A. J. ROBINSON.

HOT-AIR FURNACE.

No. 193,553. Patented July 24, 1877.

Fig. 1.

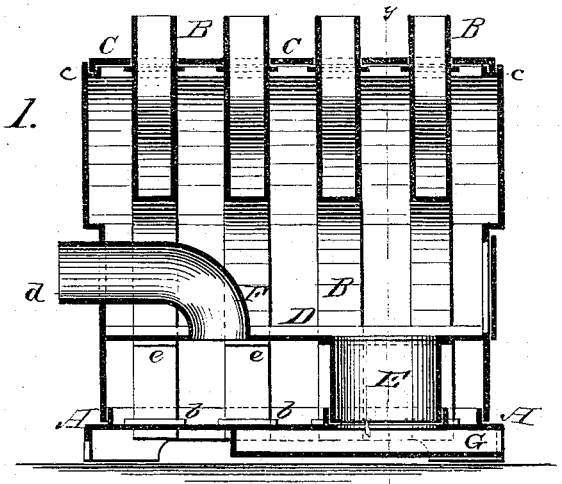


Fig. 2.

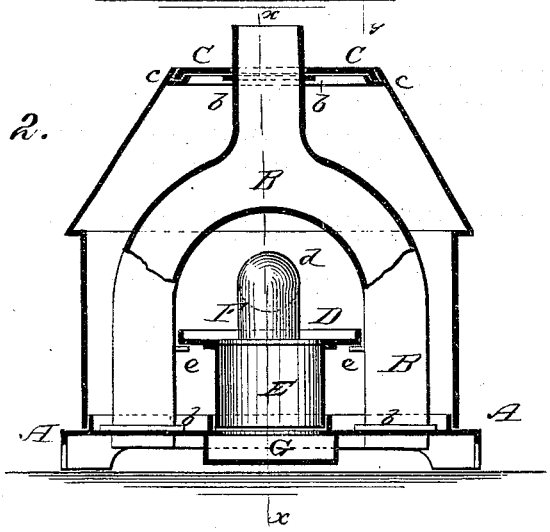
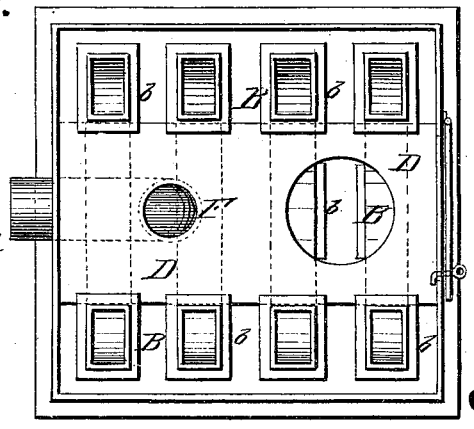


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ANDREW J. ROBINSON, OF TROY, NEW YORK.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **193,553**, dated July 24, 1877; application filed May 16, 1877.

To all whom it may concern:

Be it known that I, ANDREW J. ROBINSON, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Hot-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention relates to hot-air furnaces; and it consists in the construction and combination of parts, as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a central vertical section on line *x x*, Fig. 2. Fig. 2 is a transverse section on line *y y*, Fig. 1; and Fig. 3 is a bottom view, with the bottom plate removed.

A represents the bottom plate of a stove or furnace, provided with suitable openings on either side to receive the base of the heater B. This heater B (of which there may be any number) is provided with two openings for the admission of cold air, and one for the exit of the air after it has been heated. It is also provided at the bottom and top with projecting flanges *b*, adapted to be bolted fast, or otherwise secured to the top and bottom plates of the stove or furnace. The heaters may be of any desired shape, and may be so arranged that the cold air can be admitted through the side walls of the heater instead of through the bottom, or the hot air may be taken out through the side walls instead of the manner now shown. C is the top plate, provided with flanges or edges turned down, and fitting loosely in a groove, *c*. This groove will be filled with sand to secure a tight joint, and also to allow the heater B to expand and contract, and the top plate to rise and fall in the dry sand without injury to any part of the heater or stove. D is a plate, which is placed on a line with the top of the fire-pot E, and is provided with a collar, F, adapted to receive the smoke-pipe *d*, which issues from one end of the furnace or stove, as shown in Figs. 1 and 3. The edges of this plate are turned up and supported by flanges *e* upon the heater B. This plate may be made in one or more pieces, and covers the whole of the space between the pipes of the heater. G is an ash-pit, which is placed under the bottom plate.

There may be a grate for the fire-pot and a door for the ash-pit, of any desired construction.

The object of my invention is to heat air by passing it through separate pipes or heaters, having two or more openings for the admission of cold air, and one opening for the escape of hot air, so as to form an unbroken connection between the register where the hot air is delivered and the cold air.

In stoves it is proposed to take cold air from a place other than that in which the stove stands, so as not to take cold air from the room in which the stove is placed.

The advantages of this heater over others is, first, the absence of joints in the heater will not allow any gas to escape with the hot air in the rooms to be heated; second, by the unbroken connection between the registers and cold air each pipe must deliver an equal amount of heat—that is, there is in this furnace no hot-air chamber from which all pipes receive their supply, as is the case in other furnaces, and by my arrangement one pipe cannot steal from the other, as is often the case; and, third, any number of pipes can be heated by the same fire; and more than one fire may be used—for instance, one in each end, for use in very cold weather.

I do not claim a sand packing, broadly, as such a packing has been heretofore used in a groove formed by converging or V-shaped lines; but by this arrangement the contraction and expansion of the plate, and the joining, all tend to work the sand to the bottom, and lift the plate, and thereby prove injurious rather than beneficial, while by having a right-angled groove and tongue, or with equal width at the top and bottom, the movements of the metal do not work the sand to the bottom of the groove.

Having thus fully described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a furnace or stove the heater B, provided with flanges *b*, in combination with the

plates A, C, and D, substantially as and for the purpose set forth.

2. In a furnace or stove the plate D in combination with the fire-pot E, smoke-pipe *d*, and ash-pit G, substantially as and for the purpose set forth.

3. In a furnace or stove the combination of the heater B, having flanges *b e*, plates A C D, groove *c*, fire-pot E, smoke-pipe *d*, and ash-pit G, constructed and arranged as and for the purpose set forth.

4. In a furnace or stove the groove *c*, having equal width at its top and bottom, with the corresponding tongue of the plate C, and a sand filling or packing, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ANDREW J. ROBINSON.

Witnesses:
J. B. SINSABAUGH,
J. H. REILAY.