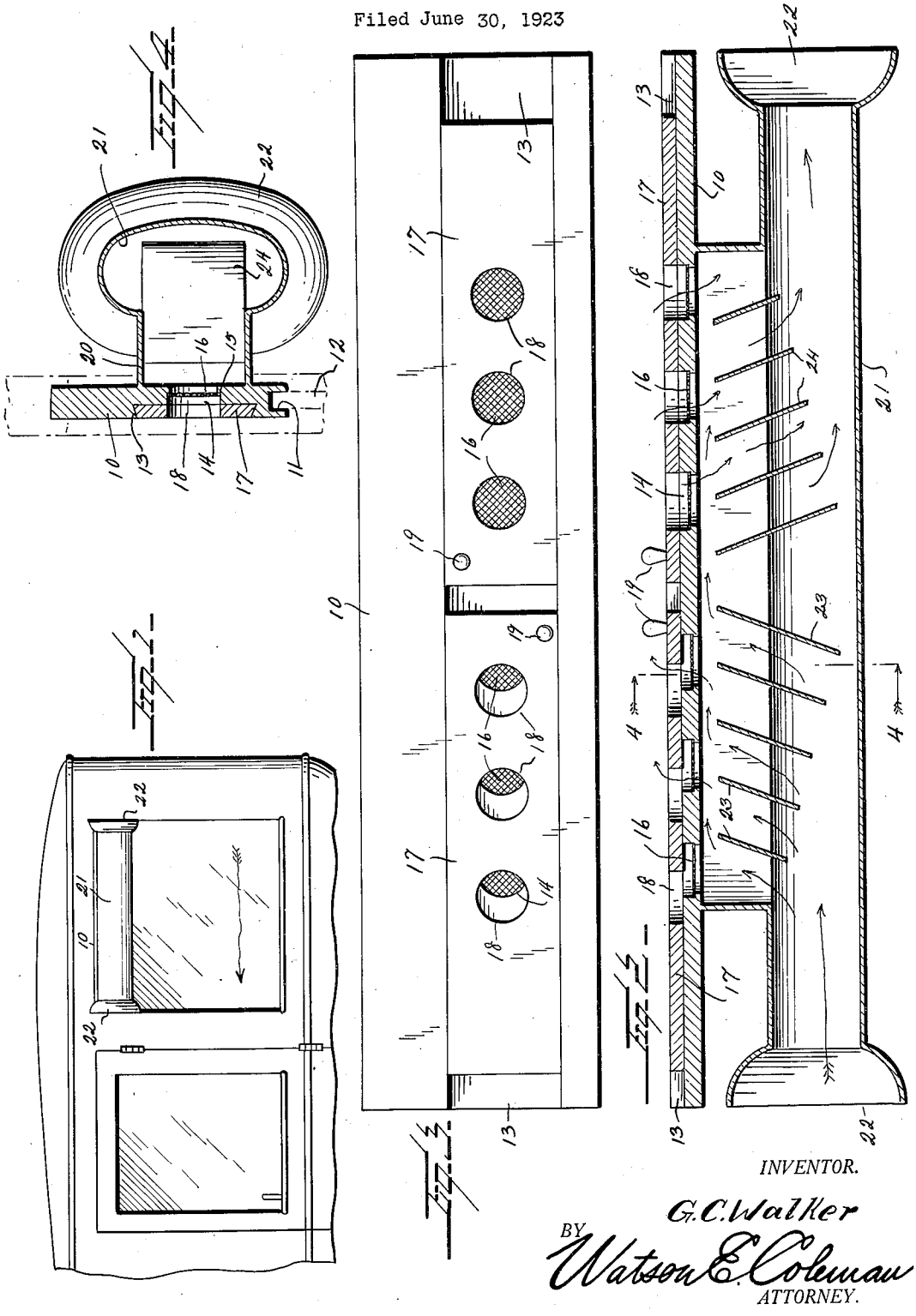
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G. C. WALKER

VENTILATOR

Filed June 30, 1923



INVENTOR.

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UNITED STATES PATENT OFFICE.

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VENTILATOR.

Application filed June 30, 1923. Serial No. 648,723.

To all whom it may concern:

Be it known that I, GROVER C. WALKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ventilators, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to ventilators, and particularly to that class of ventilators which are illustrated in my Patent #1,462,924, granted on the 24th of July, 1923.

The general object of the present invention is to provide a ventilator for use particularly on moving vehicles, so constructed that as the vehicle moves in one direction the air will be forced into the vehicle and the foul air drawn out.

A further object is to provide a device of this kind including a supporting member having screened ventilating openings, a casing into which the ventilating openings open, the casing carrying a series of deflectors of a particular form and arrangement, and a barrel or air duct open at its opposite ends through which air is caused to pass by the motion of the vehicle, the deflectors being so formed as to cause a portion of this air to be discharged into the interior of the vehicle and a further movement of the air in this barrel or air duct causing the foul air to be withdrawn from the vehicle.

A still further object is to provide a device of this character which is so constructed that it will not rattle, jar loose, and which may be cheaply made and readily put in place.

Another object is to so construct the device that cinders or dust which would normally be discharged against the screened openings and collect there, will be carried outward so as to leave the screened openings relatively clean.

Still another object is to provide means for controlling the effective area of the screened openings so as to thereby control the amount of air drawn into the vehicle or discharged therefrom, or prevent any air from being forced into the vehicle but permit foul air to be discharged therefrom, or vice versa.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a fragmentary elevation of a motor car with my ventilator applied to the window thereof;

Figure 2 is a longitudinal horizontal section through the ventilator;

Figure 3 is an inside elevation of the ventilator;

Figure 4 is a cross section on the line 4—4 of Figure 2;

Referring to these drawings, 10 designates a longitudinally extending member which may be made of metal or wood and which is designed to be disposed in the wall of the vehicle and act as a support for the remainder of the ventilator. This member 10. as illustrated in Figure 4, is longitudinally grooved on its lower face, as at 11, so that the window 12 of the car may be inserted in this groove. The inside face of this member 10 is longitudinally recessed, as at 13. At intervals this member 10 is formed with apertures 14 each formed with a shoulder 15 upon which a screen 16 of fine wire mesh may be disposed. The groove 13 intersects these openings 14, and disposed in this groove 13 are a pair of sliding dampers or valves 17. Both dampers are of the same character and, therefore, the description of one applies to the other. As will be seen from Figure 4, the groove 13 is undercut and the damper plates 17 are formed with beveled edges engaging the undercut walls of the groove 13. Each damper plate is formed with a plurality of openings 18 equal in area to the area of the openings 14 and adapted to register therewith. When the damper is shifted in one position, the openings 18 register with the openings 14 and when in another position they will be out of register and the plates 17 will prevent any passage of air through the openings 14. They can likewise be shifted, as illustrated in Figure 3, so as to only partially cut off the passage of air. Each damper plate 17 carries a handle or knob 19 whereby it may be manipulated and one damper plate is independent of the other.

Extending outward from the supporting plates 10 is a rectangular casing 20. This casing has upper and lower walls and end walls, and the openings 14 open into this casing. The outer end of the casing opens into a longitudinally extending barrel or

air duct 21 which is open at its opposite ends, these opposite ends being preferably flared, as at 22. The barrel 21 is longer than the casing 20 and, as illustrated, is approximately as long as the supporting plate 10. This barrel is disposed entirely upon the exterior of the vehicle and, therefore, it will be obvious that as the vehicle moves in one direction air will traverse the barrel in the direction of the arrows in Figure 2 from end to end thereof, and that if the vehicle as, for instance, a railway car or street car, should travel in the opposite direction the air would enter the barrel reversely.

Mounted in the casing 20 and attached to the upper and lower walls thereof, or mounted in any other manner, are the deflecting vanes 23 and 24. I have illustrated five vanes 23 disposed in a series beginning adjacent one end of the ventilator and extending nearly to a point adjacent the middle of the ventilator. These vanes are parallel to each other and are inclined and are disposed at less than a right angle to the axis of the duct 21. The inner ends of all of the vanes 23 are approximately in the same plane but are spaced from the inner face of the member 10. The first vane of the series nearest one end wall of the casing is relatively narrow and projects only a short distance into the air duct 21, the next vane 23 projects into the air duct slightly further, the next still further, and so on until that vane which is nearest the middle of the air duct projects into the air duct nearly to the outer wall thereof but not quite. The series of vanes 24 are of the same character as the vanes 23 but are reversely angled, as shown most clearly in Figure 2, and gradually grow smaller from the vane nearest the middle of the air duct to the vane adjacent the end.

With this construction, assuming that the vehicle is traveling in the direction of the arrow in Figure 1, the air will be forced along the tubular duct 21 in the direction of the arrow in Figure 2 and the greater portion of this air will be intercepted by the vanes 23 and deflected in the direction of the same arrows and forced through the screened ventilating openings into the interior of the car. The passage of air along this duct in the direction of the arrow in Figure 2 will tend to draw air out through the passages between the vanes 24, as illustrated by the small arrows in Figure 2, and draw air out from the interior of the car. Thus there will be a continual entrance of fresh, pure air into the car and a continual discharge of foul air out between the vanes 24 and into the duct 21. The amount of air which will be discharged into the interior of the car through the openings 14 will, of course, depend upon the adjustment of the controlling plates or dampers 17. If the damper on the left hand side of Figure 1 is only partially in register with the openings 14, only a certain amount of air will be discharged into the interior of the car. If the dampers 17 have their openings in full register with the openings 14, it will be obvious that a full amount of air will be discharged into the car or removed therefrom.

It will be seen that in this device there are no pivoted members or the allied pivot pins, connecting rods, or movable controlling mechanism. Thus there is nothing to rattle or get out of order. When the air passes through the spaces between the vanes 22, the air will strike against the screen 16 and if there be cinders or dust in this air the current of air which is induced between the inner ends of the shutters and the confronting face of the member 10 will carry the cinders or the dust away to the opposite end of the frame where it will be caught up by the outgoing current and pass out into the air duct and so out into the atmosphere. It will be obvious that this whole device except, of course, the sliding dampers 17 can be cast from metal as, for instance, aluminum or can be formed up out of sheet metal. Inasmuch as all removable parts are done away with the device may be made at relatively low cost, requires no repair, and will last for a long time.

I claim:—

1. A ventilator comprising a supporting member having a series of screened openings, a casing extending outward from the member and firmly engaged therewith, a longitudinally extending, relatively large air duct into which the casing opens, the air duct being open at its opposite ends and two series of deflector vanes mounted within the casing, the inner ends of all of the deflector vanes being disposed adjacent to but spaced from the supporting member, the outer ends of all of the deflector vanes extending into the air duct, the deflector vanes successively from each end of the casing increasing in length to the middle of the air duct and casing and projecting successively further into the air duct, those deflector vanes disposed nearest the middle of the casing having their outer ends spaced from the wall of the air duct.

2. A ventilator comprising a supporting member having a series of screened openings, a casing extending outward from the member and firmly engaged therewith, the casing being rectangular in form, a longitudinally extending, relatively large air duct into which the casing opens, the air duct being open at its opposite ends and flared, and two series of fixed deflector vanes mounted within the casing, the inner ends of all of the deflector vanes being disposed adjacent to but spaced from the supporting member, the outer ends of all of the deflector vanes

extending into the air duct, the deflector vanes successivelv from each end of the casing increasing in length to the middle of the air duct and casing and projecting successively further into the air duct, those deflector vanes disposed nearest the middle of the casing having their outer ends spaced from the wall of the air duct, the face of the supporting member being grooved, and slides mounted in said groove and having openings, the slides being shiftable to carry their openings into or out of register with the screened openings in the member.

In testimony whereof I hereunto affix my signature.

GROVER C. WALKER.