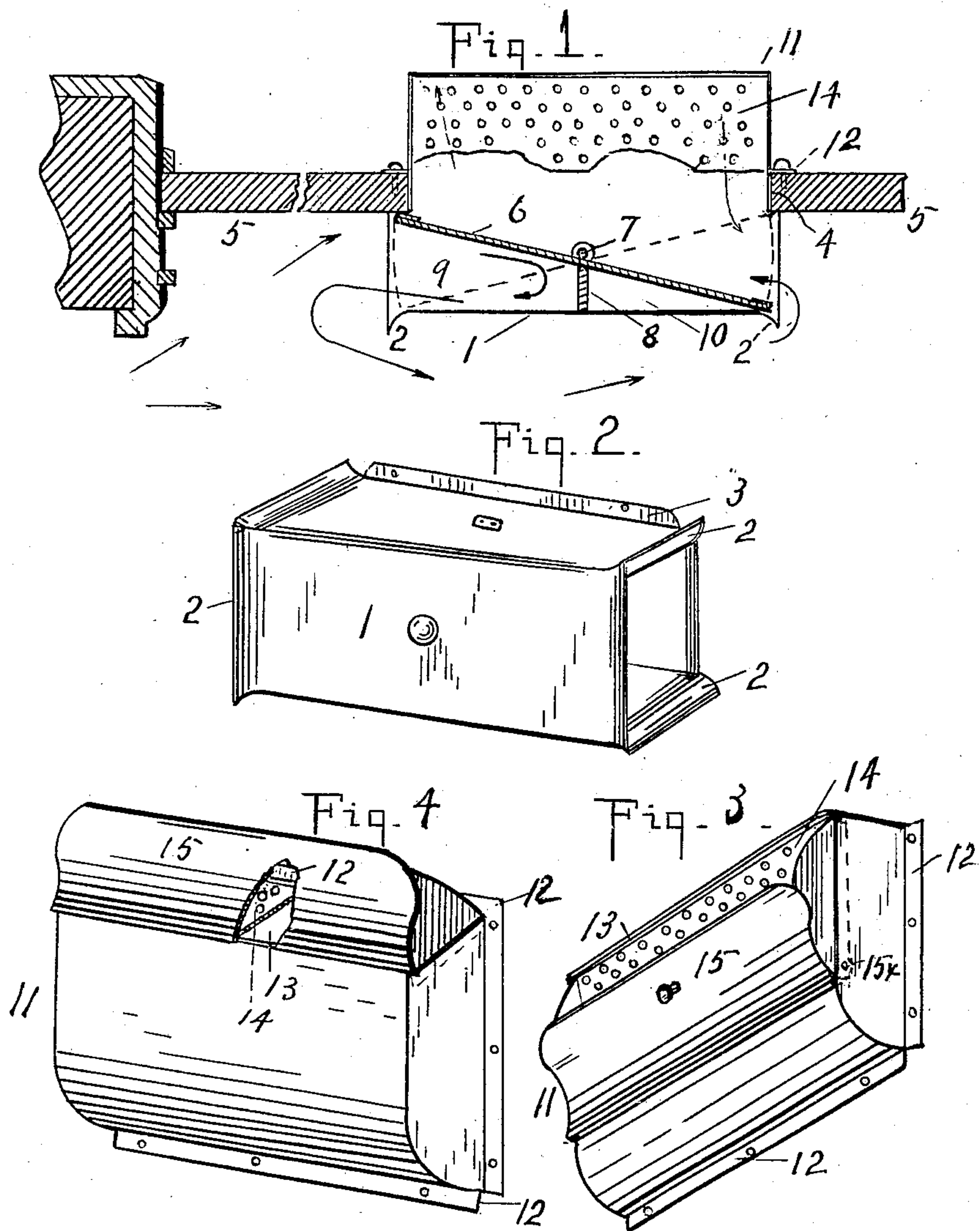


No. 865,518.

PATENTED SEPT. 10, 1907.

C. H. OCUMPAUGH.  
VENTILATOR.

APPLICATION FILED APR. 27, 1906.



WITNESSES  
C. M. Catlin  
Geo. E. Pursh.

INVENTOR  
C. H. Ocumpaugh  
By Benj. R. Catlin  
Attorney



# UNITED STATES PATENT OFFICE.

CHARLES HERBERT OCUMPAUGH, OF ROCHESTER, NEW YORK.

## VENTILATOR.

No. 865,518.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed April 27, 1906. Serial No. 313,947.

*To all whom it may concern:*

Be it known that I, CHARLES HERBERT OCUMPAUGH, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in 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 pertains to make and use the same.

10 The invention relates to ventilators, and has for its object to provide efficient means for ventilating a room or closed space that will act promptly and certainly under the influence of air currents of any strength.

15 The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawing which illustrates the invention and forms a part of the specification, Figure 1 is a horizontal section of the improved ventilator; Fig. 2 is a perspective of a ventilator hood; Fig. 3 is a perspective of a diffusion box; Fig. 4 is a similar view of a modified form of box.

25 Numeral 1 denotes a hood open on one side and at its ends, which latter by preference have outwardly flaring lips as illustrated at 2. The hood is provided with flanges 3 having screw holes for securing it about an opening 4 in a sash rail 5 or elsewhere.

6 indicates a two-winged valve extending from top to bottom and end to end of the hood and pivoted therein.

30 7 indicates the valve pivot which preferably is situated in the center both lengthwise and transversely of the hood.

8 denotes a partition extending from the valve adjacent the pivot to the closed side of the hood.

35 The construction is such that when the valve closes one end of the hood, as shown at the left in Fig. 1, it, together with the partition and the adjacent wall of the hood, incloses a bay or pocket 9. At such time the other wing of the valve together with the partition and adjacent walls of the hood, include a closed chamber 40 10. The object of the partition is to prevent passage of air below the valve and the hood and it is sufficient if the parts be so constructed and arranged as to effect this purpose.

45 In operation if air enters the open end of the hood and back of the valve, as indicated at the left in Fig. 1, it is reflected back out of pocket 9 and flowing along the hood on its exterior will be turned, more or less of it, into the opposite end of the hood and escape through opening 4 to counterbalance air escaping from the space 50 to be ventilated, this effect being insured by pressures due to unequal temperatures.

55 When air enters the hood on the inside of the valve, that is between it and the open or apertured side of the hood, it acts upon the farther end of the valve and moves it to the front of the hood thus producing a closed pocket at the entrance end and insuring the operation

just above described. Thus in any case the pocket end of the hood will be open toward the air current whichever direction it flows.

Referring to Fig. 1 it may be noted that the exterior 60 fresh air current is indicated as proceeding from the left. So long as the current continues, or in case it simply fails without other change than that the external air becomes stationary, the valve is not moved but remains open for escape of foul air which tends to 65 hold the valve stationary. Let a change of wind be assumed and a current of fresh air from the right. It would then pass by the short partition, and a part of it outside of the diffusion box, and such part would strike the wing 6 moving it and the opposite wing so that air 70 would enter behind the latter, the combined effect being to throw the valve to the situation indicated by the broken line in said figure. This operation and the guiding of a reverse current of fresh air into the diffuser would be defeated were the partition situated both 75 sides of the valve and extended toward the diffuser box to a plane coincident with the glass, wall or base 5 and an opening left behind the valve on its windward side, as heretofore practiced. Further, when the valve is straight, as shown and preferred, the described operation is aided by the situation of the leeward wing more 80 directly in the path of the initial fresh air current. It also enables the valve to be more perfectly balanced whereby its movements though more certain are made more sensitive than in the case of curved or bent valves. 85 Preferably the valve pivot is situated at the longitudinal and transverse center of the hood.

With the above described hood is combined what is termed an air diffusion box 11. This has closed ends and an open side and flanges 12 whereby it can be secured to a sash rail or the like on the interior of the room or space to be ventilated in manner to freely communicate with the hood. The box 11 has an opening 13 90 either on top as indicated in Fig. 4, or below the top as indicated in Fig. 3, for the passage of air. In said opening is situated a screen 14 of sheet metal finely perforated to divide the air currents passing through the box and diffuse them in the surrounding atmosphere. This screen can be fixed in a frame 15 provided with closed ends fitted within the box ends and either 100 fixed therein or held by friction or by any suitable means. If not fixed the frame may be pivotally connected to the box and thereby made adjustable to vary the amount of air flowing therethrough.

Warm air within the room to be ventilated will be forced out through some part of the screen and heavier 105 air from the exterior will enter in an opposite direction substantially as indicated by arrows and with the effect to supplant warm and vitiated air with purer air.

110 The partition 8 is important to exclude the passage of air between the valve and front wall of the hood



which would interfere with the entrance of the fresh air into the open end in communication with the space to be ventilated. It is also important that the valve be of length and form substantially as shown so that one end of the hood is in full communication with the room to be ventilated and the other entirely closed to any direct communication as indicated and that this be effected automatically by an air current flowing past the hood in either direction.

The valve is preferably straight but the essential feature is that it be adapted to entirely prevent the passage of air through the hood in one direction while leaving it entirely free to pass in the other, and that it be adapted to automatically effect this under the influence of air currents of any strength.

It is not intended to limit the improvement to air tight joints or connections between the parts but to such construction as excludes practically all the air from passing through the hood in one direction while the other end is open to practically its full capacity for the passage of air, the purpose being to prevent any considerable air passing through the hood next its outer or front wall and between the valve and such wall, it having been discovered that such an air current obstructs the entrance of air at the end of the hood where desired.

Although the described operation of the device is largely or mainly due to difference of exterior and interior pressures, it is believed that air reflected from the pocket 9 acts to deflect the passing air current in manner tending toward the production of an eddy, as indicated by arrows, thus preventing or modifying the natural eductive effect of a current flowing exactly parallel to the outer face of the hood.

Heretofore in ventilators of the general kind herein described, an open space has been left between the two-winged valve such as indicated at 6 and the outer wall of the hood. In such construction exterior air flows freely lengthwise the valve and on both sides thereof and tends to induce and eject air from the interior, that is, from the space situated oppositely to the valve with respect to a sash rail or wall, such as indicated at 5. To insure that the valve shall be fully and positively closed as indicated in Fig. 1 and that air shall not flow past the opening in 5 on either or both sides of the valve, and to prevent or substantially diminish the eductive effect of exterior air currents, the partition 8 is provided by my improvement. This has the effect to cause the valve to be closed and so held on the side from which the air flows, which in the illustration is on the left as indicated by arrows. The air thus arrested on the left is diverted from a direct course through the hood with the result of producing a condition at the right of the hood favorable for the entry of

fresh air through the hood and diffuser, it being understood that a difference in temperature between outside and inside air is an efficient aid to ventilation when not neutralized by eduction of air currents or by other causes. A change in the direction of outside air currents will obviously close the hood at the right and favor admission of air at the left. I have demonstrated that better ventilation is a result of my improvement, and I do not wish to be limited by any insufficiency in my description of the theoretical action of air currents, deeming it sufficient to say that a partition such as 8 in a ventilator having a two-winged valve of the kind set forth, insures a positive closing of the valve and an increase of ventilation.

It will be understood that the higher temperature and consequent greater levity of the interior escaping air promotes its escape, and that its place must be filled by fresh outside air. This effect of different temperatures and different gravities promotes the inlet of air recurrent at the open end of the hood and outside the outflowing current of warm air.

Having thus described the invention what I claim is,—

1. In a ventilator, a hood having a partition, and a two-winged valve, the entire valve when at an equal distance between its two extreme movements inclosing right angles with the partition.

2. In a ventilator, a hood having a partition, and a pivoted two-winged valve, the valve when at an equal distance between its two extreme movements inclosing right angles with the partition, all of the partition being between the valve and the face of the hood.

3. In a ventilator, a hood having two open ends, and a valve pivoted centrally between the sides of the opening at each end and centrally between the openings at opposite ends.

4. In a ventilator, the combination of the hood having opposite air passages, with a two-winged valve pivoted in said hood, and a partition closing the space between the valve and the outer wall of the hood, said partition being situated approximately at the longitudinal center of the hood and extending approximately to the transverse center of the same.

5. In a ventilator, the combination of the hood having opposite air passages, with a two-winged valve pivoted in said hood, and a partition closing the space between the same and the adjacent wall of the hood, the pivot and partition being on opposite sides of the valve.

6. In a ventilator, an interior box for use in connection with an exterior part or hood, a metal screen in the box, said box having a flap or door formed in its sides and a closed top so as to permit the box being placed against the casing at the top of the window.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

C. HERBERT OCUMPAUGH.

Witnesses:

E. C. HENPEL.

A. M. ZIMMER.