No. 755,269. PATENTED MAR. 22, 1904.

E. H. BENNETT.

HEATING APPARATUS.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

Fig. 1.

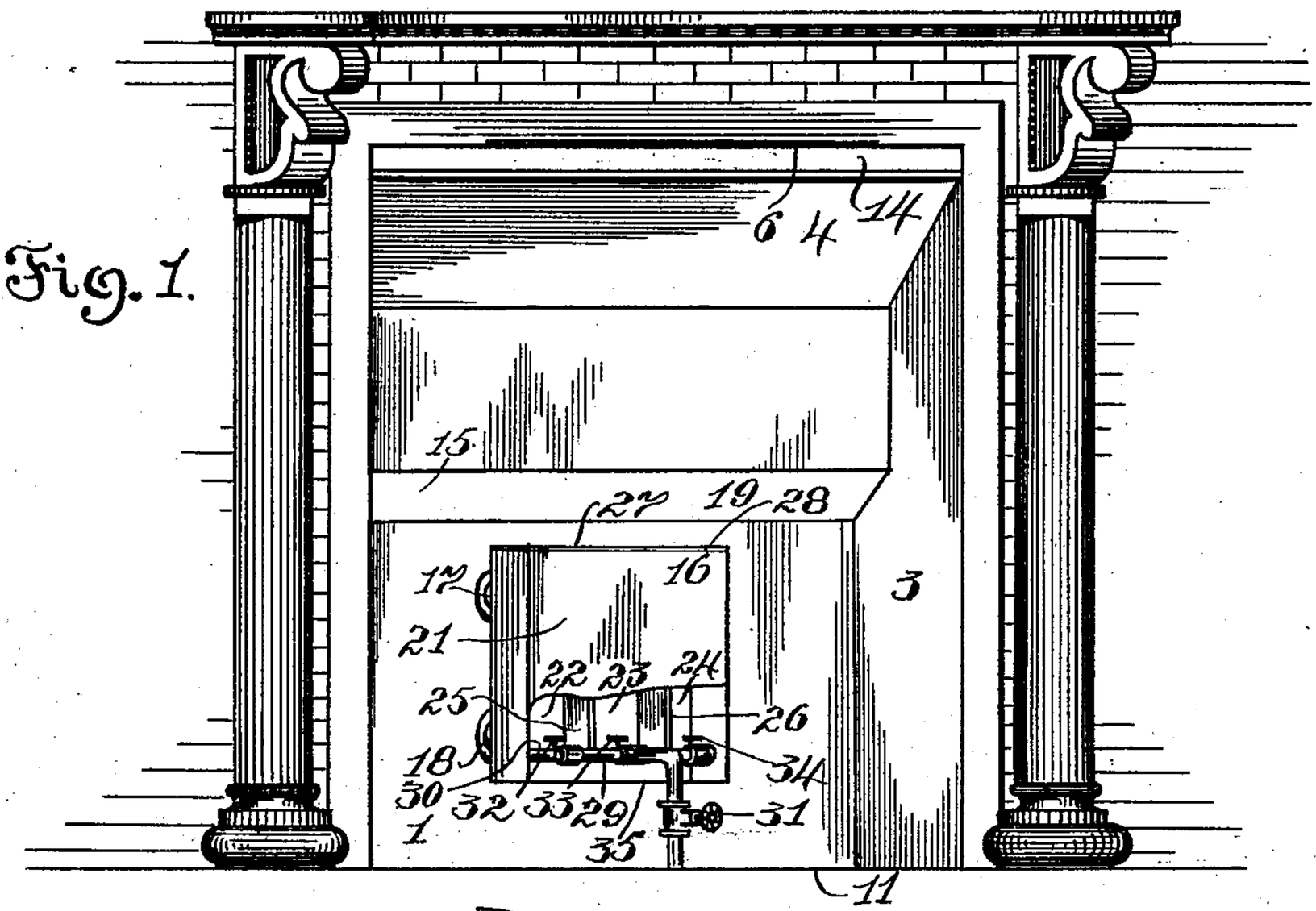
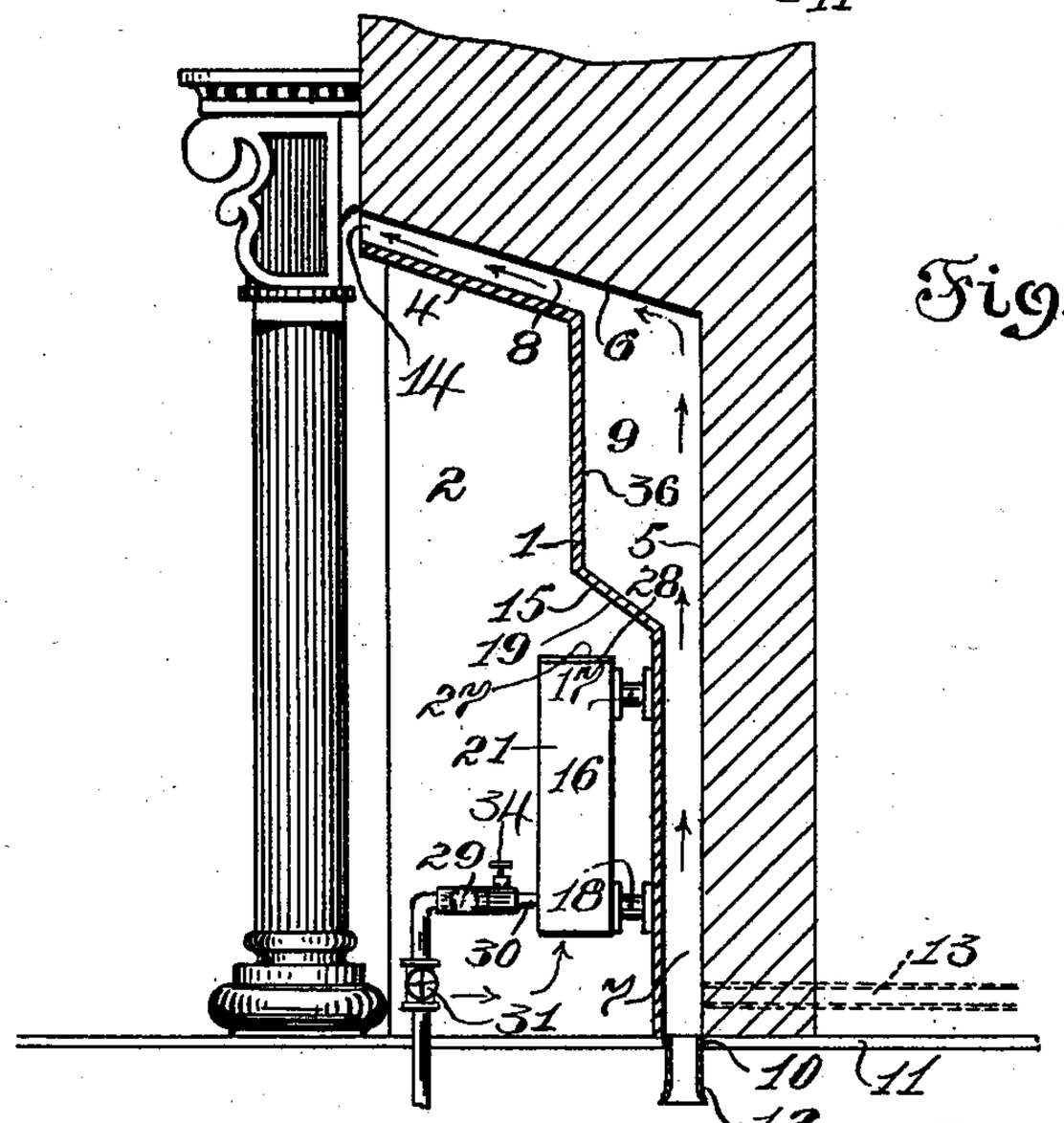


Fig. 2.



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By his Attorney.
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No. 755,269. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

ERNEST H. BENNETT, OF EAST ORANGE, NEW JERSEY.

HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 755,269, dated March 22, 1904.

Application filed April 21, 1903. Serial No. 153,642. (No model.)

To all whom it may concern:

Be it known that I, ERNEST H. BENNETT, a citizen of the United States, residing in East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Heating Apparatus, of which the following is a specification.

This invention relates to heating apparatus, and more especially to open gratings or fireplaces wherein the employment of gas or hydrocarbon burners is preferred.

The objects are to insure the entrance of fresh air, to heat the air while entering, to preferably employ gas or hydrocarbon burners as a heating means, to prevent odors from emanating from the burners, to render the use of chimney-flues unnecessary, to effect economy in consumption of fuel, to create a variation in the volume of flame, and to make an inexpensive and durable structure.

The apparatus is adapted to be heated by any suitable kind of burner, and therefore such as may be desired may be employed. However, it is preferred that the burner shown and described in my pending application, Serial No. 144,971, filed February 25, 1903, be employed.

Referring to the drawings forming a part of this specification, Figure 1 illustrates a perspective of a fireplace fitted with the improved apparatus, and Fig. 2 is a vertical section illustrating the construction of the same.

Similar characters of reference indicate like parts throughout the figures.

Within a fireplace opening I place a frame, preferably sheet-metal, which comprises a back 1, sides 2 and 3, and a top or canopy 4. A portion of the back 1 and the top 4 run parallel with the rear wall 5 and the top 6 of the fireplace and form conduits or air-ducts 7 and 8, respectively, which lead in and out of an air-chamber 9, which in the present instance is formed by an outwardly-protruding portion of the back 1 of the frame. The air-duct 7 in the present instance communicates with an opening 10 in the floor 11, in which may be fitted a bell 12, as shown. Other arrangements, however, such as shown in dotted lines 13, may be observed for the admission of air. The air-duct 8 enters the room, as at 14, and this duct or that of 7 may be provided with a damper (not shown) suitably disposed so that when the apparatus is not in use the cold air may not rush into the room.

The air-chamber 9, by which the two ducts 7 and 8 are connected, is created by forming a drum 36 in the rear wall of the frame, which extends outwardly at 15 over and in close proximity with a burner 16, which is suitably supported, preferably at the rear 1 of the frame, by brackets 17 and 18, and the flame emanating from the burner will travel along the wall 19 of the drum and spread over the bottom of the air-duct 8 thereof, whereby to intensely heat the entire drum and the air passing through the chamber formed thereby. In this way the flame may be employed in installments or in its entirety. The burner 16 in the present instance preferably comprises a casing or drum 21, which in the present instance is divided into chambers 22, 23, and 24, respectively, by walls or partitions 25 and 26. The top of the burner casing or body 21 is covered with a diaphragm 27, which preferably comprises a screen of fine mesh which may be secured to the body of the burner or fixed to a frame 28, adapted to cover the top of said body. A supply pipe or conduit 29 is in the present instance provided with a series of feed-nipples 30, which enter the wall of the casing 21 near the bottom, whereby the supply may be admitted and regulated to each individual chamber, and a valve 31 is provided for cutting off and admitting the supply to all the burners, and these nipples are each provided with valves 32 33 34. Any arrangement of the means of supply, however, may be resorted to, according to the location and disposition of the burner. The bottom 35 of the casing is open to form a draft for the entrance of air, whereby to mix with the supply issuing from the ports of the nipples 30 to form a proper combustion, the proper admixture of gas and air of course being obtained by the proper sizing of the ports. When all the chambers are in use, the flame covers the entire diaphragm 27 of the burner. When the supply is cut off from chamber 23, the flames only cover the opposite end portions of the diaphragm, and when the supply is cut off

from chambers 22 and 24 the flame burns only on that portion midway of the extremities of the diaphragm.

The cold air enters the duct 7, as indicated by the arrows, and thence into the heating-chamber 9, from whence it forces its way outward through the duct 8 into the room, and, as is indicated by arrows, the heated air which is emitted into the room is later siphoned into the burner 16 for mixing with the fuel. By this method the flames of the burner are permitted to burn evenly and without that fluctuation which results from burners being connected to the fresh-air inlet. Furthermore, by causing the air to be siphoned into the burner, rather than forced in from a supply obnoxious odors of gases are avoided. It will also be noted that the entire flame of the burner may be employed or so much thereof as is necessary to produce the requisite amount of radiation, according to the temperature of the air, and, as is obvious, this is conducive both to comfort and economy in consumption. It will be further observed that this apparatus is especially designed for artificial fireplaces and requires no flue.

It will be obvious that for preventing the entrance of cold air when the burners are not in use a damper suitably disposed may be employed. It is to be also understood that the structure herein disclosed, together with the method of supply, may be varied and modified within the purview of this invention and that any means of heat suitable for such a construction may be adopted.

Having thus described my invention, I claim—

1. The combination of a fireplace, a sheet-metal frame substantially of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, and an elongated burner member provided with an elongated mixing-screen upon the whole or portion of which may be carried flames of different widths whereby to vary the heat imparted thereby to the frame.

2. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, and a burner under said frame and therewithin comprising an elongated member provided with compartments and a continuous diaphragm and whose flame is governed by the number of compartments in use.

3. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace, and thereby forming a set of air-ducts, and a burner under said frame and therewithin comprising an elongated member provided with compartments and a continuous diaphragm and whose flame is governed by individual ports leading to the compartments which are separately usable.

4. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, an offset in said frame and intermediate said ducts, and an elongated burner comprising a series of independent mixing-tubes to which individual supply-ports supply the fuel whereby the whole or a portion of the burner-flame may impinge the offset, thereby varying the heat of the apparatus.

In testimony whereof I have hereunto set my hand this 2d day of March, 1903.

ERNEST H. BENNETT.

Witnesses:
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