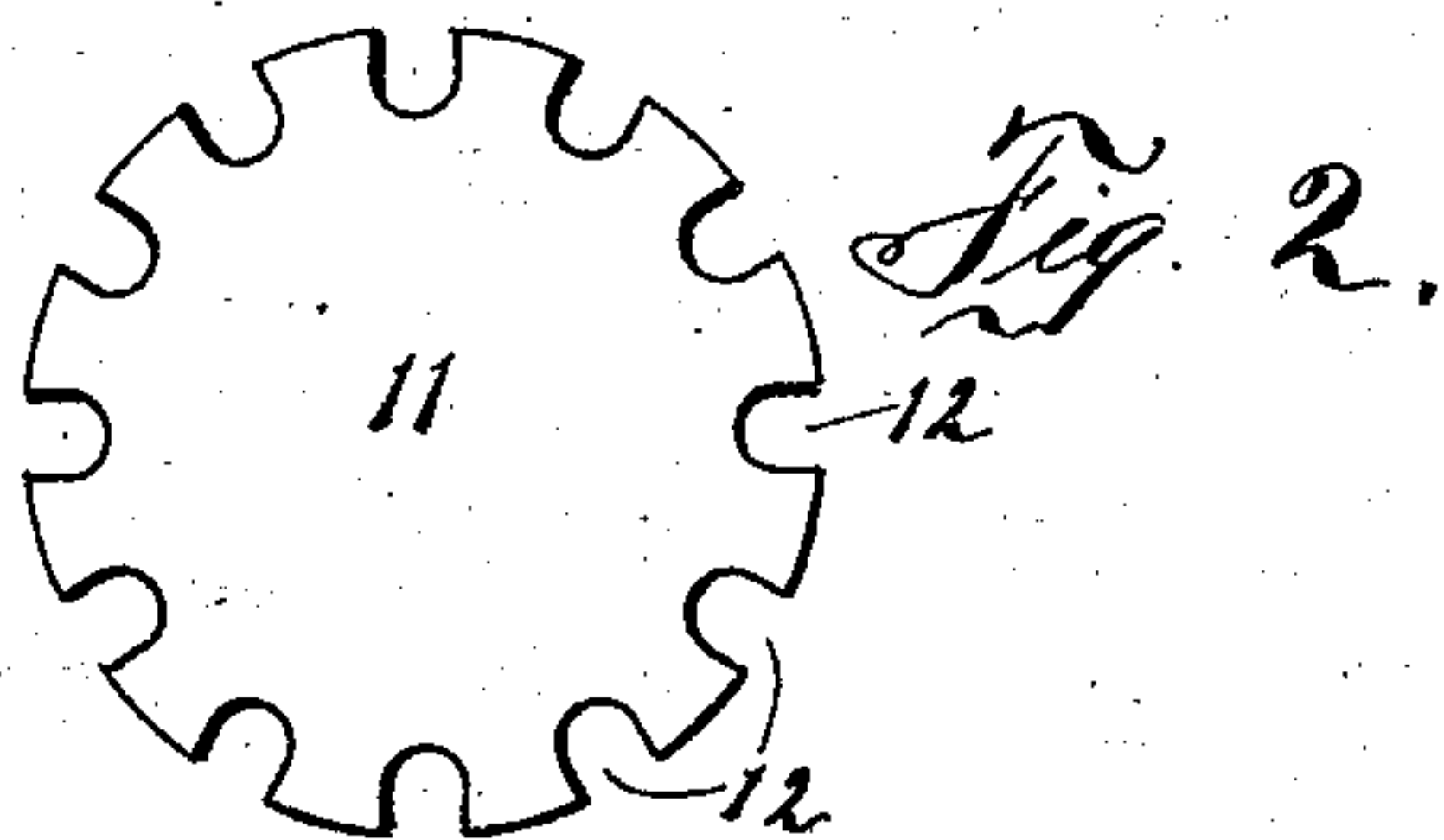
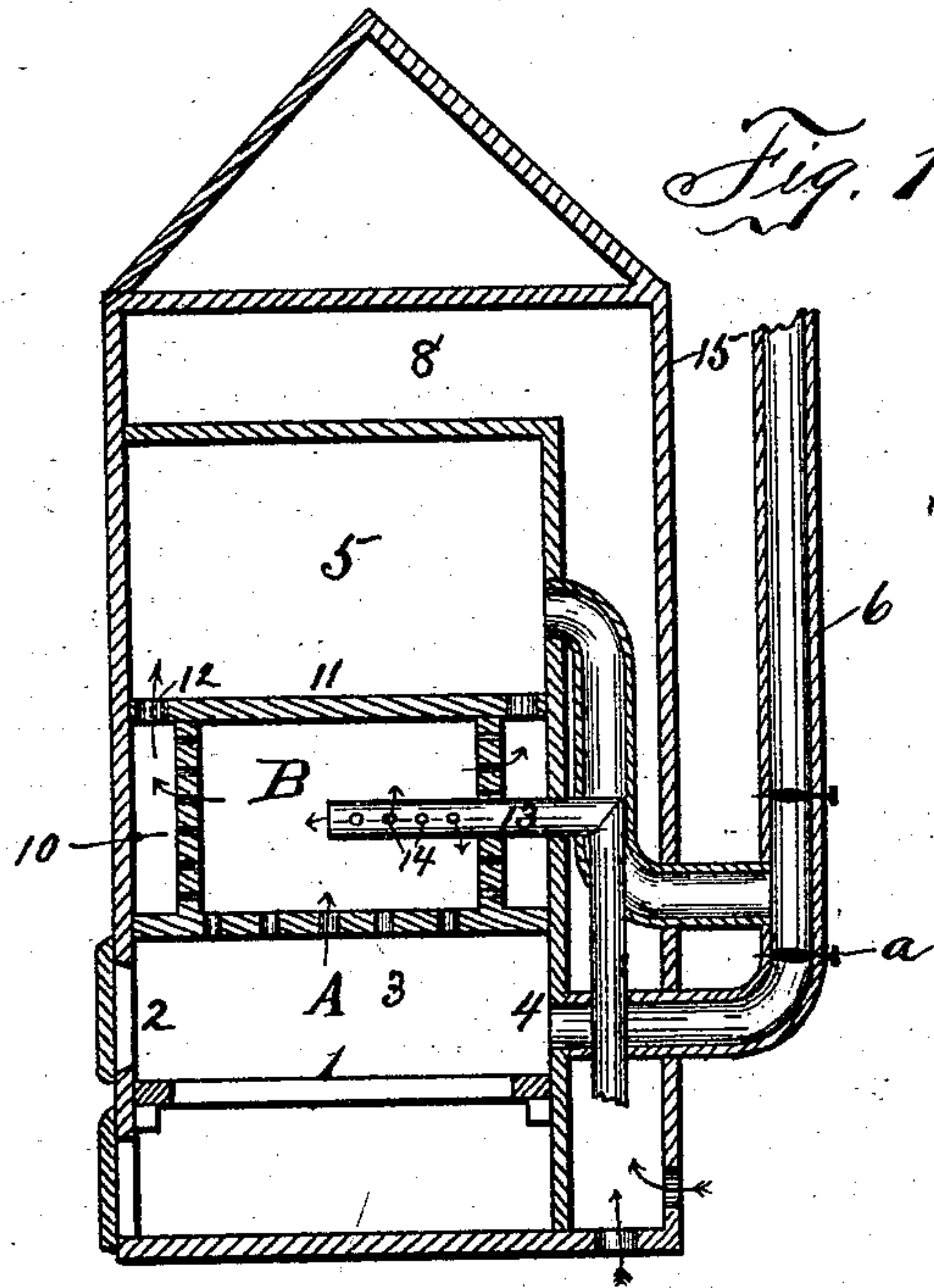


(No Model.)

C. W. EMERSON, Dec'd.  
G. W. EMERSON, Administrator.  
HEATING APPARATUS.

No. 455,542.

Patented July 7, 1891.



Witnesses

*H. A. Carhart.*  
*E. V. Mack.*

*Charles W. Emerson*

Inventor

By *His* Attorneys

*Smith & Emerson*



# UNITED STATES PATENT OFFICE.

CHARLES W. EMERSON, OF SOMERVILLE, MASSACHUSETTS; GEORGE W. EMERSON (ADMINISTRATOR OF SAID CHARLES W. EMERSON, DECEASED) ASSIGNOR OF ONE-HALF TO WALTER S. WAIT, OF NEWTON, MASSACHUSETTS.

## HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 455,542, dated July 7, 1891.

Application filed April 7, 1890. Serial No. 346,880. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. EMERSON, of Somerville, in the county of Middlesex, in the State of Massachusetts, have invented 5 new and useful Improvements in Heating Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to heating apparatus 10 of the class known as "smoke or gas consuming," and in which such smoke or gas consumption is effected by the discharge of superheated air into the products of the primary combustion of the fuel in an auxiliary 15 gas-consuming chamber.

My object is to increase the heating capacity and efficiency by effecting complete combustion of the gases and smoke by discharging superheated air into them, the air 20 being heated by the primary heat of the gases, smoke, &c., and also by their combustion in an auxiliary combustion-chamber in the upper part of the primary combustion-chamber, and above the fire, the heat being sufficient to produce perfect combustion thereof. 25

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereto annexed. It is 30 constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a stove embodying my invention. Fig. 2 is a plan view of the top of the auxiliary combustion-chamber. 35

A is the combustion-chamber above the grate, 1, and 2, 3, and 4 are respectively the front, side, and rear walls of this chamber.

B is the auxiliary combustion-chamber, 40 constructed of fire-brick or other non-combustible material, extending above the chamber A and supported by the latter.

The chamber B is provided with a perforated bottom, so that the products of combustion are conducted into it from the combustion-chamber, and the gases are consumed therein. The sides are also perforated, there being a space between the walls of the combustion-chamber and the said sides of the 50 chamber B, so as to create an annular flue 10 around the chamber B and between it and the walls of the body of the heater, and 11 is

the top, of the same size as the base, but provided with a notched rim 12. The gases, &c., enter the chamber B through the bottom perforations, commingle with the hot air or steam 55 discharged into it from the air-pipe 13, open at its inner end and also provided with perforations 14 to aid in distributing the hot air more evenly, and in this chamber the hot air 60 and gases unite and are therein consumed entirely, or substantially so, and the heated products of this combustion pass out together through the perforations in the sides into the flue 10, and thence through the notches in the 65 rim 12 into the heating-chamber 5, and thence to the chimney through the pipe. A jacket 15 is used, creating a hot-air reservoir, whence the heat is conducted to any point desired, or, in the case of a stove, is discharged directly 70 into the room. The air-supply pipe 13 leads outward into the room or out of doors or at any other source of supply. It is apparent that steam can be fed through this pipe into the chamber B. 75

What I claim is—

1. The combination, with the grate and fire-pot, of an auxiliary combustion-chamber supported above the fire-pot, having a perforated bottom and sides, there being a flue 80 between the auxiliary chamber and the body of the heating apparatus, and an outlet-flue leading thence to the smoke-pipe, and an air-inlet pipe projecting into the auxiliary chamber. 85

2. The combination, with the grate and fire-pot, of an auxiliary combustion-chamber supported above the fire-pot, having a perforated bottom and sides and an outwardly-flanged top provided with apertures, there 90 being a flue between the auxiliary chamber and the body of the heating apparatus, a heating-chamber above the auxiliary chamber receiving the products of combustion from the flue 10, an outlet-flue leading thence 95 to the smoke-pipe, and an air-inlet pipe projecting into the auxiliary chamber.

In witness whereof I have hereunto set my hand this 13th day of March, 1890.

CHARLES W. EMERSON.

In presence of—

HOWARD P. DENISON,  
C. W. SMITH.