W. H. DAVIDSON.

VENTILATOR.

APPLICATION FILED APR. 10, 1908.

898,730. Patented Sept. 15, 1908.

Fig. 1.

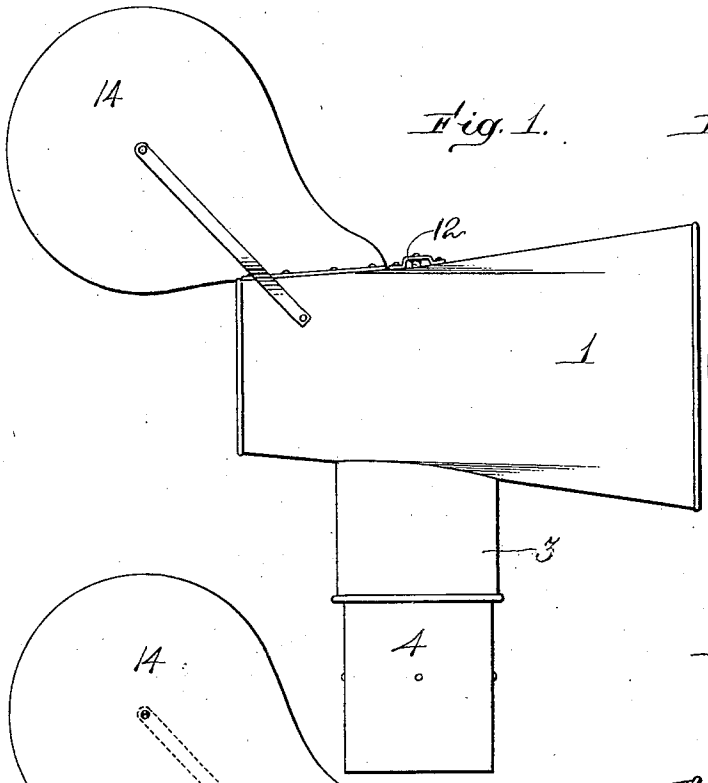

Fig. 2.

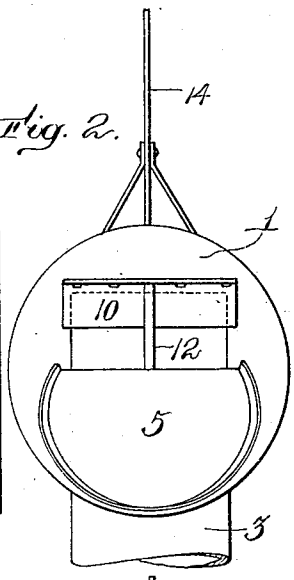

Fig. 3.

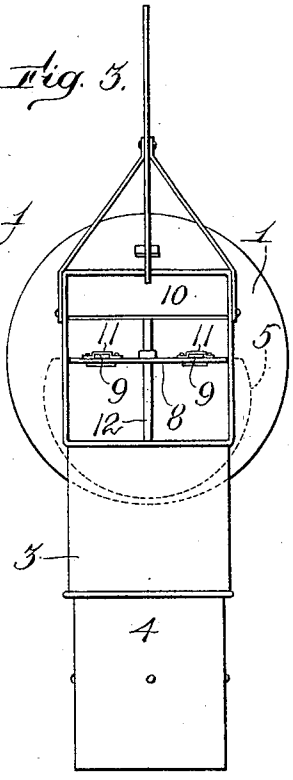

Fig. 4.

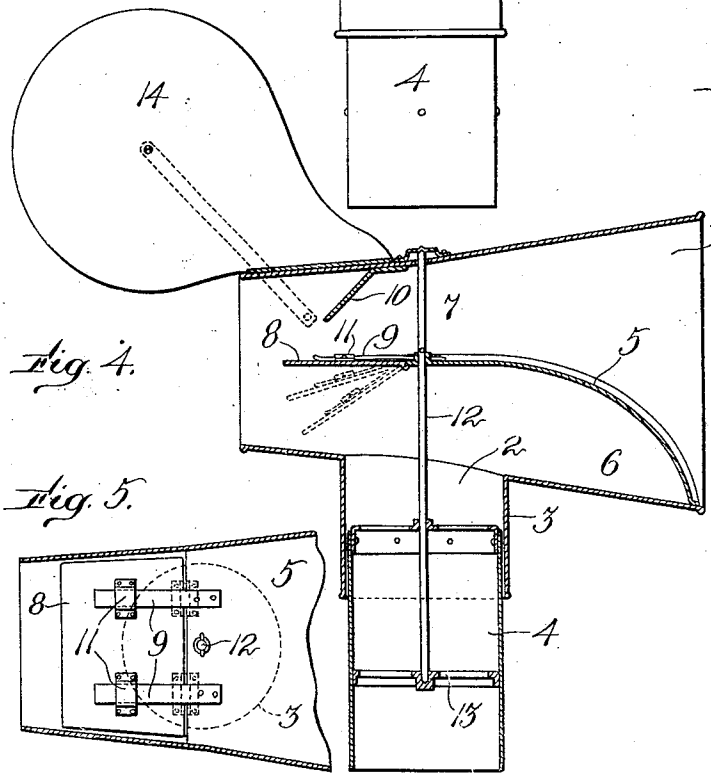

Fig. 5.

Witnesses:
P. W. Peggotti
F. R. Ridlstone

Inventor:
Wm. H. Davidson
by Wright, Brown, Quinby & Kay
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. DAVIDSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO W. OSGOOD EDDY, OF MIDDLEBORO, MASSACHUSETTS.

VENTILATOR.

No. 898,730. Specification of Letters Patent. Patented Sept. 15, 1908.

Application filed April 10, 1908. Serial No. 426,246.

To all whom it may concern:

Be it known that I, WILLIAM H. DAVIDSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ventilators, of which the following is a specification.

This invention relates to ventilators to be placed upon chimneys or outlet flues of dwellings and other buildings, to cause an induced draft whereby to draw the foul air from a building or produce a draft in a furnace.

The present invention is particularly adapted and intended for use on chimneys, and is of such a construction as to eliminate to the maximum degree the chance for the deposit of soot and other ponderable products of combustion, while enabling whatever deposits are made to be readily removed.

The main object of the invention is to make provision whereby the ventilator will automatically regulate itself and induce approximately the same draft under varying conditions of velocity of the wind. To this end the ventilator is provided with a device which is operated in greater or less degree, according as the wind is strong or light, to restrict the outlet from the induction passage, and thereby keep the draft pretty nearly constant.

Of the accompanying drawings,—Figure 1 represents a side elevation of a ventilator constructed to embody my invention. Fig. 2 represents a front end elevation of the same. Fig. 3 represents a rear end elevation of the ventilator. Fig. 4 represents a central vertical section thereof. Fig. 5 represents a horizontal cross section.

The same reference characters indicate the same parts in all the figures.

The ventilator consists of a main body or casing 1, which is open at its front and rear ends and has a passage extending longtiudinally completely from one end to the other. At its lower side there is an opening 2 with which is connected a pipe 3 which fits over and forms a continuation of the flue 4 leading from the chimney or any part of the interior of a building. Within the casing 1 is a partition 5 which is attached at its edges to the walls of the casing and extends across the opening 2. The front end of the partition is carried down to the lower wall of the outer casing, while the rear end extends approximately horizontally across the longitudinal center, so that thus a chamber 6 which is closed at its front end is formed. Above the partition is formed a passage 7 through which the air is enabled to flow, which air is kept from the chamber 6 by the fact that the partition extends at its front end wholly to the wall of the casing. The opening 2 in the under side of the ventilator provides an inlet to the chamber 6, and the fact that the latter chamber is open at the rear causes the air flowing through the draft passage 7 to induce a draft through the opening 2. The latter thus serves as an inlet to the chamber 6, which therefore may be considered an induction chamber, while the chamber and the interior of the flues 3 and 4 together form an induction passage.

At the rear end of the partition 5 there is hinged a gate or plate 8 which is supported by springs 9 so that normally it forms an extension of the partition and lies in the same plane with the rear end of the latter. The fact that it extends beyond the rear limit of the inlet 2 causes the air or gas within the flue 4 to be sucked out of the latter and carried from the outlet at the rear of the ventilator. In the top of the main casing above the gate 8 is a deflector 10 which diverts the wind flowing through the passage 7 and causes it to impinge on the surface of the gate. When the wind is of low velocity, the force which it applies against the gate is not sufficient to overcome the springs 9 and the gate remains in its horizontal position, leaving the outlet from the induction passage of its maximum extent. But when the wind increases in force, it tends to overcome the springs, and when of sufficient intensity, it deflects the gate, causing it to swing toward the lower wall of the casing to a greater or less extent, as indicated in dotted lines, thereby restricting the outlet opening from the induction passage.

It is obvious that if the induction passage outlet were of the same size at all times there would be a great variation in the amount of draft induced by the flow of air through the draft passage, being of great amount when the velocity of the wind is

high and comparatively slight with light breezes. By providing the gate or movable partition extension, the outlet is automatically regulated proportionally to the strength of the wind, so that the maximum provision for the outlet of gases from the flue is found only when the wind is light, and the opening is materially shut off as the wind increases.

Preferably the cross-sectional outline of the casing change progressively from front to rear, being circular at the front and merging into a rectangular outline at the rear. This is for the purpose of permitting a rectangular gate to be used, and thereby more correctly proportioning the diminution of the induced draft outlet to the force of the wind.

The form of the gate is shown clearly in Fig. 5, and also the character of springs used, these being preferably flat leaves which are riveted at one end to the partition, and being extended through lugs 11 riveted to the gate.

The ventilator is hung upon a pivot rod 12 supported upon a bracket 13 in the flue 4 so that it may swing freely, and has at its rear a vane 14 to keep the front end always opposite to the wind.

I claim:—

1. A ventilator having a draft passage, an induction passage, and means governed by the pressure in the draft passage for varying the effective transverse area of the induction passage.

2. A ventilator having a draft passage, an induction passage, and a gate actuated by the draft pressure within the draft passage to obstruct more or less the induction passage.

3. A ventilator consisting of a body open at its ends to provide a draft passage and having an induction inlet in the side, a partition separating the interior into distinct longitudinal chambers into one of which the said inlet opens, and means operated by pressure of the wind for restricting the outlet from the induction chamber.

4. A ventilator consisting of a body open at its ends to provide a draft passage and having an induction inlet in the side, a partition separating the interior into distinct longitudinal chambers into one of which the said inlet opens, means operated by pressure of the wind for restricting the outlet from the induction chamber, and yielding opposed means acting to enlarge such outlet upon diminution of the wind pressure.

5. A ventilator consisting of a body open at its ends to provide a draft passage, a partition therein providing a distinct induction chamber closed at the inlet end and open at the outlet end of the ventilator, an inlet at the side of the ventilator opening into the induction chamber, and a stop member operable by increase of pressure in the air flowing through the draft passage for reducing the outlet opening of the induction chamber.

6. A ventilator consisting of a body open at its ends to provide a draft passage, a partition therein providing a distinct induction chamber closed at the inlet end and open at the outlet end of the ventilator, an inlet at the side of the ventilator opening into the induction chamber, and a cover mounted near the induction chamber outlet and arranged so as to be moved by the force of the air flowing through the draft passage to restrict such outlet.

7. A ventilator consisting of a body open at its ends to provide a draft passage, a partition therein providing a distinct induction chamber closed at the inlet end and open at the outlet end of the ventilator, an inlet at the side of the ventilator opening into the induction chamber, a cover mounted near the induction chamber outlet and arranged so as to be moved by the force of the air flowing through the draft passage to restrict such outlet, and a spring for restoring the said cover upon diminution of the air flow.

8. A ventilator consisting of a casing open from end to end to provide a draft passage and having a side opening, a partition in said casing connected at its sides to the walls of the latter and extending across the side opening, thereby forming an induction chamber closed at the inlet and open to the outlet of the casing, and of which the side opening constitutes an inlet, and a gate connected to the rear end of the partition so as to swing more or less across the induction chamber to restrict the outlet therefrom.

9. A ventilator consisting of a casing open from end to end to provide a draft passage and having a side opening, a partition in said casing connected at its sides to the walls of the latter and extending across the side opening, thereby forming an induction chamber closed at the inlet and open to the outlet of the casing, and of which the side opening constitutes an inlet, a gate connected to the rear end of the partition so as to swing more or less across the induction chamber to restrict the outlet therefrom, and a deflector arranged to direct the current of air flowing through the draft passage against said gate and thereby swing the same toward the opposite wall of the induction chamber.

10. A ventilator consisting of a casing open from end to end to provide a draft passage and having a side opening, a partition in said casing connected at its sides to the walls of the latter and extending across the side opening, thereby forming an induction chamber closed at the inlet and open to the outlet of the casing, and of which the side opening constitutes an inlet, a gate connect-

ed to the rear end of the partition so as to swing more or less across the induction chamber to restrict the outlet therefrom, a spring normally holding said gate in the extension of the partition, and a deflector arranged to direct the current of air flowing through the draft passage against said gate and thereby swing the same toward the opposite wall of the induction chamber against the tension of the spring.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLIAM H. DAVIDSON.

Witnesses:

F. R. ROULSTONE,

P. W. PEZZETTI.