(No Model.)

# A. H. SMITH, Dec'd.

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## HEATING AND VENTILATING DWELLING HOUSES.

No. 514,970. Patented Feb. 20, 1894.

*Fig. 1.*

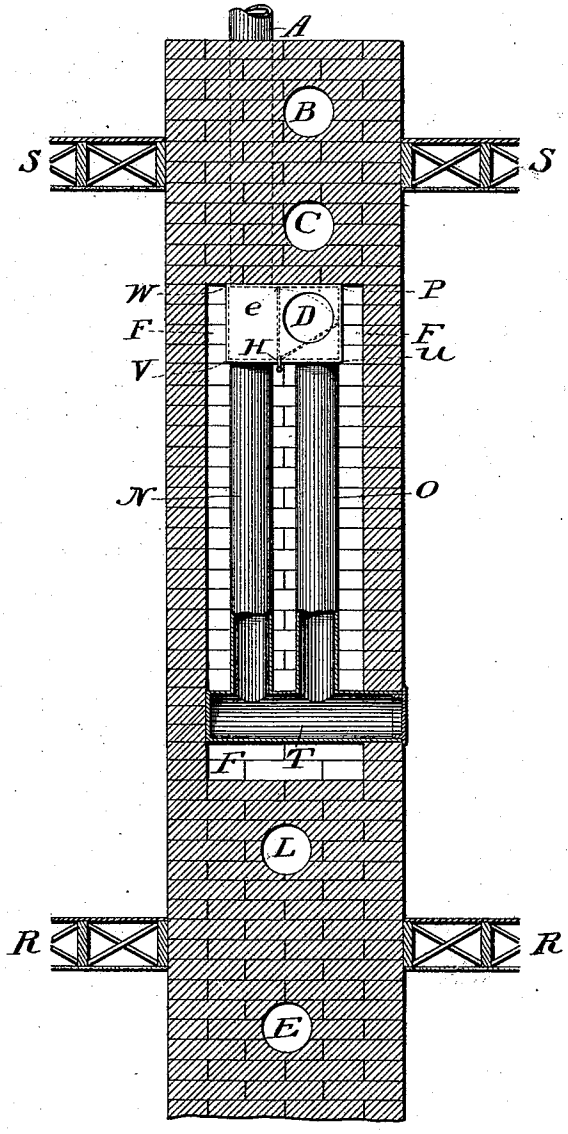



*Fig. 2.*

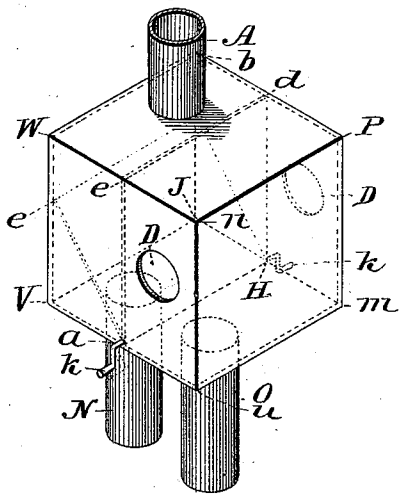
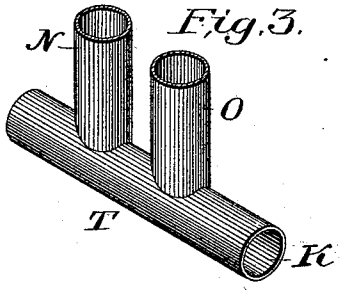



*Fig. 3.*

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## HEATING AND VENTILATING DWELLING-HOUSES.

SPECIFICATION forming part of Letters Patent No. 514,970, dated February 20, 1894.

Application filed February 23, 1892. Serial No. 422,595. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAM HERR SMITH, a citizen of the United States, residing at Memphis, in Scotland county, State of Missouri, have invented a certain new and useful Method of Heating and Ventilating Dwelling-Houses; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to corresponding parts.

Figure 1 is a perspective view of the invention, showing the chimney and the different parts of the device in position within it, also some of the openings through its outer walls into the space containing it. Fig. 2 is an iron box, shown at *b p v n*, Fig. 1. Fig. 3 is a pipe with T connections N and O, and shown at T, Fig. 1.

To more fully describe my invention: I construct a chimney of brick or stone, as shown in Fig. 1, at any desired place in the building, and of such size as may be desired, and extending from the ground out at the roof of the house, and having a hollow space or cavity within of not less than eight by sixteen inches, laterally, and extending vertically from its base to its summit, and that part of the space containing the device and as high as the thimble entered by pipe A I designate by letters F F.

R R is the first floor and S S the second floor of the building.

The chimney has numerous horizontal openings also, with suitable shape and size, extending from said space F F to its exterior. E is such an opening, located below the first floor, and receives a pipe extending from the outside of the house, and has a movable cap or door, and through which air from outside is admitted to the space F F, and within the space circulates about and heated by the pipes as far upward as the thimble entered by pipe A. C C are also such openings and are provided with registers and located above the iron box *b p v n*, upon any side of the chimney, and below but close to the ceiling of the first story. Its use is two-fold; in connection with one set of openings it admits heated air into the room into which it opens, and then in connection with another set permits the heated air of such room to pass out into another room through space F F. B B are similar openings with registers and located above and near the floor S S and below the thimble entered by pipe A. Its use is to admit air into the room heated by the pipes within the space, or which having been heated in a room is then admitted into the space at C, thence thrown into another room, through another C to an adjoining room, or through B to an upper room. L L are similar openings with registers and located upon any side of the chimney below the pipe T but above the first floor R R. Its use when E is closed is to admit air from the room to said space F, and keeps the device from overheating by the air circulating about it, and when E is also open, to admit cold air into the room.

K is an opening immediately above L L and receives the open end of the pipe T, and through it the device may be cleaned. It has a close fitting cap, over the open end. D D are also openings and located immediately below C and above the upper end of the door (hereinafter described) and opposite the iron box *b p v n*. Its use is to receive the pipe from the stove or grate through which the draft and proceeds of combustion with the escaping heat pass to the device within the space F F.

There is another opening located in the first story upon either side of the chimney, but it is best to place it upon the side opposite the stove or grate. Its width is the same as the space F F and its length is about six feet, the lower end being immediately above the register L, and below the pipe T, while the upper end terminates just below the iron box *b p v n*. It has a non-combustible door and when closed forms one side of said space the length of the door, and when open the device through it may be removed and replaced, and, also, direct radiation into the room from it results.

O is a pipe within the space F F, and extends downward from the iron box about six feet and rests upon the pipe T and connects it with the iron box. Its use is to make a

downcast draft pipe for the escaping proceeds of combustion and escaping heat and to increase the heating and radiating surface, and by the downward draft compelling a more complete radiation of the heat to the air about it. N is a similar pipe to O and is parallel with and distant about one inch from it and, also, similarly connecting the iron box and pipe T, but it is an up-cast draft pipe. Its use is similar to O. A is also a pipe within the space and rests upon the iron box and extends upward from it to a point above the register B, and then enters a closely fitting thimble whose sides unite with walls of the chimney, and terminates the upward extent of the space F F. Its use is for an outlet for the draft, and also affords additional radiating surface for heating the air about it in the cavity F F. T is also a pipe (shown in detail in Fig. 3) within said space and located above the lower end of said door and the opening L and about twenty inches from the floor R R. It may be straight or curved and with one end closed and the other open. The upper side has two openings to receive the pipes N and O. The open end fits into and is supported by the opening K, while the closed end rests upon a flange projecting from the chimney, and the other pipes and iron box rest upon and are supported by it in position.

The letters *b p v n* mark the outline of the iron box (shown in detail in Fig. 2). It is square or of any convenient form and is cut into two apartments by a movable partition or damper, *d e* H, and is opened and closed by handle *k*. Its sides are in contact with the sides of the chimney and at the ends are spaces (parts of F F) of sufficient width to permit the passage of the air past it. The under side has two openings to receive the pipes N and O, and the apartment entered by O also has openings, D D, on any side, and upon the top an opening to receive the pipe A, directly over opening entered by pipe N. It is located in the cavity of the chimney, so that the opening D in it coincides with the opening D in the chimney, and through which the draft pipes from the stoves or grates connect with the device. Its use is to afford a convenient method for the different pipe connections, for changing their direction, and for throwing the device out of action.

The pipes N, A, O and T are of the same size and of any convenient form and size which will permit the air to circulate freely about them in the cavity F F. The pipes and iron box may be made of sheet or cast metal, but it is best to make the pipes of sheet aluminum, because it is indestructible by the proceeds of combustion or by any ordinary heat, and because such plates may be made very thin to facilitate radiation.

When my invention has been constructed substantially as and for the purposes set forth and described, and one or more stoves connected with it at D, its operation is as follows: The partition or damper is thrown back and fire kindled, and the draft and proceeds of combustion with the escaping heat enter the iron box at D, pass over the partition and enter the pipe A, thence out at the top of the chimney. After the fire has been started the partition or damper is raised to a vertical position and the draft and products of combustion with the escaping heat are forced down through pipe O into T, thence into N, and thence again to the iron box, thence into A, and thence out as before. The escaping heat in its downward and then upward course is radiated through the pipes to the air about them and admitted at E or L. The air thus admitted and heated is then thrown into any room through the proper register, and thus thrown into rooms keeps the cold air from the room, maintains an even temperature and supplies the loss caused by the draft, rarefication and respiration. E may be closed and L alone opened to admit air about the device, and when E and L are open at the same time cold air rushes into the room, and if C and B are also open at the same time the heat in the room is rapidly transferred to another room, but if L is closed and the two latter continue open the heat is still transferred as before, but not so rapidly. Thus a new and useful method for heating and ventilating dwelling houses results, with a saving in fuel and labor, and an increase in healthfulness and cleanliness.

Having described my invention, its construction, operation, and effect, I claim as new and desire to secure by Letters Patent—

The combination with a drum having a smoke inlet and provided with a movable partition, pipes O and N communicating with said drum on each side of the partition, pipe T connecting the ends of pipes O and N and the outlet pipe A, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ABRAM HERR SMITH.

Witnesses:
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N. M. PETTINGILL.