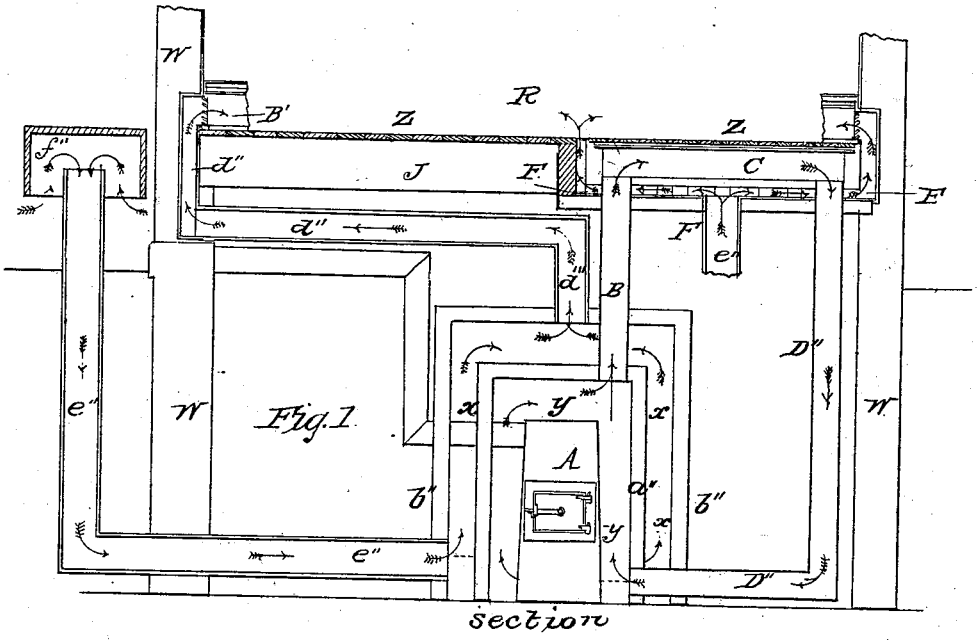
# E. Y. ROBBINS.

## Ventilating Apparatus.

No. 48,722. Patented July 11, 1865.

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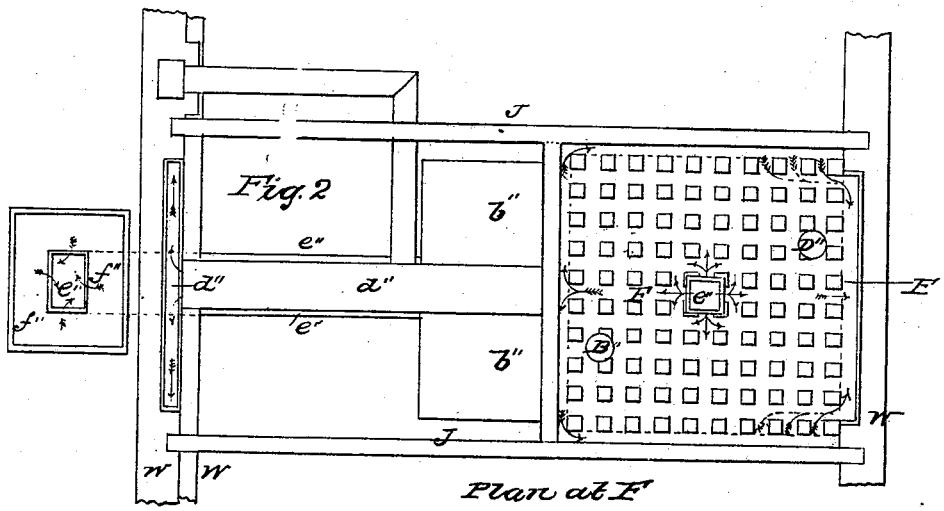


Witnesses
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# UNITED STATES PATENT OFFICE.

E. Y. ROBBINS, OF CINCINNATI, OHIO.

## VENTILATING APPARATUS.

Specification forming part of Letters Patent No. **48,722**, dated July 11, 1865.

*To all whom it may concern:*

Be it known that I, E. Y. ROBBINS, in the city of Cincinnati, county of Hamilton, and State of Ohio, have invented a new and Improved Method of Warming and Ventilating Houses, of which the following is a full and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in excluding the heated air from the furnace, steam-pipes, or other iron heater from the rooms and using it only for warming a portion or portions of the floor, (or the walls,) made of tile or other non-metallic substance, and in bringing into the rooms for respiration air only warmed to a moderate temperature by passing over a large earthen surface not highly heated, as iron furnaces and steam-pipes usually are, but only warmed to the temperature of the earth's surface in a summer's day.

R, Figure 1, represents a room, Z being the floor.

A represents a common iron furnace, stove, or other heater placed below the room or rooms to be warmed. A brick wall or other earthen casing, $a''$, Fig. 1, is built around the iron heater, at a few inches from it on all sides. The hot air rising from the surface of the iron passes up through the pipe B; but instead of entering through a register into the room, as is the case with other heating apparatuses, it is thrown into a hot-air chamber, C, four or five inches deep, (more or less,) immediately beneath the floor. The upper boundary of the hot-air chamber is on a level with the floor, and forms a portion of the floor. It may be an enlarged hearth, or it may be a piece of tile-work or other non-metallic material in any part of the floor; or, if preferred, the hot-air chamber may be built in the wall. The hot air, after circulating through this hot-air chamber C, or successively through several hot-air chambers situated in different rooms or in different stories, one above another, descends through the return pipe or flue D'', Fig. 1, to the bottom of the furnace to be heated, and again rises through the pipe B to take the same course; and so it circulates round and round continuously.

To secure fresh air for ventilation, a second brick wall or casing, $b''$, is built, surrounding the whole structure of the furnace before described, and six or seven inches (more or less) on all sides from the first wall, $a''$. This first wall $a''$ becomes warmed through, and its outside affords a large earthen surface for warming fresh air for ventilation. Fresh air from without is brought in through the air-duct $e''$ and thrown between these two walls $a''$ and $b''$, and, becoming slightly warmed, rises through the flue or pipe $d''$ and enters the room through a perforated base-board, B', or through registers in the walls or floor. Thus I have two distinct and separate air-channels surrounding the furnace, one—the ordinary hot-air channel—$y'$, immediately around the iron furnace, where the air which circulates through the hot-air chambers C beneath the floor is heated, (this air not being permitted to enter the rooms,) the other, $x$, external to this, between the walls or casings $a''$ and $b''$, in which the air for ventilation is moderately warmed, and afterward brought into the rooms through $d''$.

In case of warming by a steam or hot-water furnace, I secure the same supply of fresh air from an earthen surface by first incasing the boiler with bricks, as is usually done, and then building another wall or casing at a little distance around this, and passing fresh air between them and carrying it up into the rooms through the pipe or air-duct $d''$.

In cases where a large amount of ventilation is necessary, as in school-houses, churches, &c., or in any case where the fresh air does not enter with sufficient rapidity, a small amount of mechanical force, either of water, steam, or horse power should be applied to impel it in more rapidly.

To prevent soot from being brought into the rooms with the fresh air, especially in cities where bituminous coal is burned, I construct the external mouth of the air-duct $f''$ to open downward, so that the air that enters must first rise. I also make this external mouth or entrance for the air much larger in sectional area than the duct itself, (six or eight times as large, if necessary, or even more,) so that the air, having a large space to enter through, shall enter slowly and have but slight draft to carry the soot up into the duct. This may be effected either by placing over the top of the exter-

nal upright portion of the air-duct a large inverted hood or box, $f''$, open below, the mouth or rim of the box or hood reaching a little below and some distance round the top of the duct itself, or the duct may be made to come out horizontally from the wall and terminate in a large box or funnel-shaped mouth, open downward. Across this large mouth opening downward, and through which the air must rise to enter the duct, wire-gauze or a net-work of cotton or other fabric may be stretched, so that the soot will be caught on the under side of it.

What I claim as my own invention, and desire to secure by Letters Patent, is—

1. The arrangement for warming the floor or portions of the floor by causing the hot air from the furnace to circulate through a hot-air chamber, C, and return to the bottom of the furnace through the return pipe or flue D$''$, substantially as set forth.

2. The construction of the outer fresh-air or warm-air channel, $x$, Fig. 1, entirely separate and distinct from the inner or hot-air channel $y$, the air in the latter, heated by contact with the hot surface of the iron, being excluded from the room and only used for carrying heat to the hot-air chamber beneath the floor or in the walls, while the air from the former, $x$, being warmed entirely by contact with the outer surface of the brick or earthen wall or casing $a''$, is conducted into the room for respiration.

E. Y. ROBBINS.

Witnesses:

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