

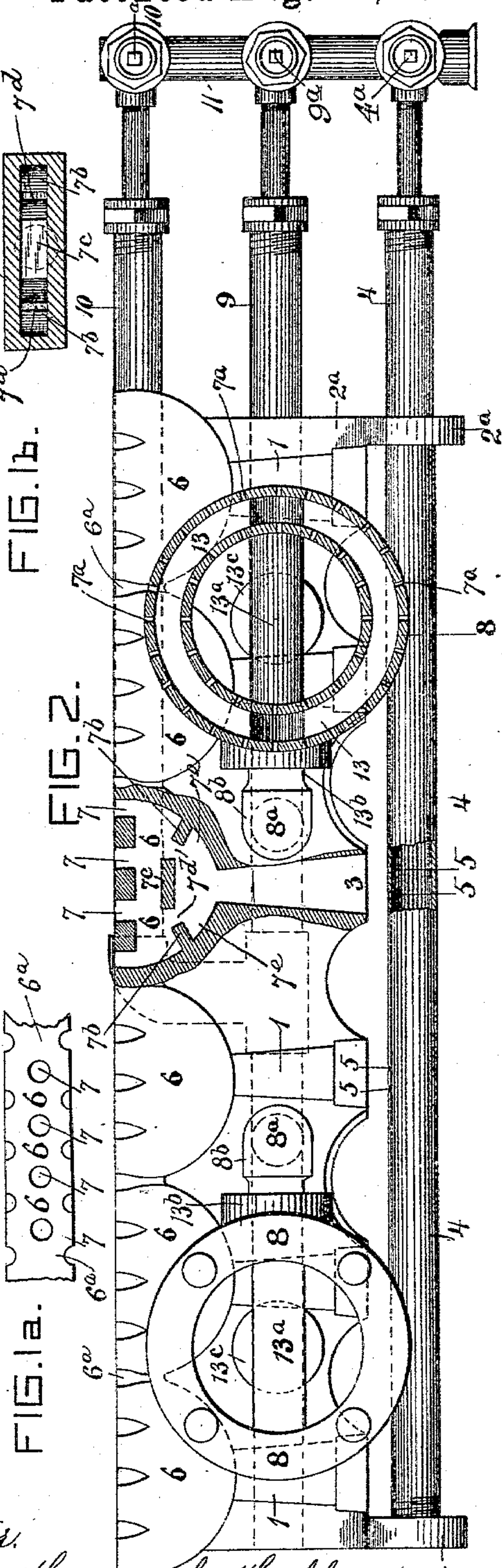
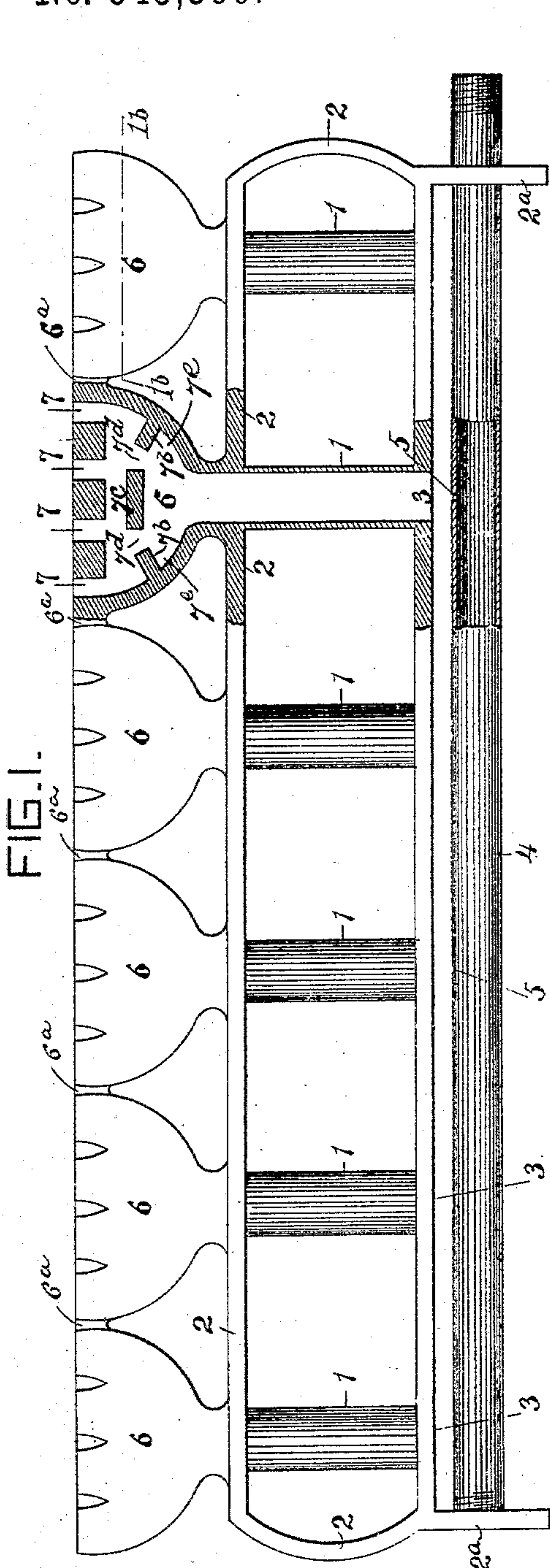
(No Model.)

2 Sheets—Sheet 1.

H. H. HIBBERD.
GAS BURNER.

No. 545,360.

Patented Aug. 27, 1895.



Witnesses:
Walter E. Allen.
S. Allen.

Inventor:

Harry H. Hibberd.
By *Knight Bros.* Attorneys.

(No Model.)

2 Sheets—Sheet 2.

H. H. HIBBERD.
GAS BURNER.

No. 545,360.

Patented Aug. 27, 1895.

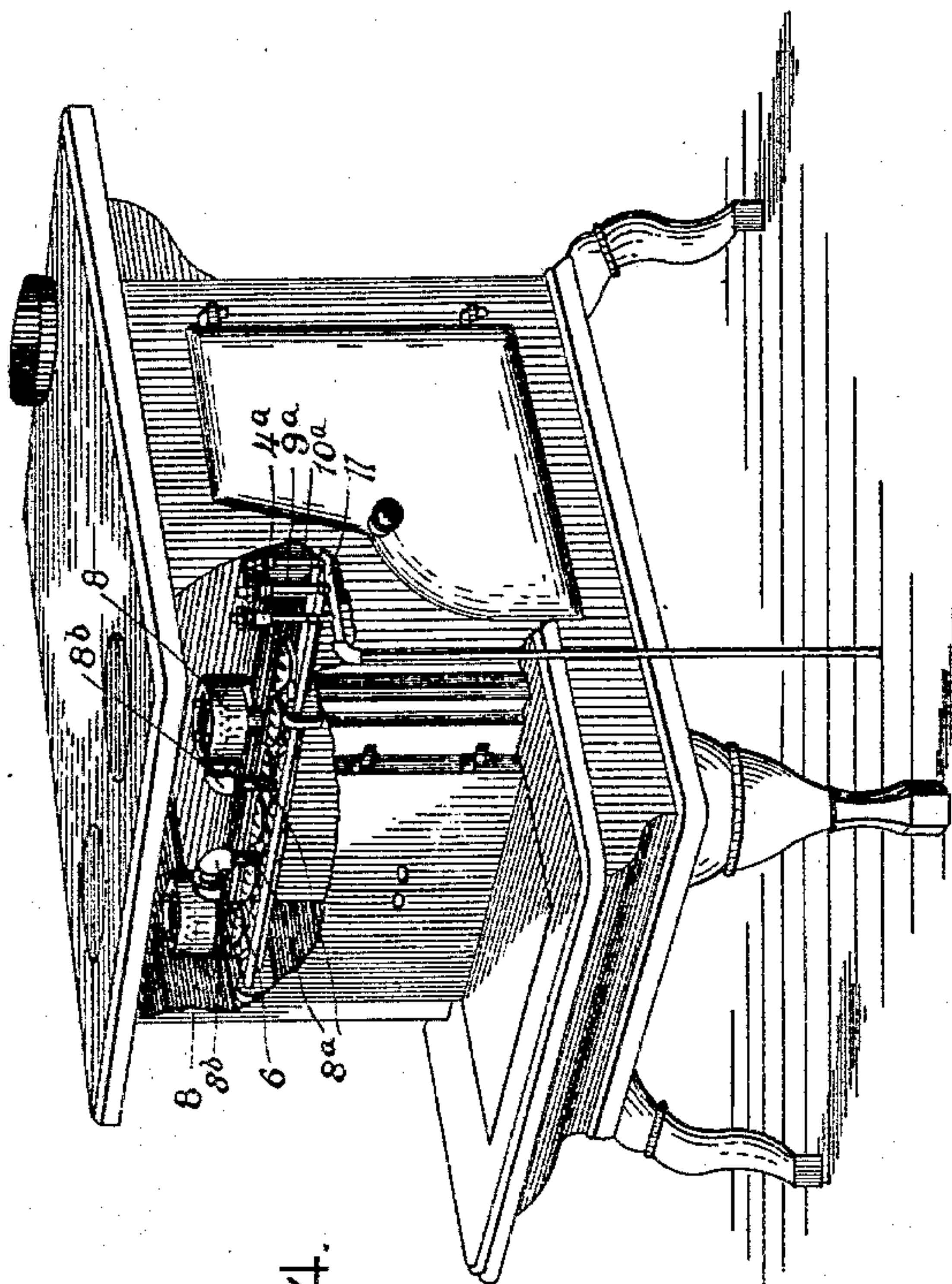


FIG. 4.

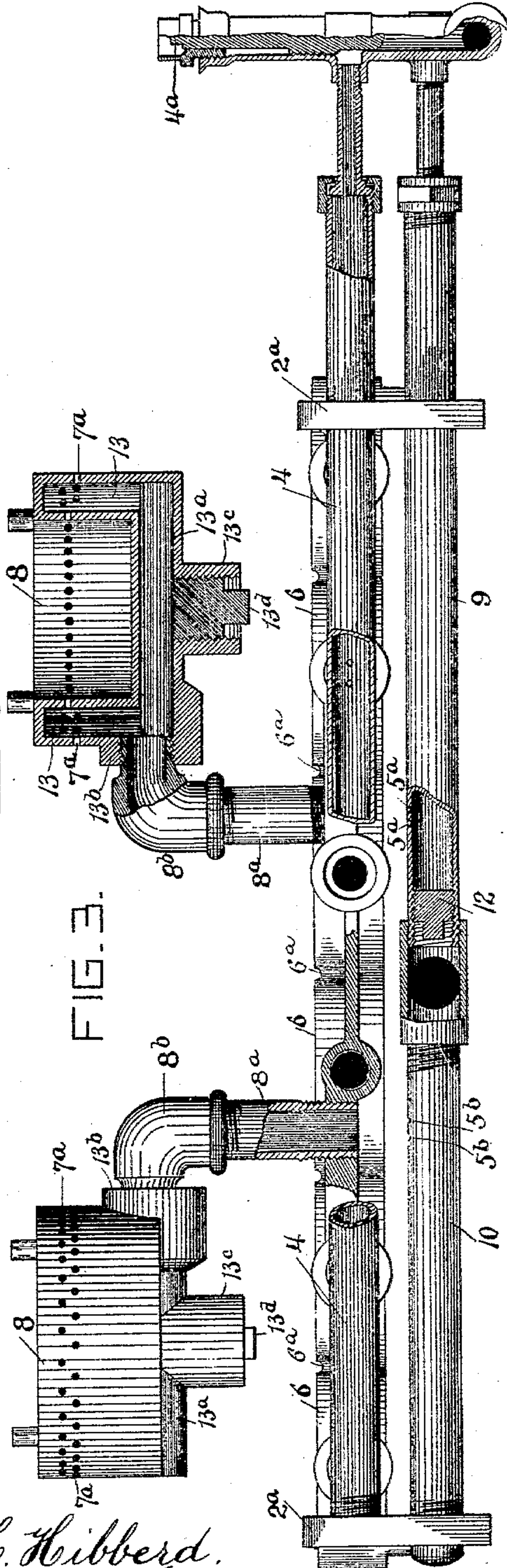


FIG. 3.

Witnesses

Walter E. Allen.
S. Allen.

Inventor.

Harry H. Hibberd.

By

Knight Bros
Attorneys.

UNITED STATES PATENT OFFICE.

HARRY H. HIBBERD, OF WHEELING, WEST VIRGINIA, ASSIGNOR TO GEORGE HIBBERD & SON, OF SAME PLACE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 545,360, dated August 27, 1895.

Application filed August 31, 1894. Serial No. 521,835. (No model.)

To all whom it may concern:

Be it known that I, HARRY H. HIBBERD, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

My invention relates to burners for the consumption of gas as a fuel, and which are adapted both for heating and cooking purposes, my present invention consisting in part of certain improvements in burners embodying the same general principles as described in my Letters Patent No. 459,783, granted September 22, 1891.

My present improvements will first be fully described with reference to the drawings, forming part of this specification, and afterward particularly pointed out in the claims. In said drawings, Figure 1 is a sectional elevation of a simple form of burner adapted for use as an open-fireplace heater. Fig. 1^a is a top view of a mixing-chamber shown in Fig. 1. Fig. 1^b is a horizontal section of the same on the line 1^b 1^b, Fig. 1, looking toward the commingling-tube. Fig. 2 is a plan, partly in section at upper and lower planes, of a burner for use in cooking-ranges, being provided with separate burners for the oven and for the fire-holes. Fig. 3 represents a sectional elevation of the same, and Fig. 4 is a view representing the application of this form of burner to a cooking-range.

In Fig. 1 is represented a supporting-frame comprising a series of commingling-tubes 1, cast integral in a supporting-rack 2 and having located beneath them, in end brackets 2^a and discharging into their lower ends 3, a longitudinal supply-pipe 4, extending transversely of the tubes, and formed with restricted escape-openings 5, which are located sufficiently distant from their lower ends 3 to cause the proper amount of air to enter with the gas. The tubes 1 are surmounted at their upper ends by the spreading semicircular mixing-chambers 6, also cast in one piece with the frame and formed with flat sides and having burner-openings 7 in its top, the communication from the tubes 1 through said mixing-chambers 6 to the openings 7 being controlled by the provision of a central transverse par-

tion-plate 7^c and outwardly-projecting end plates 7^b, extending across the chamber and forming narrow passages 7^d intermediate of the tubes and the burner-openings and pockets 7^e beneath the end plates, the partition-plates and end plates dividing the mixing-chamber into two parts, as shown, in order to cause a complete commingling of the air and gas to produce the desired non-luminous flame of complete combustion. The tops of the mixing-chambers are approximately oblong in shape. The flow of gas and air passing through the commingling-tubes strikes the partition-plate 7^c, is thrown back by the latter into the pockets 7^e, and then passes upward through the narrow passages between the plates into the upper part of the mixing-chamber. The arrangement of these plates permits them to be cast in one piece with the mixing-chambers. The construction of these mixing-chambers (shown in Figs. 1, 2, 5, and 6) will suffice to give an idea of the construction of all, as they are similar in every respect. In my patent referred to the burner is shown constructed in sections, and the burner-tubes are screwed to the rack, so as to be adjustable therein.

As the burner-tubes in the present invention are provided with mixing-chambers, I am enabled to cast the burner-tubes in one piece with the frame, no adjustment being needed. In casting the burner-tubes with the rack their inlets are located at the proper distance from the escape-openings of the supply-pipe. The mixing-chambers are connected by webs 6^a.

In putting into use the burner shown in Fig. 1 it is set in an upright position in any suitable fireplace constructed for radiation of heat and may be used without additional apparatus.

Referring to the form shown in Figs. 2, 3, and 4, it will be observed that to adapt it to a cooking-range three distinct burners are employed—to wit, a horizontal series of burners constructed similarly to the series of burners described with reference to Fig. 1 and mounted to direct a requisite quantity of heat to the fire-flue surrounding the oven and two upwardly-presented annular auxiliary burners 8, located to heat vessels placed over the fire-holes upon

the top of the stove. The horizontal series of burners is provided with a supply-tube 4, having escape-openings 5 presented toward the open ends 3 of the tubes 1, as described with reference to Fig. 1, while the upwardly-presented annular burners 8 have supply-pipes 9 and 10. The pipes 4, 9, and 10 communicate with a common pipe 11, but each communication is controlled by an independent valve 4^a 9^a 10^a. It thus becomes possible to utilize either burner separately, or any two or all of the burners at will. Referring to the series of burners, as shown in Fig. 1, such a form is preferable, inasmuch as it increases the facility for mixing the air and gas and at the same time causes the mixture to leave the outer ends of the tubes with greater force and to strike the partitions in the mixing-chamber and effect a more thorough mingling.

For convenience in arrangement of the parts the series of burners has cast integrally with it brackets 2^a for the various supply-tubes, and a portion of tube 10 is attached end to end in the bracket to tube 9, said tubes being separated, however, by a plug 12, in order to keep separate the supply of gas to the respective annular burners 8. Each annular burner 8 is supported upon and supplied by an upright auxiliary commingling-tube 8^a, screwed into the web of the group of integral burners, and beneath the lower open ends of these tubes 8^a are upwardly-presented escape-openings 5^a and 5^b in the respective supply-pipes 9 and 10. Each of the auxiliary burners 8 has an annular combustion-chamber 13, across the bottom of which extends a tube 13^a, and from the upper portion of this combustion-chamber the gas escapes through inner and outer radial openings 7^a. The auxiliary burners may be connected indirectly by the side-couplings 13^b and short pipe 8^b with the auxiliary tubes or by means of the bottom couplings 13^c directly to the auxiliary tubes, according to the distance apart of the fire-holes of the stove with which the burners are used, the coupling not in use being closed by a plug 13^d.

In arranging the above-described burner in the stove it is simply necessary to make openings to accommodate the supply-pipes 4, 9, and 10 and to properly support the burner at the right height in the fire-chamber of the stove, with the controlling-valves 4^a, 9^a, and 10^a exposed on the outside for convenience in manipulation.

A burner constructed as above described

with reference to Fig. 1, or as described with reference to Figs. 2, 3, and 4, will be found to be well adapted for burning either natural or manufactured gas.

While I have described somewhat minutely the details in the construction of the burners, I do not limit myself to these precise constructions.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A gas-burner comprising a commingling tube and a spreading semi-circular chamber 6 formed with an approximately oblong top having a series of burner-openings 7, with a central transverse partition-plate 7^c, and with outwardly projecting end plates 7^b, extending across the mixing chamber and providing narrow transverse passages 7^d intermediate of the tubes, and the burner-openings, and pockets 7^e located beneath the end plates; the partition-plates and the end plates dividing the mixing chamber into two parts, substantially as described.

2. A gas-burner comprising a spreading semi-circular chamber 6 formed with an approximately oblong top having a series of burner-openings 7, with a central transverse partition-plate 7^c, and with outwardly projecting end plates 7^b, extending across the mixing chamber and providing narrow transverse passages 7^d intermediate of the tubes and the burner-openings, and pockets 7^e located beneath the end plates, and a commingling tube tapered toward the partition-plate for directing the flow of mingled air and gas onto the center thereof; the partition-plate and the end plates dividing the mixing chamber into two parts, substantially as described.

3. A gas-burner comprising a supporting rack 2 having end brackets 2^a the supply pipe 4, the horizontal commingling tubes and mixing chambers, the vertical commingling tubes and mixing chambers, the plugged supply pipe 9 communicating with one of the vertical commingling tubes, the supply pipe 10 supporting the inner end of the plugged pipe and communicating with the other vertical commingling tube and the main pipe common to all the supply pipes having independent valves for the supply pipes; substantially as described.

HARRY H. HIBBERD.

Witnesses:

CYRUS P. FLICK,
GEO. W. ATKINSON.