

F. J. LEIGH.
VENTILATING COWL FOR RAILWAY CARS.
APPLICATION FILED NOV. 15, 1909.

969,708.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

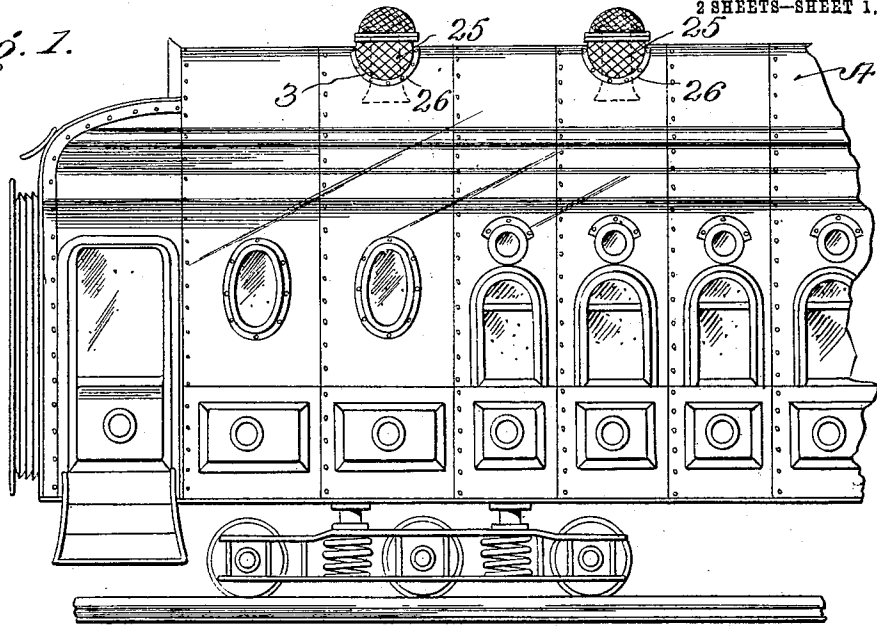
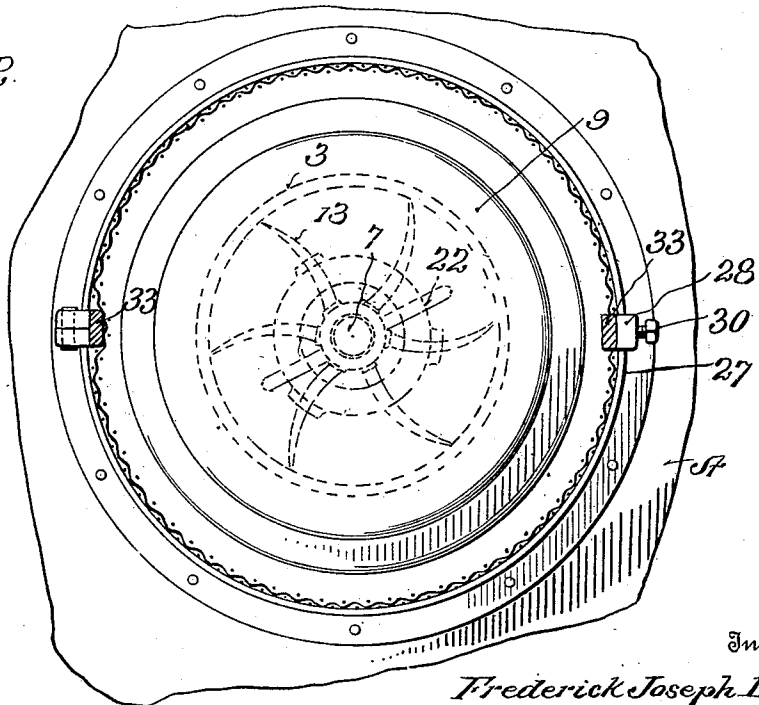


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

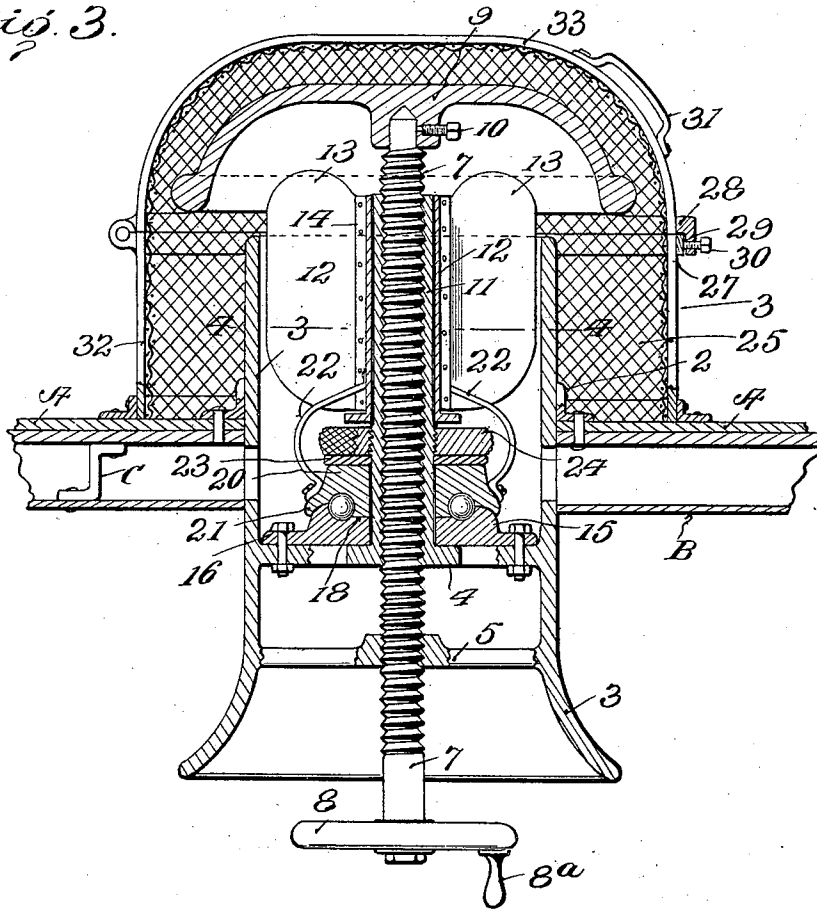
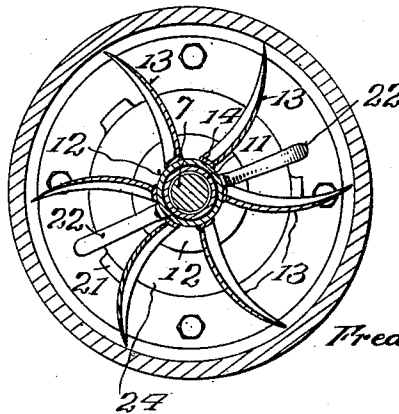


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VENTILATING-COWL FOR RAILWAY-CARS.

969,708.

Specification of Letters Patent.

Patented Sept. 6, 1910.

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To all whom it may concern:

Be it known that I, FREDERICK J. LEIGH, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Ventilating-Cowls for Railway-Cars, of which the following is a specification.

My invention relates to ventilating cowls particularly designed for railway car ventilation, the invention consisting in the provision of a cowl having an air outlet pipe, a series of fan blades rotatable within the outlet pipe and rotated by the passage of the car, and adjustable means for controlling the outlet of air through the pipe.

The object of the invention is to provide a cowl of this description, wherein means shall be used for withdrawing foul air from the car structure, and which will be provided with means for preventing a direct inlet of outside air through the outlet pipe, and which is so arranged that the outlet of air through the pipe may be prevented entirely, if desired.

It may be premised that these cowls are to be supplied for each section or compartment of a railway car, and are independently operable so that the occupants of the compartments may have the ventilation individually regulated.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side view of a car provided with my ventilating cowl; Fig. 2 is a top view thereof, the outer screen being in section; Fig. 3 is a vertical diametrical section of the ventilating cowl; and, Fig. 4 is a top view of the fans and uppermost cone section and the outlet pipe.

Corresponding and like parts are referred to in the following description and indicated in all the drawings by the same reference characters.

Referring to these figures, A designates the roof plate of a car, and B the ceiling plate thereof, C designating the angular frame connecting the roof plate with the ceiling plate. This is in accordance with the construction of an improved car which forms the subject of another application,

but I do not wish to be limited of course to the adaptation of my device to any particular construction of car. Supported upon the roof plate by means of the annular angle iron 2 is the air outlet pipe 3. This extends above the roof of the car and also extends down below the ceiling plate of the car and is flared at its lower end. Formed within the cylindrical pipe 3, or attached thereto in any suitable manner, are the spiders 4 and 5, these spiders having a plurality of radial arms or webs joined at their center to a hub, this hub being screw-threaded for a purpose to be hereafter described. I have shown an upper and a lower spider 4 and 5. Both of these spiders are alike in general construction. Passing centrally through the spiders, and engaging with the screw threads thereof is the screw-threaded adjusting rod 7 whose lower end projects down below the lower extremity of the outlet pipe 3 and is there provided with the wheel 8 having thereon a crank handle 8^a whereby the screw may be turned. The upper end of the rod 7 has attached to it the mushroom-shaped covering member 9 which is attached to the extremity of the rod 7 by means of a set screw 10. This mushroom cowl or cover extends downward on all sides and is larger in diameter than the diameter of the pipe 3, so that when the mushroom cowl is drawn downward, its downwardly depending margin will be below the upper edge of the pipe 3 and will act to entirely cover said pipe, preventing or retarding the passage of air outward through the outlet pipe and also acting to prevent the inlet of rain through the pipe.

In order to perfectly ventilate the car, it is necessary to provide a plurality of ventilating fan blades mounted within the pipe 3 which will act to withdraw air from the interior of the car. To this end, I surround the rod 7 with an interior fixed sleeve 11 which extends down and at its lower end is attached to the upper spider 4 so as to form a tubular standard extending up from the center of the spider and loosely inclosing the adjusting rod 7. Surrounding the sleeve 11 is a loose and rotatable sleeve 12 having attached thereto the fan blades 13 whose inner edges are flanged, as at 14, and bolted or riveted to the sleeve 12. These fan blades are so arranged that their upper ends project somewhat above the top of the outlet

pipe 3, so that air passing between the mushroom cowl 9 and the upper end of the pipe 3 will contact with the blades and revolve them. It is necessary of course to provide ball bearings for the support of these blades, so that they may be rotated perfectly freely, and to this end, I attach to the spider 4 the lower member 15 of a ball bearing cone. This member is provided with radial lugs 16 whereby it is attached to the arms of the spider, and is also provided with the outer wall 17 and the inner wall 18, the space between these walls forming a raceway in which the balls 19 are carried. Resting upon the balls 19 and revoluble thereon is the rotatable cone 20 of the ball bearing, having the radially and downwardly projecting lugs 21 which extend down below the exterior face of the fixed cone 15. This cone 20 is loose upon the central tubular standard 11 so as to revolve freely therearound. Attached to the upper face of the cone 20 are a plurality of bracket arms 22 which extend upward and outward and then extend inward and are attached to the lower end of the sleeve 12 so that the sleeve 12 is mounted upon the uppermost cone 20 and will rotate therewith. The interior sleeve or tubular standard 11 is screw-threaded between the lower end of the rotatable sleeve 12 and the upper face of the cone 20 to engage with a screw-threaded washer 23 and a screw-threaded adjusting nut 24 which is knurled upon its circumference. It will be obvious that by turning down the screw-threaded washer, and then locking it by the nut 24, the cone 20 will be forced down to a greater or less degree upon the balls 19 so that a proper adjustment may be made to take up wear and hold the parts properly upon their bearings, so that they will not rattle or otherwise get out of order.

The operation of my invention is of course obvious. The fan blades 13 rotate during the passage of the car, by reason of the air which enters beneath the mushroom cowl 9, and the rotation of these blades acts to draw out the air through the upper portion of the car. By turning the wheel 8, the mushroom cowl 9 may be raised or lowered so as to increase or decrease the effect of the air upon the fan blades 13 and also to retard the passage of air out of the upper portion of the car, or check it entirely if the mushroom cowl is brought down to its lowest position.

In order to provide for the arrest of dust and cinders, and thus prevent dust and cinders from passing in through the inlet pipe, I provide my improved cowl with a hood screen which is placed over the entire cowl, including the mushroom cover, and which is attached to the roof of the car. Preferably, this screen is made in two parts, one hinged upon the other, so as to permit the hood

screen to be opened and repairs to be made to the interior parts, if desired. The base of the hood screen is designated 25 and is attached to the roof plate A by a flanged base band 26. The upper edge of the lower section 25 of the screen is also provided with a reinforcing band 27, and hinged to this band 27 is the ring or band 28 to which the upper portion of the screen is connected. The band 28 is provided with a hasp 29 through which passes a thumb screw 30, whereby the upper section or cover is locked to the lower section. The upper section is also provided with a handle 31 whereby it may be manipulated. It will be seen that the hood screen or cage is of sufficient size to entirely close that portion of the ventilator which projects above the car roof, and that it is of such size as to permit the mushroom cover 9 to be raised or lowered to the extent required. In order to reinforce this hood screen or cage, and support it rigidly in position, I provide the upwardly extending bars 32 attached to the base ring and extending to the ring 27, and also provide the reinforcing bars 33 which are attached to the ring 28 and extend over the top of the hood screen. It is to these bars that the handle 31 is attached.

It will be plain that by means of my invention any car may be given a constant and positive ventilation, which is, however, entirely adjustable at any time to suit particular circumstances, and which does not depend upon the passage of air from the car for its operation.

Having thus described the invention, what I claim is:

1. In a ventilating cowl, an outlet pipe, a cover supported above the top of the outlet pipe, larger than the same, having a downwardly depending margin, a cover-adjusting rod passing through the center of the outlet pipe and engaging said cover to raise or lower the same, and rotatable fan blades mounted within the outlet pipe projecting partially above the outlet pipe and rotatable around said adjusting rod.

2. A ventilating cowl including an outlet pipe, a cover for the same, larger than the pipe and having a downwardly depending margin, a rod passing centrally through the pipe and attached at its upper end to the cover, said rod being screw-threaded and movable downward to move the cover downward into a position wherein its outer margin is below the upper end of the outlet pipe, a bearing for the screw-threaded rod located within the outlet pipe, and fan blades disposed around the adjusting rod and rotatable therearound, said fan blades projecting partially above the upper end of the pipe.

3. A ventilating cowl including an outlet pipe, a spider within the outlet pipe, a cover

located above the outlet pipe, a screw-threaded adjusting rod extending downward from the cover and having screw-threaded engagement with the spider, whereby the cover may be raised or lowered, a plurality of fan blades rotatably mounted within the outlet pipe and extending above the upper end of the same, said fan blades being rotatably supported upon said spider and loosely surrounding the adjusting rod.

4. A ventilating cowl including an outlet pipe, a spider arranged therein, a fixed tubular sleeve attached to said spider and projecting upward through the upper edge of the outlet pipe, a cover at the upper end of the outlet pipe, a screw-threaded rod passing through said pipe, attached at its upper end to the cover, said rod having screw-threaded engagement with the pipe, a loose sleeve surrounding the fixed sleeve, blades thereon, said blades projecting beyond the upper end of the pipe, a stationary cone mounted on the spider, a rotatable cone mounted on the spider, antifriction balls between the two cones, brackets connecting the rotatable cone with the rotatable sleeve and blades, and a nut engaging with the fixed sleeve and with the upper face of the rotatable cone, whereby the rotatable cone may be adjusted.

5. A ventilating cowl including an outlet pipe, a spider arranged therein, a cover at the upper end of the outlet pipe, a screw-threaded rod passing through the spider and attached to the cover, a loose sleeve surrounding the rod and freely rotatable therearound, fan blades on said sleeve, a stationary cone mounted on the spider, a rotatable cone supported on the stationary cone, antifriction bearings between the two cones, and brackets connecting the rotatable cone with said fan-supporting sleeve.

6. A ventilating cowl including an outlet pipe, a spider arranged therein, a fixed tubular sleeve attached to said spider and projecting upward through the outlet pipe, a screw-threaded rod passing through the spider and through the sleeve and projecting above the outlet pipe, a cover attached to the upper end of the rod and having a

downwardly depending margin, a loose sleeve surrounding the fixed sleeve, blades thereon, said blades extending partially above the upper end of the outlet pipe, a stationary bearing member mounted on the spider, a movable bearing member rotatably supported on the fixed bearing member, brackets connecting the rotatable member with said blade-bearing sleeve, and means for adjusting the movable bearing member to or from the fixed bearing member.

7. A ventilating cowl including an outlet pipe, a spider arranged therein, a fixed tubular sleeve attached to said spider and projecting upward beyond the upper edge of the outlet pipe, a screw-threaded rod passing through the said spider and loosely through the sleeve, a cover supported at the upper end of the rod, a loose sleeve surrounding the fixed sleeve and rotatable thereon, rotatable blades on the loose sleeve, said blades projecting above the upper end of the outlet pipe, a stationary bearing member rotatable on the fixed bearing member, brackets supporting the blade-supporting sleeve upon the movable bearing member, and means engaging with the fixed sleeve for forcing the movable member toward the fixed member.

8. In a ventilator for railway cars, an outlet pipe, freely rotatable blades located in the outlet pipe, a cover located above the end of the outlet pipe, means for raising or lowering said cover to control the outlet of air through the pipe, and a screen inclosing the upper end of the ventilator, said screen comprising a base portion provided with a flanged ring at its bottom attached to the car roof, the upper end of said base portion being also provided with a reinforcing ring and a cover having a reinforcing ring at its lower end hinged to the first named reinforcing ring.

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

FREDERICK J. LEIGH. [L. S.]

Witnesses:

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