

(No Model.)

C. W. EMERSON.

STOVE.

No. 395,430.

Patented Jan. 1, 1889.

Fig. 1.

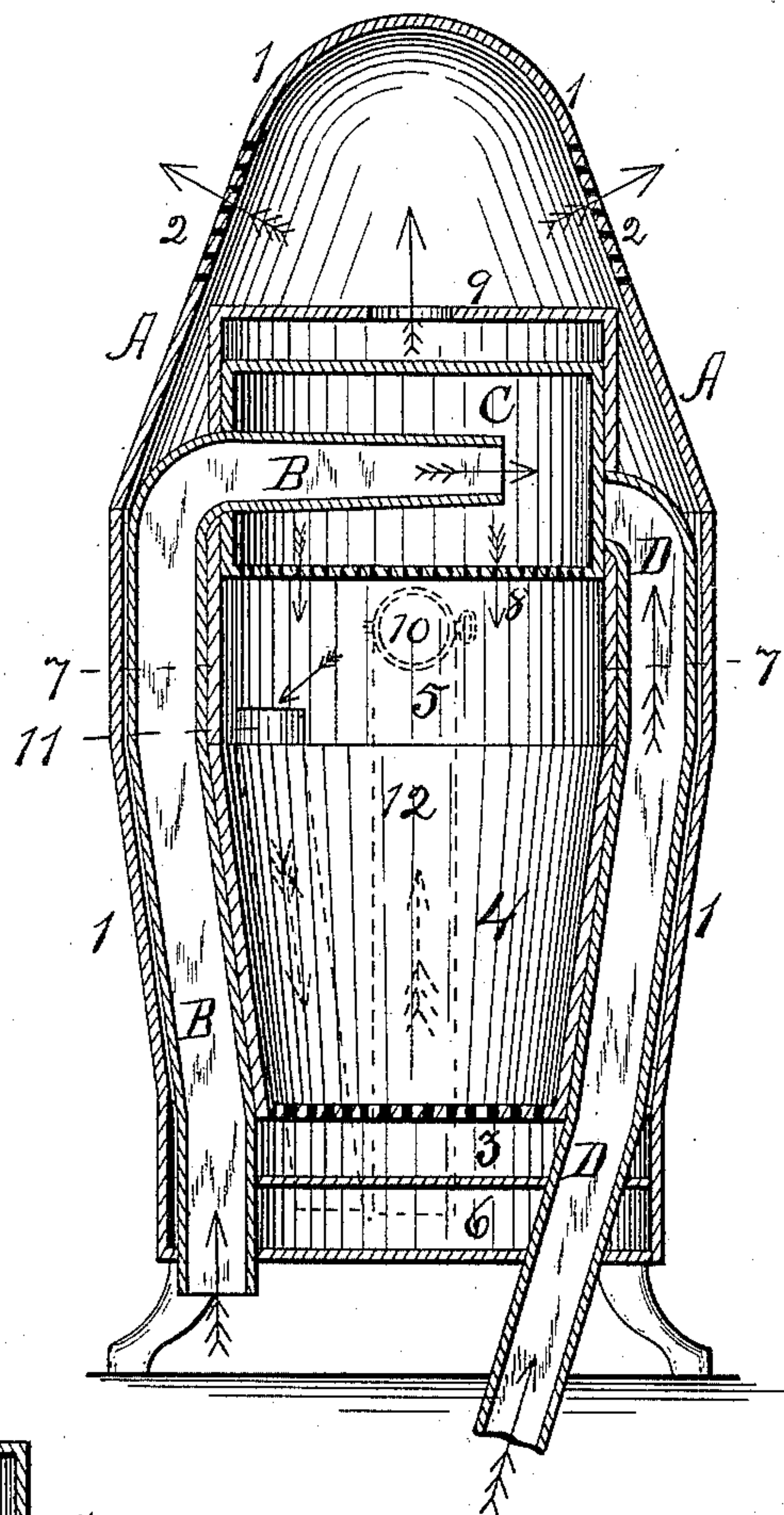


Fig. 2.

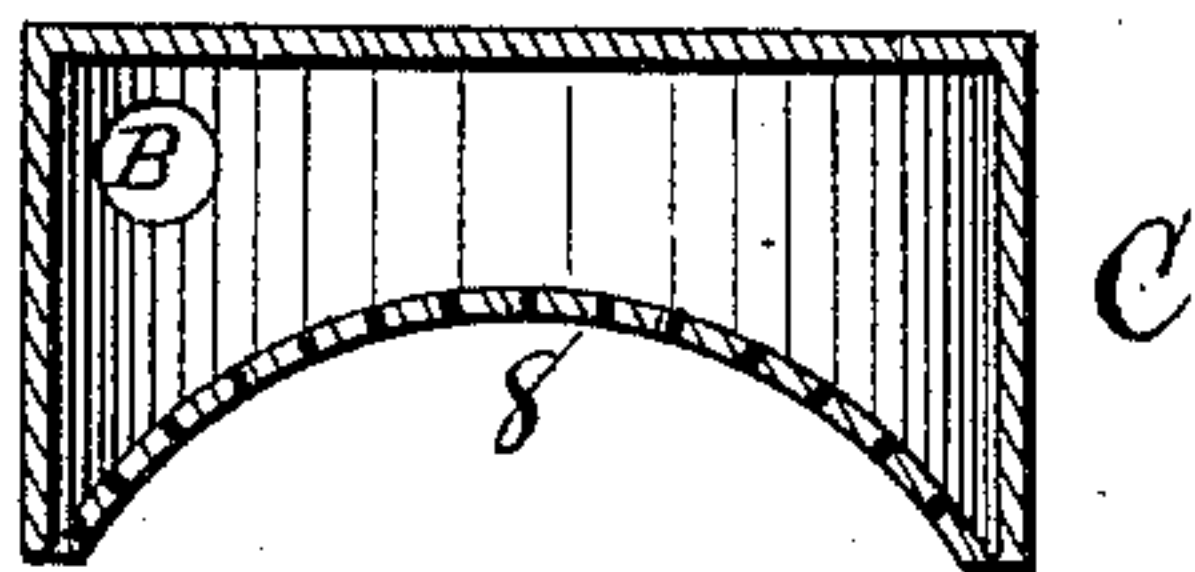
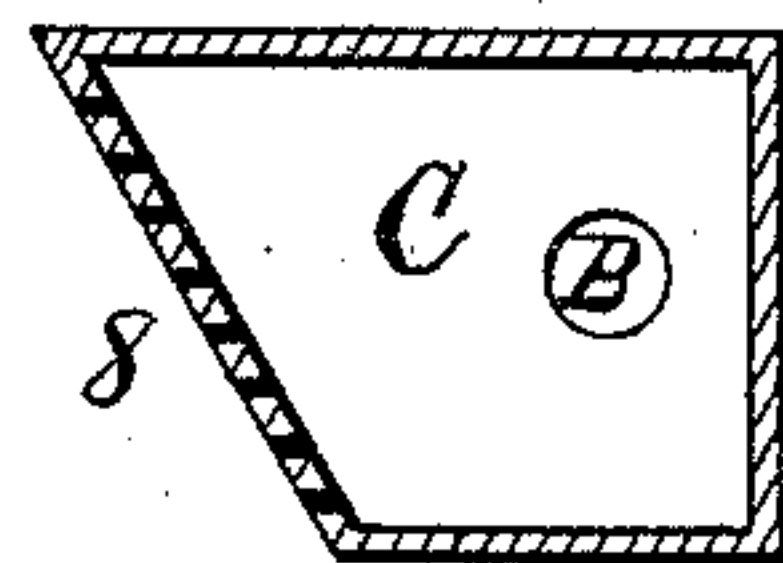


Fig. 3.



Witnesses,

H. P. Denison
L. Smith

Inventor,
Charles W. Emerson

UNITED STATES PATENT OFFICE.

CHARLES W. EMERSON, OF SOMERVILLE, MASSACHUSETTS.

STOVE.

SPECIFICATION forming part of Letters Patent No. 395,430, dated January 1, 1889.

Application filed January 28, 1888. Serial No. 262,207. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. EMERSON, of Somerville, county of Middlesex, in the State of Massachusetts, a citizen of the United States, have invented certain new and useful Improvements in Stoves, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical transverse section of a stove, shown to illustrate the principles of my invention, which are applicable to furnaces and all other kinds of heating apparatus, whether hot air alone or hot air and steam combined, as well as to portable or stationary boilers or locomotives, or any other kind of apparatus in which it is advantageous to generate high heats. Figs. 2 and 3 represent vertical transverse sections of different forms of construction of the air-heating chamber, varying from the form shown in Fig. 1, but all operating upon the same principle.

My invention relates generally to that class or subdivision of stoves or heating apparatus commonly known as "ventilating," and more especially to those which by a flue system take in adjacent to the floor the foul and vitiated air of a room or building, heat it in the stove or apparatus, and discharge it hot into the combustion-chamber, where it commingles with the gases which are disintegrated from the fuel, and chemically combines with, unifies, and consumes all of the gases, and which stoves or apparatus, simultaneously with such withdrawal of foul air from a room also take into themselves fresh atmospheric air from out of doors, heat it, and then discharge it into the room or rooms, such input of pure air equalizing the withdrawal of foul air.

My object is to produce an improved stove or heating apparatus of that class; and my invention consists in the several novel features of construction and operation which are hereinafter described, and which are specifically set forth in the claim hereunto annexed. It is constructed as follows:

In the drawings I show only a stove as illustrating the principle of my invention, not deeming it necessary to illustrate all of the kinds of furnaces and heating apparatus, as well as boilers—stationary, portable, or locomotive—to which this principle or a part of it can be applied.

A is the stove, in which 1 is the outer casing, perforated at or adjacent to the top, as at 2. 3 is the ash-pit; 4, the fire-pot; 5, the combustion-chamber; and 6 is the reverse flue-chamber in the base below the fire-pot, and, as these parts are all of ordinary construction, I do not describe them in detail.

B is the foul-air flue extending upward from below the base of the stove, between the fire-pot and combustion-chamber wall 7 and the casing 1, opening at its upper end into the heating-chamber C, into which it may extend, as shown in the drawings, which conducts the foul air from the room into this heating-chamber. This chamber consists of a hollow box wholly constructed of fire-brick, or having its lower face of fire-brick, and also the whole or part of its sides and the top, and perhaps a part of its sides of metal or any other material desired. The bottom or lower face, 8, may be flat, as shown in Fig. 1, or concave, as shown in Fig. 2, or with an angular face, as shown in Fig. 3, in all of which forms the face 8 is perforated, as shown. This chamber is inserted into the stove above the combustion-chamber 5, forming the whole or part of the top thereof, and is supported in its position by any ordinary means, the walls of the combustion-chamber being carried up to or up around the heating-chamber, in which case the top of these walls may be closed by the heating-chamber or by a perforated diaphragm, 9. The foul air taken into this chamber C is heated therein and is thence discharged through the perforations downward into the combustion-chamber, meeting the gases of the fuel, combining with and unifying, so that all of the gases and the oxygen in this air are consumed, the hottest blaze being adjacent to the face 8, which operates as a deflecting-plate, while the chamber C is raised to a very high temperature, and the upward radiation of heat therefrom heats the top of the stove very hot.

The products of combustion, when the damper 10 is closed, (shown in dotted lines,) closing the direct draft, pass from the combustion-chamber into the downward flue 11, down into the chamber 6 below the ash-pit, and thence pass out into the smoke-pipe 12, (shown in dotted lines at the back of the stove.) Simultaneous with this withdrawal of foul air

from the room the pipe and flue D are taking atmospheric air from out of doors, conducting it into the upper part of the stove around the top of the heating-chamber C, where it is
5 heated and passes out into the room through the perforations 2.

The arrows indicate the courses of the output of foul air from the room and through the stove and of the input of fresh air into the
10 stove and through it into the room.

It will be observed that the upper end of the output-flue B extends into and nearly across the heating-chamber C, which increases the heating capacity of the chamber, and also this
15 extension operates to effectually prevent any reversal of the current through the flue B, which would otherwise carry all of the gases and products of combustion (or nearly all of them) from the combustion-chamber out into
20 the room.

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

A stove consisting of an ash-pit and reverse flue-chamber in the base, a grate, a fire-pot, a combustion-chamber, a heating-chamber 25 above the combustion-chamber, provided with a perforated bottom, and a flue leading from the heating-chamber down through the base, a flue leading from the combustion-chamber down into the base and connected therefrom 30 to the smoke-pipe, an air-inlet flue leading upward through the base and exterior to the fire-pot and combustion-chamber, but heated therefrom, into the upper part of the stove, and a casing inclosing all of these parts and 35 perforated, substantially as described.

In witness whereof I have hereunto set my hand this 24th day of January, 1888.

CHARLES W. EMERSON.

In presence of—

H. P. DENISON,
C. W. SMITH.