

(No Model.)

2 Sheets—Sheet 1.

E. B. REQUA.
GAS BURNER.

No. 305,535.

Patented Sept. 23, 1884.

Fig. 1.

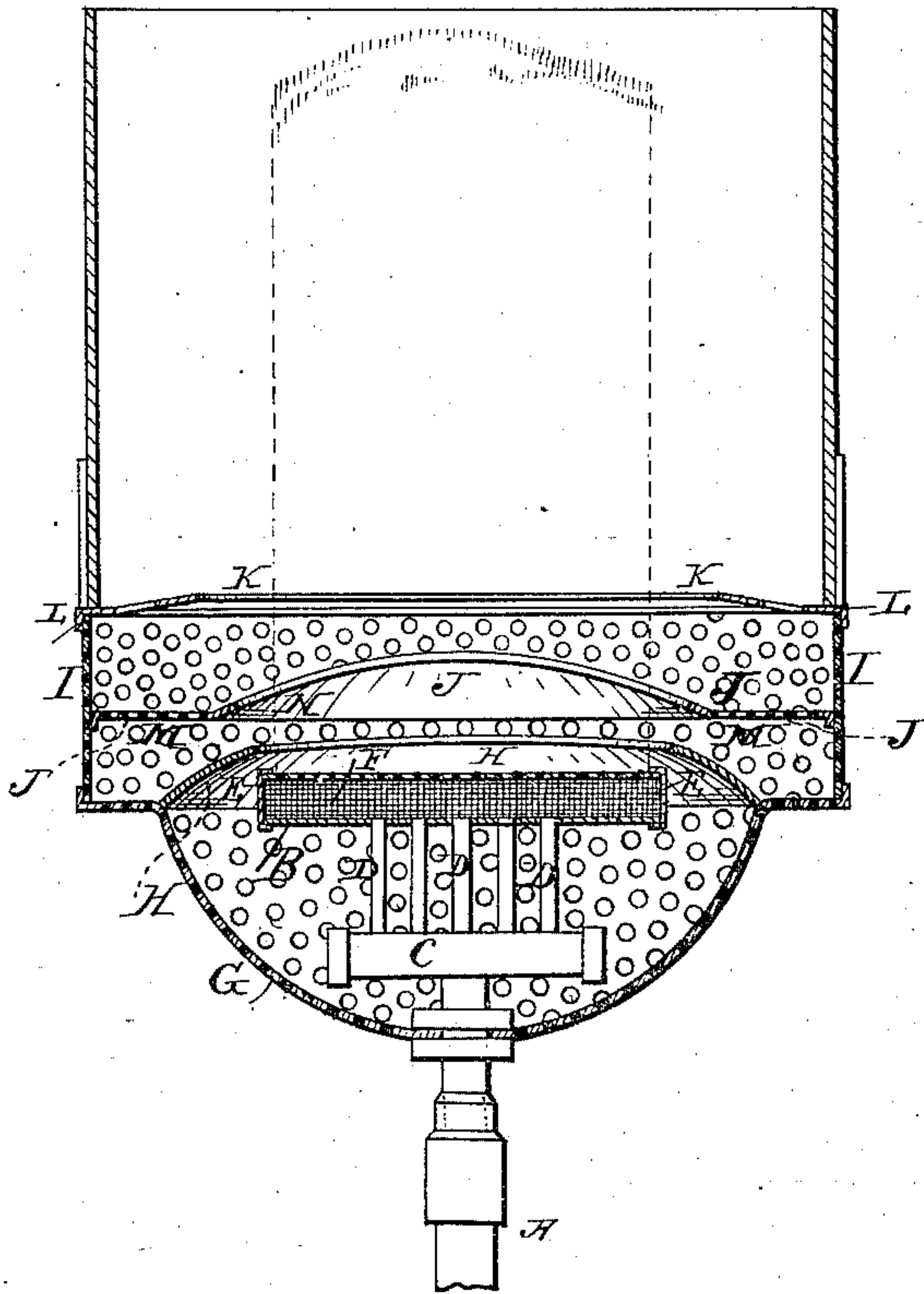


Fig. 2.

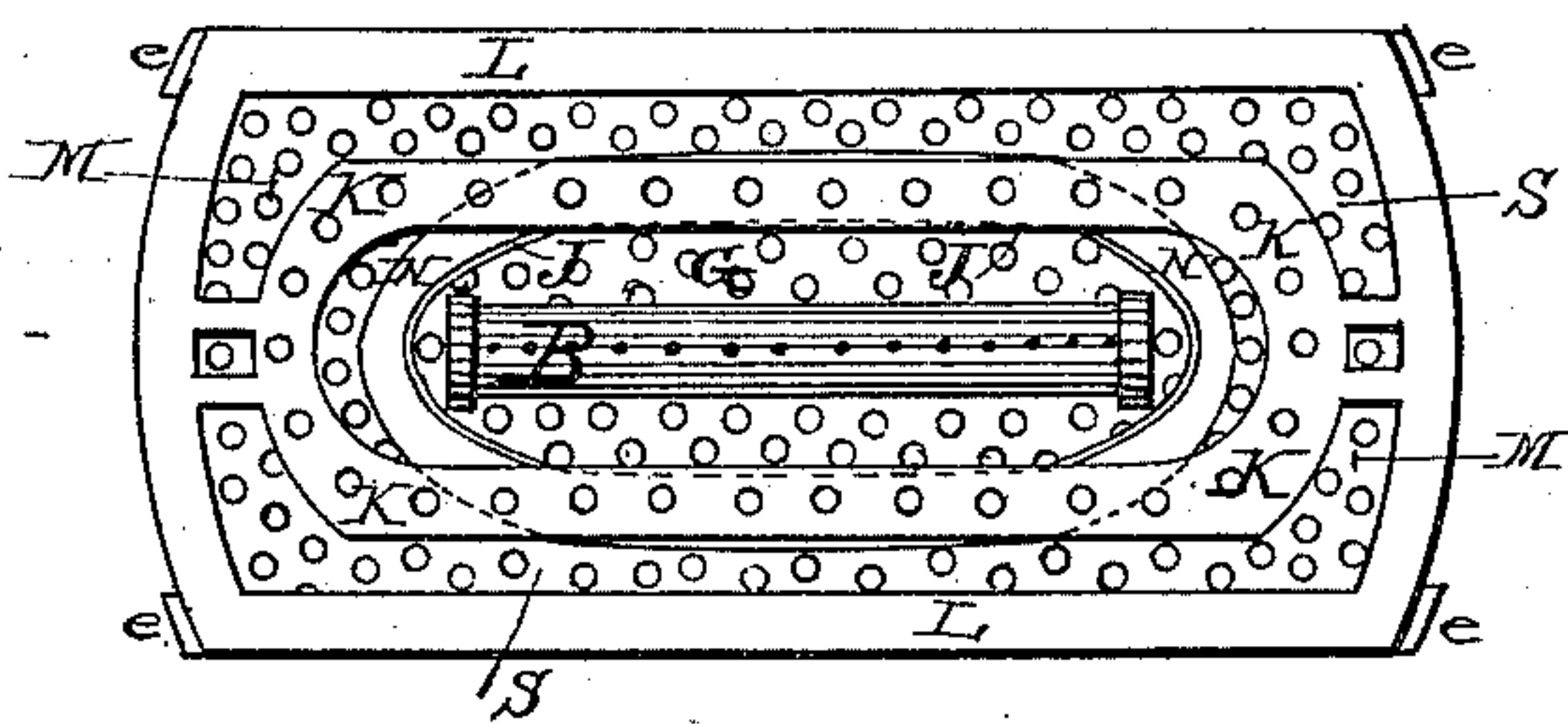


Fig. 3.



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Fig. 4.

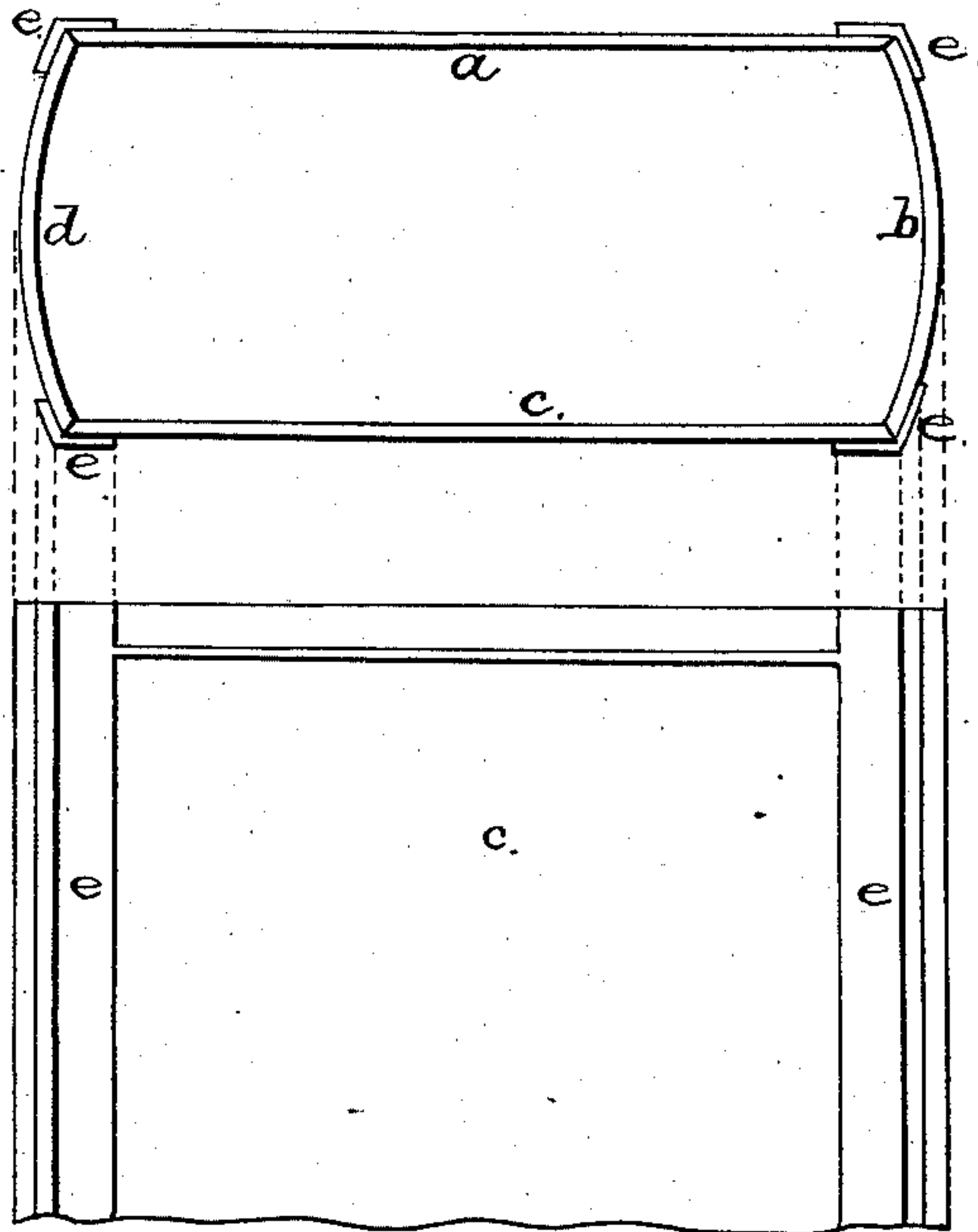
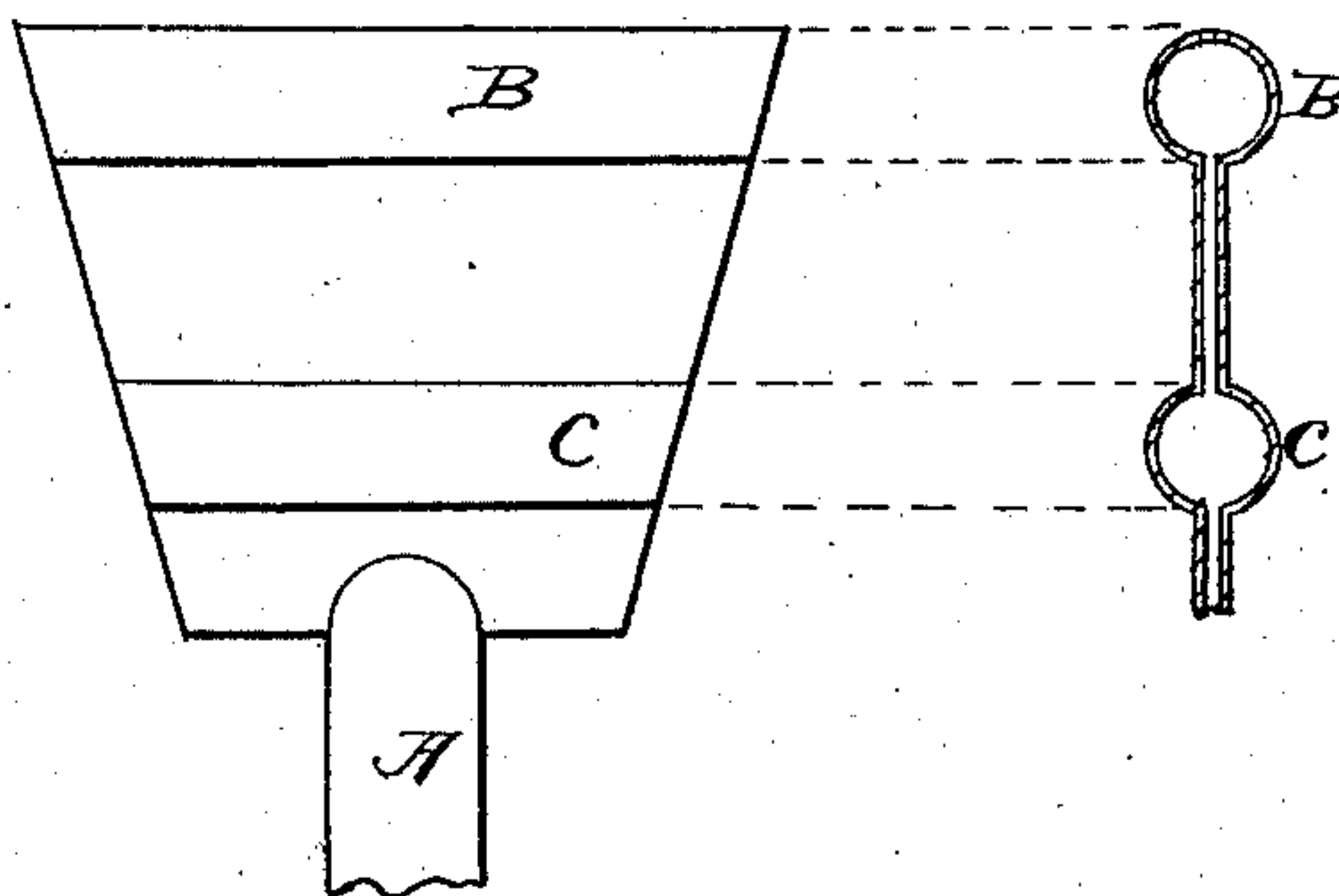


Fig. 5.



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UNITED STATES PATENT OFFICE.

ELIAS B. REQUA, OF JERSEY CITY, NEW JERSEY.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 305,535, dated September 23, 1884.

Application filed November 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELIAS B. REQUA, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

The invention relates to an improvement in gas-burners, and its object is to produce a flame of great brilliancy and power with a small consumption of gas.

The distinctive characteristics of the invention and its mode of operation will appear in full hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of a gas-burner embodying the elements of the invention. Fig. 2 is a top view of the same. Fig. 3 is a view of the roll of wire-cloth detached from the flame-tube. Fig. 4 is a top and side view of the chimney made in sections, and Fig. 5 is a side and sectional view of a modified form of burner.

In the drawings, A denotes the pipe leading from the source of gas-supply, and upon the end of the pipe is the burner proper, which consists of a suitable frame, hereinafter described, inclosing the horizontal flame-tube B, which is connected with the horizontal tube C by the series of small vertical tubes D, the tube C being in communication with the supply-pipe A. The flame-tube B will be perforated along its upper edge, will be supplied in its interior with a roll of fine wire-cloth, F, or equivalent material, and will, preferably, have screw-caps E at its ends. The wire-cloth or other material will be rolled up and inserted in the tube, the screw-cap on one or both ends being afterward applied. The purpose of the wire-cloth is to retard and superheat the gas, as hereinafter pointed out.

Any number desired of the connecting-tubes D may be employed; or, in lieu of them, I may connect the tubes B C by a flat metal tube, as indicated in Fig. 5, this latter being either made a part of the tubes B C or independent thereof, as may be preferred.

The frame of the burner consists of the bowl-shaped foraminous plate G, surrounding the base of the burner and supporting the deflector

H and vertical frame I, which carries the deflector J, the air retarding and heating plate K, and the flange L, upon which the chimney rests. The lower portion of the bowl-shaped part G is cut to receive the tube communicating with the tube C, and along the upper inner horizontal edge of said part G is secured the deflector H. The vertical frame I extends upward from the outer edges of the horizontal portion of the plate G. It is perforated throughout, and at about its center is secured the upper deflector, J, which consists of the horizontal perforated portion M and the upwardly and inwardly deflected portion N. Around the upper edge of the vertical frame I is the flange L, for sustaining the chimney, and from one end of the frame I to the other extends the elongated frame or plate K, the center of which is removed to permit the passage of the flame through it, and its outer edges are separated from the flange L by a space, S, through which air may pass along the inner surfaces of the chimney or globe. The frame K will preferably be perforated, as indicated, and its office is to retard and partially heat the current of air and turn part of it into the flame, the other and cooler portion of the current being permitted to pass gently upward over the inner surface of the globe or chimney.

The fingers or devices employed for retaining the chimney or globe in place will be such as are best adapted to the purpose and to the shape of the chimney. I recommend the employment of a chimney having flat sides and flat or oval ends, the whole describing in cross-section an outline substantially in the form of an oblong square. This chimney may be made in one piece or in four sections, as shown in the drawings, and lettered *a b c d*, respectively, and when thus constructed the retaining-fingers *e* will be of proper form and width to cover the joints made by the sections, and will preferably extend to the top of the chimney, being there connected by a narrow strip of metal to prevent their being sprung outward. There is a great advantage in making the chimney in sections, as described, and it is that one part of the same may be of colored or frosted glass and the other part of plain glass, or that the chimney may be made wholly of

clear mica. The parts of the chimney may be made of any suitable transparent or translucent material, and one part may differ from the other in color or material.

5 In the operation of the invention the burning of the gas heats the flame-tube B, the inclosed wire-cloth, connecting-tubes D, and tube C, whence the heat is communicated to the foraminous bowl-shaped plate G, and in
10 a lesser degree to the vertical frame I, the upper part of the frame being much cooler than the lower part. The flame heats the deflectors H J and frame K. It will be noted that the gas is heated in the tubes B, C, and
15 D, and is thoroughly diffused before its escape, and that the air passing through the heated perforated parts of the frame and circulating about said tubes will also be greatly heated and then deflected into the base or hy-
20 drogen part of the flame. That part of the air which is deflected inward by the frame K enters the flame, while the air which enters through the perforated frame I and the perforations in the deflector J and passes upward
25 through the air-space S is comparatively cool. The frame K, however, breaks up any strong drafts, and heats and turns part of this previously-cool air into the flame. The parts of the burner and frame are constructed and ar-
30 ranged with a view of so superheating the gas and tempering the air at different points that a broad strong brilliant flame will be produced and give forth a clear pervading light. As an illustration, I will say that with a flame-
35 tube two and one half-inches in length and containing twenty-seven apertures I have had no difficulty in producing a beautiful flame two and one-half inches in width and four and one-half inches in height from six feet of gas
40 per hour. Of course the flame-tube may be of any length required, the foregoing dimensions having been given mainly with a view of conveying an approximate idea of the capacity of the invention.

45 In Letters Patent granted to myself April 10, 1883, and numbered 275,708, I illustrate an elongated flame-tube connected with the gas-pipe by smaller tubes; but in said patent the elongated flame-tube does not contain a
50 roll of gas retarding and superheating substance, and the light is probably not so desirable as that produced by the present flame-tube. In the patent to Allen, No. 10,270, dated November 29, 1853, is shown an elongated flame-tube containing a wick inclosed
55 in wire-gauze. This patent is for a lamp, and the wick is kept moist by actual contact with the fluid, which is conveyed through a tube to the wick. The wire-gauze causes the oil to
60 spread uniformly through the wick, and prevents it from burning. According to my invention the roll of gas retarding and superheating substance is essentially different from that shown in the patent to Allen and de-
65 scribed therein as a wick inclosed by wire-

gauze. If this wick and gauze were placed in applicant's elongated flame-tube, it would not serve to superheat the gas, but the wick would be rapidly destroyed, and the shell of wire-gauze would neither retard the flow of
70 nor superheat the gas. The roll of wire cloth F used by applicant in the flame-tube must be sufficiently dense to retard the flow of gas, and hence it is called a "roll," to distinguish it from a mere tube of wire-cloth.

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

1. In a gas-burner, the elongated horizontal tube B, containing a roll of gas retarding and superheating substance, and connected by
80 means of the series of tubes D and tube C with a gas-supply, substantially as set forth.

2. In a gas-burner, the elongated horizontal flame-tube B, connected with a source of gas-supply, the perforated bowl G, inclosing the
85 same, the elongated deflector H, projecting inward from the inner upper edges of the bowl G, the vertical perforated frame I, and the deflector J, the part G being perforated between the deflector H and frame I, and the deflector
90 J being located above the flame-tube and consisting of the perforated portion M and imperforated deflecting portion N, substantially as set forth.

3. In a gas-burner, the flame-tube B, the
95 inclosing perforated bowl G, deflector H, perforated frame I, deflector J, and the frame K, around which is an air-space, S, substantially as set forth.

4. In a gas-burner, the flame-tube, perfo-
100 rated bowl G, deflector J, perforated frame I, frame K, and flange L, an air-space, S, being provided between said flange and the frame K, substantially as set forth.

5. In a gas-burner, the elongated flame-tube
105 perforated along its upper portion, the bowl-shaped perforated part G, supporting on its inner horizontal portion the elongated deflector H, the frame I, extending upward from the outer edge of the horizontal perforated por-
110 tion of part G, and the frame K, between the outer edges of which and the frame I is an air-space, S, substantially as set forth.

6. In a gas-burner, the tube B, perforated
115 along its upper portion, the bowl-shaped perforated part G, supporting on its inner horizontal portion the elongated deflector H, the frame I, extending upward from the outer edge of the horizontal perforated portion of part G, the deflector J, as specified, and the
120 perforated frame K, around which is an air-space, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 7th day of November, A. D. 1883.

ELIAS B. REQUA.

Witnesses:

CHAS. C. GILL,
HERMAN GUSTOW.