(No Model.) 2 Sheets—Sheet 1.

W. E. COWEN.

CAR VENTILATOR.

No. 294,016. Patented Feb. 26, 1884.

Fig. 1

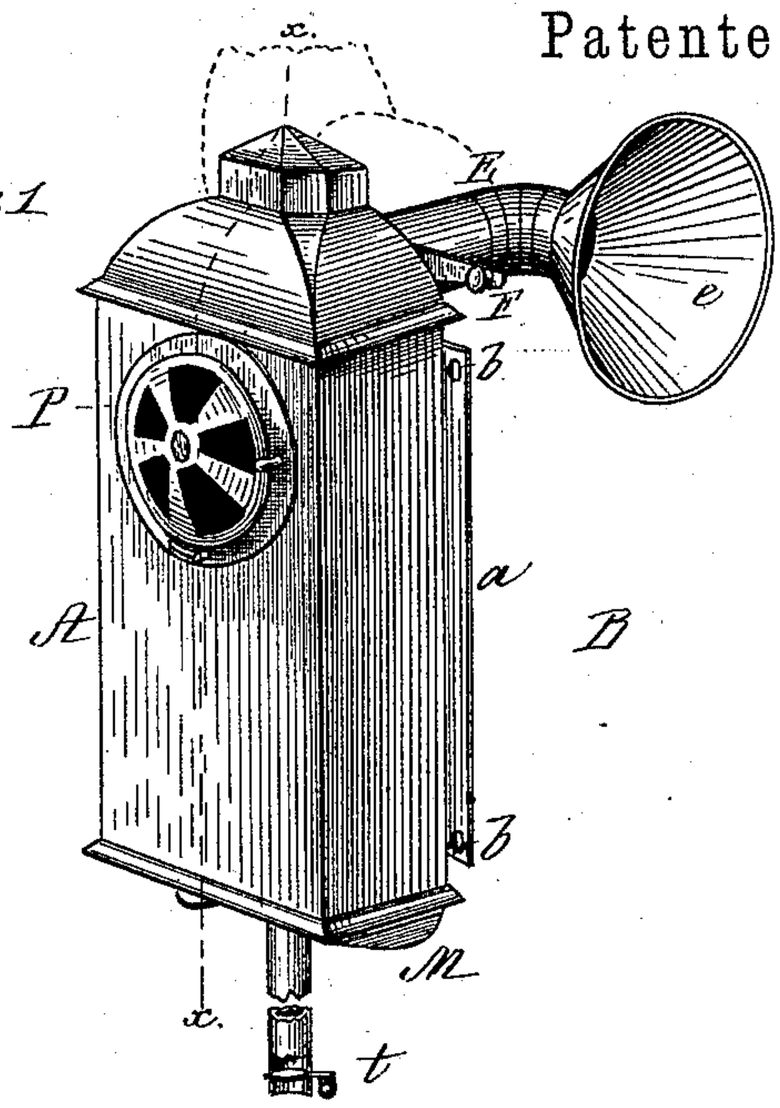


Fig. 2.

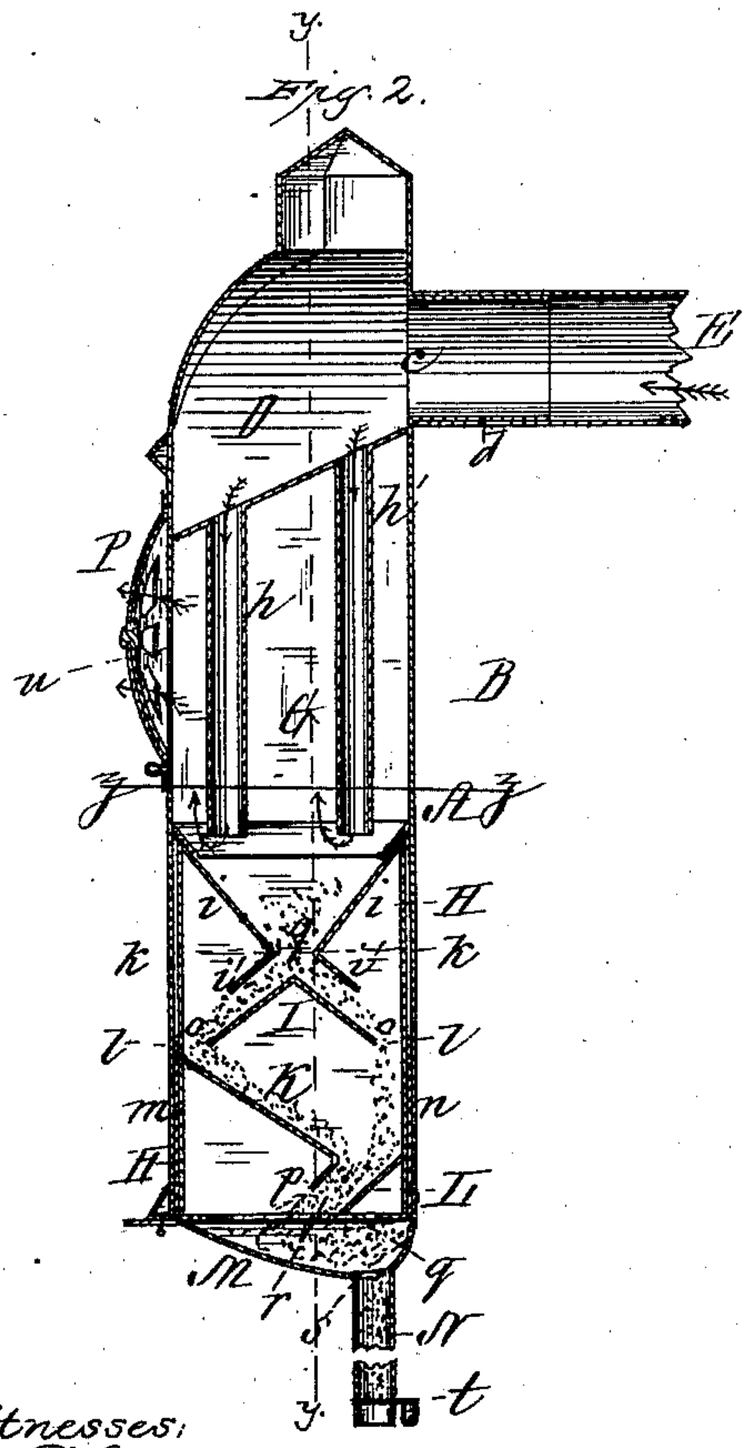
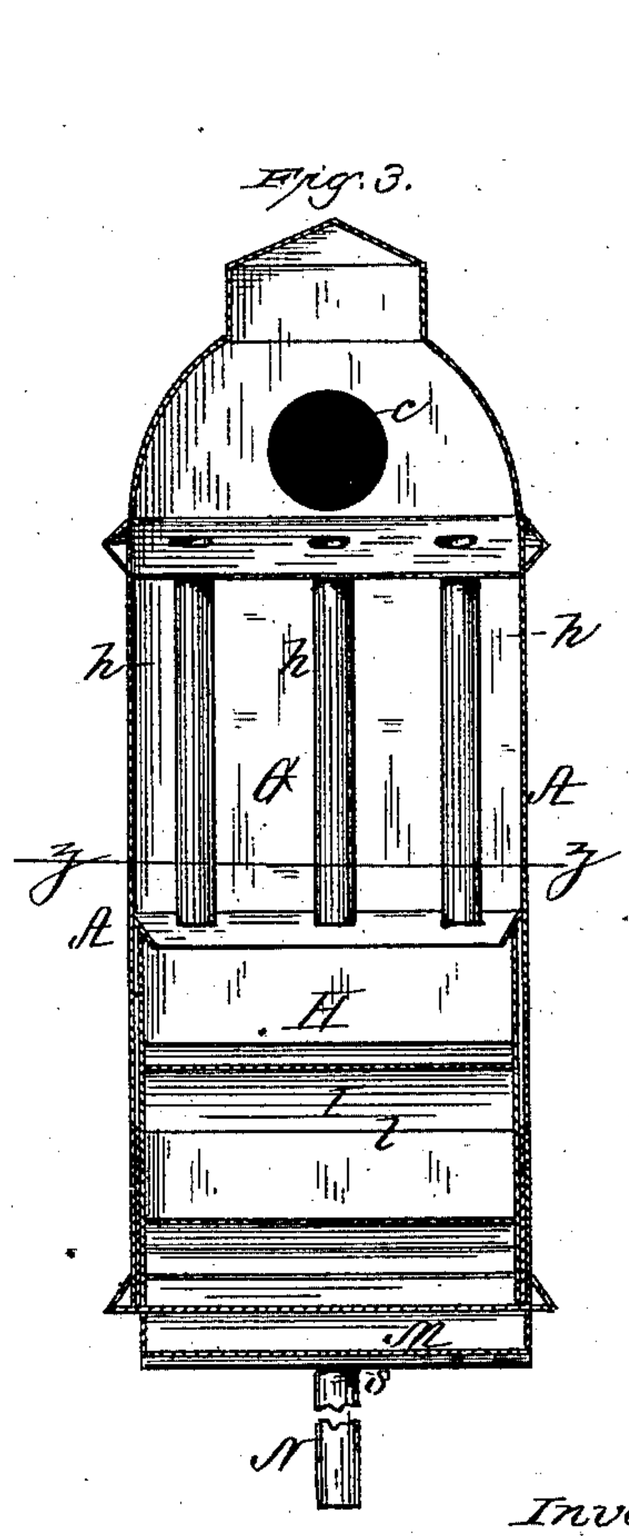


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

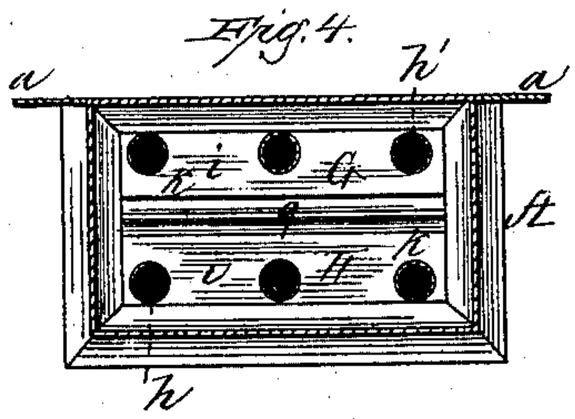


Fig. 5.

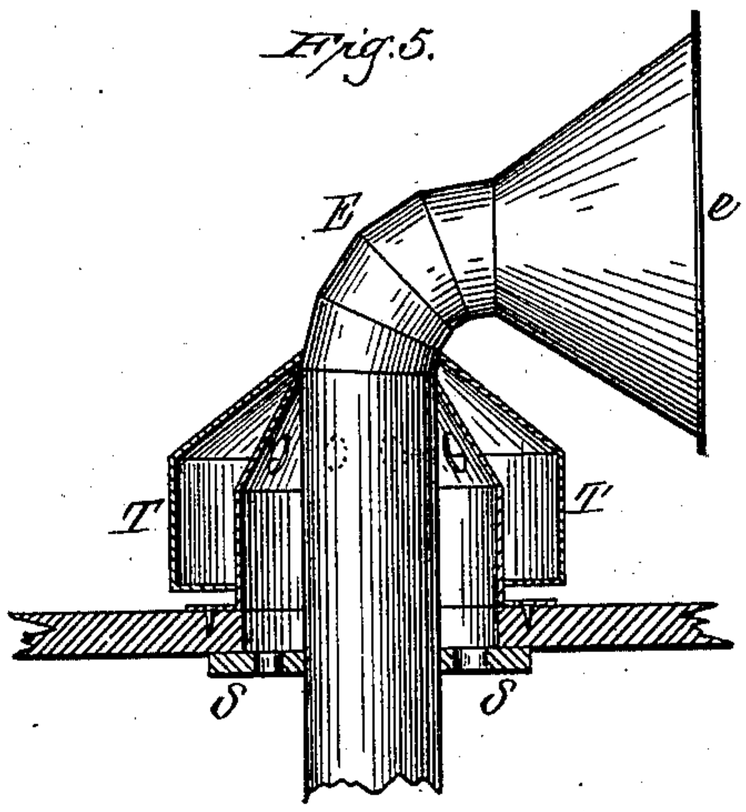


Fig. 7.

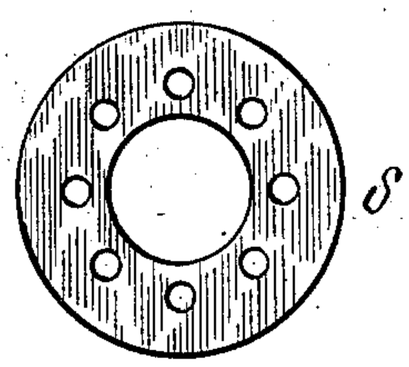
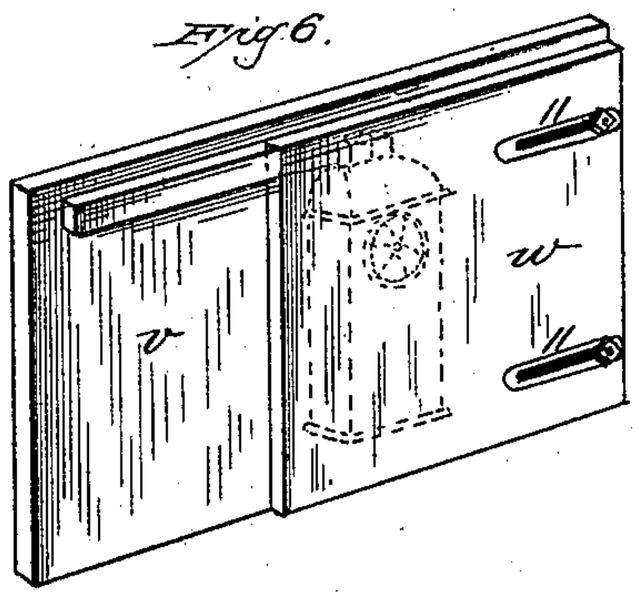


Fig. 6.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM E. COWEN, OF DEFIANCE, OHIO.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 294,016, dated February 26, 1884.

Application filed October 9, 1882. Renewed August 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. COWEN, a citizen of the United States, and a resident of Defiance, Defiance county, State of Ohio, have invented certain Improvements in Car-Ventilators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a car-ventilator constructed in accordance with my invention as applied to the side of a car. Fig. 2 is a longitudinal vertical section through the center of the same on the line *x x* of Fig. 1. Fig. 3 is a central longitudinal vertical section on the line *y y* of Fig. 2. Fig. 4 is a horizontal section on the line *z z* of Figs. 2 and 3. Fig. 5 shows the adaptation of the inlet-pipe to the roof of a car. Fig. 6 represents my improved ventilator secured to a frame made adjustable to adapt it to fit into a car-window casing of any width; Fig. 7, a detail to be referred to.

To eliminate the dust, cinders, and smoke from the air admitted through a ventilator from the outside of a car, and also to free the air within the car from said impurities which may enter therein through the doors and windows when open, is the object of my invention, which consists in a deflector interposed between a receptacle located thereunder for collecting the cinders, dust, &c., and one or more vertical pipes located thereover, down which the air passes after entering the inlet-pipe, the said impurities being conveyed by the deflector to the bottom of the receptacle by reason of their gravity, from which they can be readily removed when desired, the air thus purified being forced from the bottom of the vertical pipe or pipes up outside thereof into the space inside the casing, and thence through an opening controlled by a register to the interior of the car; and my invention also consists in certain details of construction, and in a new arrangement of the respective portions of the ventilator, to be hereinafter described and specifically claimed.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents a box or casing, preferably of sheet metal, provided at its sides with flanges *a*, through holes in which screws *b* may pass, to secure the casing to the inside B of a car, should it be desired to locate it between two windows, or to a frame, Fig. 6, adjustable in width to the window-casing of any car. At the top of the casing A is a chamber, D, having an opening, *c*, in its side next the wall of the car. From this opening projects a short cylindrical pipe, *d*, over which fits the inner end of the inlet-pipe E, which passes through a circular hole in the side of the car, and is provided at its outer end with a flaring or funnel-shaped mouth-piece, *e*, a strip of metal being secured to the outside of the inner end of the inlet-pipe, to serve as a handle, F, accessible from the inside of the car, and by which the funnel-shaped mouth-piece may be turned toward the direction in which the car is going, to receive a supply of fresh air forced therein for circulation through the car, or may be turned so as to face to the rear of the car (see dotted lines, Fig. 1) when it is desired to draw therefrom the impurities which may have entered when the doors and windows were open.

The bottom of the chamber D is inclined, (see Fig. 2,) and has leading down therefrom two series of vertical pipes, *h h'*, the inclination of the bottom serving to conduct the heavier particles—such as cinders—down the pipes *h* at the lower side of the chamber, while any dust that may not also escape by the lower row of pipes, *h*, may be carried down the upper row, *h'*. I prefer to employ a series of vertical pipes for conducting the impurities down, instead of a single pipe only, (which, I am aware, has heretofore been used,) as the cinders do not come in the way of each other so much, and do not have time to collect in the chamber D, as is the case when one vertical pipe only is employed. The compartment G below the chamber D (and through which compartment the vertical pipes extend) is contracted at about the level of the bottoms of these pipes, and fitting into the casing below them is a deflector, H, a suitable air-space being formed between them. This deflector has two portions, *i i*, inclined from the top of its two opposite sides down at an angle of about forty-five degrees to points *k k*, with a longitudinal space, *g*, between them at the center of the deflector; thence the bottom *i'* of each portion *i* inclines down toward and terminates at its contiguous wall of the deflector.

Below the plane of the longitudinal opening *g*, between the points *k k*, is formed the top or vertex of an inverted-V-shaped partition, I, the two lower edges, *l l*, of which do not extend up to the side walls, *m n*, of the deflector, but are separated therefrom, so as to form a space, *o*, at each side of said edges.

K is another downwardly-inclined partition, extending from the side or wall *m* of the deflector to about two-thirds the width of the same, and has its lower edge, *p*, turned in the opposite direction toward the wall *m* of the deflector from which its top proceeds, the lower turned edge, *p*, being located above the plane of the bottom of the deflector. (See Fig. 2.)

L is a short partition extending from the wall *n* longitudinally across the deflector and down to the plane of its bottom, the lower edge, *q*, of the partition L being parallel with and separated from the lower edge, *p*, of the partition K, thereby forming a longitudinal space, *r*, between them.

Underneath the deflector is a rectangular receptacle, M, into which are deposited the impurities in the air admitted through the ventilator from the outside of the car. This receptacle forms the bottom of the casing, and the bottom of the receptacle abuts against the bottom of the deflector.

The bottom of the receptacle M may be rounded or depressed down toward a point, *s*, where it opens into a vertical pipe, N, which passes down through the floor or side of the car to a short distance below it, and is provided with a weighted valve, *t*, to close its bottom, the raising of the weight end by the attendant when the car is not in motion serving to tip the valve so as to open the pipe, and thus allow the deposits therein and in the cinder-receptacle to be discharged. When the air forced into the funnel-shaped mouth-piece has been freed from impurities by the latter droping down onto and through the deflector to the cinder-receptacle underneath, it is driven around the bottom of the vertical tubes into and up through the space between them and the inside of the compartment G below the chamber D, and thence out of an opening, *u*, controlled by a register, P, into the car, a guard located in front of the latter being provided, if necessary, to prevent a forcible current of air from impinging on the occupant of a seat or sleeping-berth contiguous thereto.

My improved ventilator may be arranged to have its inlet-pipe pass vertically through the roof of the car, as seen in Fig. 5, a perforated collar, S, being employed to allow the impure air to pass upward out of the car, and a guard, T, being located around the inlet-pipe in such manner that the cinders, dust, &c., from the top of the car may not be blown down therein, Figs. 5 and 7. My ventilator may be located in various portions of the car, and when placed under the lower sash of a window it is only necessary to secure it to a frame composed of two pieces, *v w*, the inner one of which is made to slide on the outer by means of screw-bolts passing through slots 11, in order that the frame may be adjusted in width to that of the inside of the casing. (See Fig. 6.)

The lower portion of the ventilator, forming the receptacle for collecting the cinders, dust, &c., may have a flat bottom and be provided, with a drawer for the removal of the impurities, in which case the pipe N could be dispensed with, and water may be used in the said receptacle, if desired. I am, however, aware that a tank containing water into which the cinders, dust, &c., are collected is public property. When it is desired to free the inside of a car from impurities which are carried therein by the air blowing in when the doors and windows are open, I turn the funnel-shaped mouth of the inlet-pipe to the rear, (opposite the direction in which the car is going,) as seen in dotted lines, Fig. 1, and open the register P, which covers the opening *u* in the casing, the effect of which is, that the impure air will flow in through the open register and discharge its impurities through the deflector into the cinder-receptacle underneath, the foul air thus relieved passing out through the inlet-pipe.

I do not limit this invention to the exact construction of the deflector herein described and shown, as the inlet-opening *g* at its top may be to one side of the center, and its outlet *r* at its bottom be at or near the center, and the number of its partitions and their angles of inclination may be changed without departing from the spirit of my invention.

I claim—

1. As an improvement in car-ventilators, a deflector, H, in combination with and interposed between a receptacle, M, for collecting cinders, dust, &c., located thereunder, and one or more vertical pipes, *h h'*, extending through a compartment, G, located thereover, and an inlet and outlet for the air, as and for the purpose described.

2. An inlet-pipe, E, a chamber, D, the compartment G, provided with a series of vertical pipes, *h h'*, extending through the same, a deflector, H, a cinder and dust receptacle, M, and an outlet, *u*, opening into the car, and controlled by a register, P, slide, damper, or other suitable valve, combined and arranged as shown and described, for the purpose set forth.

3. The deflector H, with its inclined partitions *i' i* I K L and passages *g o r*, in combination with and interposed between a compartment, G, located thereover, and provided with a series of vertical pipes, *h h'*, extending down through the same, and a cinder and dust receptacle, M, located thereunder and provided with a discharge-pipe, N, having a suitable valve, as and for the purpose specified.

Witness my hand this 26th day of September, 1882.

WILLIAM E. COWEN.

In presence of—
RICHARD DUDENSING, JR.,
GEORGE H. MEYER.