

(No Model.)

2 Sheets—Sheet 1.

E. S. WICKLIN.
WARMING AND VENTILATING HOUSES.

No. 369,828.

Patented Sept. 13, 1887.

Fig. 1.

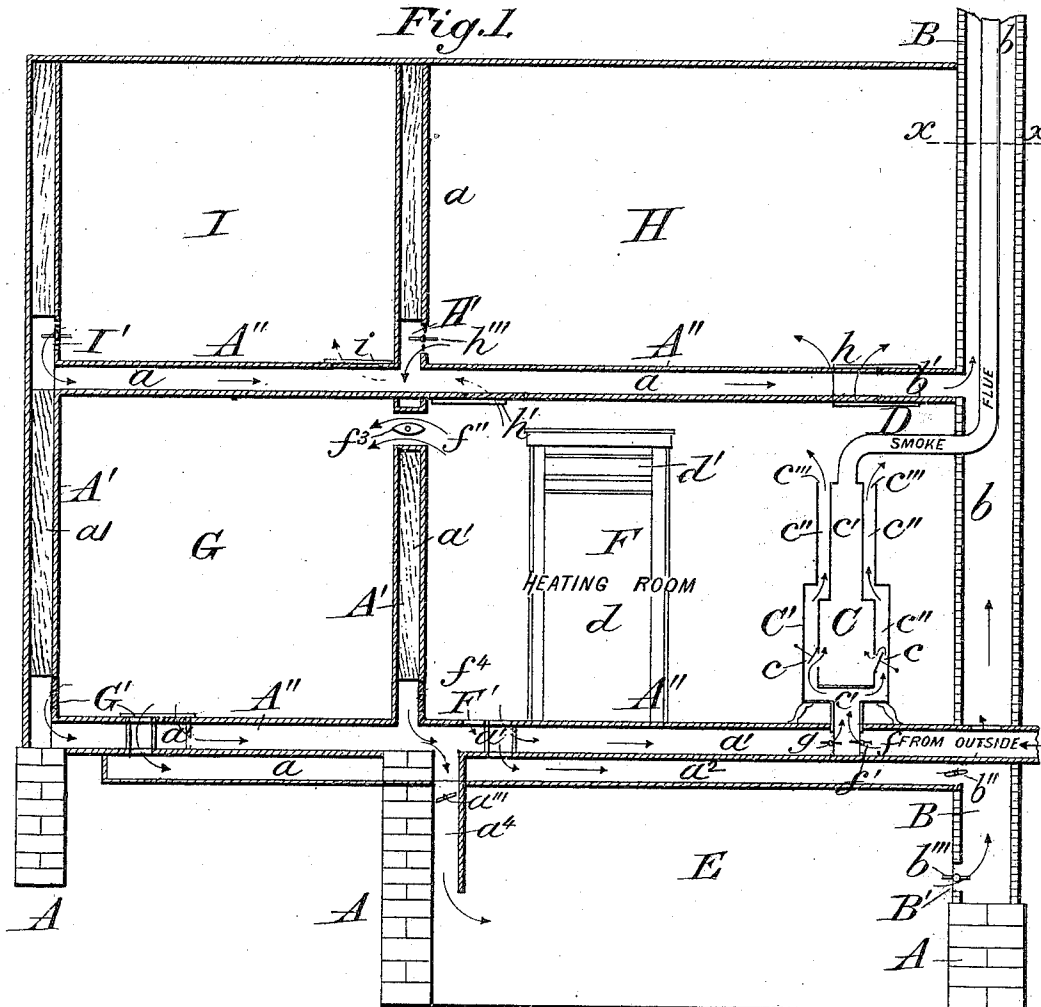
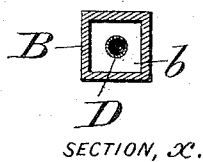


Fig. 4.



Witnesses

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By *his* Attorney *Norton Cranford*

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Fig. 2.

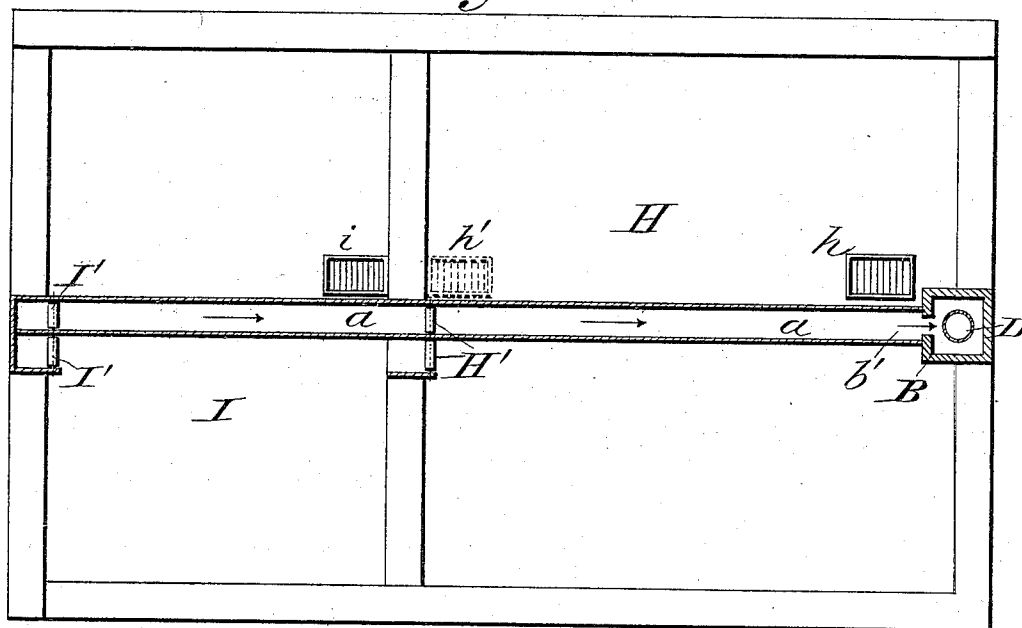
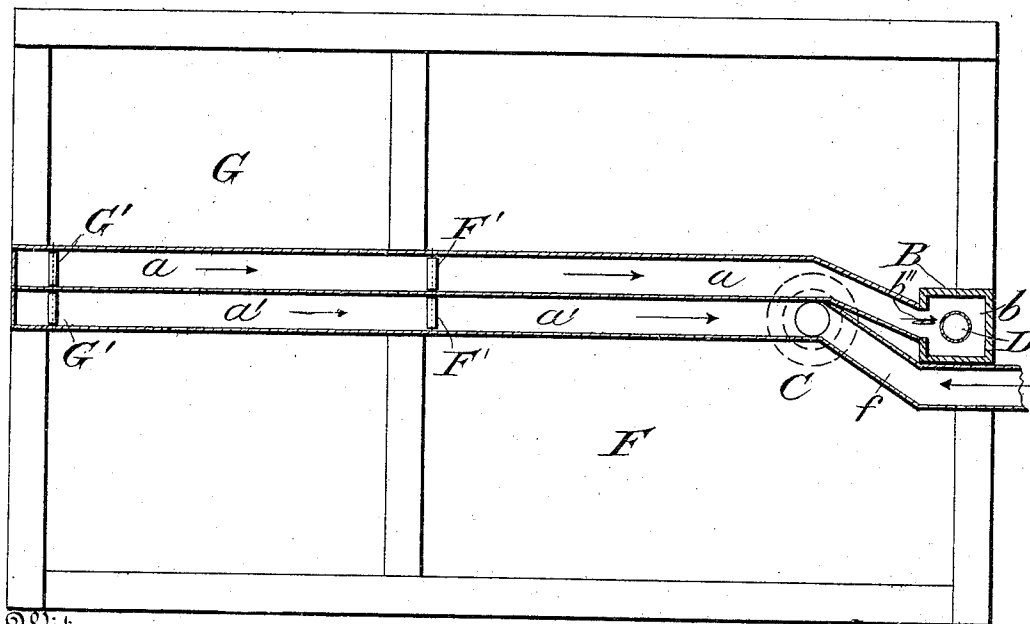


Fig. 3.



Witnesses

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H. H. Schott
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UNITED STATES PATENT OFFICE.

ELIJAH S. WICKLIN, OF DUBUQUE, IOWA.

WARMING AND VENTILATING HOUSES.

SPECIFICATION forming part of Letters Patent No. 369,828, dated September 13, 1887.

Application filed July 15, 1886. Serial No. 208,123. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH S. WICKLIN, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Warming and Ventilating Houses, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of this invention is to improve the heating and ventilation of dwellings and other buildings by a better means of circulating and warming the air within several apart-
15 ments, or a single apartment, and automatically to continue the circulation, and raising the temperature or changing the course of such circulation at will, so as to introduce fresh warm air or pure cool air and produce a thorough and perfect ventilation.

20 The invention consists in the special construction, arrangement, and combination of devices whereby the object is perfected and obtained, as will be fully hereinafter described.

25 In the drawings, Figure 1 represents an elevation of a house with the front walls partly removed in order to show in side view the manner of circulating the air through the several rooms to warm and ventilate them. Fig.
30 2 represents a plan view of the upper floor and the location of the air flues and registers and valves by which the circulation of air is made to pass through the several rooms to be warmed and ventilated and controlled; and
35 Fig. 3 represents a plan view of the lower floor, showing the location of air-flues, their registers and valves. Fig. 4 represents a section on line *xx* of Fig. 1.

The parts to be described include a series of rooms, a ventilating-chimney, a stove or
40 heater, and the necessary air-conducting flues or passages and valves that give freedom and control to the entire air-circulation to the point of exit through the ventilating-flue in chimney.

45 A represents the stone or brick or other material in the foundation of the building.

A' represents the external walls and partitions, which may be hollow or provided with air flues or passages in which the air circulates.
50

A'' represents the usual floor-supports, which may also be hollow or have circulating-flues therein for the passage of air in the sys-

tem of heating and ventilation, and in which the air is caused to flow in a direction desired, 55 in order to circulate the air in the entire rooms of the building, so as to carry warm air to or promote a perfect ventilation in any or all of the rooms; and *a a'* represent the flues or spaces in the walls, partitions, and 60 floors through which the air is caused to circulate either to or from a specified room or be returned to the stove or heater or passed into the ventilating-chimney.

B represents ventilating chimney or flue, 65 starting from the basement or lower rooms of the building and extending upward above the roof of the building, in order to deliver foul air and gases out of the building and through the space *b*, that extends its entire height. 70

C is a stove or heater of proper construction, capacity, and height to produce the heat and draft required. It is surrounded by a jacket, C', with a space, *c'*, between the stove-body and the jacket, in which the air coming in at *f'* 75 or at *g'* is heated by contact with the stove-body and passed upward and delivered freely through the opening *c''* at the top of the jacket.

c c are valves to admit air from the space *c''* 80 into the combustion-chamber of the stove, for a purpose hereinafter explained; but these may be closed and air to support combustion admitted through any ordinary well-known means for such purpose. 85

D is the common stove-pipe or smoke-flue, which enters the ventilating-chimney at a convenient point and is joined with other pieces of pipe to carry the gases of combustion up to top of chimney and there discharge them into the open air, and this pipe may extend a few inches above the top of the chimney and terminate in a flange or rim sufficiently wide to cover and protect the ventilating-flue from falling soot and rain. By so conveying the pipe up 95 within the flue of the chimney B the air within the chimney will be heated when there is fire in the stove, causing an upward circulation of such heated air to escape at the top of chimney, and if foul air is inducted into the flue of 100 the chimney from any or all of the rooms, as it may be, it will also escape from the top of the chimney into the free air.

E represents a basement room; F, the heating-room, in which the stove or heater is placed; 105 G, another room, in which the heated air from

F can be received. H is another room, over room F, and I is another room back of H, and with which an air-circulating connection is had; and *d* is an interior door, which may lead to another room or to a hall along which other rooms are situated.

F' G' H' I' are valves or registers, and each one of these is double, as shown at F' and G', and one half of each opens into the flues or passages *a* and the other half to the passages *a'*, and it will be seen that all the air-passages *a* connect with and conduct air to the ventilating-chimney B, while passages *a'* return the air, by the valve *g*, to the space *c'* around the stove or heater, and either part of each of the double registers may be worked independently, so that the air is caused to take either direction or both at the same time, if desired.

The valve *f'''* in opening *f'''* may be a transom-window over a door, as shown at *d'* over the door *d*, and the door itself may be opened, when desired, to give greater freedom to the circulation.

The operation of the system of heating and ventilation by this construction is as follows: Fire being started in the heater C, the air in the chimney B, surrounding the smoke-pipe D, is heated, causing the air therein to rise; hence all the air inducted thereto from the rooms of the building will be carried up inside the chimney to its top. Air, pure and fresh, is supplied to the space *c'* from the outside air through flue *f* by valve *f'*, is heated by contact with the stove, and passes upward and out at the opening *c'''* into the heating-room F; thence it can be conducted through opening *f''* in partition A' into room G, or it may be conducted into room H over F through register *h*, or through register *h'* to room I, while the air in room H can also be conducted into flue *a* or *a'* through the register H', and the foul air in room I can be conducted through register I' into flue *a*, thence horizontally to the chimney B, entering it at the opening *b'* and passing upward and out at top of chimney. By closing registers *h*, *h'*, and *f''* the air in room F can be conducted into flue *a* or *a'* through register F', and room F alone heated or ventilated. Then by opening valve *f'''* and register G' the circulation is extended through room G, and by opening registers *h* and H' room H also is brought into the circuit, and by then opening registers *h'*, *i*, and I' room I is included. If the registers are opened so as to allow the air to flow only into the passages *a'*, it may be returned by the valve *g* to the heating-jacket and reheated and returned to room F and made to continue to circulate around and be more and more heated; but this can be changed to a thorough ventilation or limited at will. To pass warm air down to room E, valves *a³* and *b³* are opened and valve *b''* closed.

Any of the rooms may be rapidly ventilated and cooled by giving the air free passage to the ventilating-chimney and opening a window. Thus by using the full power of the system the

air may be quickly drawn from any room and replaced by fresh warm or cool air.

The object of admitting air at the valves *c* *c'* from within the heating-jacket to support combustion rather than from the free air in the room is to avoid drawing air from remote parts of the room and in at key-holes and around windows and doors, and to cause an outward flow of air from about the stove and from the room, and thus to afford a better distribution of heat in the room and a more ready flow of air to other rooms when desired.

The valves and registers may be of any effective construction, as I do not claim for either their construction or exact location, as I wish to confine my claim to invention to the means by which I am enabled to change the air in any one or all of several rooms in a house and give fresh air to supply the place from which the foul air has been removed, or to supply heated air to any number or all of the several apartments of a building, and to keep up a continuous circulation and a thorough ventilation, avoiding all tendency to cold drafts, and having the entire system under easy and perfect control.

I am aware that cool air has been admitted around and to be heated by a stove or heater. Such construction alone I do not claim, but confine my claim to regulating the cool-air current by proper valves in the pipe that conducts the cool air to the air-heating chamber around the heater and a free exit of the air therefrom, when heated, into the room in which the heater is located.

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

1. In a device for warming and ventilating houses, the combination of a cold-air flue, *f*, having valve *f'*, heater C, having a surrounding jacket, C', forming air-chamber *c''*, and a free exit therefrom for the heated air to escape, with a series of rooms, F, H, I, and G, their intermediate air-circulating flues, *a* *a'*, their registers and valves, and ventilating-chimney *b*, having air-space *d*, surrounding the smoke-flue D, substantially as described.

2. In a device for warming and ventilating houses, the combination of the heater C, having jacket C', surrounding hot-air chamber *c''*, with the rooms F, H, I, and G, the intermediate air-circulating flue, *a*, its registers and valves, and flue *a'*, having valve *g* open and valve *f'* in flue *f* closed, whereby the air that has once been heated may be again returned to the heater after circulating through the rooms and be reheated for circulation, substantially as described.

In testimony whereof I have subscribed my name to this specification in presence of two subscribing witnesses.

ELIJAH S. WICKLIN.

Witnesses:

GEO. A. SCOTT,
JNO. C. PRESCOTT.