W. J. PALMER.

Lamp Burner.

No. 34,521. Patented Feb. 25, 1862.

Fig. 1.

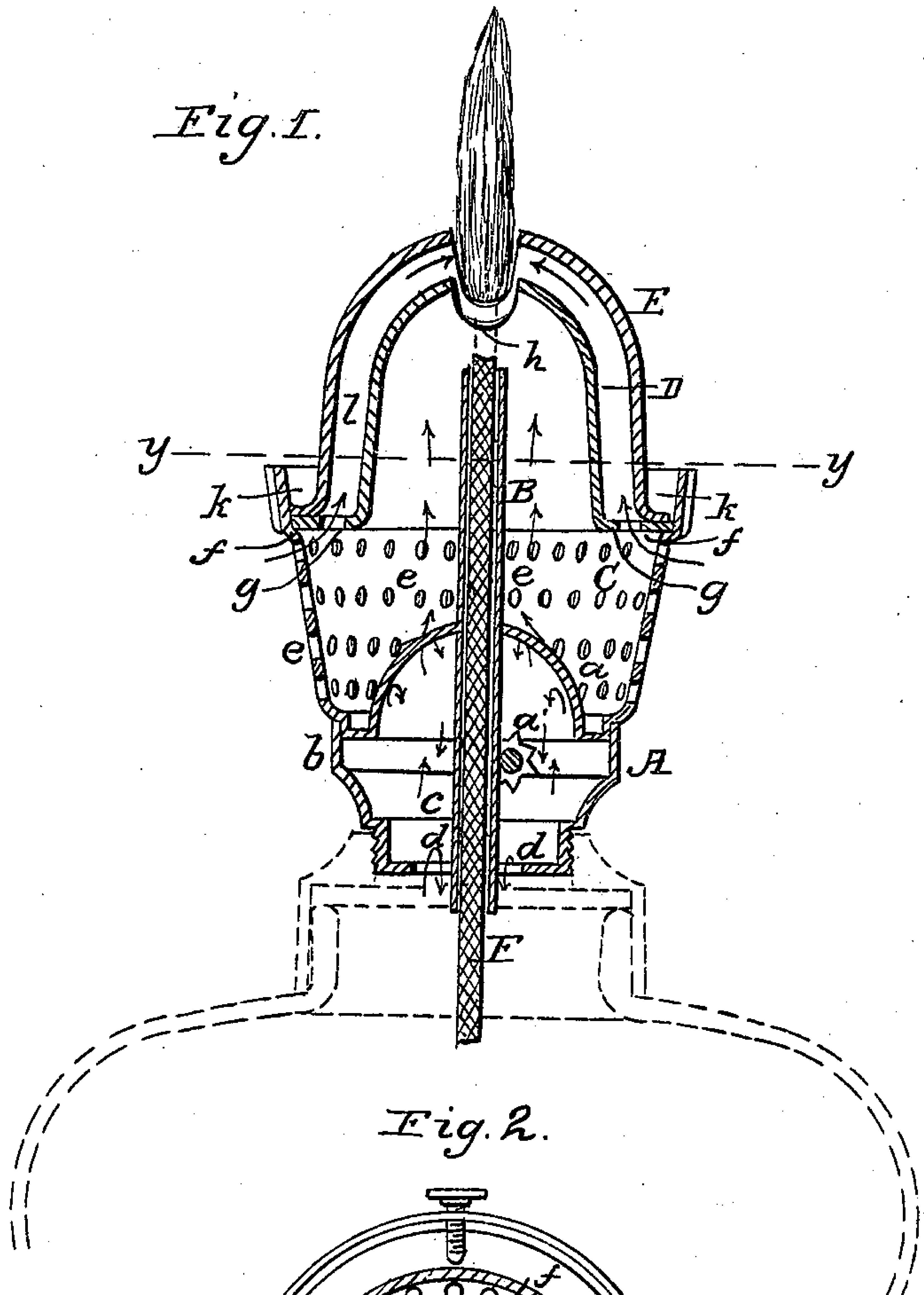
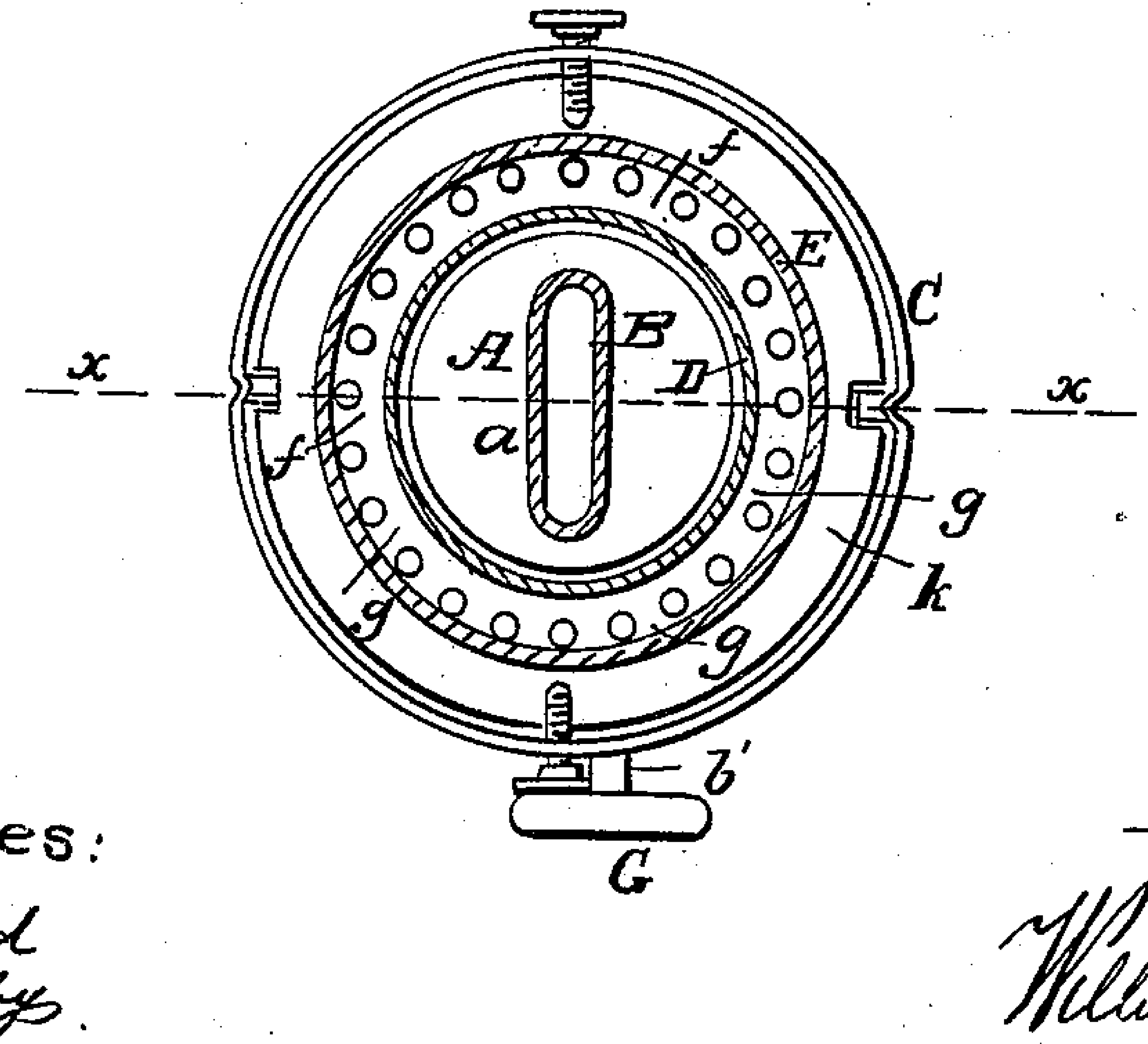


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH PALMER, OF FLUSHING, NEW YORK.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **34,521**, dated February 25, 1862.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH PALMER, of Flushing, in the county of Queens and State of New York, have invented a new and Improved Lamp; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to an improved lamp for burning coal-oil without a chimney, and has for its object the supplying of the flame with a requisite amount of oxygen to support proper combustion by a very simple means and one by which the vapor or gas in the upper part of the lamp will be condensed as it ascends, thereby preventing not only explosions, which are liable to occur in burning the lighter grades of oil, but also preventing the escape of the vapor or gas from the lamp and consequent waste of the oil.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents what is commonly termed the "cap" of a lamp, and which is screwed into the top of the latter. This cap A has a vertical wick-tube B fitted in it as usual, the lower end of the tube projecting slightly below the bottom of the cap, as shown clearly in Fig. 1. The cap A is hollow, and its upper surface is of dome shape, being a section of a sphere, as shown at *a*, in order to obtain as large a surface as possible, the lower part *b* being of cylindrical form. The interior of the cap A forms a condensing-chamber *c*, and it communicates with the interior of the lamp by openings *d*.

To the top of the cap A there is permanently attached an air or draft chamber C, which may be of cylindrical or slightly-taper form. This chamber C is perforated all around with holes *e*, and on its top a cone or deflector D is placed, said cone or deflector having a horizontal flange *f* at its base, which is perforated with holes *g*. The apex of the cone or deflector is provided with a slot *h*, which is directly over and a short distance above the top of the wick-tube B, as shown in Fig. 1.

E represents a cone, which is placed over and concentric with the cone D, a space *i* being between them, which space communicates with the air or draft chamber C by means of the holes *g* in the flange *f* of the cone or deflector D. The apex of the cone E is provided with a slot *j*, which is in line with the slot *h* of the cone or deflector D. The lower edge of the cone E is provided with a flange *k*, which is fitted snugly within the top of the air or draft chamber C, directly over the flange *f* of the cone D. The wick F may be of the ordinary flat kind.

From the above description it will be seen that when the wick F is lighted the flame will be supplied with two drafts or currents of air, one passing up within the chamber C and impinging against the base of the flame and the other passing up within the space *i* between the two cones D E and impinging against the flame at the slot *j*. By this arrangement the flame is supplied with a requisite quantity of oxygen at such points as to insure perfect combustion.

The vapor or gas from the body or fountain of the lamp passes up into the chamber C of the cap A and is there condensed, owing to said chamber being kept cool by the passage of the cold air through chamber C. This is an essential feature of the invention, for the lamp cannot explode by the ignition of the vapor or gas in the upper part of its body or fountain, as sometimes occurs in burning quite volatile oils, and it is therefore not necessary to have any vent to admit of the gas or vapor escaping to prevent such contingency, and a great saving in oil is consequently effected.

The wick F is raised and lowered by means of the usual serrated wheels *a'*, placed on a shaft *b'*, the latter having a thumb-wheel G, of mother-of-pearl or other non-conducting material, attached to the end of shaft *b'*. By this means the fingers of the operator will not be burned in raising and lowering the wick, as the wheel G will be cool at all times.

I do not claim, broadly, the employment of two caps, for they have been used before; but I believe it to be new to have the inner cap provided with a perforated flange for the purpose of allowing the air to pass between the inner and the outer cap, so that all the air

must pass through the air-chamber C before going into said cap or cone. This is a great advantage, because it not only rarefies the air, but it makes the two currents of air equal. The inner cap is also provided with a larger flame passage or slot than the outer one, for the purpose of allowing the gas to ascend and prevent the said cap from being filled with gas, for when such is the case, as it is in ordinary double-cap lamps, the flame will immediately go out when the lamp is moved.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the cold-air or draft chamber C, of the dome-shaped gas-condensing chamber *c*, as and for the purpose herein shown and described.

WILLIAM JOSEPH PALMER.

Witnesses:

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