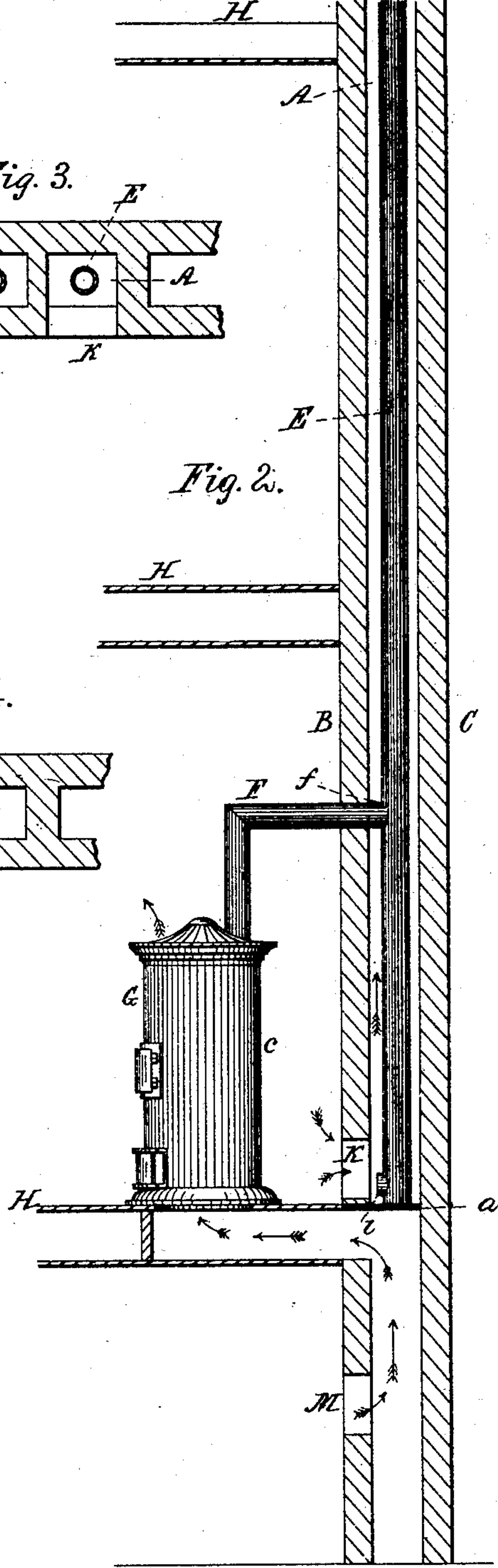
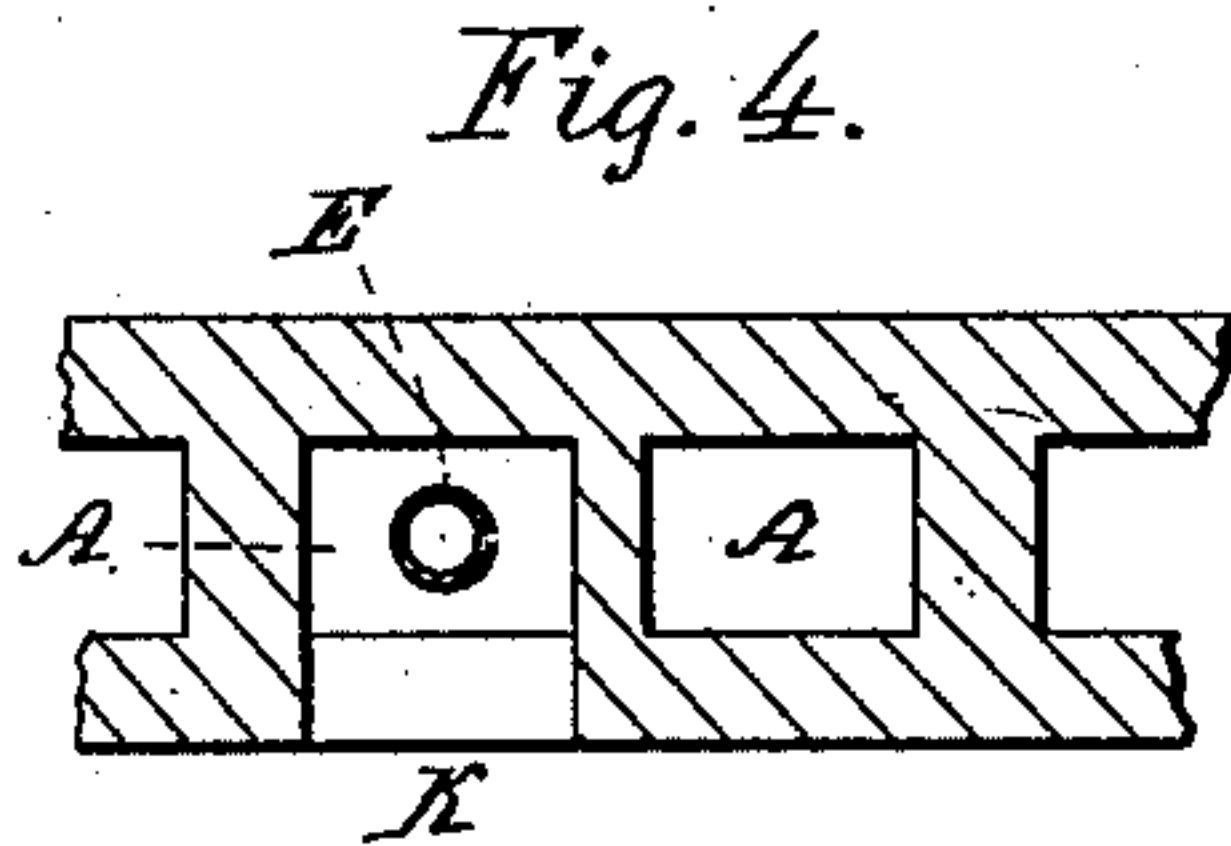
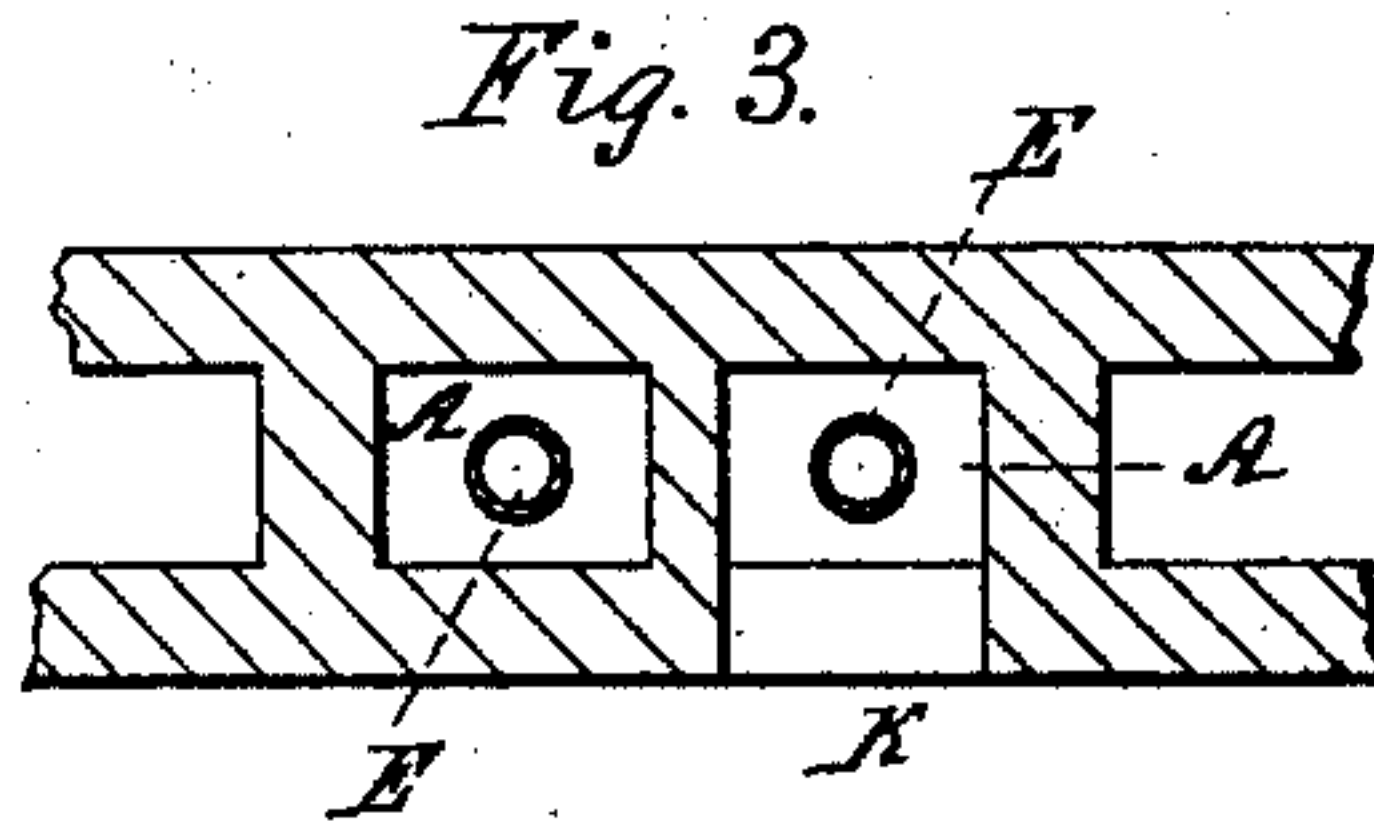
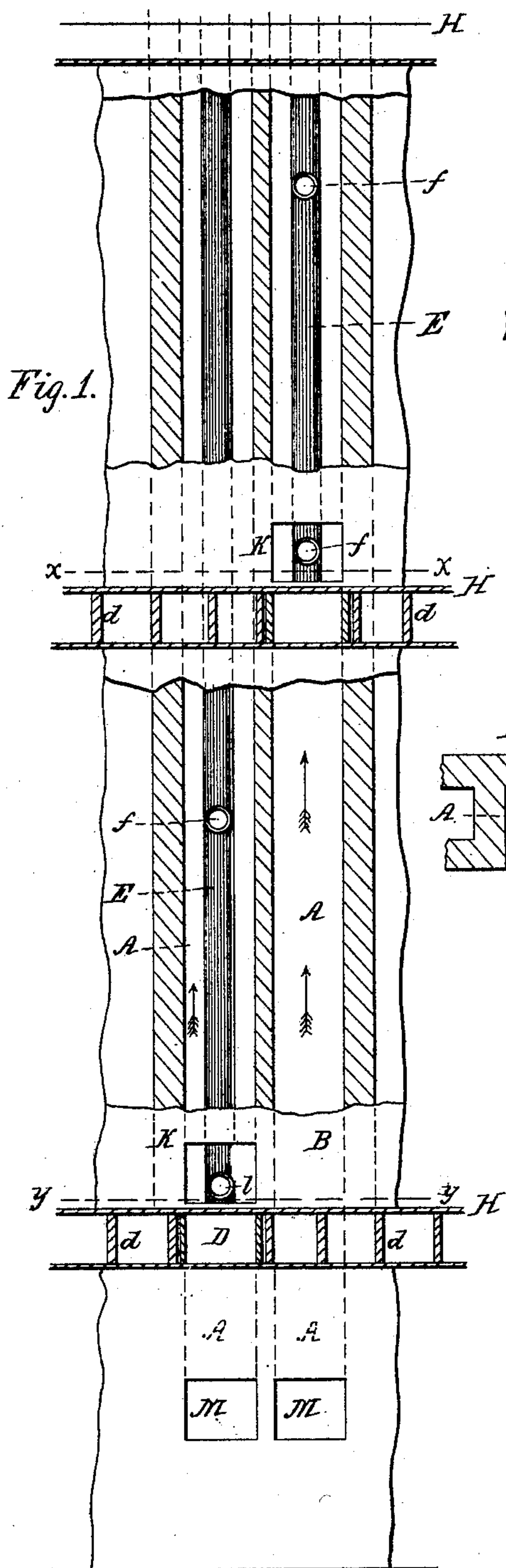


M. RUMBAUGH.

HEATING AND VENTILATING BUILDINGS.

No. 362,116.

Patented May 3, 1887.



Witnesses:
W. C. Firdinston.
James N. Ramsey

Inventor:
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Fig. 5.

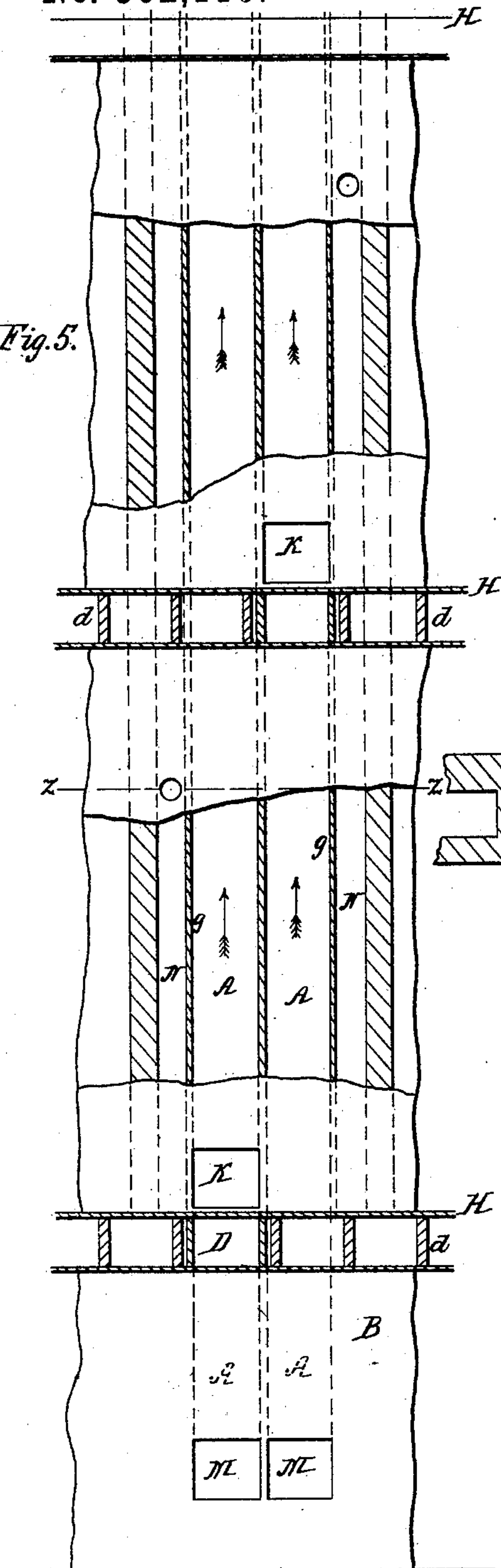


Fig. 6.

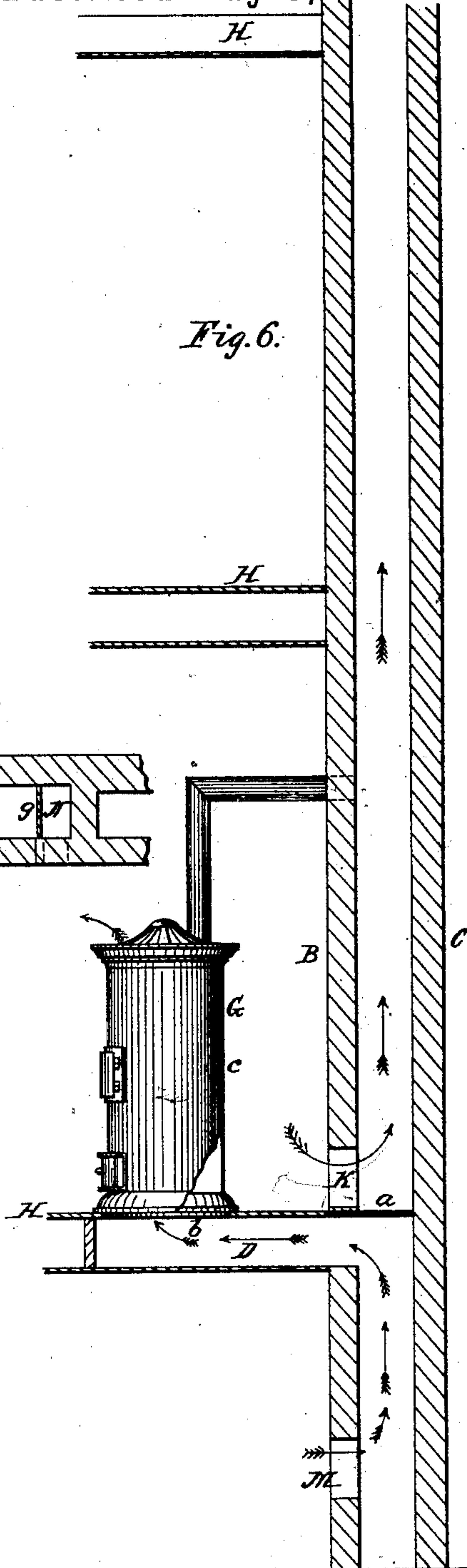
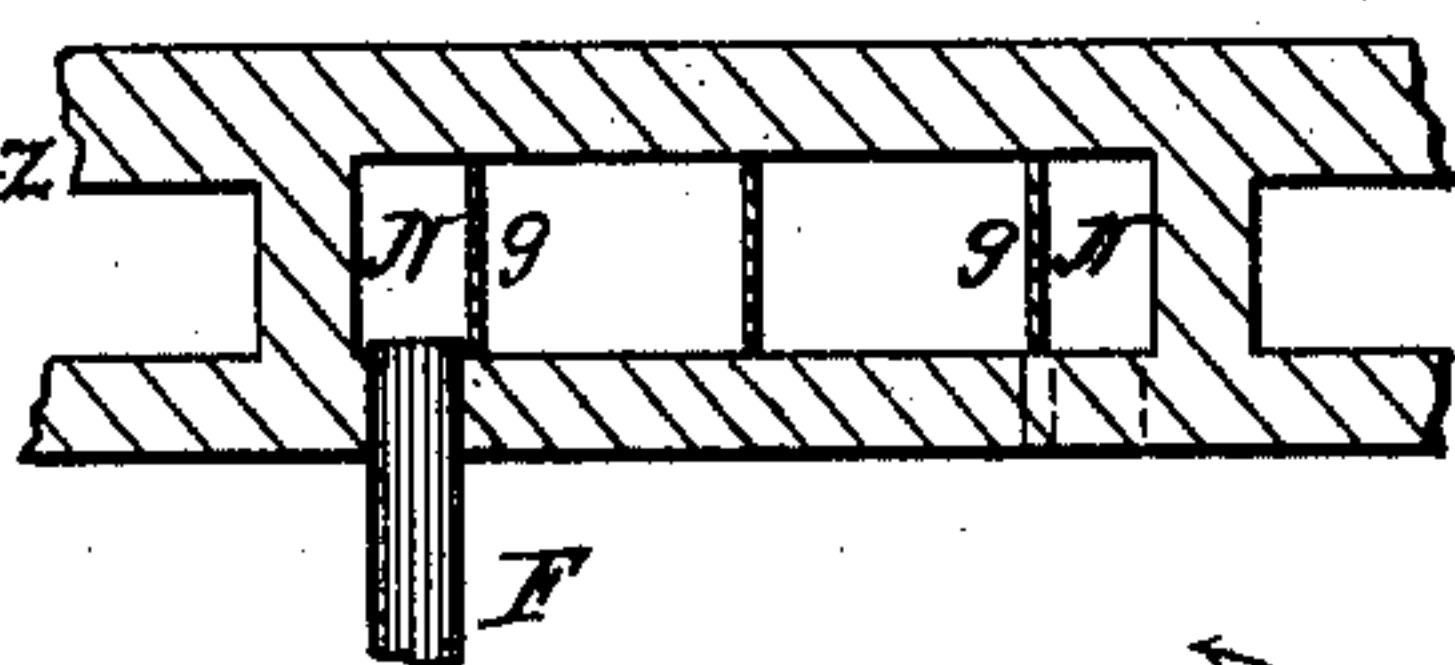


Fig. 7.



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UNITED STATES PATENT OFFICE.

MICHAEL RUMBAUGH, OF CINCINNATI, OHIO.

HEATING AND VENTILATING BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 362,116, dated May 3, 1887.

Application filed August 14, 1886. Serial No. 210,944. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL RUMBAUGH, of Cincinnati, county of Hamilton, and State of Ohio, have made a new and useful invention in Heating and Ventilating Buildings, of which the following is a specification.

The object of my invention is to provide a convenient and economical means of heating and ventilating buildings. For this purpose I construct the building with vertical flues extending in the space between the walls and communicating at their upper and lower ends with the external air. These flues I divide by a transverse partition or cut-off plate at or near the floor-level of the room with which it is designed to communicate. I also construct horizontal flues between the joists of the floor, one for each of the said vertical flues and communicating with its corresponding vertical flue below the transverse partition thereof. These horizontal flues I provide with an orifice opening into an air-trunk, which passes around or in close contact with the heater within the room to be heated and ventilated and opens at or near its top into said room. I further form an aperture through the wall of the room into the upper division of the vertical flue, in which upper division I place the smoke-stack or escape-flue for the products of combustion, introducing these products of combustion into it through a suitable pipe. Either or all of the flues, or the apertures communicating with them, may be provided with any convenient register or valve for regulating the draft. My plan contemplates a vertical flue and a corresponding horizontal flue for each room to be ventilated. These flues occupy no space otherwise available, and, being completely hidden, do not disfigure the building, either externally or internally, while they add little to the expense of construction. They afford a completely independent means of ventilation for each room. The fresh air, being brought first into contact with the heater, distributes its heat throughout the room, and pure air is thus obtained at the desired temperature and without the inconvenience of cold drafts.

In the drawings, Figure 1 is a face view of a portion of the inner wall of a building having the lathing and plastering removed in places

to expose the vertical flues and the joists. Fig. 2 is a vertical section taken through one of the upright flues, showing, also, in perspective the smoke-stack and the heater. Fig. 3 is a horizontal cross-section taken through $x x$, Fig. 1. Fig. 4 is a similar section taken through $y y$, Fig. 1. Fig. 5 is a modification of Fig. 1. Fig. 6 is a modification of Fig. 2, having also a portion of the jacket of the heater broken away. Fig. 7 is a horizontal cross-section taken through $z z$, Fig. 5, showing, however, the smoke-pipe in perspective.

A A represent vertical flues between the walls of the building B C, having partitions a .

D D represent horizontal flues communicating with the vertical flues, respectively, and opening at b into a trunk or drum or jacket, c , inclosing the wall of the heater G, or a portion thereof. This drum is opened at the top, so as to allow the air, after passing in contact with the heater, to escape into the room. If desired, a register may be provided at this point to regulate the current of inflowing air.

H H represent the several floors of the building; $d d$, the joists of the floor; K, the apertures from the room into the upper division of the vertical flues; E the smoke-stack, entered by the smoke-pipe F through suitable orifice, f . By providing an orifice, l , to the smoke-stack opposite the aperture K, and a removable cap for such orifice, I am able to readily remove the soot from the smoke-stack. The external air reaches the lower end of the vertical flue through apertures M, which may extend in either direction, and either communicate with a common inlet-pipe or directly with the outside of the building. The upper end of the flue may communicate with the outer air through the chimney, or in any other convenient place.

In the modified form of construction shown in Figs. 5, 6, and 7 I dispense with the interior smoke-stack and separate the smoke-flue N from the air-flue by any suitable partition, g . The heat from the heater causes the air in the drum to ascend, thus creating a suction to draw in the external air whenever the room is to be warmed for use. At the same time the smoke-flue serves to heat the air in the vertical air-flue above the aperture K, causing it to rise and

creating a suction to draw off the impure air from the room. The course of the air from the flue is represented by arrows.

It will be seen that I have thus an independent and economical means of ventilation for each room without occupying space that might otherwise be available for other purposes, while the heater, without the addition of other mechanical means of any kind, furnishes the necessary propulsion to both draw in the fresh air and exhaust the impure air.

While I have shown a jacket or drum as a convenient method of bringing the cold air in contact with the stove before its discharge into the room, I do not mean to confine my invention to the particular construction of this passage or chamber. The inflowing air may be carried by a pipe through the stove or other heater, or brought into contact with it in any other suitable manner so as to be heated before being discharged into the room.

Various forms of heater may be used. If a steam-heater is employed, the steam-pipe may be carried from story to story through the escape air-flue, or in such proximity with it as to afford the desired propulsion for the air in the flue, in lieu of the smoke-stack or parallel flue.

The flues for ventilating the second floor have the transverse partitions or cut-off plates located therein at or near the level of this floor. The same is true of each successive floor, the arrangement being the same in respect to each floor, as shown and described more particularly with reference to the ground floor. These flues can be varied in shape and arrangement, according to convenience or to suit the taste of the architect.

I claim—

1. In combination with the wall of a room, a flue having a transverse partition near the floor-level, a communication with the outer air below the partition, and another communication with the outer air at its upper end, a flue extending between the joists of the floor from the lower division of the first-mentioned flue and communicating with a pipe, whereby the inflowing air is brought in contact with the heater and thence discharged into the room, an aperture from the room into the upper division of the first-mentioned flue, and the pipe through which the products of combustion are carried off from said heater, extending, in contact with said flue, between said aperture and the discharge-opening, substantially as herein described.

2. The herein-described means of ventilating a building, consisting of a vertical flue for each room, extending between the walls, having communication with the external air at their upper and lower ends, and having a transverse partition near the floor-level of the room with which each communicates, horizontal flues extending between the floor-joists, each communicating with its respective vertical flue below its partition and with the surface of the heater of the room, and thence with the room itself, and an aperture leading from said room into the foul-air flue above the transverse division-plate, substantially as herein set forth.

MICHAEL RUMBAUGH.

Witnesses:

JAMES N. RAMSEY,
CHAS. REMELIN, Jr.