No. 781,608. PATENTED JAN. 31, 1905.

E. J. KRAETZER.

GAS BURNER.

APPLICATION FILED MAR. 3, 1904.

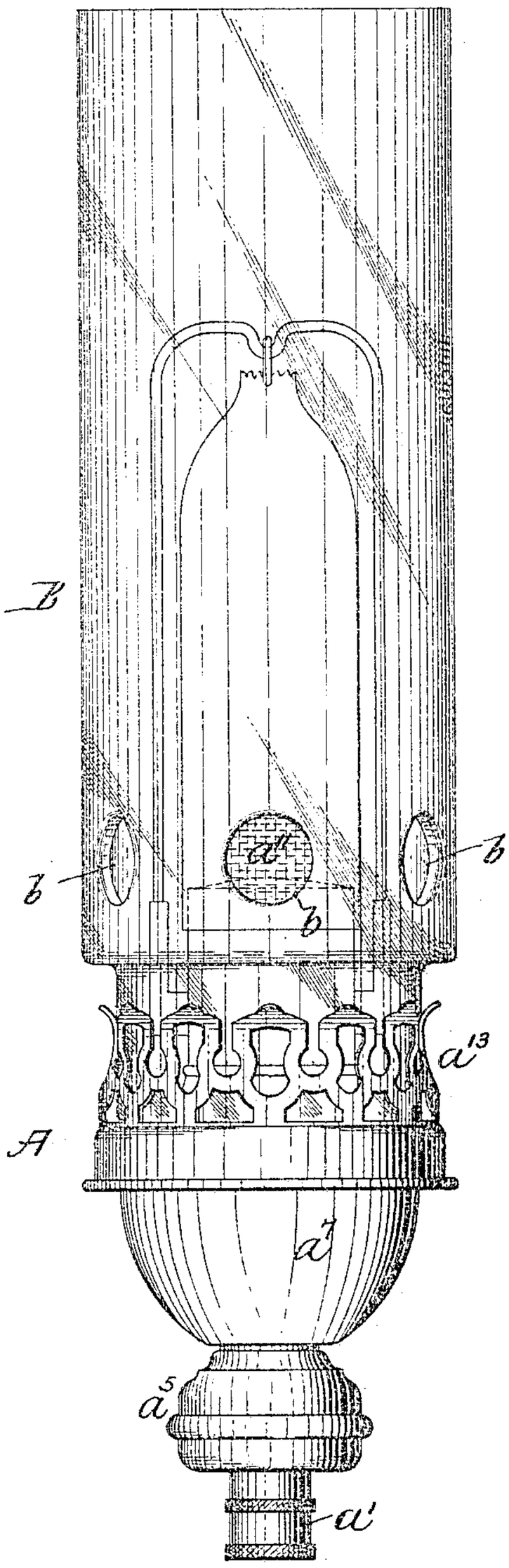

Fig. 1.

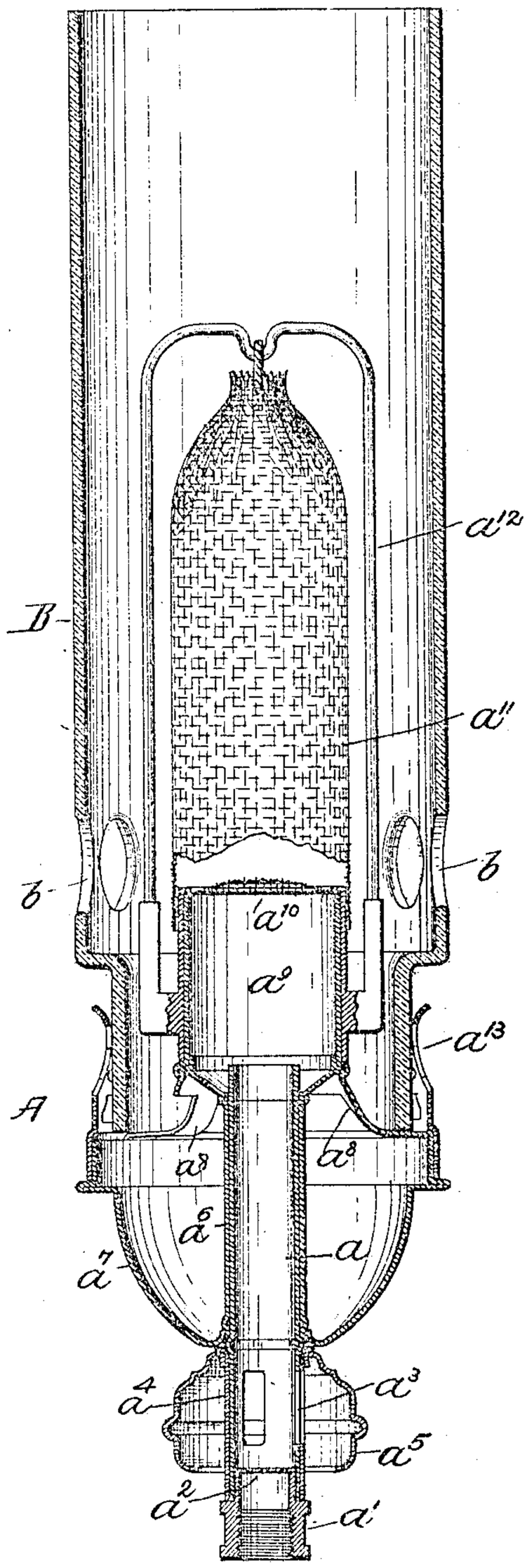

Fig. 2.

WITNESSES:

J. W. Dolan.

M. V. Foley

INVENTOR:

Edwin J. Kraetzer

by Edwards Kaymond & Brown

his attorneys.

No. 781,608. Patented January 31, 1905.

UNITED STATES PATENT OFFICE.

EDWIN J. KRAETZER, OF SOMERVILLE, MASSACHUSETTS.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 781,608, dated January 31, 1905.

Application filed March 3, 1904. Serial No. 196,281.

To all whom it may concern:

Be it known that I, EDWIN J. KRAETZER, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Gas-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to an improvement in gas-burners and to that type of burner in which a mantle or hood is used which, made incandescent by the gas-flame, serves as the light medium.

One great objection to the incandescent gas-burner resides in the fact of its extreme brilliancy—most dazzling and trying to the eyes. The mantle on the inside is heated to a state of incandescence by the gas-flame, while on the outside air passes up through the open base of the burner to flow between the mantle and adjacent chimney, so furthering the incandescence and when the burner is in proper order causing the mantle by reason of the intensity of its incandescence to emit an almost perfectly white light, which, as said before, is most trying to the eyes by reason of its unnatural brilliancy. I have discovered by a slight variation made in the structure of the burner a means by which the mantle may be made to glow with a softer and more mellow light most pleasing in its effect to the eyes.

My improved form of burner can best be seen and its advantages best understood by description, in connection with the drawings, forming a part of this specification, in which—

Figure 1 shows the improved burner in elevation. Fig. 2 shows the same in vertical cross-section.

In the drawings, A represents the burner, comprising a tube a, which connects with any gas-supply pipe (not shown) by means of a screw-coupling a'. Inside the coupling is a perforated diaphragm a^2, through which the gas from the supply-pipe passes up into the interior of the tube. In the side of the tube near its base are holes a^3, through which air may be admitted to the interior of the tube to mix with the gas passing through it, and these holes are regulated in the amount of their opening by a perforated sleeve a^4 fitting about the tube. The sleeve is controlled by a regulating-cone a^5, joined to it, forming a chamber opening from its bottom for the ingress of air. These parts just described form portions of a kind of burner now in common use and are referred to merely for the purpose of showing the relative arrangement of parts hereinafter to be described.

Above the sleeve a^4 and regulating-cone a^5 there fits upon the tube a, by means of a connecting-sleeve a^6, what may be termed the "superstructure" of the burner, the same comprising a closed base-piece or basket a^7, converging in to be joined to the bottom end of the sleeve a^6 and at the top, on the inside, being provided with ribs a^8, extending inwardly to carry an enlarged tubular portion a^9, connecting with the upper end of the sleeve a^6 and practically forming a combustion-chamber at the end of the tube a. The upper end of the tubular portion a^9 is closed by a wire screen a^{10}, as ordinarily used, while above it to be heated by the products of combustion hangs the mantle a^{11}, having any suitable fixture of support a^{12}. On the outside the superstructure of the burner, around the top edge of the closed base-piece or basket a^7, is provided with a gallery a^{13} for retaining the flanged end of the chimney. The chimney is designated B, and it is to be noted that the chimney near its base is provided with a series of openings for the ingress of air.

The essential difference between the type of burner just described and that hitherto used is especially noted in the fact that the exterior shell or base-piece or basket of the burner is made closed instead of open. By closing this portion of the burner the air, which hitherto has had ingress at this point, is entirely shut off and instead an air-chamber is formed, into which, as I have found by experiment, the air passes, or at least a portion of the air passes, which enters through the holes in the chimney, which air after entering said chamber flows upwardly out of the same to pass over the outer surface of the mantle. The effect is that the mantle when heated by the gas-flame glows with a softened and more mellow

state of incandescence or with a more yellow light, which is easy to the eyes.

The theory upon which I base the effect of my discovery is primarily that a superheated air is made to pass over the outside surface of the mantle. As I have found by experiment, the air first entering through the openings in the chimney is deflected downward to pass alongside the combustion-chamber into the chamber below, from which, becoming heated, it rises to again pass alongside the combustion-chamber and thence to flow upwardly over the outer surface of the mantle. The air entering the holes in the chimney is deflected downward into the air-chamber below, apparently by reason of the fact that the heated air rising from said chamber leaves a partial vacuum therein, so drawing the cool entering air downward and from flowing directly upon the mantle, as it might otherwise do. With my improved burner also the mantle is made to glow with an even incandescence over its entire surface. This effect is undoubtedly obtained by the closed chamber so directing the currents that the air entering through the openings in the chimney will not flow, as before stated, directly upon the mantle, when it would appear streaked, but is so disseminated that its application will be even to all parts of the surface of the mantle. Among other advantages obtained by the closing of the base of the burner may be mentioned the fact that drafts of air and various disturbing particles, which hitherto entering at this point have broken the delicate fabric of the mantle, are entirely cut off. In other words, the mantle is better protected. Then, again, by shutting off the flow of cool air up through the base of the burner, which hitherto has acted to quicken the incandescence of the mantle to an intense white heat, the life of the mantle is increased.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a gas-lamp, a burner, a chimney inclosing said burner and spaced a slight distance therefrom, said structure having openings from the interior of the chimney directly to the outer air at points opposite the burner, a closed chamber or basket below the burner communicating with the interior of the chimney through the space between said chimney and burner.

2. In a gas-lamp, a closed chamber or basket, a burner extending well above said chamber, a chimney inclosing the burner and spaced therefrom to have its interior in communication with the closed chamber below, said structure having an opening from the interior of the chamber directly to the outer air at a point substantially opposite the top of the burner.

EDWIN J. KRAETZER.

In presence of—
J. M. DOLAN,
M. V. FOLEY.