2 Sheets--Sheet 1

Le R. SATTERLEE.

Ventilating Buildings.

No 169,300. Patented Oct. 26, 1875.

Fig. 1.

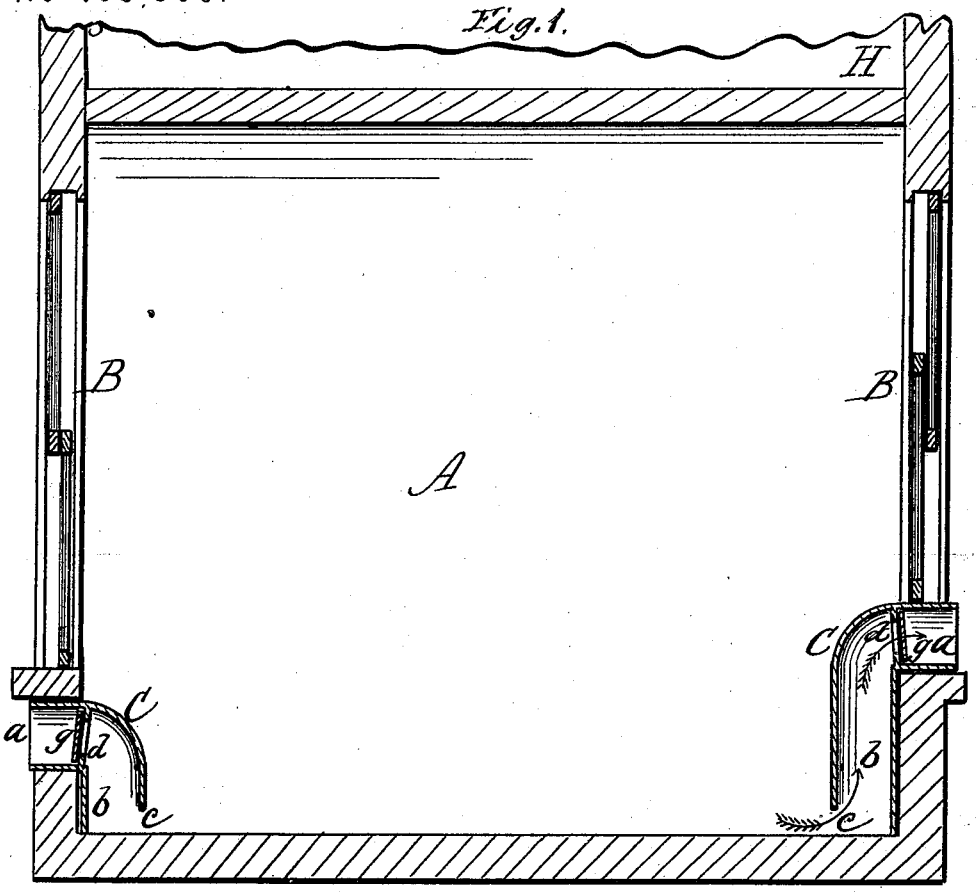
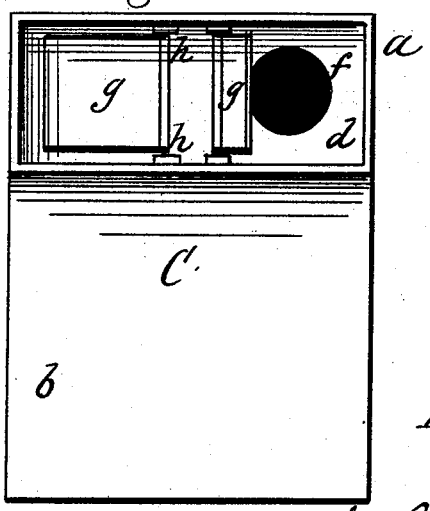


Fig. 2.



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P. M. Brandon

Inventor.
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2 Sheets--Sheet 2.

Le R. SATTERLEE.

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Fig. 3.

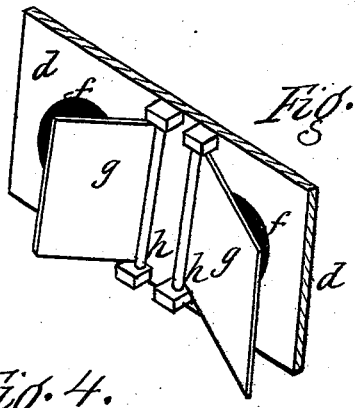
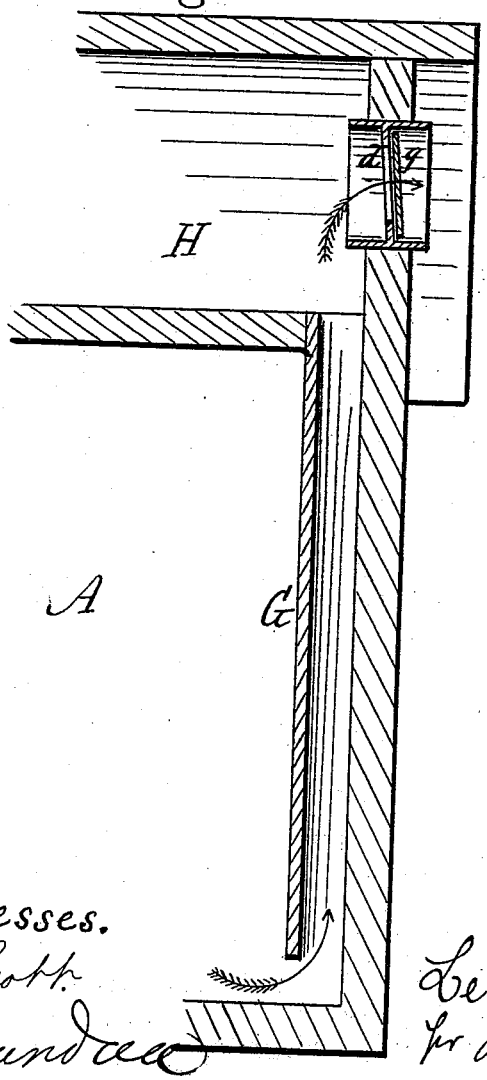


Fig. 4.



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UNITED STATES PATENT OFFICE.

LE ROY SATTERLEE, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN VENTILATING BUILDINGS.

Specification forming part of Letters Patent No. **169,300**, dated October 26, 1875; application filed June 17, 1875.

To all whom it may concern:

Be it known that I, LE ROY SATTERLEE, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Ventilating Buildings, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a portion of a building, showing my improvement. Fig. 2 is a front elevation of one of the ventilating-trunks and its valves. Fig. 3 is a perspective view of the self-acting valve arrangement. Fig. 4 is a vertical section of one end of a building, showing a modification of my improvement.

My improvement has for its object a more perfect ventilation of buildings and other structures than is now secured by registers and ventilators where the action depends entirely upon the rarefaction of the air under heat. In such case the ventilation is very imperfect, owing to the variableness of the rarefaction and the different conditions of the air, the carbonic-acid gas settling to the bottom of the room, and not being easily passed off.

My invention consists in the combination and arrangement of parts hereinafter described.

In the drawings, A represents the lower story of a building, and B B are the windows therein. C C are ventilating trunks or tubes, of the right-angled form shown, and which serve to convey the vitiated air from the bottom of the room outward into the open air. The upper right-angled end *a*, which opens outward, may be passed through the window, as shown at the right in Fig. 1, or be passed through the wall below the window, as shown at the left, or at any other point in the room higher or lower, as may be desired. The end *b*, which rests in the room, extends to near the floor, and has a port or passage, *c*, which allows the impure air to pass upward. This port may be covered by a valve or slide, by which the escape of the air may be regulated.

In the part *a* is located a plate or partition, *d*, which stands slightly inclined inward, as shown. This plate has one or more ports, *f*, covered by one or more inclined doors or valves, *g*. The incline of the plate and the doors is such as to give the doors a tendency to close by their own gravity to shut the passage, but still so slight that the doors are rendered very sensitive, and will open outward under very slight impulse from within. The doors are made light and thin, and may be hung by journals *h h*, as shown in the drawing, or by springs, or any other means which will avoid friction and render the doors as sensitive as possible. A great variety of attachments of the door might be used with substantially the same effect. Stops should be used in connection with the doors to prevent their opening too far, for it would not do to let them open to a right-angled position; otherwise they might fall the wrong way. At least two of these ventilators are used, one on each side of the building, and four will be still more effective, located on the four quarters. The object of this is to produce efficiency of operation, since the blowing of the wind on one side will shut the ventilators on that side, and the pressure of the air in the room will correspondingly open the ventilator to allow escape of the air. The ventilators on at least two sides of the building have, therefore, a unity of action, closing on one side and opening on the other under the action of the wind; and if four are used this action is sure to occur in whatever direction the wind may blow.

It is my design to produce a self-acting apparatus which will close automatically on the side from which the wind is blowing, and open automatically on the side in which the wind is blowing. In such case the pressure against the ventilators shuts off the entrance through the same on the one side, while the pressure which accumulates inside from apertures around the windows, the opening of doors, &c., opens the ventilators on the other side.

It is rarely the case that the air is so still that such action will not occur; but even in that case the opening and shutting of doors will create an overbalance of pressure inside and open the ventilators.

The action of ventilating, as above de-

scribed, is facilitated, in case there is wind, by reason of the tendency to a vacuum on the side of the building opposite to the blowing of the wind. Such vacuum has the tendency to open the ventilators on that side and draw the air from the interior of the room.

In addition to this self-acting ventilation it is apparent that the rarefaction of the air by heat will produce pressure in the apartment, and consequently open the ventilators.

Of course, in the use of such a self-acting arrangement, it is imperative that the ventilating-doors should be hung very accurately, and on journals, springs, or bearings, that will produce the minimum amount of friction. It is also necessary that the doors should be very light, and that they should fit accurately to their seats when closed.

From a series of experiments I have made, I am satisfied that the work can be done effectively, and with but little trouble or expense.

If the action of the doors is made to depend upon the incline at which they stand, the partition *d*, to which they are attached, may be made adjustable to different inclines by resting on journals, or by other means.

It is obvious that so far as the efficiency of the self-acting ventilators are concerned, it is not necessary that they should be connected with the trunks C C; but they will be equally effective if placed directly in the walls. The trunks are for the purpose of drawing the air from the bottom of the rooms, thereby removing the dead air and carbonic-acid gas more effectively. They also form a portable arrangement which may be placed directly in the windows, as shown at the right in Fig. 1, thereby rendering the invention easily applicable to houses already built.

In building new buildings they may be built directly within the walls under the base-board, thus forming no projections in the rooms.

To prevent a strong wind from striking under or back of the ventilators when partially open, thereby tending to throw them still wider open, suitable screens, lattice-work, or other devices may be used to direct the current upon the back of the ventilators.

Where it is desired to ventilate only at the top of the building and to use no ventilators below, the modification shown at Fig. 4 may be employed. In this case a tube or tubes, G, extend from the lower stories upward into the attic H, conveying the vitiated air up to that point, and upon the sides of the attic are two or more of the ventilators, such as before described. In this case the same effect will be produced.

In addition to buildings this invention may be applied to boats, vessels, cars, and other structures where ventilation is required.

I do not claim slatted ventilators connected by a rod, as shown in Letters Patent No. 90,180; neither do I claim a valve hung to close by the force of the wind, as shown in Patent No. 32,730; neither do I claim a flue or shield attached to a window-pane to break the draft of air, as shown in Patent No. 160,066.

Having thus described my invention, what I claim as new is—

1. In a building or other structure requiring ventilation, two or more outwardly-opening and self-closing valves, *g g*, made close-fitting to their seats to prevent the entrance of outside air to the room, and hung by journals or bearings to be opened automatically by the pressure or impulses of the air within the room, to allow the discharge of said air outward, as herein shown and described, and for the purpose specified.

2. In a building or other structure requiring ventilation, the trunk C, extending to near the bottom of the room, and constructed with the plate *d* and self-acting valve *g*, for the purpose of conveying off and discharging the vitiated air from the bottom of the room, as herein shown and described.

3. In a building or other structure requiring ventilation, one or more self-closing ventilators, *g*, set in the attic or upper story, and one or more tubes, G, extending from the attic or upper story downward into or through the rooms below, and having apertures communicating with said rooms, whereby the vitiated air will be drawn upward through said tube or tubes and be discharged through the ventilators, the whole combined and arranged to operate as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LE ROY SATTERLEE.

Witnesses:
R. F. OSGOOD,
E. B. SCOTT.