H. M. ROBERTSON.

AIR CLEANER AND VENTILATOR.

APPLICATION FILED JAN. 25, 1911.

1,067,759.

Patented July 15, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

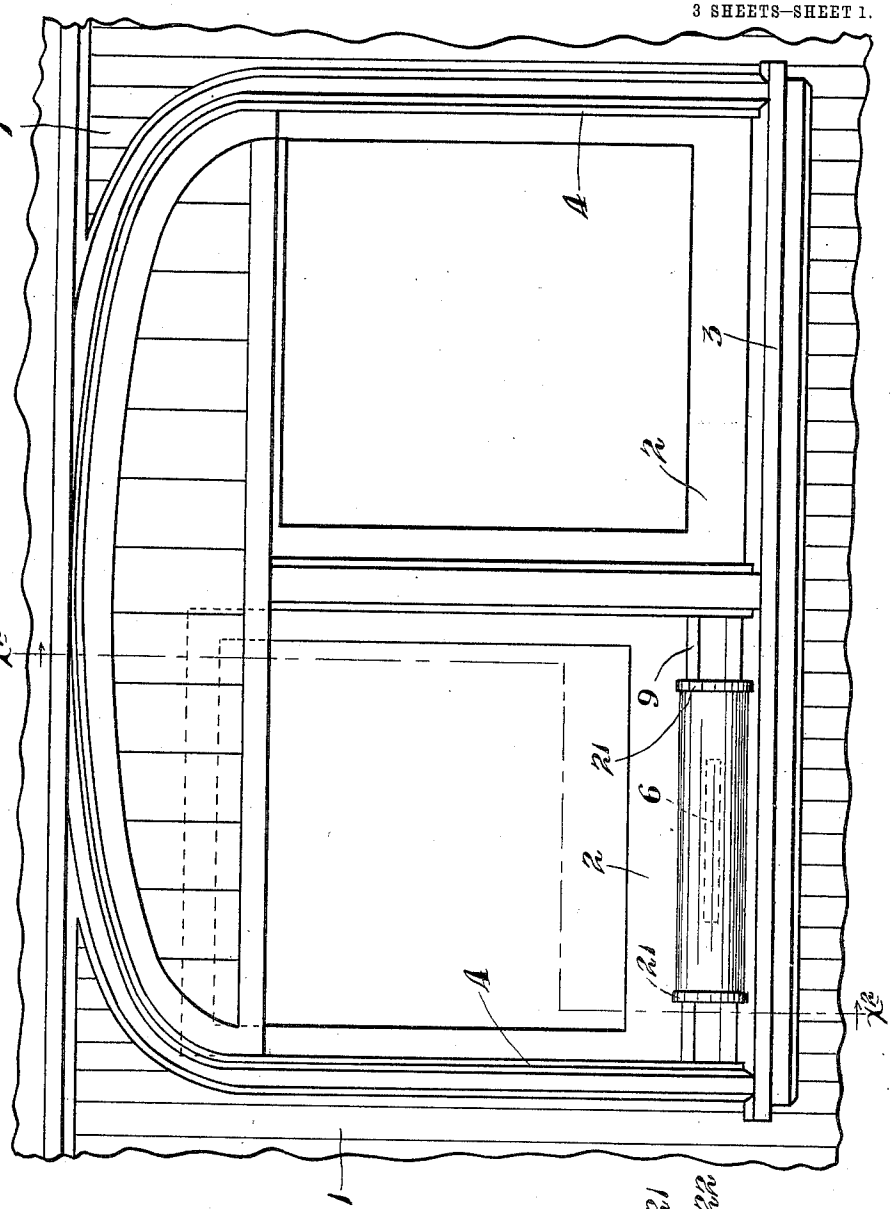
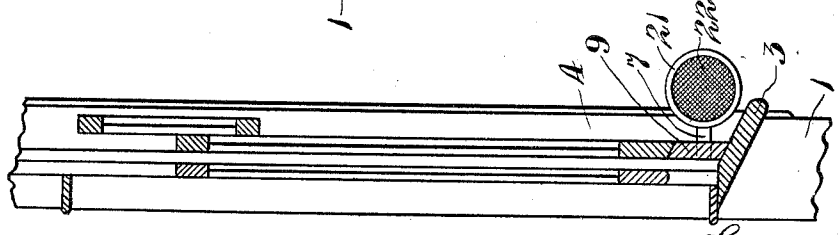


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

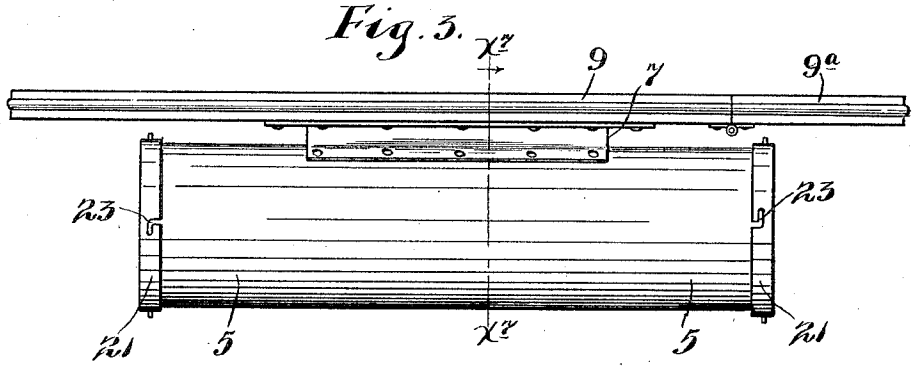


Fig. 4.

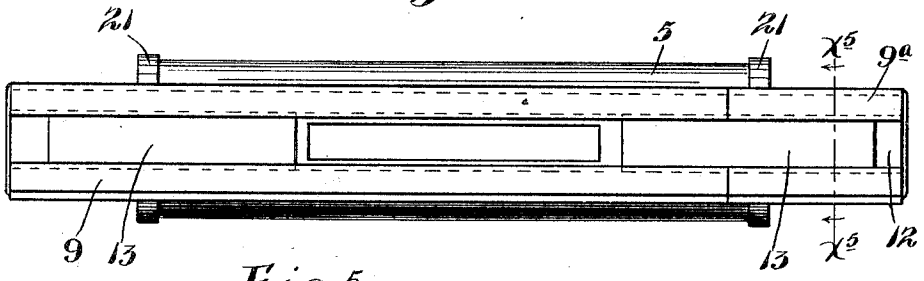
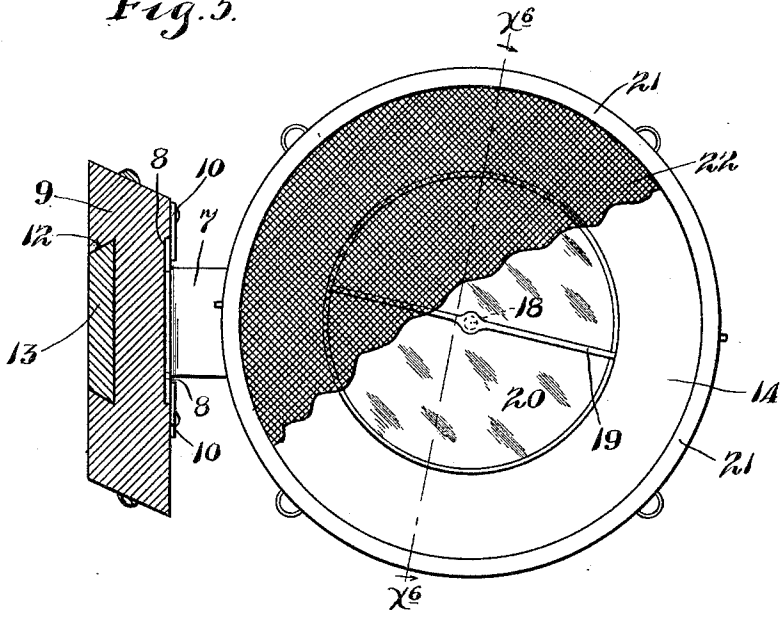


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

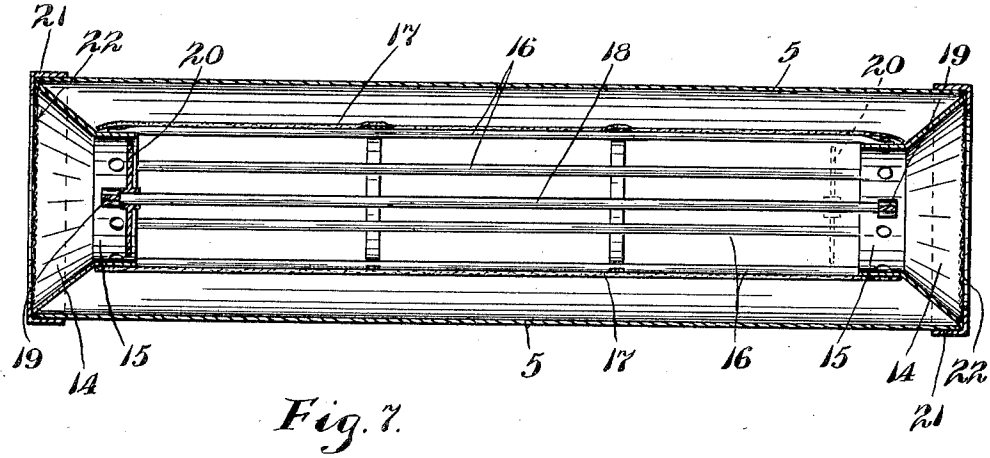
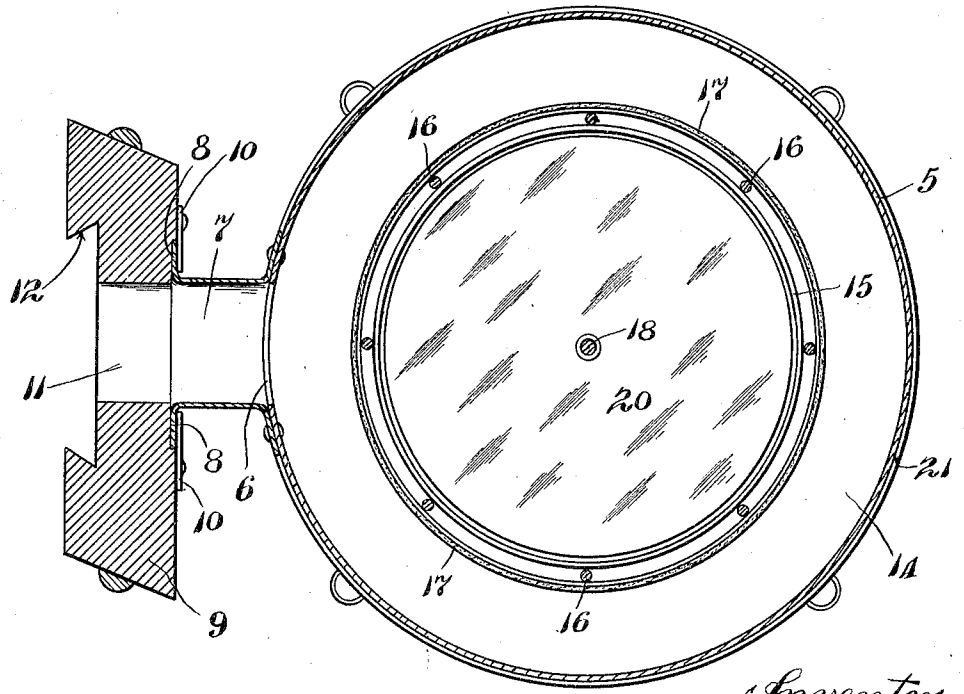


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY M. ROBERTSON, OF ST. PAUL, MINNESOTA.

AIR-CLEANER AND VENTILATOR.

1,067,759. Specification of Letters Patent. Patented July 15, 1913.

Application filed January 25, 1911. Serial No. 604,569.

To all whom it may concern:

Be it known that I, HENRY M. ROBERTSON, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Air-Cleaners and Ventilators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide a highly efficient and simple air cleaner and ventilator adapted for general use, but more particularly adapted for application to car windows.

To the above ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

As illustrated in the drawings, the improved air cleaner and ventilator is shown as designed for and applied to the window of a passenger car.

In the drawings, like characters indicate like parts throughout the several views.

Figure 1 is a view in elevation showing a window and a part of the side of a passenger car and illustrating my improved air cleaner and ventilator applied to one of the windows thereof; Fig. 2 is a vertical section taken approximately on the line x^2 x^2 of Fig. 1; Fig. 3 is a plan view of the cleaner and ventilator removed from working position; Fig. 4 is an elevation of the same looking at that side thereof which is adapted to be applied to the car window; Fig. 5 is an enlarged section taken on the line x^5 x^5 of Fig. 4 and with some parts broken away; Fig. 6 is a longitudinal section taken on the line x^6 x^6 of Fig. 5; and Fig. 7 is an enlarged transverse section taken on the line x^7 x^7 of Fig. 3.

Of the parts of the car shown in Figs. 1 and 2, the numeral 1 indicates the car body, the numeral 2, one of the vertically movable window sashes, and the numerals 3 and 4, respectively, the window sill and outside stops which coöperate with the sash 2, said parts being all of standard construction.

I will now describe the preferred form of my improved air cleaner and ventilator as the same is designed for application to car windows.

The device comprises an outer shell 5 which is preferably of cylindrical form being constructed from thin sheet metal and having at its inner side a longitudinally extended slot 6 that is in communication with an elongated channel box 7 riveted, or otherwise secured to the said cylinder 5 and provided at its projecting edge with outturned flanges 8. These flanges 8, as shown, fit a shallow channel formed in an anchoring board 9 and are slidably engaged with retaining strips 10 secured on the said board in such manner that the cylinder or casing 5 may be slid endwise to and from engagement with the said anchoring board. The said anchoring board is provided with a long slot 11 which normally registers with the opening of the channel box 7. At one end the anchoring board 9 is provided with a hinge extension 9^a. The board 9 and the extension 9^a are of such length that they can be inserted at their ends in the channel formed in the window frame for the sash 2, only when they are buckled. When their ends are thus engaged back of the stop strips 4 and the said parts 9—9^a are straightened and dropped upon the inclined window sill 3, they will be held in their alined positions interlocked to the window frame, and the window sash 2 will then be lowered upon the same.

For closing the air passage 11, or for opening the same to a greater or less extent at will, the board 9 and its extension 9^a are shown as formed with a longitudinally extended dovetailed groove 12 in which works a sliding closure or strip 13.

Secured to the ends of the cylindrical casing 5 are inwardly tapered annular or funnel shaped heads 14, preferably provided at their extreme inner ends with cylindrical portions 15 that are of much less diameter than the casing 5. A skeleton frame 16, preferably constructed of longitudinal wires and surrounding hoops having approximately cylindrical form, is secured to the cylindrical end portions 15 of the heads 14. A filtering or cleaning tube 17 of reticulate material, preferably such as closely woven cloth, completely surrounds the skeleton frame 16 and overlaps the cylindrical portions 15 of the heads 14.

A guide rod 18 extends axially of the casing 5, and at its ends is supported by small

bars 19 extended diametrically of and secured to the cylindrical portions 15 and the heads 14. Mounted to freely slide on the guide rod 18 is an imperforate disk-like gate or valve plate 20. In one extreme position, the gate 20 is stopped by the lefthand bar 19 and closes, or approximately closes the air passage through the cylindrical portion 15 of the lefthand head 14, as shown by full lines in Fig. 6; and in its other extreme position, the said gate 20 will be stopped by the righthand bar 19 and will close, or approximately close, the air passage through the sleeve 15 of the righthand head 14, as shown by dotted lines in Fig. 6. To prevent cinders from entering the casing 5, reticulate caps are applied to the ends thereof. These caps are made up of rims 21 and wire screens 22 held by the said rims. The rims 21 telescope over the ends of the shell 5 and are preferably secured thereto by bayonet joints 23.

When the device is applied to a car, as described, and the car is moved, a draft will be created in the casing 5 and the pressure of air will force the sliding gate 20 backward against the rear bar 19 and thereby close the passage through the head 14 which is at the rear in respect to the direction of the travel of the car. When the gate 20 assumes its rearmost position, the air, which is directed into the interior of the cleaning tube 17, through the head 14, which is then in front in respect to the direction traveled, will be forced outward through the said cleaning tube into the chamber surrounding the same within the casing 5, and from thence will be forced into the interior of the car through the passages 6, 7 and 11. All dust, soot, small cinders and other particles which pass through the front screen 22, will be caught and held by the cloth cleaning tube 17 so that only clean air will pass into the car.

As is evident, the sliding gate 20 automatically adjusts itself to the direction of travel of the car and will always close the passage through the cap 14 which is at the rear end of the device in respect to the direction of travel of the car.

The device, while especially adapted for application to a car window, is, nevertheless, as already stated, adapted for general use as an air cleaner and ventilator. In connection with a car, it may be applied to various other places than at the window opening, and it may be applied to windows or other parts of houses where a supply of clean, fresh air is desired. When applied to a stationary object such as a house, the movable gate 20 will be slid to one extreme position, or to the other, according to the direction in which the wind is blowing through the casing.

The device is of small cost and may be easily applied to a car window, and elsewhere, and, in practice, has been found highly efficient for the purposes had in view.

What I claim is:

1. In an air cleaning and ventilating device, the combination with a casing having open ends and funnel-shaped heads at its open ends, of a cleaning tube within said casing connected to said heads at its ends, a guide rod extended through said cleaning tube from one of said heads to the other, an automatic air pressure actuated gate slidably mounted on said guide rod and adapted in one extreme position to close the passage through one of said heads, and in its other extreme position to close the air passage through the other of said heads, and screens applied to the outer extremities of said funnel-shaped heads.

2. In an air cleaning and ventilating device, the combination with a casing having open ends and funnel-shaped heads at its open ends, of a cleaning tube within said casing connected to said heads at its ends, a guide rod extended through said cleaning tube from one of said heads to the other, an automatic air pressure actuated gate slidably mounted on said guide rod and adapted in one extreme position to close the passage through one of said heads, and in its other extreme position to close the air passage through the other of said heads, and caps detachably applied to the ends of said casing and having screens covering the outer portions of said funnel shaped heads.

3. In an air cleaning and ventilating device, the combination with an anchoring board having an air passage therein, of a casing having open ends and provided at one side with a boxlike structure connecting the interior thereof to the air passage in said anchoring board, funnel-shaped heads applied to the ends of said casing and air cleaning tube within said casing connected at its ends to said funnel-shaped heads, and an air pressure actuated gate slidably mounted within said cleaning tube and adapted in one position to close the air passage through one of said funnel-shaped heads, and in its other extreme position, to close the air passage through the other of said funnel-shaped heads.

4. In an air cleaning and ventilating device, the combination with a casing having funnel-shaped heads and provided with an air discharge passage at one side, of a skeleton frame work connecting said heads, a cleaning tube extending from head to head and surrounding said skeleton frame, a guide rod supported by said heads and extending axially through said cleaning tube, and a gate slidably mounted on said rod and adapted in one position to close the air passage through one of said funnel-shaped heads, and adapted in its other position, to

close the air passage through the other of said funnel-shaped heads.

5. In an air cleaning and ventilating device, the combination with a casing having open ends and an intermediate discharge passage, of a cleaning tube within said casing having its ends connected to the ends of said casing and its body portion interposed between the ends of said casing and the said discharge passage, and a gate movable within said cleaning tube to close either of the ends of said casing and thereby direct the air through said cleaning medium, regardless of which end of said casing is closed by said gate.

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

HENRY M. ROBERTSON.

Witnesses:
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HARRY D. KILGORE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."