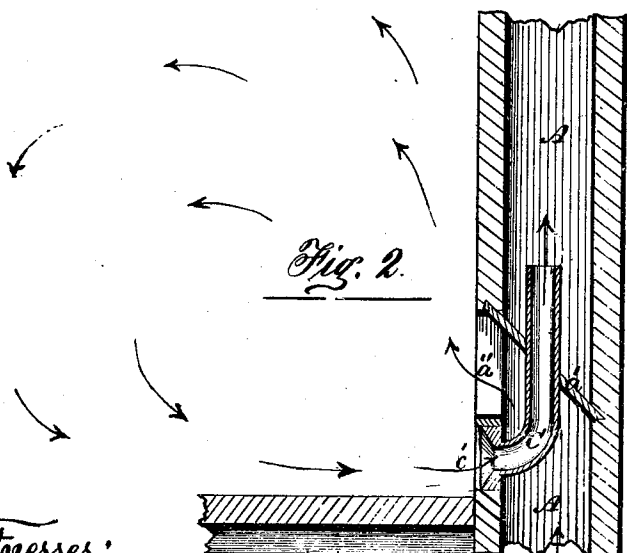
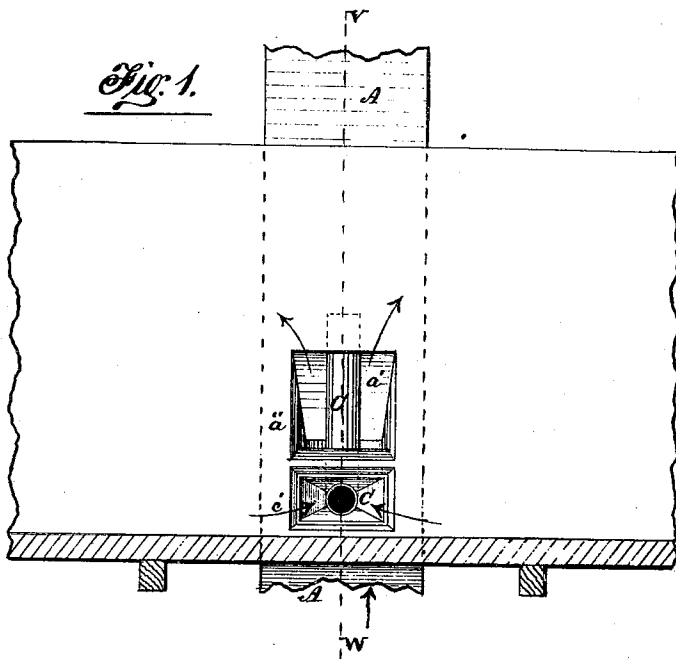


G. K. Barker,

Ventilator.

No. 111,718.

Patented Feb. 14, 1871.



Witnesses:

Benjamin Morrison
Wm. H. Morrison

Inventor:

G. K. Barker

UNITED STATES PATENT OFFICE.

GEORGE R. BARKER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VENTILATORS.

Specification forming part of Letters Patent No. **111,718**, dated February 14, 1871.

I, GEORGE R. BARKER, of the city of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Ventilators for Buildings warmed by air-heating furnaces in the basements or cellars, of which the following is a specification:

Nature and Objects of the Invention.

My invention relates to the combined arrangement, in a building to be warmed by an air-heating furnace in the cellar or basement, of a flue within a flue, in such a manner that while the one flue operates as a free passage-way for the heated air from the furnace to enter and ascend within the inhabited room above which is to be warmed thereby, the other flue operates as a drain or free passage-way for the exit of the contaminated or impure air, which, cooling, descends toward the floor; the object of my invention being to afford a heated outlet-flue with its mouth near the floor of the room, for more rapidly drawing off the cooled and contaminated or impure air of the inhabited room, while a constant supply of fresh warm air from the furnace below enters immediately above the open mouth of the said outlet-flue and ascends within the room. Thus the two said flues, operating together, warm and ventilate the said inhabited room in the most healthful and effectual manner; and, occupying no more space than either one of the two separate flues heretofore required for the said two results, the cost of construction is proportionately less.

Description of the Accompanying Drawing.

Figure 1 is a sectional elevation of a room, showing a front view of my improvement applied. Fig. 2 is a vertical transverse section of the same on the left-hand side of the dotted line V W of Fig. 1.

General Description.

The hot air passes from the furnace (not shown) upward in the flue A to a stop-plate, *a'*, and thence through the register-opening *a''* into the room in ascending currents toward the ceiling. The flue for the discharge of the contaminated or impure air consists, in this instance, of a sheet-metal pipe, C, bent so that its lower end fits closely around and opens

into a smaller register-opening; *e'*, which is fixed directly below the hot-air-register opening *a''*, its upper end passing, in an air-tight manner, through the stop-plate *a'*, upward into that part of flue A which is above the plate *a'*.

In the joint operation of that part of the hot-air flue A which is below the stop-plate *a'* and the pipe C for the discharge of the impure air, it will be seen that the said pipe C will become and remain heated by the surrounding hot air passing up from the usual furnace below, and that, consequently, a strong current of the descending air, which in an inhabited room necessarily becomes contaminated by the addition of carbonic acid and animal matter, and also deprived of its due proportion of oxygen, will pass out through the said pipe C, and thus allow continual accessions of the fresh hot air from below.

It will also be seen that, if it be desired, the rooms above may be steadily supplied with fresh warm air, and the subsequently contaminated portions carried out, as described, by simply extending the pipe C upward in the flue A accordingly, and adjusting inlet-pipes to communicate between the said pipe C and respective register-openings made near the floors for the discharge of the contaminated air, so as to operate in combination with respective register-openings directly above the latter, communicating with the flue A, divided into sections accordingly by stop-plates fitted with adjustable valves or slides in the usual well-known manner, for the purpose of letting the hot air into or stopping it off from either of the stories of the building.

As a modification of the combination of the hot-air-supply flue A and the impure air-discharge pipe C, the said pipe C may be extended downward into the hot-air chamber of the furnace, and made to discharge the hot-air through the upper register-openings *a'*, while the flue A, being heated thereby, will serve the purpose of carrying off the impure air to be admitted into it through respective register-openings, like *e'*, fixed directly below the hot-air register-openings *a''*, as shown in the drawing.

In the modification the flue A may also serve the purpose of a smoke-flue from the furnace. In either case the same chimney or main

flue A serves for both heating and ventilating, the vitiated air in both cases escaping at or near the floor of the room to be warmed, and the hot air entering at a point which is immediately above the said opening for the vitiated air, or, if desired, at any point between it and the ceiling.

I am aware that the same main flue or chimney-shaft has been used simultaneously for heating and ventilating by admitting the hot air into the room at or near the floor and discharging the vitiated air at or near the ceiling; therefore, I do not desire to claim broadly the use of the same main flue or chimney-shaft for heating and ventilating; nor do I desire to claim the introduction of the hot air at or near the floor and the discharge of the vitiated air at or near the ceiling; but what I desire to

secure by Letters Patent is confined to the following

Claim.

In combination with the same chimney-shaft or main flue A, a warmed flue having its mouth *e'* at or near the floor for drawing off the vitiated air, a hot-air-supplying flue having its discharge-openings *a''* above the mouth *e'* of the said vitiated-air flue, and the partition *a'*, the said parts being arranged to operate together, substantially as and for the purpose hereinbefore set forth and described.

GEO. R. BARKER.

Witnesses:

BENJ. MORISON,
WM. H. MORISON.