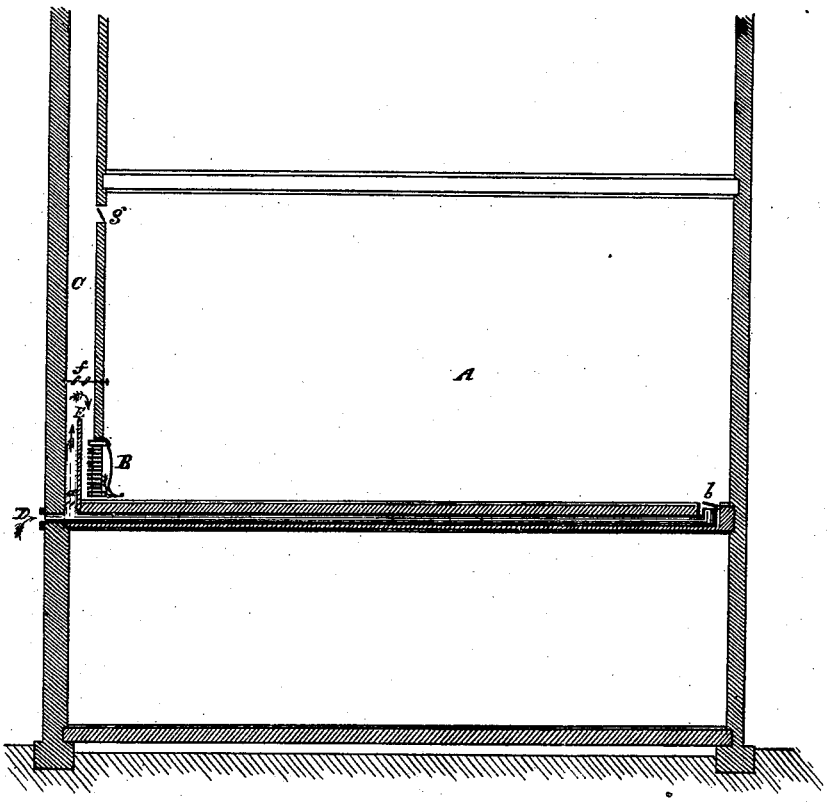
W. Ennis,

Ventilator.

No. 110,641. Patented Jan. 3. 1871.



Witnesses.

Edmd. J. Thornton

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Inventor.

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United States Patent Office

WILLIAM ENNIS, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 110,641, dated January 3, 1871.

IMPROVEMENT IN VENTILATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM ENNIS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and improved Plan for Distributing Heat in Buildings; and I do hereby declare that the following is a full 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.

The object of this invention is to provide a plan for the more thoroughly distributing heat and fresh air in a building so as to warm and ventilate the same, and keep the supply both of heat and fresh air constantly under complete control, and thus regulate the temperature as may be desired; and likewise to use the heating apparatus for the purpose of drawing in fresh air and forcing out the foul or vitiated air, and to ventilate the room either from the upper part or the lower part, or from both top and bottom at the same time, as may be desired.

The nature of this invention consists in a peculiar and novel arrangement of the radiator in connection with flues and valves or dampers, as will be hereinafter more fully described and explained, for the purpose of obtaining a supply of pure air from without the building; and either heating it by causing it to come in contact with the heating surfaces of the radiator as it descends, so as to enter the room in a heated state, or to conduct it into the room without being heated, for the purpose of ventilating the same; and in arranging the valves or dampers so that the supply both of heated and of cold air be kept constantly under complete control; and also in arranging the radiator in such a manner that it will serve to draw the fresh air into the room and drive out the foul or vitiated air or gases.

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

The figure represents a vertical section of a portion of a building with my improved plan for distributing heat.

A may represent the room to be warmed and ventilated.

B is a radiator of ordinary construction, located and fixed at any convenient height within the flue or ventilating-shaft C, through which said radiator the air is caused or made to descend in contact with its heating surfaces before it enters the room.

D is a flue communicating with the external atmosphere for the purpose of conducting fresh air into the room, either heated by contact with the radiator, as above described, or at the temperature of the external atmosphere or nearly so.

This flue may be located or carried under the floor of the room, and is provided with two valves or dampers, *a* and *b*—the former for admitting fresh air into the ventilating-shaft C, within which it comes in contact with the radiator, and enters the room in a heated state, and the latter for admitting it into the room at or near the temperature of the outside atmosphere.

E is an upright partition within the ventilating-shaft, which is carried a short distance above the top of the radiator, and is for the purpose of bringing the air admitted by the valve *a* into contact with the upper portion of the radiator B, and causing it to pass downward through the radiator in contact with its heating surfaces, from whence it passes from the lower portion of the same into the room in a heated condition.

f is a valve or damper located in the ventilating-shaft above the top of the partition E, and is for the purpose of allowing the escape of carbonic-acid gas and other heavy gases which settle toward the floor, and which are forced up the ventilating-shaft by the fresh air admitted through the valve *b* when the valve *a* is closed.

g is a valve or damper for the purpose of allowing the heated and vitiated air or lighter gases to pass from the room into the ventilating-shaft.

In the drawing the radiator is shown located near the floor, but it may be placed at any convenient height in the flue, provided that the air to be heated is made to descend through the same in contact with its heating surfaces.

It will be seen that, by my improved plan of distributing heat, the temperature and ventilation of a room or a number of rooms can be adjusted and modified with the greatest nicety, by opening or closing the several valves designed to produce the desired result.

When the room is to be heated the valves *f* and *b* are closed and the valve *a* is opened, by which means the air entering by the flue D is made to pass downward through the radiator in contact with the heating surfaces before it enters the room.

When it is desired to cool the air in the room as much as possible and produce the greatest amount of circulation therein, the valve *a* is closed and the valves *b*, *f*, and *g* are opened, by which means the heat is caused to pass up the ventilating-shaft, and the vitiated air and gases are forced through the valves *f* and *g* by the currents of fresh air admitted from the external atmosphere through the valve *b*.

Again, when it is desired to both heat the room and ventilate it at the same time, the valves *b* and *f* are closed and the valves *a* and *g* are opened, so that

fresh air is admitted through the valve *a*, and the vitiated air and lighter gases escape by the valve *g*.

It will also be seen that, by these means, the room may be ventilated from both the top and the bottom at the same time, and, further, that the heating apparatus is utilized for the purpose of forcing out the foul or vitiated air and gases by drawing in fresh air from the external atmosphere.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent of the United States, is—

In combination with the shaft C and end-induction tube D, the partition-wall E, located within the said shaft C, for the purpose of carrying the air downward upon the heating surfaces of the heater or radiator B, and from thence into the room A, as herein shown and described.

WILLIAM ENNIS.

Witnesses:

JOHN S. THORNTON,

WM. VENTZ.