

(No Model.)

P. ABRAHAMSON.
VENTILATOR.

No. 417,851.

Patented Dec. 24, 1889.

FIG. 1-

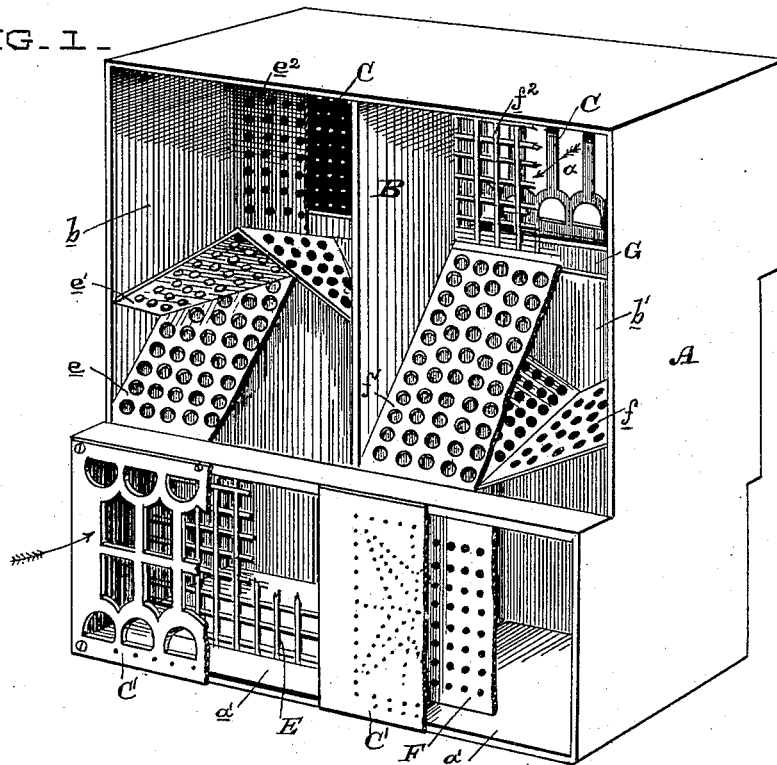
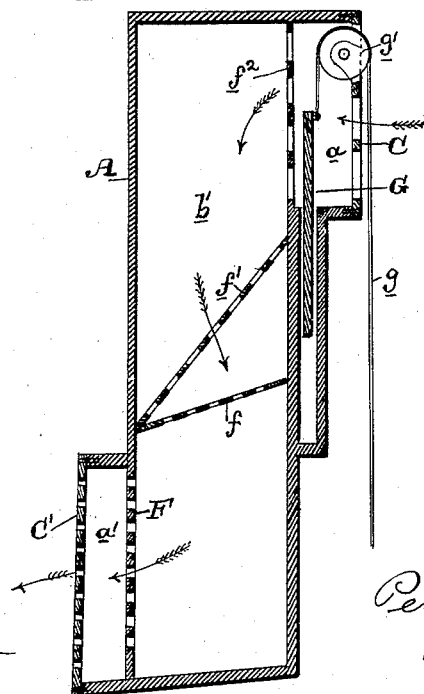


FIG. 2-



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UNITED STATES PATENT OFFICE.

PETER ABRAHAMSON, OF SAN FRANCISCO, CALIFORNIA.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 417,851, dated December 24, 1889.

Application filed July 24, 1889. Serial No. 318,545. (No model.)

To all whom it may concern:

Be it known that I, PETER ABRAHAMSON, of the city and county of San Francisco, State of California, have invented an Improvement in Ventilators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of ventilators in which a box having an opening on each side is employed; and my invention consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

The object of my invention is to provide a simple and effective ventilator providing for the free and uninterrupted passage of the incoming and outgoing currents, thereby effecting perfect ventilation.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of my ventilator, one wall being omitted to show the internal screens, some of which are broken away for the sake of clearness, as is also the plate C'. Fig. 2 is a vertical section of my ventilator.

A is the box, having an opening *a* at its top on its inner side and an opening *a'* at its bottom on its outer side. Within the box is a vertical central partition B, which divides it into two separate and parallel passages, one of which *b*, I will designate as the "passage for the incoming current," and the other *b'* as the "passage for the outgoing current." Now, it is obvious that if I make the passage *b* at the inlet-opening *a'* of greater capacity than the corresponding opening *a'* of the adjacent passage *b'* the outer air will seek said passage *b* and flow through it in preference to seeking passage *b'* and passing through it; and, likewise, if I make the passage *b'* at the inner opening *a* of greater capacity than the passage *b* at the adjacent corresponding opening the inner air will seek and pass through passage *b'* rather than passage *b*. There will therefore be two distinct currents passing through the box, one from the outside inwardly through passage *b* and one from the inside outwardly through passage *b'*, and these will not interfere with each other. Now, though to attain this result I might graduate the capacity of the two passages in reverse direc-

tions by tapering or inclining their walls so as to graduate their dimensions, I prefer to accomplish the end by means of the perforated metal or screen plates which cover the openings *a* and *a'* of the box. One of these plates C, which covers the inner opening *a*, has the perforations in that end which covers the inner end of the passage *b'* made larger than the perforations in that end which covers the inner end of passage *b*. The other plate C', which covers the outer opening *a'*, has the perforations in that end which covers the outer end of passage *b'* made smaller than the perforations in that end which covers the outer end of passage *b*. Therefore the incoming current will seek the larger perforations of plate C' and the outgoing current will seek the larger perforations of plate C, the former current passing in through passage *b* and the latter current flowing out through passage *b'*. Now, to further this result by a more complete graduation of the two passages, I place within them a series of screens, the mesh of which varies in each passage reversely. Thus in passage *b*, and behind the larger perforations of plate C', I place a screen E, having a mesh slightly smaller than the mesh or perforations of the plate. Then in the body of the passage I place a second screen *e*, having a mesh smaller than that of the screen E, and above this a third screen *e'*, of yet smaller mesh, and, finally, in opening *a*, behind the smaller perforations of plate C, I place a fourth screen *e''*, having a mesh smaller than screen *e'*, but larger than the perforations of the plate. In the passage *b'* a similar set of screens is placed, but reversed in capacity to the first set—that is to say, behind the smaller perforations of plate C', I place screen F, having a mesh larger than said perforations. Then follows a screen *f'*, of larger mesh, then a screen *f''*, of still larger mesh, and, finally, a screen *f'''*, of yet larger mesh, but smaller than the perforations of plate C, behind which it is placed. By this arrangement of screens it will be seen that the passage *b* for the incoming current of air is practically gradually diminished in capacity from its inlet to its exit, and the passage *b'*, for the outgoing current, is also gradually diminished from its inlet to its exit, and as the inlets and exits of these

passages are reversed with respect to each other the two currents seek each its own passage and without interference.

The screens above described serve another purpose—namely, breaking up the currents in their passage through the ventilator, and thereby preventing drafts. This is especially important with the incoming current of cold air, which is thus delivered into the room gently and equally and without draft. Though the screens may be arranged in any manner in the passages, I prefer to arrange them as shown, the screens *E*, *F*, *e*², and *f*² being vertical, the screens *e* and *f*¹ being upwardly inclined, and the screens *e*¹ and *f* being peak-shaped transversely of the passages. These inclined screens tend to the better induction and eduction of the currents, after the manner of funnels.

G is a damper-plate mounted in a suitable recess in the inner wall of the box and adapted to be raised up to control the opening *a* by means of a suitable chain *g*, passing over a pulley *g*¹.

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

1. A ventilator having separate passages for the incoming and outgoing currents and having the inlets for said currents reversely placed and of greater capacity than the outlets, substantially as described.

2. A ventilator consisting of a box or frame divided into independent passages, each of which has an inlet on the same side as the outlet of the adjacent passage, the inlet and outlet of each passage being perforated with holes of different sizes, whereby one end has a greater capacity than the other, substantially as described.

3. A ventilator having separate passages for the incoming and outgoing currents, the inlets and outlets being reversely placed, so that the inlet of one passage on one side is adjacent to the outlet of the other passage on the same side, said inlets and outlets hav-

ing perforations of different sizes, whereby incoming and outgoing currents travel in opposite directions.

4. A ventilator consisting of a box having an opening on each side and a partition dividing it into separate passages communicating at each end with said openings, a perforated or screen plate controlling one opening and having its perforations opposite one passage larger than those opposite the other passage, and a perforated or screen plate controlling the other opening and having its perforations opposite said other passage larger than those opposite said first-named passage, substantially as described.

5. A ventilator consisting of a box having an opening at the top of one side and an opening at the bottom of the other side and a vertical partition dividing it into separate passages communicating at their ends with said openings, and a graduated series of screens in said passages, the mesh of said screens in one passage being graduated in a direction opposite to the mesh of the screens in the other passage, substantially as described.

6. A ventilator consisting of the box having the top opening on one side and the bottom opening on the other side and the central vertical partition dividing it into separate passages communicating at each end with the openings, the perforated plates *C C*¹, controlling the openings and having opposite halves with larger perforations than the other halves, the screens *E e e*¹ *e*² in one passage, having gradually-diminishing meshes, and the screens *F f f*¹ *f*² in the other passage, having gradually-increasing meshes, substantially as described.

In witness whereof I have hereunto set my hand.

PETER ABRAHAMSON.

Witnesses:

S. H. NOURSE,
H. C. LEE.