower end, and a plate slid-

able on said shaft between the exhaust-fan and the wind-wheel and adapted to form a partition dividing the casing into upper and lower chambers.

5. The combination in a car-ventilator, of a cylindrical casing open at both ends, a removable cap upon the upper end of said casing, a removable partition disposed transversely in said casing and dividing it into upper and lower chambers, said lower chamber having communication with the interior of the car, and both of said chambers having openings at the rear for the escape of air, a shaft rotatably supported in said partition, a wind-wheel rigidly associated with the upper end of said shaft and located in the upper chamber, and an exhaust-fan rigidly mounted upon the lower portion of said shaft and disposed in the lower chamber of the casing.

6. The combination in a car-ventilator, of a vertical casing, a partition in said casing dividing the interior into upper and lower chambers, a shaft arranged longitudinally of said casing, a wind-wheel mounted on the upper portion of said shaft, an exhaust-fan mounted upon the lower portion of said shaft, and a yielding member upon which the lower end of said shaft rests.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES PERRY GOODSPEED.

Witnesses:

H. V. MELOY,
L. C. BAILEY.