A. F. KNOWLES.

VENTILATING VALVE.

APPLICATION FILED OCT. 7, 1916.

1,380,567. Patented June 7, 1921.

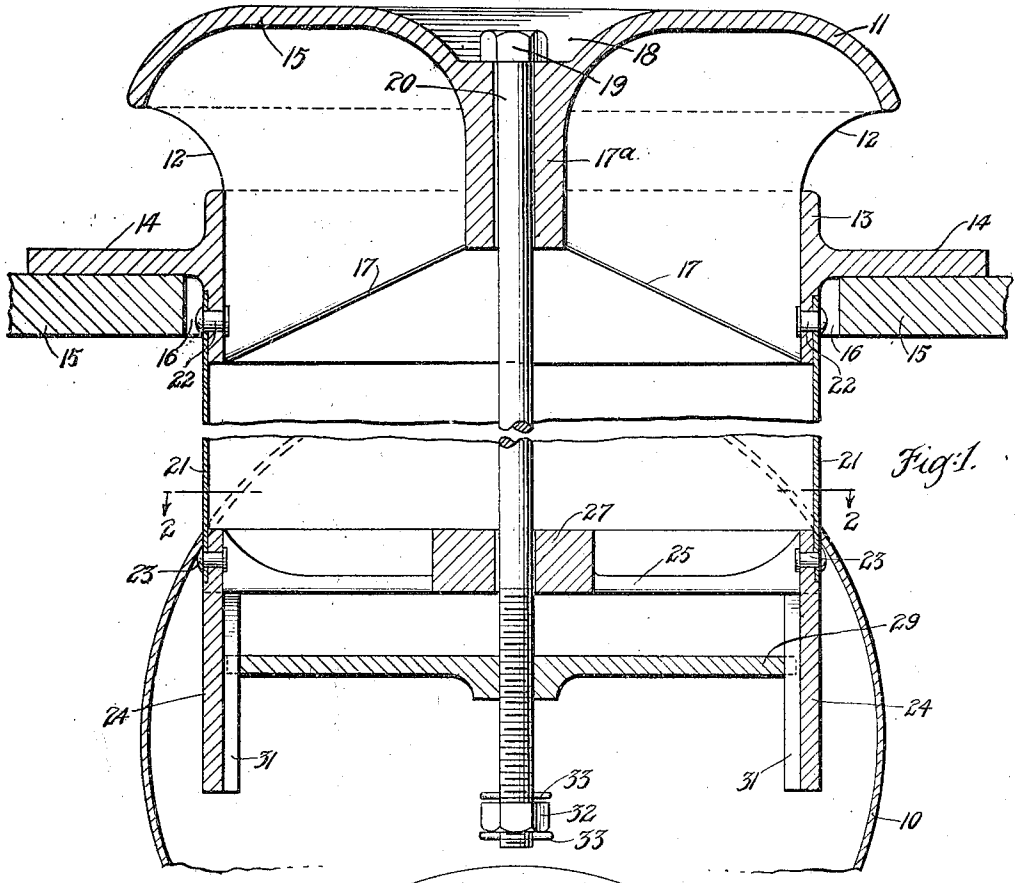


Fig. 1.

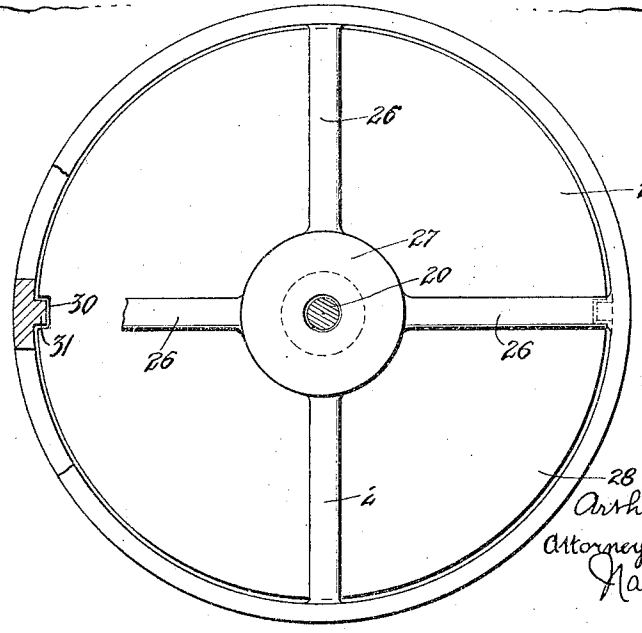


Fig. 2.

Inventor
Arthur F. Knowles
Attorney
Nathan Cohen

UNITED STATES PATENT OFFICE.

ARTHUR F. KNOWLES, OF MONTCLAIR, NEW JERSEY.

VENTILATING-VALVE.

1,380,567. Specification of Letters Patent. Patented June 7, 1921.

Application filed October 7, 1916. Serial No. 124,435.

To all whom it may concern:

Be it known that I, ARTHUR F. KNOWLES, a citizen of the United States, and a resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Ventilating-Valves, of which the following is a specification.

This invention relates in general to ventilating valves, and particularly to a device adapted to be used in connection with ventilating systems to serve both as a distributer of the ventilating fluid from a main duct to secondary or branch ducts, and as a means for effectively controlling and regulating the volume of ventilating fluid which passes from the main duct into a secondary duct branching off therefrom.

Ventilating valves of this general character have heretofore been located directly over or extending into the secondary duct or sleeve branching off from the main ventilating duct. This arrangement has the disadvantage that the air supply cannot very effectively be controlled with a valve located so far from the source of supply, and the velocity of the air at the exit is not greatly diminished. These valves heretofore also had the means for operating the valve mechanisms exposed and could easily be tampered with. As these valves are usually located in readily accessible places, such as under seats in theaters, etc., this has given rise to trouble and annoyance.

One object of this invention, therefore, is to provide a ventilating valve which shall serve to regulate within the main duct the volume of ventilating fluid passing from the main duct into a secondary or branch duct, thus giving the air space to lose its velocity in the branch duct and to emerge from the outlet without causing any appreciable draft.

Another object of this invention is to provide a ventilating valve of the character described, which shall have its valve parts so disposed as not to interfere with or obstruct the passage of the ventilating fluid through the main duct.

A further object of this invention is to provide a ventilating valve of the character described which shall be neat, compact, durable, easily operable, and still not easily tampered with.

Further objects and advantages will appear from the following description and the features of novelty will be particularly pointed out in the claims.

In the accompanying drawing,

Figure 1 is a cross sectional elevation of the ventilating valve in place in the main duct.

Fig. 2 is a plan view, partly in cross section, taken along the line 2—2 of Fig. 1.

Referring in detail to the drawing, it will be understood that 10 is the main ventilating duct through which flows the supply of ventilating fluid. The ventilating valves are inserted into this duct at desired points conveniently located, as for instance under the seats in a theater or auditorium, and when the valve is open, some of the supply ventilating fluid is admitted into the hood 11, where it escapes through the openings 12.

The hood member 11 has a ring 13 and a flange 14 integral therewith resting on the floor 15 over the opening 16. If desired, the flange 14 may, of course, be provided with holes to receive bolts whereby the ring may be bolted to the floor. As will be seen from the drawing, the hood is of the mushroom type and the inner surface thereof deflects and distributes the air or other ventilating fluid through the openings 12. To insure rigidity and strength, this hood has the spider 17 formed integrally therewith radiating from the hub 17^a. The hood 11 is further formed with a central depression 18 in its top surface into which sets the head 19 of the long thread bolt 20 which passes through the hub portion 17^a of the hood. It will thus be seen that although the head 19 is readily accessible, it is so set into the top surface of the hood as to be capable of manipulation only by the application of some special tool, such as a brace. The fingers or even a wrench could hardly be of avail in turning the bolt 20.

A sleeve 21 is riveted to the hood at the lower end thereof by means of the rivets 22, and to the bottom of this sleeve are riveted by means of the rivets 23 the guide-pieces 24 and a spider or wheel 25 consisting of a number of arms 26 radiating from a hub 27, and forming the sectional openings 28.

The valve mechanism proper consists of the long threaded bolt 20 which passes cen-

trally through the hub 27 and on which is threaded the disk 29 formed at its circumference with the recesses 30 so as to move along the guides 31 of the guide-pieces 24. The long threaded bolt is provided at its extremity with a nut 32 held rigidly in position between the fixed disks 33, thus limiting the downward travel of the disk 29 as up to the upper disk 33.

The operation of the valve will now be clear. It will, of course, be understood that the main duct 10 runs perpendicular to the plane of the paper in the drawing. When the disk 29 is in the position shown in the drawing, air from the main duct passes from over the top of this plate through the openings 28 of the spider 25 into the sleeve 21, strikes against the inner surface of the hood and is thus deflected and distributed through the openings 12 into the room. By properly manipulating the head 19, the disk 29 may be made to travel up or down on the bolt, thus decreasing or increasing at will the volume of air that passes from the main duct into the hood. Thus, when the disk 29 is in its extreme upper position in contact with the collar 27, it closes the openings. It will be clear that the disk 29 is parallel to the direction of flow of the ventilating fluid in the main duct. The fluid, therefore, flows easily over and beneath it and is in no way interfered with by the valve plate. By reason of the adjustment of the valve being effected within the main duct, the air after passing through the restricted passage as adjusted by the valve plate expands in the branch duct or sleeve 21, and thus emerges from the large openings 12 with very low velocity, and distributes evenly in all directions. By reason of the low velocity of exit of the air, assurance is always had that no draft is caused while perfect ventilation is always obtained.

It will be understood, of course, that many variations may be resorted to without departing from the scope of the invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A ventilator adapted to set into a main ventilating duct comprising a stationary portion having openings in the walls thereof, disposed above said main duct, and a movable valve head extending into the main duct and adjustable vertically, relative to said stationary member, the ventilating fluid adapted to flow from the main duct into the space between said valve head and said stationary member and through the openings in the latter.

2. A ventilating valve comprising a valve portion adapted to set into a main ventilating duct, said valve portion comprising an adjustable valve head extending into the main duct disposed parallel to the direction of flow of the ventilating fluid in the main duct in every position of adjustment.

3. In combination with a main ventilating duct, a ventilator comprising a ventilating valve, a spider, a threaded bolt adapted to pass through said spider, means threaded on said bolt, adapted to travel thereon, and vary the space between it and the spider, said means disposed parallel to the direction of flow of the ventilating fluid in every position of its adjustment.

4. A ventilator comprising a distributing portion for the ventilating fluid, a sleeve or duct attached to said portion, an open spider rigidly mounted in said sleeve, a threaded bolt passing into the distributing portion from the outside thereof, and through said spider, a valve plate threaded on said bolt at its lower extremity, said plate being adapted to travel thereon and vary the space between the upper surface of the plate and the spider.

5. In a ventilator, in combination with a distributing member a valve portion adapted to vary the amount of ventilating fluid admitted into the distributing member, said valve portion consisting of a sleeve attached to the distributing member at the lower portion thereof, an open spider rigidly mounted in said sleeve in communicative relation with the distributing member, a threaded bolt passing from the distributing member into the sleeve and through the spider, a plate threaded on said bolt at the lower extremity thereof adapted to travel thereon, and guide members for said plate attached to the sleeve at the lower extremity thereof.

6. A ventilating valve comprising a sleeve, a hub, and arms radiating from said hub, a threaded bolt adapted to pass through the spider hub, a plate threaded to said bolt at the lower portion thereof, and guide members for said plate attached to the sleeve at the lower extremity thereof.

Signed at New York city, in the county of New York and State of New York, this 16th day of August, A. D. 1916.

ARTHUR F. KNOWLES. [L. S.]

Witnesses:
F. S. AMERMAN,
W. FORBES MURRAY.