C. L. HARRISON.

CAR VENTILATOR.

APPLICATION FILED MAY 31, 1918.

1,308,737.

Patented July 1, 1919.

3 SHEETS—SHEET 1.

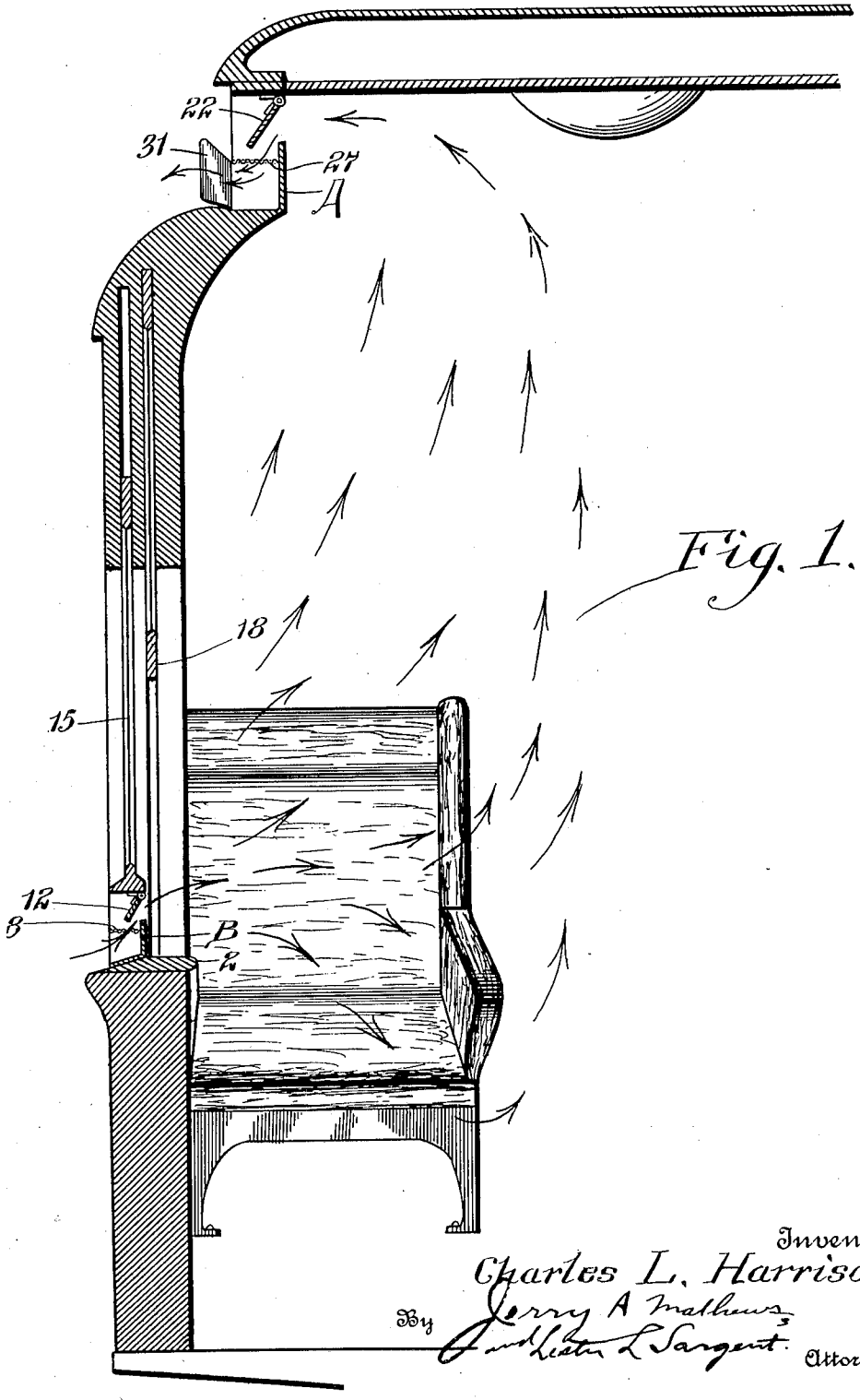


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

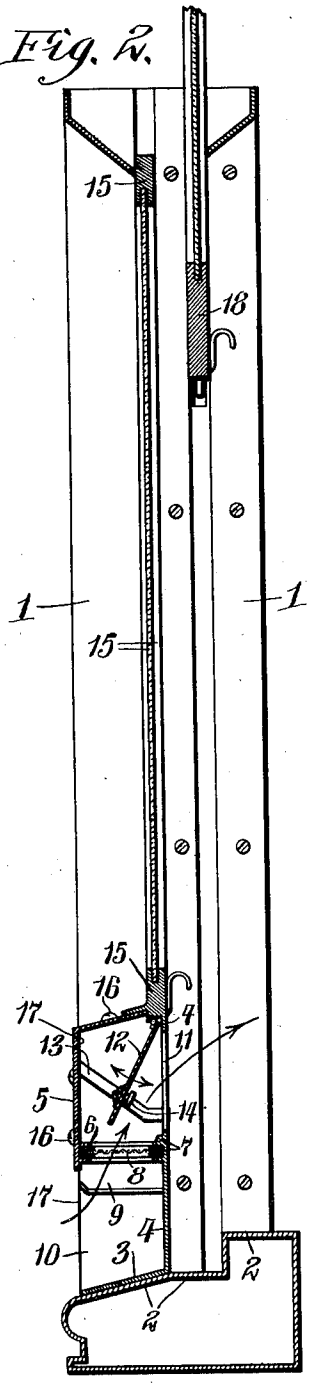
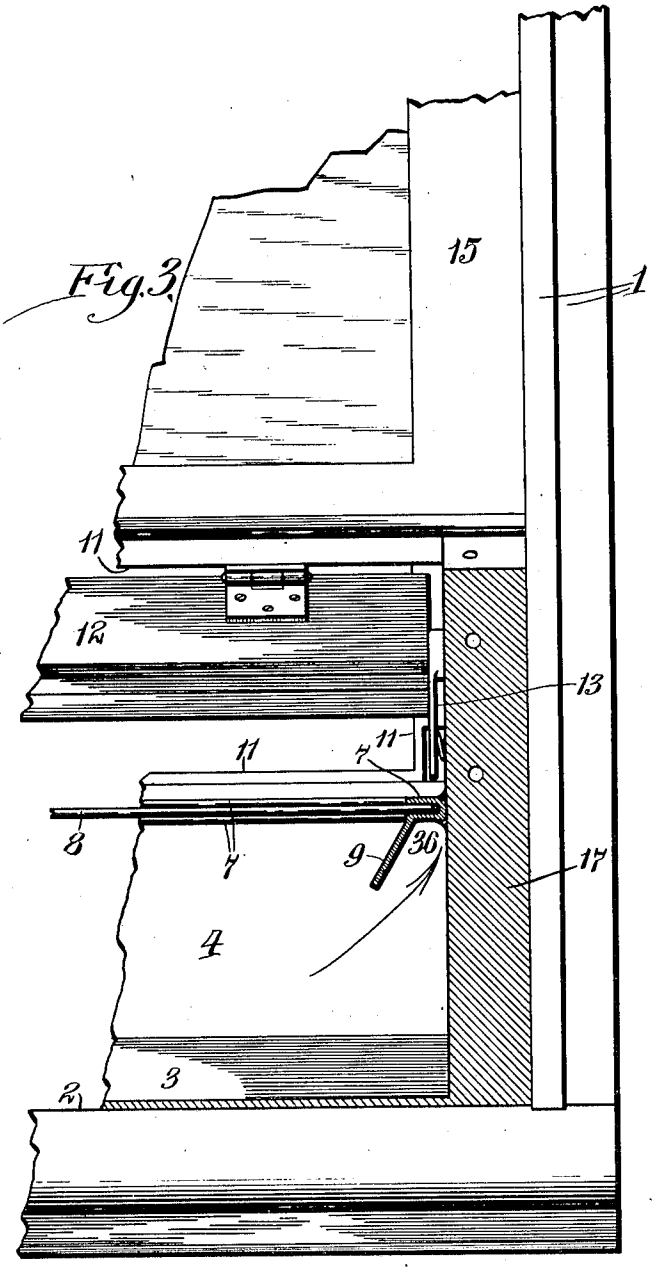


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

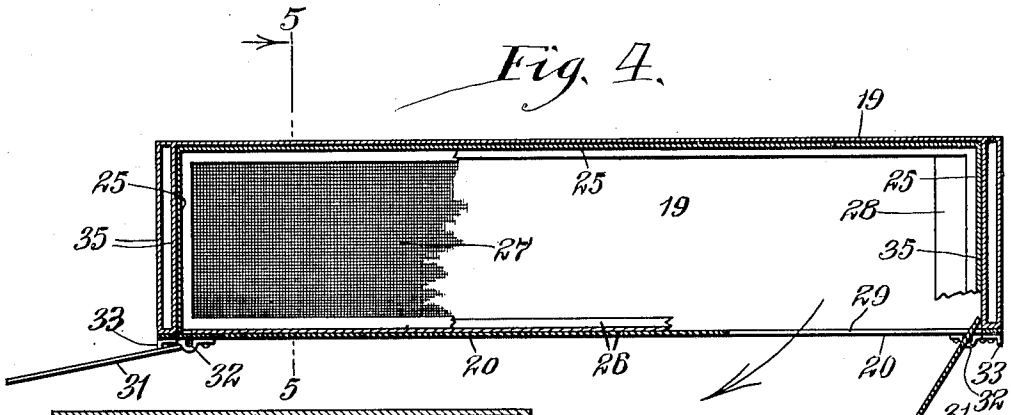
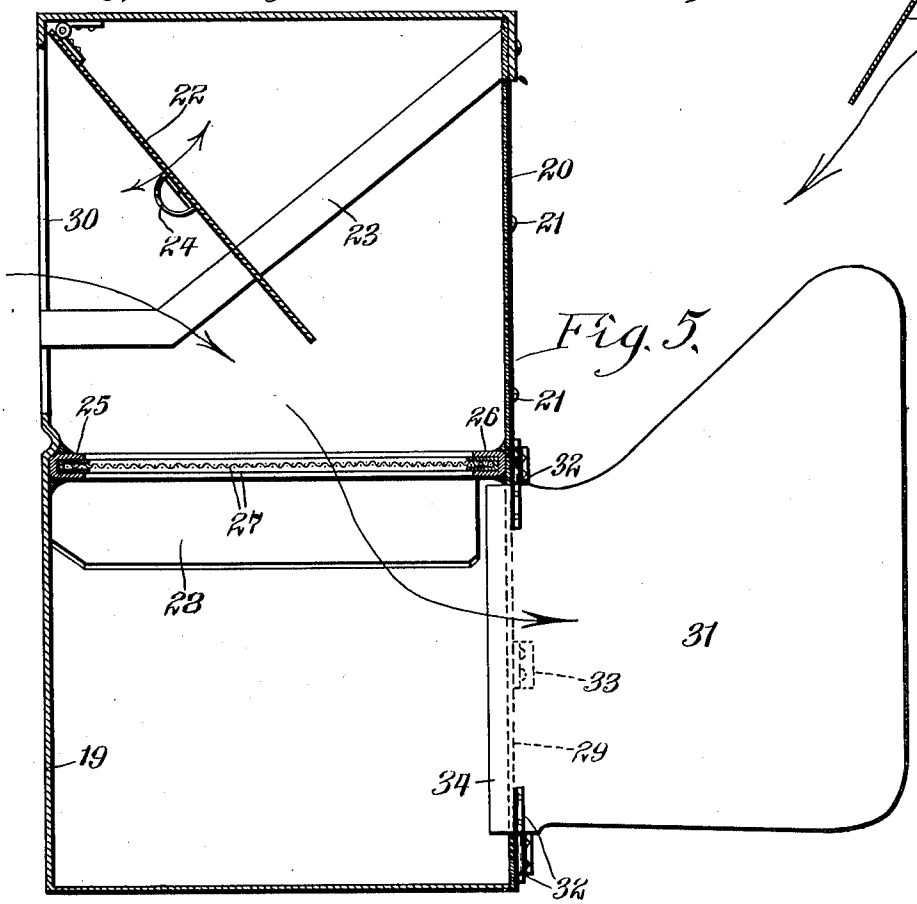


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES L. HARRISON, OF RICHMOND, VIRGINIA.

CAR-VENTILATOR.

1,308,737. Specification of Letters Patent. Patented July 1, 1919.

Application filed May 31, 1918. Serial No. 237,493.

To all whom it may concern:

Be it known that I, CHARLES L. HARRISON, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented new and useful Car-Ventilators, of which the following is a specification.

The object of my invention is to provide certain improvements on ventilators, to make the screen member in such ventilators readily removable and to prevent cinders from drifting against the outer ends of the screen and ultimately injuring the screen. It is further my object to provide a novel exhaust ventilator having novel automatically operated deflectors arranged to create a vacuum sufficient to exhaust the foul air from the top of the car when the train is in rapid motion in either direction. It is further my object to introduce an improved system of ventilation by the novel means hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical transverse section through one side of a car, illustrating the operation of my ventilating system;

Fig. 2 is a vertical section through a car window to which one of my ventilators is applied;

Fig. 3 is an enlarged detail view, partly in section of one side of my ventilator;

Fig. 4 is a horizontal section through my exhaust ventilator; and

Fig. 5 is a vertical section of same, on line 5—5 of Fig. 4.

Like characters of reference designate like parts throughout the several views.

Referring to the accompanying drawings 1 designates the window frame and 2 the sill. I provide an intake ventilator having a bottom wall 3, inner wall 4, outer removable wall 5, side walls 17, removable screen 8, ventilator door 12, knob 14 for the door, and friction arm 13 bearing against the edge of the ventilator door to hold it in any of its adjusted positions. Members 5 and 4 are arranged with their free edges in spaced overlapping relation, but are provided with novel channeled portions 6 and 7 which serve as holders for the removable screen 8, and extend all around that member. When it is desired to remove the screen, the screws 16 (or other fastening members) are removed, wall 5 is taken off and the screen pulled out. This permits of readily replacing the screen in case it becomes damaged in any manner. At opposite sides of the ventilator I provide angularly positioned cinder guards 9 disposed transversely of the ventilator to prevent cinders from being forced through the ends of the mesh by the air current which is much stronger at the ends opposite to the direction the car is moving. The guards prevent fine cinders being forced through the mesh. Wall 5 and ventilator door 12 are mounted on window sash 15 in some suitable manner, such as illustrated in Fig. 2. In the drawing, 18 designates the inner window.

For application to the deck of the car, I have devised a novel exhaust ventilator having an inner wall 19 and an outer wall 20, the free ends of which are disposed in an overlapping relation. I further provide a suitable removable screen 27 mounted in the channeled members or screen holders 25 and 26, as shown. I further provide a ventilator door 22 swingably mounted adjacent to the inner opening 30. A friction arm 23 engages the edge of door 22 to hold it in adjusted position. A suitable spring (concealed behind friction arm 23) presses arm 23 outwardly against the edge of the door to hold the door in any desired position. Friction arm 13 of the intake ventilator is likewise actuated by a similar concealed spring of any suitable type, such as described and shown in my prior Patent 1,244,602. I provide cinder guards 28 arranged transversely of the ventilation opening just below the ends of the screen, the guards being slantingly disposed to prevent cinders being forced through the screen at the ends where the air current is much stronger at the ends opposite to the direction the car is moving, and where fine cinders might penetrate the screen. Adjacent the outer openings 29 of the exhaust ventilator, I provide deflector vanes 31, of the shape shown, swingably mounted on suitable pivots 32 to the ventilator frame.

Deflector vanes 31 are limited in their outward movement by stops 33, and are limited in their inward movement by side portions 35 of the exhaust ventilator, against which the inner extensions 34 of the vanes 31 abut, as illustrated in Fig. 4. As illustrated in Fig. 5, outer wall 20 of the exhaust ventilator is removably secured to the side portion 35 by screws 21, thus permitting of the convenient removal of the wall and of the screen 27.

In operation a current of air flows into the intake ventilator B, entering the opening 10 and passing through screen 8 and then through the inner opening 11 to the interior of the car. The current of air moves in a general inward and upward direction to the top of the car where it is drawn out through the exhaust ventilator A, as illustrated by the arrows in Fig. 1. The deflector vane 31 projects from the forward end of the ventilator opening 20 at an angle of approximately 45 degrees as shown in Fig. 4, when the train is moving in a forward direction at any but a very slow speed. In consequence of this position of the deflector vanes a sufficient vacuum is created to exhaust the foul air from the interior of the car, the air passing through the inner ventilator opening 30, screen 27, and outer ventilator opening 29. If the direction of travel of the train is reversed the two deflector vanes 31 automatically reverse their positions and the ventilation is maintained as above described. This is important as considerable inconvenience has been caused to the occupants of sleeping-cars equipped with deflectors having a fixed position as cinders, dust, or rain may be directly forced into the berth when the direction of movement of the train is reversed.

When the train is stationary ventilator A ceases to act as an exhaust device and operates as an ordinary ventilator. That is, there would be an intake of air to some extent when the car is stationary. A slight intake of air would continue when the train started to move, but as soon as it travels at a more than very slow speed the deflectors would create sufficient vacuum to exhaust the air. My deflector vanes project only about four inches, which has been found sufficient to create a vacuum along the ventilator opening for a space of about 19 inches. The air striking against the slanting deflector vanes is thrown out in the same direction as the deflector, thus producing the exhausting effect mentioned. The guards 9 and 28 have been found to be useful and necessary to prevent the screen wearing out near its ends.

By providing outer walls 5 and 21 which are removable, a convenient means for readily removing screens 8 and 27 respectively is provided, so that the screens may be replaced if injured.

I am aware that deflector vanes have heretofore been used, but they have not been used in connection with exhaust ventilators on the deck of cars, nor adapted for automatic operation within the necessary limits of movement and position described, and where there is no obstruction to the view by their employment.

It will be observed that my invention is applicable to car windows of ordinary construction without any elaborate re-arrangement or changes such as has prevented many inventions in the past from being of commercial value.

An important advantage is obtained by the provision of means for readily removing the screens and in the positioning of the cinder guard in that the cost of repairs is reduced to the minimum. At the same time the advantages afforded by the provision of ventilating doors that may be operated by the passenger permitting him to regulate the ventilation to suit his individual taste is retained.

What I claim is:

1. In a ventilator of the class described, a ventilator frame, said frame having spaced walls the respective panels having their free edges extending beyond each other, a screen releasably supported by and between said walls in proximity to their free edges and cinder guards positioned transversely of the opening between the walls at either end of the ventilation opening in proximity to and immediately beneath the end portions of the aforesaid screen, to protect the ends of the screen from becoming quickly worn by the friction of fine cinders striking near its ends as shown.

2. In a device of the class described, an exhaust ventilator having parallel spaced panel-like walls, the edge of the inner wall extending up beyond the plane to which the outer panel descends, the outer wall being detachable, a screen releasably supported between said walls, means for regulating the area of the ventilating passage, and self-adjusting deflector vanes positioned at either end of the ventilator to create an outward draft through the ventilator opening when the car is in rapid motion in either direction, said deflector vanes being swingably mounted on vertical axes and mounted to abut against the ventilator frame and limit the rearward swinging movement only of the forward deflector vane relative to the direction of travel of the car to an angle of approximately 45 degrees to produce the desired exhaust draft when the car is in rapid motion.

3. An exhaust ventilator having upwardly flaring deflector vanes pivotally mounted at either end of the ventilator adjacent the ventilator opening, the rearward vane relative to the direction of travel being freely swingable rearwardly adjacent the longitudinal wall of the ventilator frame, and the forward vane relative to the direction of travel of the car being limited to a freely swingable movement to a suction creating angle of 45 degrees, approximately, relative to the longitudinal wall of the ventilator frame, each of said vanes having their inner vertical edge portions projecting within the ventilator opening to engage and limit the

swinging movement of the vanes in a rearward direction relative to the travel of the car to create an exhaust draft through the ventilator when the car is in rapid motion, substantially as described.

4. In a ventilator of the class described, a ventilator frame, said frame having spaced ventilating walls, the unattached horizontal edges of which walls extend past the same horizontal plane, a screen releasably supported by and between said spaced walls in proximity to the unattached edges of said walls, and cinder guards positioned transversely of the opening between the ventilator walls at either end of the ventilator opening in proximity to and immediately beneath the end portion of the aforesaid screen, whereby to protect the ends of the screen from becoming quickly worn by the friction of fine flying cinders.

5. In a device of the class described, an exhaust ventilator having upright substantially spaced walls, said walls having their free edges extending past the same horizontal plane, the outer wall being detachable, a screen releasably supported from the edges of said walls and extending between same, means for regulating the area of the ventilated passage, and self-adjusting deflector vanes positioned at either end of the ventilator and adapted to create an outward draft through the ventilator opening when the car is in rapid motion in either direction, said deflector vanes being swingably mounted on vertical axes and disposed in position to abut against the ventilator frame to limit the rearward swinging movement of the forward deflector vane relative to the direction of travel of the car to an angle sufficient to produce an exhaust draft when the car is in rapid motion, substantially as set forth.

CHARLES L. HARRISON.