

No. 675,951.

Patented June 11, 1901.

J. P. KEATING.  
INCANDESCENT LIGHTING DEVICE.

(Application filed Jan. 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

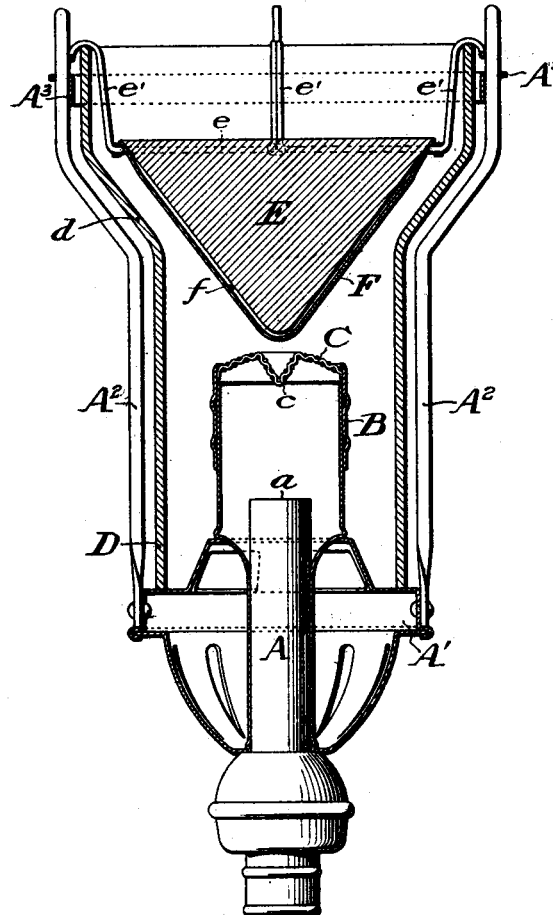
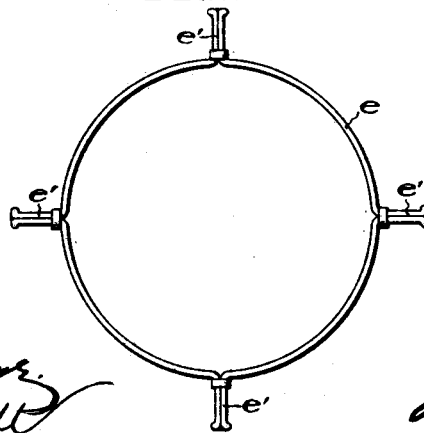


FIG. 2.



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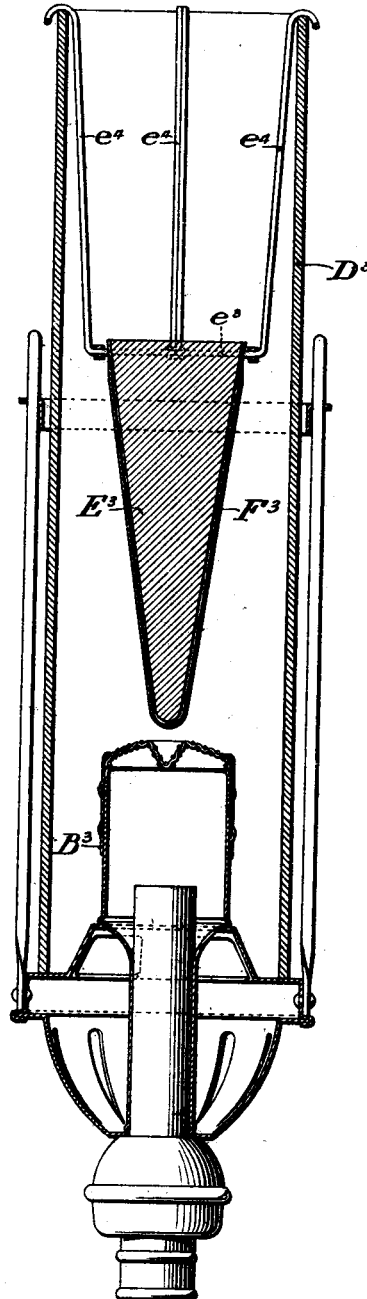
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2 Sheets—Sheet 2.

FIG. 3.



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# UNITED STATES PATENT OFFICE.

JOSEPH PERCY KEATING, OF PHILADELPHIA, PENNSYLVANIA.

## INCANDESCENT LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 675,951, dated June 11, 1901.

Application filed January 18, 1901. Serial No. 43,708. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH PERCY KEATING, a citizen of the United States, residing at No. 1833 De Lancey Place, in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Incandescent Lighting Devices, whereof the following is a specification, reference being had to the accompanying drawings.

My invention is intended for use in connection with that class of apparatus wherein a hydrocarbon-burner of the so-called "Bunsen" type is employed in conjunction with a mantle carrying material adapted to be rendered incandescent by the flame from such burner, and the features of improvement are addressed to intensifying the light and also to prolong the life of the mantle.

In the accompanying drawings, Figure 1 represents a vertical central section through an apparatus embodying my invention in a preferred form. Fig. 2 is a top or plan view of the ring or spider whereby the mantle is supported in position. Fig. 3 is a vertical central section through another apparatus embodying my invention, the general arrangement of the burner and chimney being that which is commonly in use in lamps of the ordinary Welsbach type.

Referring to the type of apparatus shown in Figs. 1 and 2, A represents the supply-tube of an ordinary Bunsen burner whose orifice *a* terminates within a cylindrical prolongation B, having a cap or diaphragm C at its upper end formed of wire-gauze, the central portion of which cap is formed with a conical depression *c*.

The means for controlling the air-supply are not described, as they are of course well understood.

The burner is surrounded by a gallery A', upon which rests the chimney D, whose upper end is flared outwardly, as shown at *d*. The gallery A' may also be provided with a standard A<sup>2</sup>, carrying a ring A<sup>3</sup>, adapted to embrace the enlarged portion of the chimney and prevent displacement. A core E, preferably in the shape of an inverted cone, of refractory material—such as chalk, porcelain, or fire-clay—is suspended coaxially above the burner, a convenient supporting device

being a wire ring *e*, provided with hangers *e'*, adapted to depend from the upper periphery of the chimney itself, although of course any other method of support may be employed. The pitch of the cone E is in conformity with that of the flared portion of the chimney D, a proper interspace being afforded for the flame and products of combustion.

A conical mantle F, which may be of the Welsbach type, is suspended in proximity to the surface of the cone E, preferably by interposing the upper margin of the mantle between the ring *e* and periphery of the cone immediately adjacent to the base. An interspace *f* should be left between the mantle and the proximate surface of the cone, as indicated in Fig. 1.

The operation of the device is as follows: The flame issuing from the burner impinges upon the outer face of the mantle and is projected into the interior thereof against the surface of the core E, where it is deflected, so as to follow along the interspace *f*, being thus compelled to travel in close proximity with the inner surface of the mantle, while of course the control effected by the chimney insures the proper contact between the flame and the outer surface of the mantle. This results in a most efficient heating contact with the mantle, so that the maximum amount of incandescence of the latter is insured. The under surface of the core itself becomes in a measure incandescent, thus assisting the general illuminating effect. Furthermore, the disposition of the mantle's surface at an angle to the vertical tends to project the light in a downward direction with reference to the horizon, and thus minimizes the inefficient diffusion of the light-rays as compared with the operation of an ordinary mantle of approximately cylindrical form.

In the type of apparatus shown in Fig. 3 the burner B<sup>3</sup> is of substantially the same construction as that heretofore described, but the chimney D<sup>3</sup> is of the ordinary cylindrical type, so that the invention may be readily applied to existing burners. The mantle F<sup>3</sup>, however, is relatively elongated as compared with the one just described, and the core E<sup>3</sup> is correspondingly elongated. Said core and mantle may be supported, as in the other in-

stance, by means of a ring  $e^3$ , having wire hangers  $e^4$  depending from the top of the chimney  $D^3$ . The mode of operation is as previously described, with the exception that the projection of the light in a downward direction is less marked, owing to the fact that the surfaces of the core and mantle are more nearly vertical.

Having thus described my invention, I would state that I do not desire to claim the use of a conical mantle by itself, nor do I broadly claim the use of refractory material in conjunction with a mantle.

In using the term "conical" to describe the preferred form of core and mantle I of course do not intend to limit the shape of these elements to the exact form thus conveniently described. I also employ the term "mantle" to comprehend, broadly, all the various types of structures thus commonly designated which carry material capable of becoming incandescent under the effect of flame.

I claim—

1. The combination of a burner; a depending core of refractory material; means for suspending said core with its lower end above the burner; a mantle surrounding said core;

means for supporting said mantle; and a chimney surrounding said mantle and core, substantially as set forth.

2. The combination of a burner; an inverted conical core of refractory material arranged above the same; an inverted conical mantle surrounding said core; means for supporting said mantle; and a chimney surrounding said mantle and core, substantially as set forth.

3. The combination of a burner; an inverted conical core of refractory material arranged above the same; an inverted conical mantle conforming to said core; means for supporting said mantle; and a chimney surrounding said mantle and core, substantially as set forth.

4. The combination of a burner; an inverted conical core of refractory material arranged above the same; an inverted conical mantle conforming to said core; a ring adapted to engage said mantle and said core; and means for supporting said ring; substantially as set forth.

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Witnesses:

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E. REESE.