(No Model.)

E. STEIN.

REGENERATIVE GAS LAMP.

No. 385,383. Patented July 3, 1888.

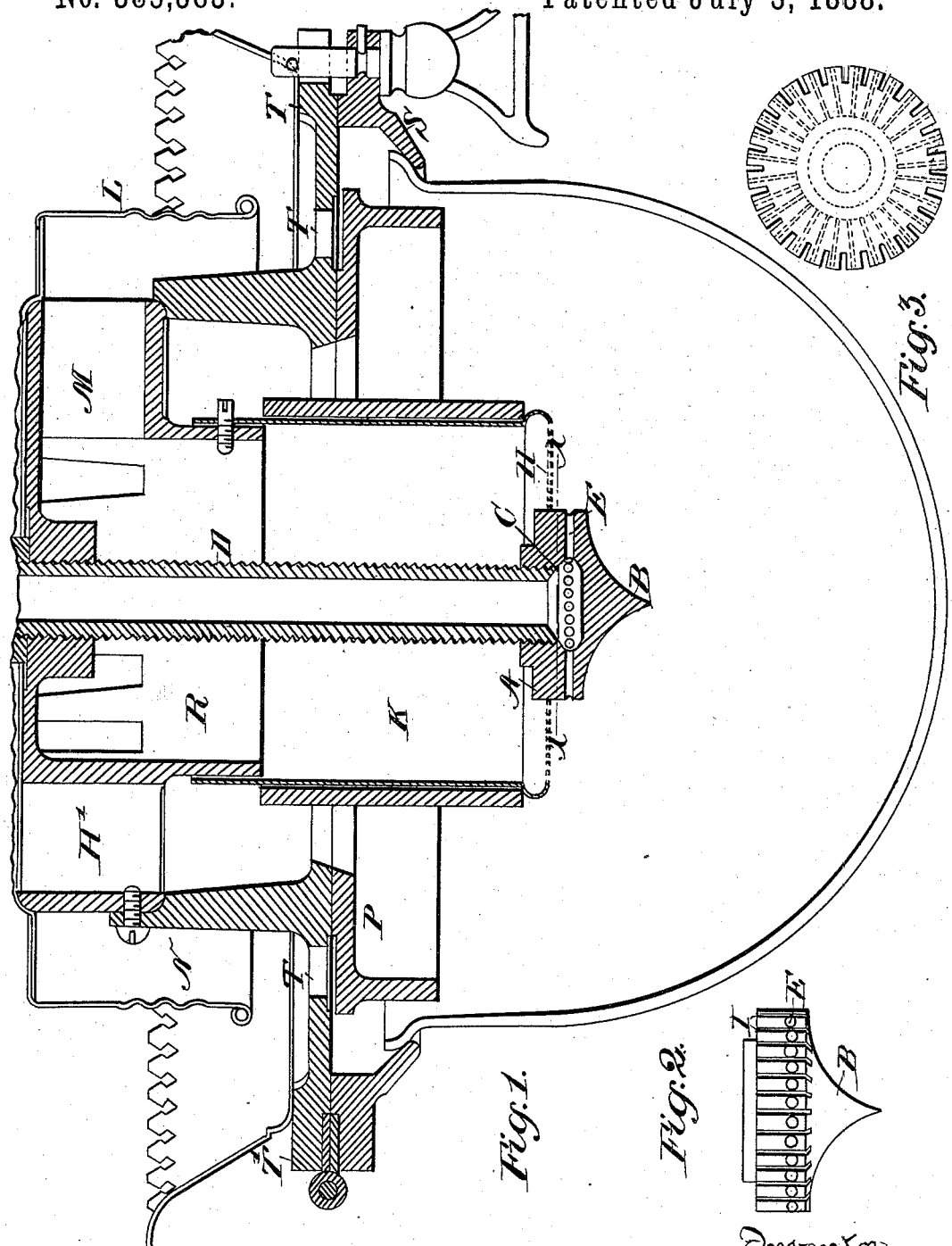

Fig. 1.

Fig. 2.

Fig. 3.

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REGENERATIVE GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 385,383, dated July 3, 1888.

Application filed December 14, 1887. Serial No. 257,917. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL STEIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Regenerative Gas-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of lamps in which the gas is burned at the base of the burner, and wherein the heat of the products of combustion from the flame is imparted to the air-supply and to the combustible gas for increasing the illuminating-power of the flame.

The nature of my invention consists in certain improvements in the construction of the burner and novel combinations of the parts thereof, which will be hereinafter fully described in the specification and designated in the claims.

In the accompanying drawings, in which corresponding parts are designated by the same letters, Figure 1 is a vertical section of a lamp in which the gas is burned at the base of the burner, and in which the heat of the products of combustion from the flame is imparted to the air-supply and also to the gas. Fig. 2 is a side view of the burner; and Fig. 3, a transverse section of the burner, taken on line *x x* of Fig. 1.

The burner consists of a cylindrical piece of metal or steatite, A, upon the bottom of which is turned or formed a downwardly-extending projection, B, of the curvilinear form shown in section in Fig. 1, the exterior surface of which may be described as generated by the revolution of an inwardly-curved line about the axis of the cylinder. This uniformly-curved exterior surface divides, deflects, and equalizes the flow of air upon the gas-jets. The cylindrical piece A is provided with a chamber, C, the upper part of which is threaded to fit a corresponding thread upon the lower extremity of gas-pipe D, and the lower part of which is somewhat expanded, as shown in Fig. 1.

A series of holes or bores, E, are pierced or cut in the burner, which are arranged in a horizontal plane radially about the chamber C in such a manner as to form independent conduits from the said chamber to the exterior periphery of the burner, through which the gas issues in a horizontal direction beneath the perforated metal plate H. Between the holes or bores E, forming the horizontal gas-conduits from the central chamber, are cut or formed a series of radial slits, I, which constitute the air ducts or conduits from the central downward air-passage, K, to the under side of the burner. These air-conduits not only supply air at the sides and beneath the jets of flame at the point of combustion, but also serve to cool those parts of the burner which are almost directly in contact with the flame. By thus providing the burner with a central chamber, horizontal radial gas-conduits leading from this central chamber, and slits or air-conduits through which the air passes downward from the central air-supply passages between each of the gas-conduits heated air to supply both the upper and under side of the flame is obtained from the central air-chamber without using a deflecting-button, which is usual and often indispensable in the class of regenerative lamps to which my invention relates.

Air is supplied along the whole surface of the annular horizontal sheet of flame by the perforated distributing and regulating plate H, which is arranged in a plane parallel or nearly parallel to the direction of the flame, and not only equalizes and regulates the flow of air, but supplies it in the requisite quantity required to the exact points where it is required.

The deflector-plate P is so arranged that an annular passage is formed on its exterior, through which the air passes from the aperture T, communicating with the outer atmosphere, downward into the globe.

The regenerator R, in which the air which flows down the central air-supply passage is heated, has a cone top which is provided with an annular pendent top, L, overhanging the top plate, T′, but not in contact with it. The regenerator is provided with a number of radial passages connecting the annular chamber N with the central air-supply flues, M, R, and K, the walls of which form the passages H′, through which the escaping products of com-

bustion flow to the chimney, having previously passed through the opening P. The cone top rests upon the circular rim of the top of the regenerator, so as to separate the currents of inflowing air from the products of combustion, which are deflected by the conical surface over the regenerator-passages against the gas-pipe.

The globe is provided with an outer annular flange which rests upon a corresponding inner flange on the globe-holder S. The globe-holder is hinged to the bottom of the top plate and secured in position by a turn-clamp. The regenerator rests within an annular groove cut for its reception in the inner edge of the top cylinder which forms a part of the top plate, and is secured thereto by screws. A beveled ring cut upon the inside of the cone top rests upon a corresponding beveled edge formed upon the top of the regenerator.

The perforated air equalizing and distributing plate H is situated at the lower end of the sheet-metal cylinder A, which is surrounded by a ring or sheathing of asbestus.

Having thus described my invention, I declare that what I claim is—

1. In a regenerative lamp, a burner provided with an interior gas-chamber and radial gas-conduits leading outward therefrom, together with vertical slits or air-conduits on the outside of said burner, through which the air passes downward between the gas-conduits, as and for the purposes described.

2. In a regenerative lamp, the combination of the globe, the supporting-frame provided with air-inlets, the flue, the central air-supply cylinder, the tubes extending through said flue and connecting the central cylinder with the outer air, the burner made in the form of a short cylinder with a conoidal lower portion, the central part of said cylinder being hollowed out, forming a gas-chamber and having horizontal radial gas-passages extending from the chamber to the outside of the cylinder, and vertical slits on the outside of the said cylinder, alternating with the openings of the said gas-passages, the gas-pipe connected with and supporting said burner, and a perforated air-distributing plate extending from the burner to the air supply cylinder, as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

EMANUEL STEIN.

Witnesses:
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