

W. N. ABBOTT.  
Hot-Air Furnace.

No. 132,554.

Patented Oct. 29, 1872.

Fig. 1.

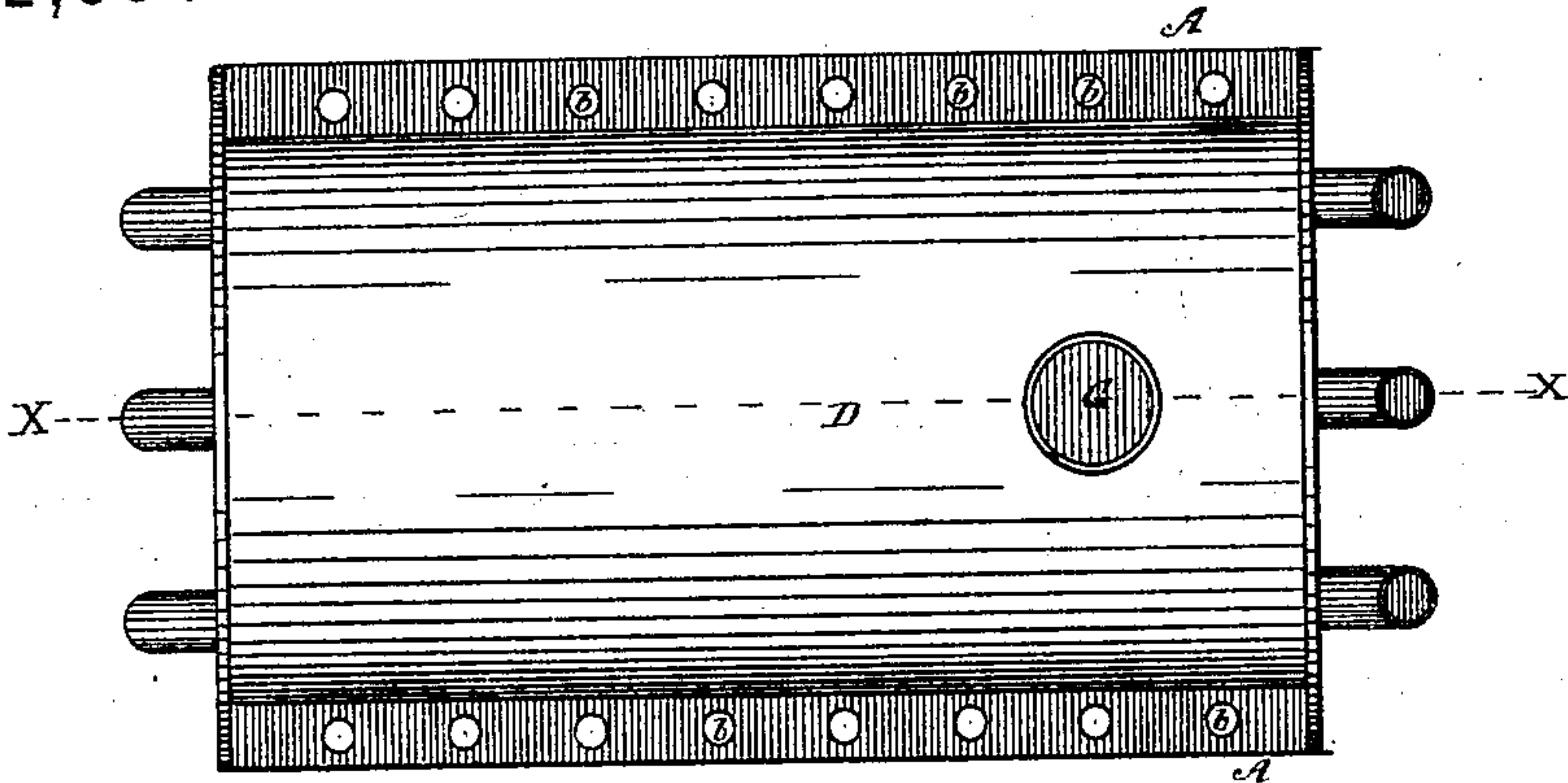


Fig. 2.

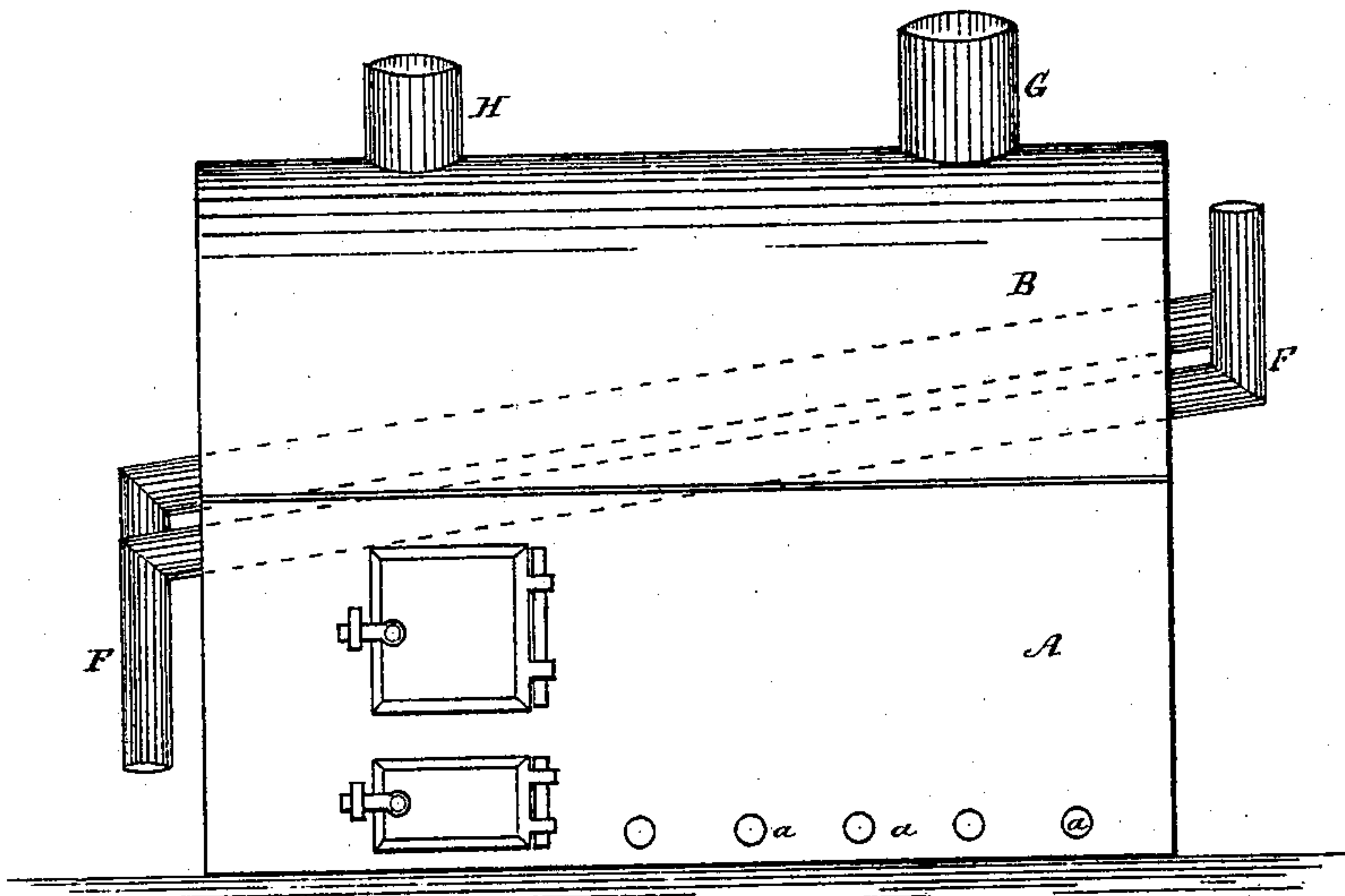
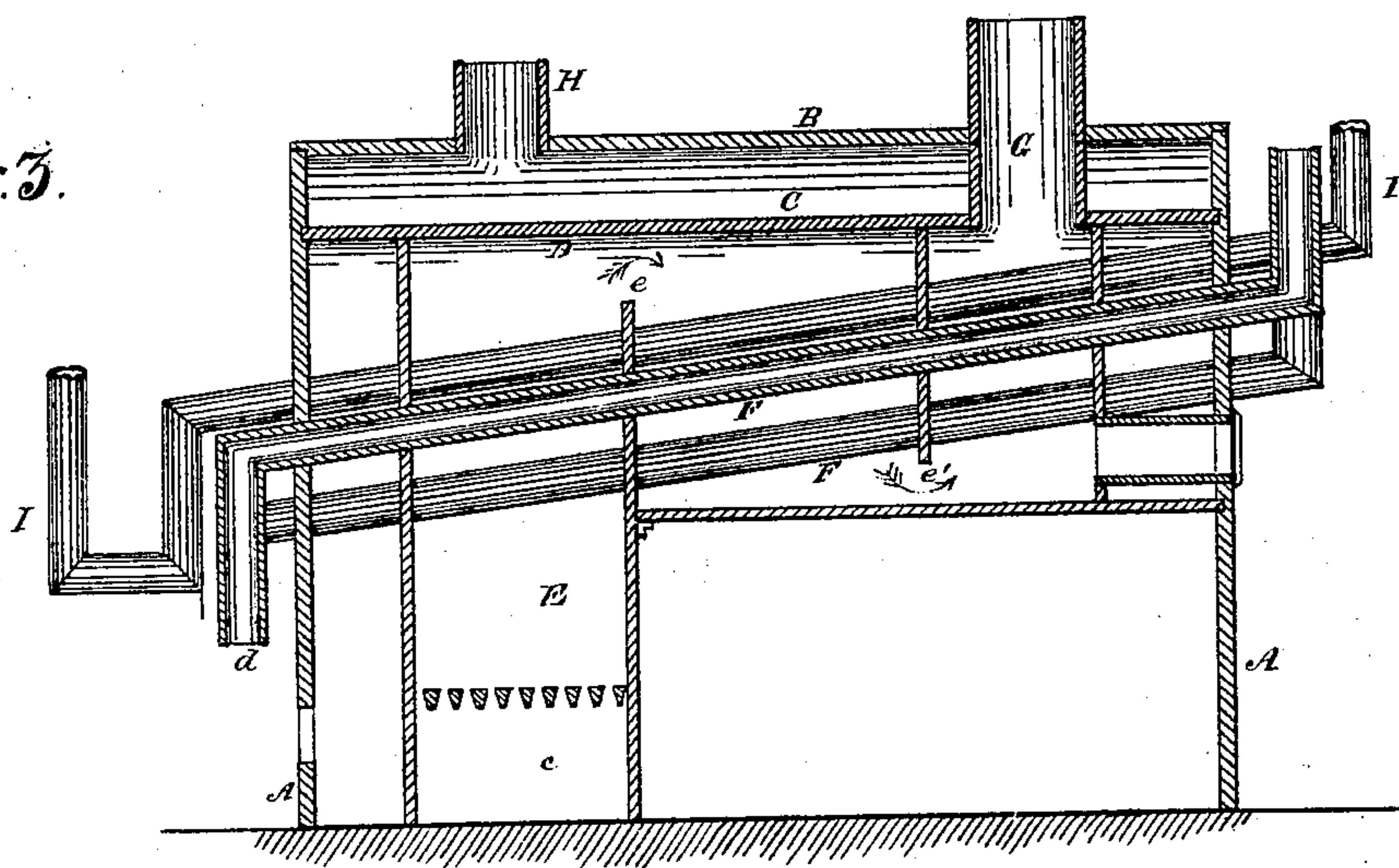


Fig. 3.



Witnesses

John. Thornton  
W. F. Tombs

Inventor.

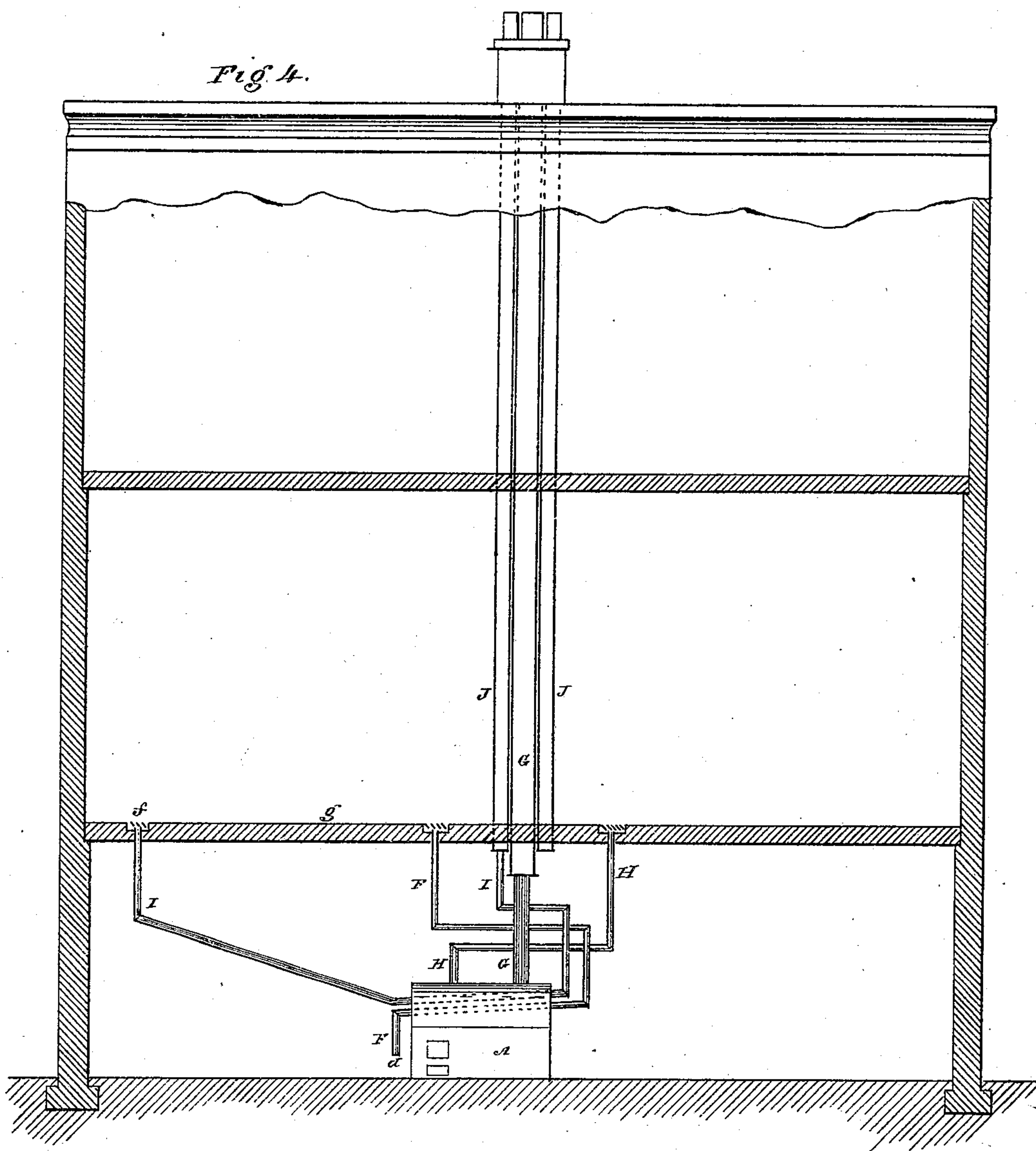
Warren, et al. e. Abbott

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# UNITED STATES PATENT OFFICE.

WARREN N. ABBOTT, OF NEW YORK, N. Y.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **132,554**, dated October 29, 1872; antedated October 26, 1872.

*To all whom it may concern:*

Be it known that I, WARREN N. ABBOTT, of the city, county, and State of New York, have invented a new and Improved Furnace for heating and ventilating buildings and removing impure air therefrom; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification and to the letters of reference marked thereon.

This invention has for its object to construct a heating-furnace in such a manner that it will heat a large quantity of air with a comparatively small amount of fuel and distribute the heated air equally through all the apartments of a building, and will also thoroughly ventilate the said apartments by drawing off the impure or vitiated air and supplying its place with pure air, and which will also occupy but little space in proportion to the amount of heat produced thereby. The nature of my invention consists, first, in the combination, with a hot-air furnace, rectangular in form and having its fire-box placed transversely therein and near one end of the same, of one or more hot-air tubes, which pass longitudinally and nearly horizontally through the said furnace, each of which said tubes forms a separate and independent hot-air chamber. By means of this arrangement an equable supply of hot air is provided for each apartment, which cannot be accomplished when several apartments are supplied from one common hot-air chamber, and the oblong form of the furnace in connection with the peculiar position of the fire-box insures an equal distribution of flame and heat among the several tubes. Secondly, in the combination of the said hot-air tubes arranged, as above described, with the hot-air chamber of a furnace having its fire-box placed transversely therein, for the purpose of increasing the area of heating-surface and economizing fuel; and, thirdly, in the combination, with the said hot-air tubes and furnace, all constructed and arranged as above described, of certain other tubes, and a separate upright flue, arranged as hereinafter described, for the purpose of simultaneously heating, ventilating, and drawing infected or impure air from an apartment, so that it may be at one and the

same time heated, ventilated, and freed from vitiated air.

To enable others skilled in the art to make and use my invention, I will proceed more particularly to describe its construction and operation.

In the drawing, Figure 1 represents a plan view of my improved furnace with the top plate or cover removed. Fig. 2 is a side elevation. Fig. 3 is a vertical longitudinal section taken through the line *xx* in Fig. 1. Fig. 4 represents a sectional elevation of a building with my improved furnace in position.

Similar letters of reference indicate like parts in each of the figures.

A A represent the outer walls of my improved furnace, which is rectangular in form, and is provided with a curved or semi-cylindrical cover, B. These walls A and cover B may be of brick or sheet metal, as may be best adapted for the size and position in which it is desired to make and place the furnace. Running parallel with the side walls are inner walls, which may be of sheet metal, and with the outer walls form two cold-air spaces that connect with the hot-air chamber C, which said chamber C is semi-annular in form and extends the entire length of the furnace between the outer cover B and the inner cover or top plate D. The cover or plate D connects with or rests upon the inner walls above mentioned. *a* and *b* are perforations or openings for admitting and supplying cold air to the hot-air chamber C. E is the fire-box, which, as will be seen, runs transversely across the furnace and near one end of the same. Underneath the fire-box is the ash-pit *c*. F F are hot-air tubes, which are for the purpose of conducting an independent and separate supply of hot air to each apartment of a building. These tubes pass longitudinally through the furnace, and are secured therein in a nearly horizontal position, being slightly elevated in the direction of the air-current. The cold air enters at their outer and lower end *d*, and is heated as it passes through that portion of the tube which passes through the furnace and is exposed to the fire, from whence it is conducted by a connecting-tube to an apartment of the building. Any number of these tubes may be used, according to the number of apartments to be



heated, and each tube forms an independent hot-air chamber, by which means an equal supply of hot air is insured to each of the several apartments. *e* and *e'* are fire-bridges, for the purpose of causing the heat and flame to circulate between the tubes, as indicated by the arrows. *G* is the chimney or smoke-stack. It will be seen that the hot-air chamber *C* is larger in proportion to the size of the furnace than that of an ordinary furnace, and in addition to this each of the tubes *F* forms a separate hot-air chamber, so that the area of heating-surface is greatly increased. *H* is a tube for supplying hot air from the chamber *C*. Any suitable number of such tubes, according to the size of the furnace, may be used in the ordinary manner. *I* is a tube for drawing infected or impure air from an apartment. One end, *f*, of this tube connects with an ordinary register located in the floor *g* of the apartment, from whence it passes downward and through the furnace in the same manner as do the tubes *F F*, and thence upward into a separate upright flue, *J*, which extends upward above the top of the building. By this means the vitiated air, especially if impregnated with the seeds of any contagious disease, is rendered innocuous by being passed through that portion of the tube which is at a red heat, and is then carried off through the flue *J*.

The advantages of my invention may be briefly stated as follows: First, it provides a separate supply of hot air for each room, so that the heat may be equally distributed throughout all the several apartments, which cannot be done when all are supplied from one

common hot-air chamber. Secondly, it secures the removal of vitiated and infected air, renders it harmless, and conducts it away from the building. Thirdly, the tubes, in connection with the peculiar arrangement of the fire-box, greatly increase the area of heating-surface, and secure economy in the consumption of fuel. Fourthly, by means of the joint operation of the tubes *I* and *F*, an apartment is heated, ventilated, and freed from vitiated air simultaneously and by one apparatus; and, in addition to these advantages, by the peculiar form of the furnace, the hot-air chambers are located near the ground, so that there is a greater length of vertical pipe between the furnace and flues, and the furnace occupies comparatively but little space in the cellar or basement in which it is placed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The tubes *F F*, constructed and arranged as herein shown and described, in combination with the hot-air chamber *C* of a furnace having its fire-box placed transversely therein, for the purpose of increasing the area of heating-surface and economizing fuel and affording a separate supply of hot air to each apartment.

2. In combination with the subject-matter of the above, the tube *I* and separate flue *J*, as shown and described, and for the purposes set forth.

WARREN N. ABBOTT.

Witnesses:

JOHN S. THORNTON,  
W. F. TOOMBS.