

No. 745,673.

PATENTED DEC. 1, 1903.

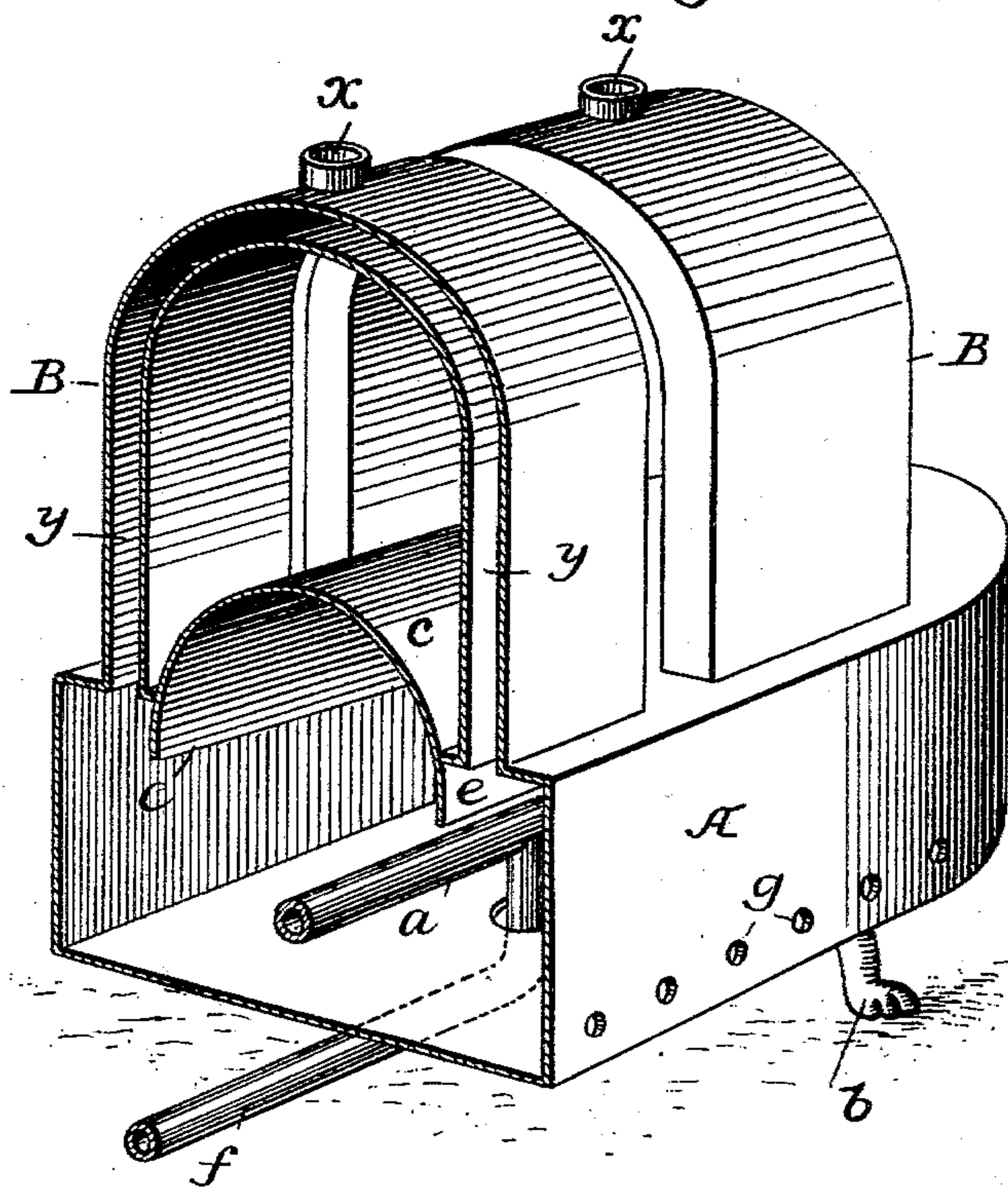
J. G. RODGERS.

GAS HEATER.

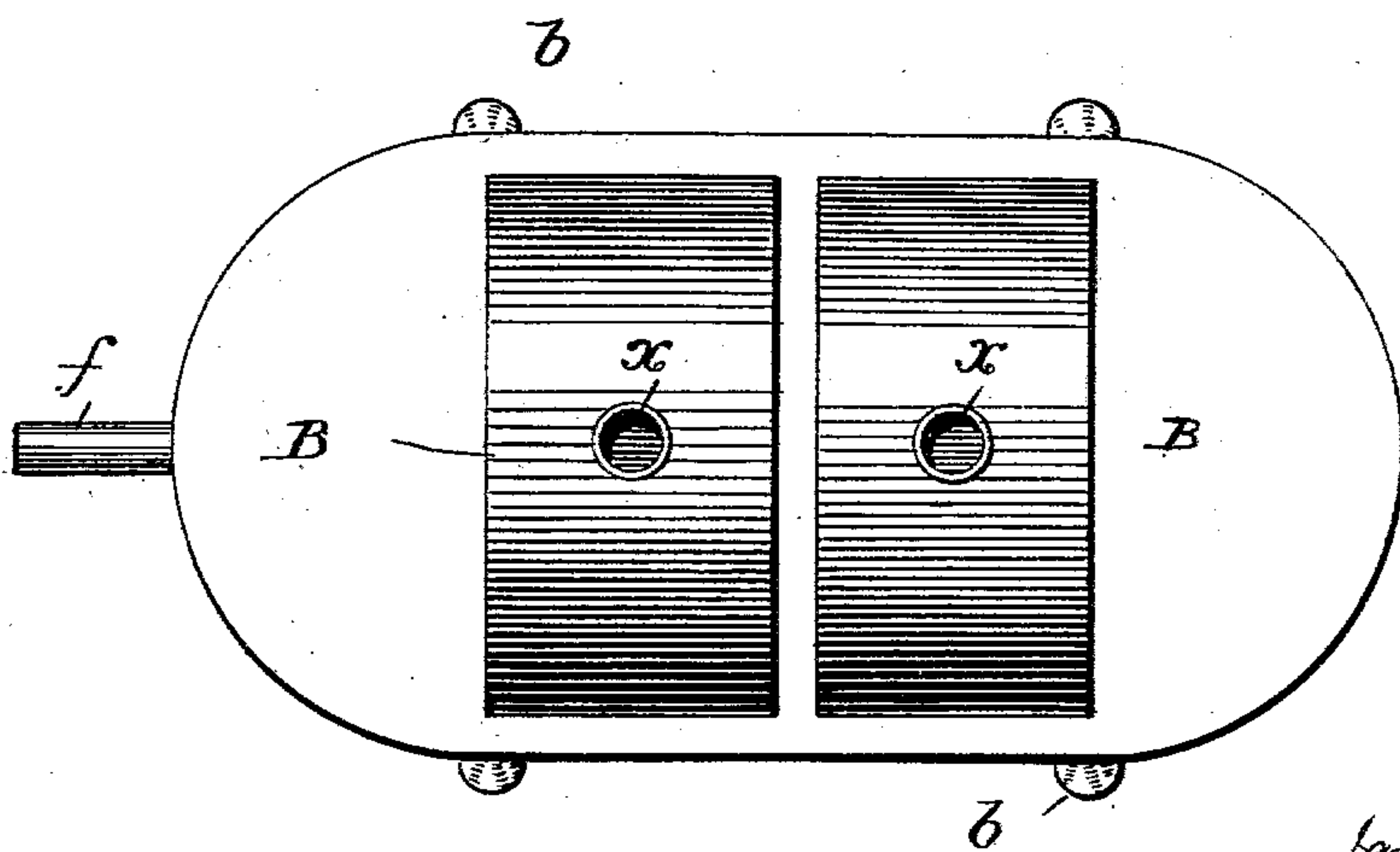
APPLICATION FILED JUNE 25, 1900.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



Witnesses

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## UNITED STATES PATENT OFFICE.

JAMES G. RODGERS, OF SPRINGFIELD, OHIO.

## GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 745,673, dated December 1, 1903.

Application filed June 25, 1900. Serial No. 21,552. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES G. RODGERS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

My invention relates to that class of radiating-heaters in which a casing, usually of thin or sheet metal, is heated by a burner for burning gas or vapor therein; and it consists in a heater having a restricted exit and a casing so constructed as to retard the flow of heated gases to the exit, whereby the combustion of the fuel is practically perfect and an extended radiating-surface is presented, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a sectional perspective view illustrating a heater embodying my invention; Fig. 2, a plan of Fig. 1.

The base A, preferably of sheet metal, is oblong or oval or of any other desired shape, being simply a hollow casing closed at all points except for the admission of air and the entrance of the gas-pipe leading to the burner a, of any suitable character, the said base being mounted upon a suitable support or feet b. The gas mixed with a proper proportion of air will be supplied to the burner by a mixing-tube f, which will preferably enter the casing A through the bottom, and a space will preferably be left around the tube f for the admission of air. Also openings g may be formed in the sides of the casing near the bottom for the admission of air to aid in the perfect combustion of the fuel. At the top of the base there is a curved plate c inserted in the top, with its ends projecting downward, forming flanges e, as shown in Fig. 1.

Above the base A is an extension B, consisting of one or more inverted-U-shaped casings closed at all of the sides and communicating at the lower ends with the base and having an outlet x at the top, thus forming side flues extending upward from the base and meeting at the top adjacent to the outlet x. It will be observed that the flues y are flat and the space between the inner and outer plates is very narrow. The superficial area of the flue is, however, quite extensive, and the narrow space between the plates, together

with the restricted outlet x, insures that the heated gases will in their passage through the flue contact with all the inner surface of the boundary-walls of the flue and move slowly thereover, thus affording ample time for the radiation of their heat through the walls of the flues.

The curved top or plate c serves to deflect the flame down upon the burner, and by the introduction of air through the openings g and the space around the mixing-tube f the air mixes with the deflected flame and insures perfect combustion. This is further aided by the passage of the heated gases being retarded by the narrow flues leading from the top of the combustion-chamber. The bottom and sides as well as the top of the base A thus become thoroughly heated, the said curved plate acting with a reverberating effect, tending to prevent the rapid flow of the gases to the side flues y y, up which, however, they finally pass to the outlet x. By extending the ends of the plate c downward, forming flanges e, as shown in Fig. 1, the heated gases are prevented from flowing too directly to the flues y y and are retained in the base, and the rapidity of their flow in the flues is so diminished that a greater heating effect is secured, so that the gases will pass from the outlet x in a much cooler condition than would otherwise be the case, and the surfaces of the heater are much more highly heated, and the heating is much more effective than otherwise would result.

It will be seen that the extension B or each section thereof has an outer and an inner curved radiating-surface, as well as two end faces also constituting radiating-surfaces, so that in a heater of very small dimensions I am enabled to secure a much larger surface for radiation than can be obtained with many of the older forms and constructions.

In actual tests of a heater constructed in accordance with my invention, with no chimney connection from the exit x, the combustion has been so perfect that not the slightest odor could be detected. Also when there has been a chimney connection such connection at no time became so hot that it could not be grasped by the hand without the slightest discomfort, thus showing that the radiation of all the heat units was nearly perfect.



Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

- 5 1. A heater having a hollow base A, a curved top plate *c*, and a plurality of hollow inverted-U-shaped extensions B, each communicating with the base at opposite sides of the plate *c*, and a burner within the base, substantially as set forth.
- 10 2. A heater having a hollow base, a curved top plate *c*, inverted-U-shaped extension B

communicating with the base at opposite sides of the plate *c*, and flanges *e*, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES G. RODGERS.

Witnesses:

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