G. R. BARKER.

Hot-Air Flues for Heating-Furnaces.

No. 141,101. Patented July 22, 1873.

Fig. 1.

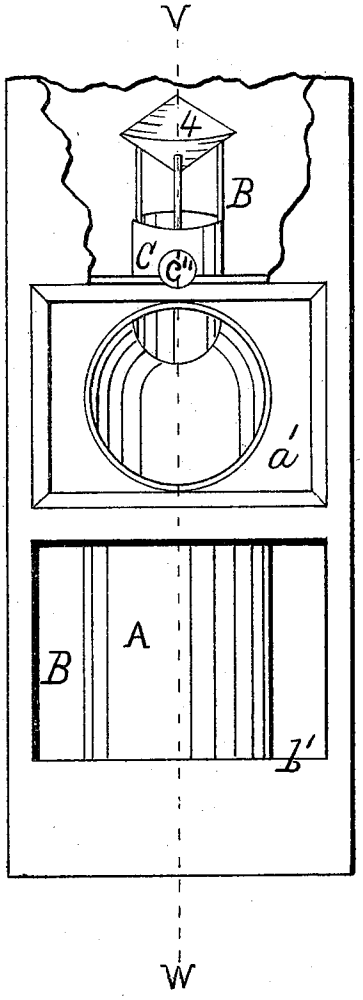
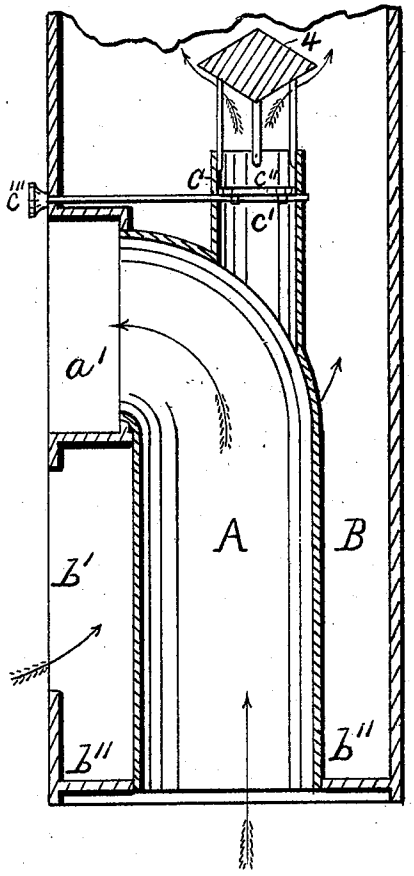


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE R. BARKER, OF GERMANTOWN, PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HOT-AIR FLUES FOR HEATING-FURNACES.

Specification forming part of Letters Patent No. **141,101**, dated July 22, 1873; application filed March 31, 1873.

To all whom it may concern:

Be it known that I, GEORGE R. BARKER, of Germantown, in the city of Philadelphia and State of Pennsylvania, have invented certain Improvements in Ventilators for Buildings, of which the following is a specification:

My improvement relates, generally, to buildings warmed by heated air from a furnace in the cellar or basement, and especially to the combined arrangement of ventilators and heaters described in the Letters Patent No. 111,718, granted to me on the 14th day of February, 1871, whereby a single flue in the wall is made to serve the double purpose of heating and ventilating.

It is often the case in parlors of dwellings, and more especially in public halls and churches warmed by heated air, that when the rooms become crowded the heat becomes excessive, and requires to be shut off by closing the inlet-register, whereby the introduction of a sufficiency of fresh air is prevented, and the air of the room soon becomes vitiated, oppressive, and sometimes, even, fatal, because of the sluggish action of the ventilators consequent upon the preclusion of the fresh air by the closing of the hot-air register, as before stated.

The object of my present improvement is to provide against this cumulative vitiation of the air when the fresh-air register of my said patent, No. 111,718, is closed, under the circumstances stated; and my invention consists in the arrangement and combination of an adjustable valve with the flue or pipe which conducts the hot air from the furnace below into the room, in such a manner that a portion of the hot air, when the entrance-register is open, or the whole of it, when the said register is closed, can be sent upward around the exhausting flue or pipe of the ventilator, which is intended to carry off the vitiated air, and thus heating the said flue or pipe, and, consequently, increasing its exhaustive function sufficiently to cause a strong upward draft through the same, which will keep a supply of fresh cold air entering the room through the fittings of the doors and windows, and the discharge of the vitiated air.

Figure 1 is a front view of my said patented ventilator embodying my present invention. Fig. 2 is a vertical central section of Fig. 1, showing the side at the left hand of the dotted line *v w*.

A is the pipe which conducts the hot air from the furnace below (not shown) to the register-opening *a'* of the room; *b'*, the opening through which the vitiated air enters the flue B, all communication of the same with the hot-air furnace below being cut off by the horizontal partition *b''*, the said parts being one modification described in my said Letters Patent. Another modification is simply an inversion of the same parts, so that the pipe A becomes the exit for the vitiated air, and the flue B the entrance of the hot air from the furnace. C is the adjustable valve, whereby either a portion of the hot air of the pipe A, when its register is open, may be discharged into the vitiated air-flue B, or the whole of it, when the said register is closed. It consists of a short open pipe, *c'*, which is fixed vertically in the upper end of the pipe A, and a valve-plate, *c''*, and stem *c'''*, arranged to be either partially or wholly opened and closed from the outside of the register-plate of the pipe A. Above the valve a deflecting protector, 4, is fixed, so as to spread the ascending hot air, and prevent flue-dirt from falling into and obstructing the valve.

It will be seen that if the valve C be closed, the whole of the hot air rising through A will pass into the room through the register-opening *a'*; that if the valve C be partially opened only a proportional portion of the hot air will pass through the register-opening *a'*; and that, if the register-opening *a'* be closed, and the valve C fully opened, all the hot air rising in A will pass upward through it into the flue B, and thus cause a greatly-increased draft upward through the latter, and, consequently, a much stronger exhaustive effect upon the vitiated air of the room.

If the relative functions of the hot-air pipe and vitiated air-flue, shown in the drawings, be changed, so that the hot-air pipe A shall be made to carry up the vitiated air, and the vitiated air-flue B arranged to carry up the hot air—which would be simply an inversion of the parts shown in the drawings—then, in such case, the valve C should be placed in the partition-plate *b''*.

I do not intend to confine the application of my present invention to the peculiar combination of ventilating and heating flues or pipes in the one wall flue, as described in my said patent, but to extend its application to any hot-air flue which may, by means of an adjustable valve, C, be made to open into a ventilating flue or pipe for the purpose specified.

I claim as my invention—

The adjustable valve C, or its equivalent, constructed and arranged to operate in combination with the hot-air flue or pipe A, and the ventilating flue or pipe B, substantially as and for the purposes hereinbefore described.

GEORGE R. BARKER.

Witnesses:

BENJ. MORISON,

WM. H. MORISON.