T. SIMMONS.
Ventilator.

No. 222,207. Patented Dec. 2, 1879.

Fig. 1.

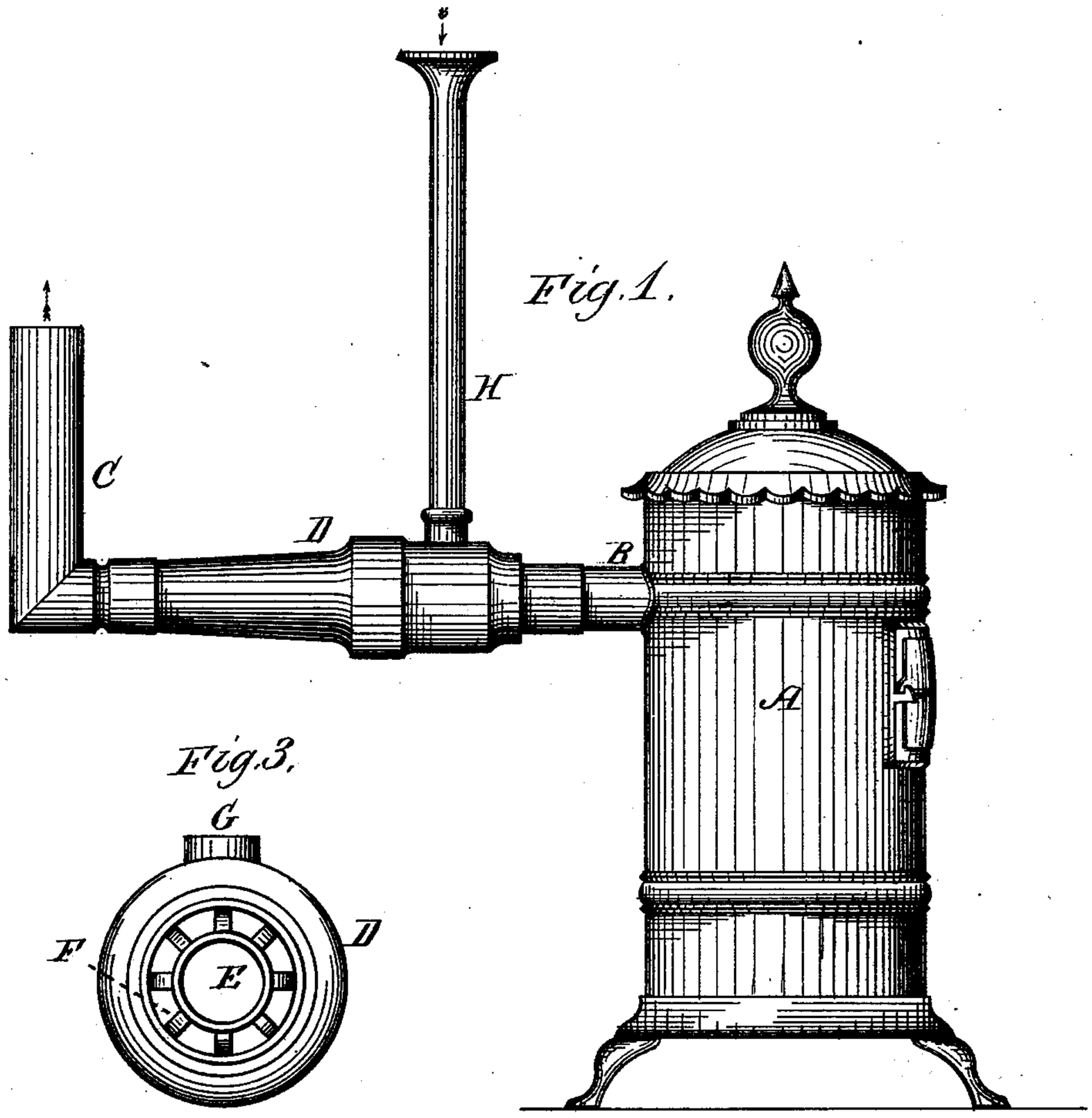
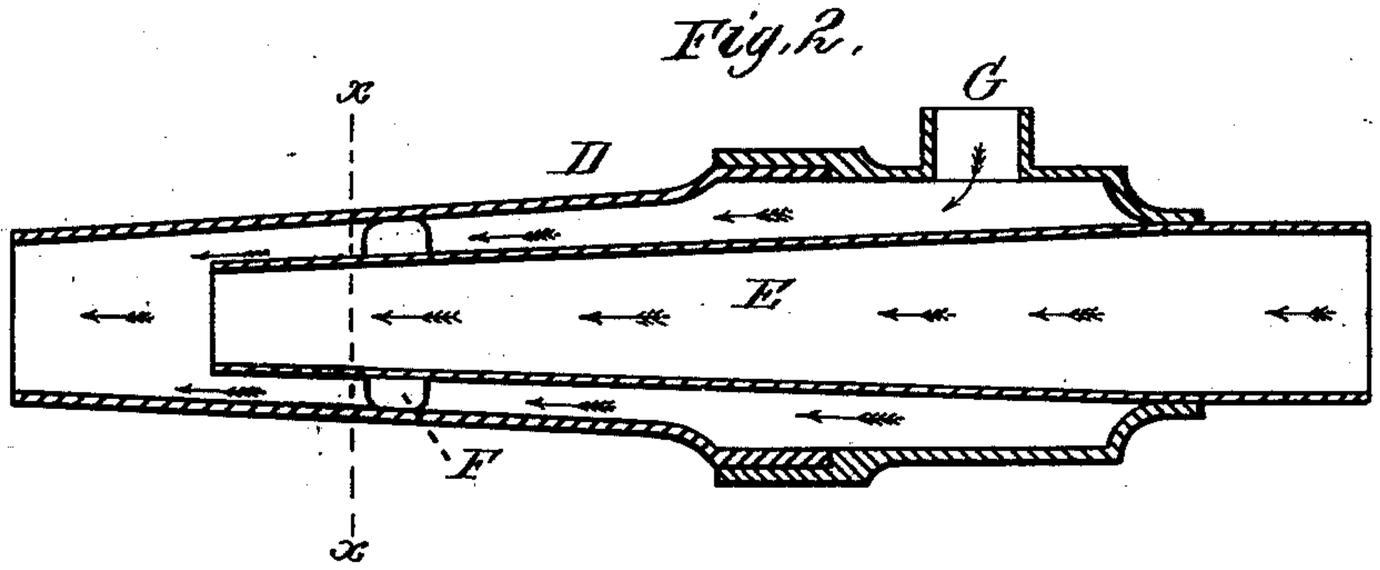


Fig. 3.

Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS SIMMONS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO HIMSELF AND JOSEPH B. CLAPP, OF SAME PLACE.

IMPROVEMENT IN VENTILATORS.

Specification forming part of Letters Patent No. **222,207**, dated December 2, 1879; application filed May 27, 1879.

To all whom it may concern:

Be it known that I, THOMAS SIMMONS, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Ventilation; 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 side elevation of a stove or other suitable heat-generating device, showing the application of my invention. Fig. 2 is longitudinal section of my invention disconnected from the pipe of the stove or other heat-generating device; Fig. 3, a cross-section thereof, taken on line *x x* of Fig. 2, to show the relative position of the grating.

This invention has relation to that class or means of ventilation wherein is employed a stove or heater having an outer pipe encircling the stove-pipe, and a second pipe communicating with the interior thereof, whereby the cold or vitiated air is carried off by suction.

The object of the present invention, therefore, is to provide a device simple in construction, and that can be applied to any of the ordinary stoves, furnaces, or other similar heaters; and a further object is to so construct the device as to greatly increase the suction and more effectually draw the vitiated air or gases into the pipe, and carry them off through the chimney or other means of outlet.

The invention consists in the general construction and arrangement of the several parts, as will be hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, A represents a stove or other suitable heat-generating device, provided with the usual pipe B, through which the smoke passes from the stove into the pipe C, and thence into the chimney.

Between the pipes B C is applied my invention, which consists of an outer cylinder, D, through which passes a conical-shaped tube, E. The shell or cylinder D is also of conical shape, or, in other words, diminishes in size as it approaches the pipe C or chimney, with which it connects. The forward end of the cylinder D incloses the tube E, so as to leave no opening or space between them; but a sufficient space is provided between the interior of the cylinder and outer periphery of the tube to form a vacuum-chamber.

The tube E does not extend the entire length of the cylinder D, and disposed between the tube and cylinder is a perforated diaphragm or grating, F. This grating is designed for the purpose of further reducing the inlet of air or gas to increase its force, and also serves to give support to the center tube, E, and produce a more uniform action.

The cylinder D is provided with a sleeve, G, for connecting thereto a pipe, H, which communicates with the vacuum-chamber between the interior of the cylinder and exterior of the conical tube, and leads from the place to be ventilated.

The pipe H is shown in the drawings as in a position to draw foul or vitiated air from the top of a room in which the stove or other heat-generating device is situated; but the pipe may be placed in any other position desired, so as to draw from the floor or from any other apartment. More than one such pipe may be connected with the cylinder D, and if desired the vacuum-chamber can be divided longitudinally into compartments, so that each pipe shall have its own division and be operated upon independently.

My invention can also be applied for deodorizing sewer and other gases by connecting a pipe from the vacuum-chamber to the sewer and connecting the chamber to the stove or other heat-generating device, to cause intense heat to pass through the chamber and bringing the gases in direct contact with the heat, thereby completely and effectually changing their poisonous character, thereby rendering them harmless before reaching the top of the chimney.

An unlimited number of the chambers constructed according to my invention may be used at the same time, if found necessary, and in such case the entire number of chambers employed are acted upon by one and the same heat-generating device.

In the operation of my invention, the current of hot air from the stove A, or other heat-generating device, ascends through the pipe B and conical or tapering tube E, and thence

into the pipe C to the chimney in the usual manner. This current of hot air passing through the tube E in its course to the chimney draws the air from the space between the cylinder D and tube, thereby creating a partial vacuum, into which the foul or vitiated air rushes through the pipe H to restore the equilibrium. The foul or vitiated air at the upper end of the pipe H is thus effectually drawn into the pipe and discharged into the chimney, from whence it escapes into the atmosphere.

Constructing the tube of conical or tapering form is accompanied with many advantages in this class of ventilators, as with this taper or contraction of the tube E at that end lying or disposed within the cylinder D condensation of force is increased, which, in turn greatly increases the velocity of the current, thereby insuring a more perfect vacuum, and consequently a more complete and successful operation of the device, it being on the principle of the steam-injector.

The perforated diaphragm or grating F is also of great importance, as it, as well as the conical or tapering form of the tube E, serves also to further increase the force and velocity of the current by reducing the inlet of air or gas, as the case may be.

It should further be noticed that the construction of the device renders it easily connected and adjusted to any stove, furnace, or other heat-generating device, and as readily removed.

The tapering form of the end of the cylinder D admits of its being connected to stove-pipes of different sizes, and the sleeve G thereon forming a means of connecting a suitable ventilating-pipe, H, which may be simply a pipe of the ordinary construction.

If desired, that part of the cylinder D provided with the sleeve G may be of one single piece of metal cast in suitable molds, and the tapering portion of the cylinder and also the conical tube D may be secured to this casting by rivets or in any other manner desired, the object being to produce such a ventilating device at a trifling cost, and that can be sold in the market ready for attaching to the pipe of any stove or furnace by the purchaser.

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

1. The combination, with the stove A, or other suitable heat-generating device, of the tube E, surrounded by a cylinder, D, to form a vacuum-chamber, as described, said cylinder being detachably connected to the stove and to the pipes C H, substantially as and for the purpose set forth.

2. The stove A, or other suitable heat-generating device, having connected thereto the conical or tapering tube E, said tube being surrounded by the cylinder D, to form a vacuum-chamber, as described, and having connected to it the detachable pipes C H, substantially as and for the purpose specified.

3. The tube E, communicating with a suitable heat-generating device, in combination with the cylinder D, grating F, and pipe H, substantially as and for the purpose described.

4. The cylinder D, having conical or tapering tube E, communicating with a suitable heat-generating device, in combination with the detachable pipes H C, the latter continuing beyond the union of the cylinder with the tube, substantially as and for the purpose set forth.

5. The conical or tapering tube E, cylinder D, and grating F, constructed as described, to form a vacuum-chamber, and detachably connected to the stove A, or other heat-generating device, and also to the pipes C H, substantially as and for the purpose specified.

6. As an improved article of manufacture, the conical or tapering tube E and grating F, surrounded by a tapering cylinder, D, having sleeve G, substantially as and for the purpose set forth.

THOMAS SIMMONS.

Witnesses:
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