

C. M. WOODWARD.
Means for Heating and Ventilating.

No. 227,709.

Patented May 18, 1880.

Fig. 1.

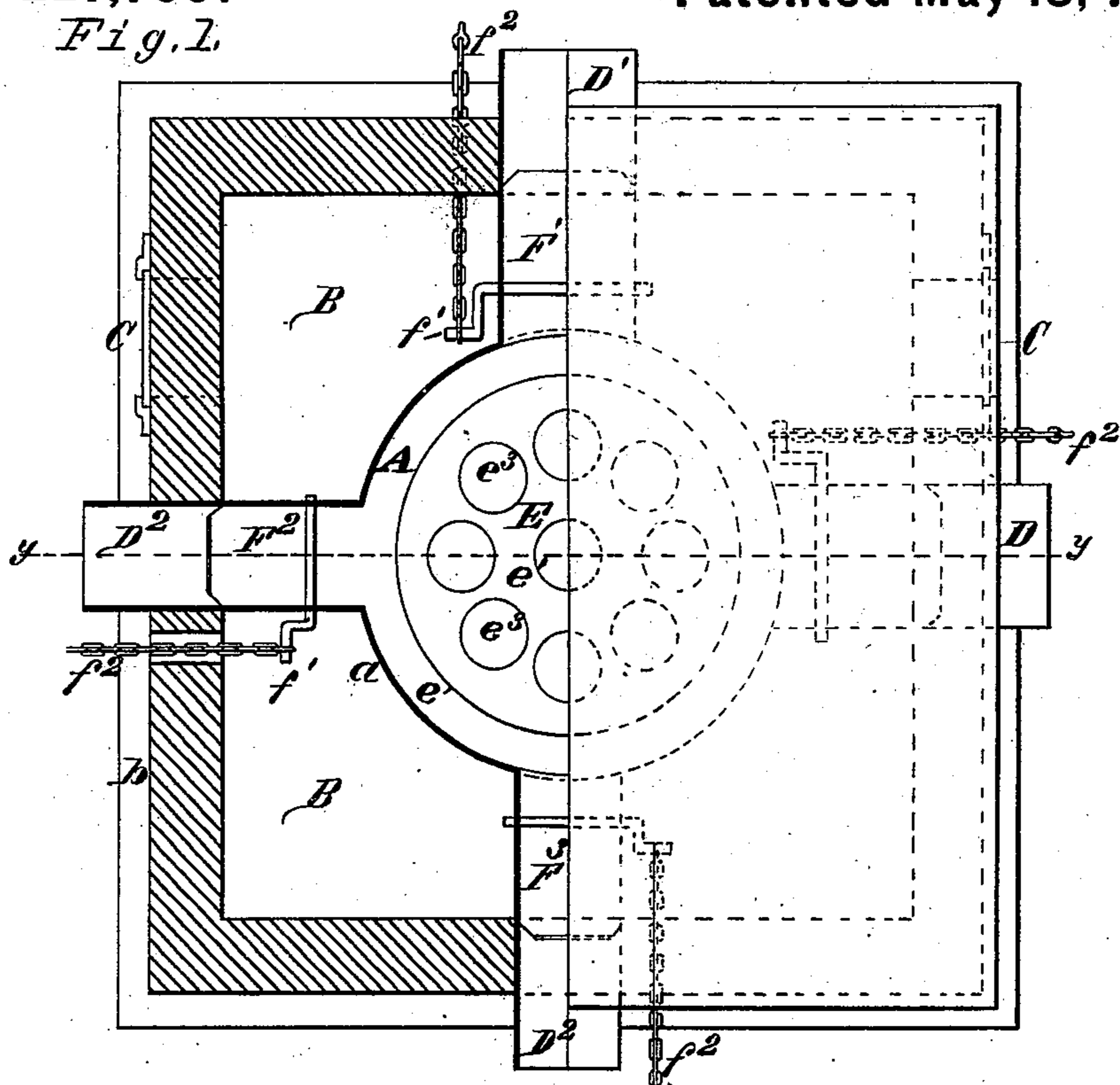


Fig. 2.

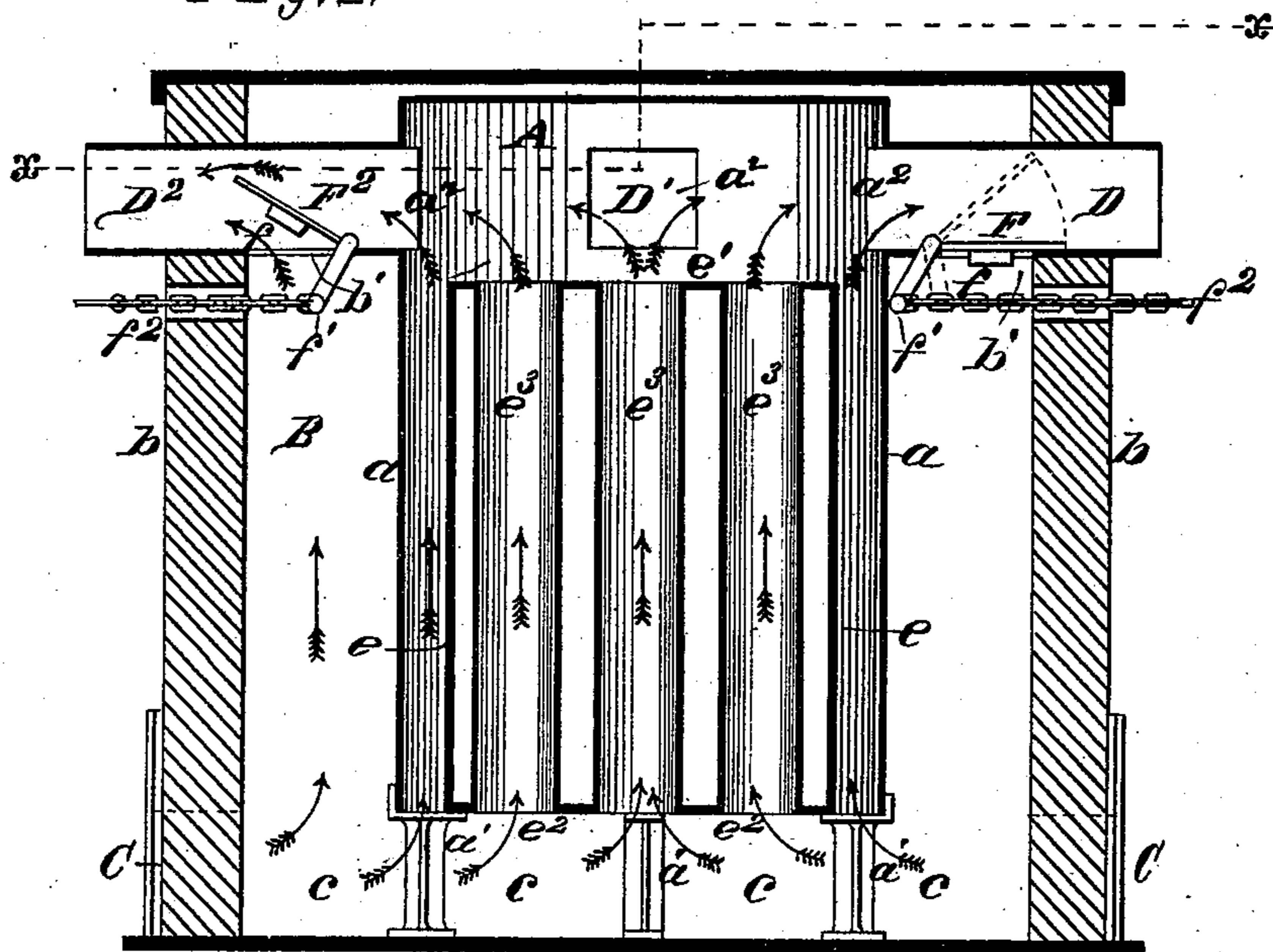
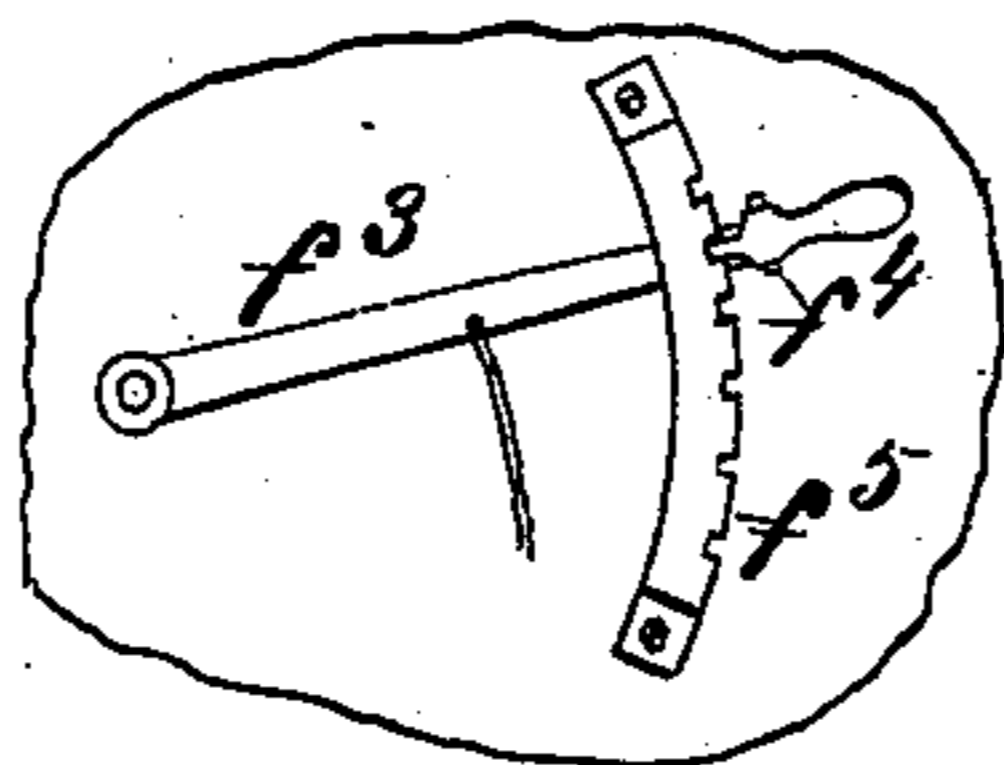


Fig. 3.



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CALVIN M. WOODWARD, OF ST. LOUIS, MISSOURI.

MEANS FOR HEATING AND VENTILATING.

SPECIFICATION forming part of Letters Patent No. 227,709, dated May 18, 1880.

Application filed February 27, 1880.

To all whom it may concern:

Be it known that I, CALVIN M. WOODWARD, of St. Louis, Missouri, have made a new and useful Improvement in Means for Heating and Ventilating, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan, partly in section, of the construction used in carrying out the improvement, the sectional portion being taken on the line *x x* of Fig. 2; and Fig. 2, a vertical section taken on the line *y y* of Fig. 1.

The same letters denote the same parts.

In warming rooms and buildings by heated air-currents delivered into them, I have observed that the ordinary practice, when the air comes too hot, is to reduce the air-supply or shut it off altogether. This is objectionable in that it impairs or entirely arrests the ventilation.

To obviate this difficulty and to provide means for readily and perfectly controlling the temperature of the inflowing air, and at the same time insuring ventilation, is the aim of the present improvement, in carrying out which two air-currents are employed, one hot and the other mildly heated. They flow from separate chambers or sources into the same delivery-pipe, which is furnished with a valve, by means whereof the air may be drawn wholly from the hot-air chamber, wholly from the mild-air chamber, or partly from each chamber, thus regulating the temperature without materially diminishing the quantity of the air passing through the delivery-pipe. The latter discharges into the room being heated, to which also may lead the valve-cord, enabling the valve to be worked directly in or from the room.

The improvement, more particularly described, consists as follows:

A represents what is termed the "hot-air chamber;" B, the mild-air chamber; C C, (one or more, as desired,) the inlets through which the air is supplied to the chambers, and D D' D² D³ the various pipes through which the air is delivered from the chambers A and B into the rooms or places to be heated.

The chambers A B may be of any desired shape consistent with the aim of the im-

provement, and the chamber-walls be composed of any suitable material. As shown, the outer wall, *b*, of the chamber B is square, and the wall *a* of the chamber A is circular. The latter is made to rest upon raised piers *a' a'*, thus freely connecting the chambers A B at the bottom, and enabling the air, as it comes from the inlets C C, to pass freely into either or both of the chambers A B, according as it is discharged from the chambers, as hereinafter described.

E represents the heater, which may be of any desired description, such as a coal-burning furnace, steam-coil, or drum. A steam-drum is shown, having the wall *e*, top *e'*, bottom, *e''*, and air-passages *e³ e³*. The drum may rest on the piers *a' a'*.

F F' F² F³ represent the valves in the various delivery-pipes D D' D² D³, by means of which the air can be delivered into the pipes D D' D² D³ either from the chamber A or the chamber B, or from both chambers A and B simultaneously—that is, both chambers, by means of the openings *a²* and *b'*, respectively, communicate with the pipes D D' D² D³, and by suitably working the valve either opening can be closed and the air-delivery from the corresponding chamber shut off, or the valve can be set so as to deliver air through both of the openings. The preferable form of valve is that shown, being weighted at *f* to cause it to close the opening *b'*, saving when the valve-arm *f'* and chain *f²* are drawn by the operator. The advantage of this form of valve and connection is that a wire may lead from the valve arm or chain to the room being heated and the valve be operated simply by drawing or loosening the valve-wire, and in the room the wire may be attached to a pivoted lever, *f³*, which is furnished with a spring-click, *f⁴*, and operated in connection with a ratchet, *f⁵*, as indicated in Fig. 3.

In operation the air, entering at C C, circulates in the space *c* at the bottom of the chambers A B, and passes thence upward through and around the drum E and through the chambers, as indicated by the arrows—that is, when the valve is set to close the opening *b'* the circulation will be exclusively through the hot-air chamber, as indicated by the arrows at the right-hand side of Fig. 2, and when the valve

is partially raised, and so as to open both of the ports b' and a^2 , the circulation will be through both of the chambers A and B, as indicated by the arrows at the left-hand side of Fig. 2, and in such last-mentioned case the air delivered through the pipe D^2 will not be as hot as that passing through the pipe D. When still cooler air is desired the valve is set to close the port a^2 entirely, causing the circulation to be exclusively through the mild-air chamber B.

An advantage accruing from the relative arrangement and connection, as shown, of the chambers A and B is that in all cases the air flowing into the delivery-pipes D D' is slightly warmed, and sufficiently to take off the chill and to cause it to circulate.

I claim—

1. The combination of the chambers A and

B, heater E, delivery-pipes D D' D^2 D^3 , and valves F F' F^2 F^3 , substantially as described. 20

2. The combination of the chambers A and B, having a common inlet, C c , the heater E, delivery-pipes D D' D^2 D^3 , and valves F F' F^2 F^3 , substantially as described. 25

3. The combination of the chambers A and B, pipe D, and valve F, substantially as described.

4. The combination of the chambers A and B, pipe D, and valve F, said valve having the weight f , arm f' , and chain f^2 , as and for the purpose described. 30

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Witnesses:

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