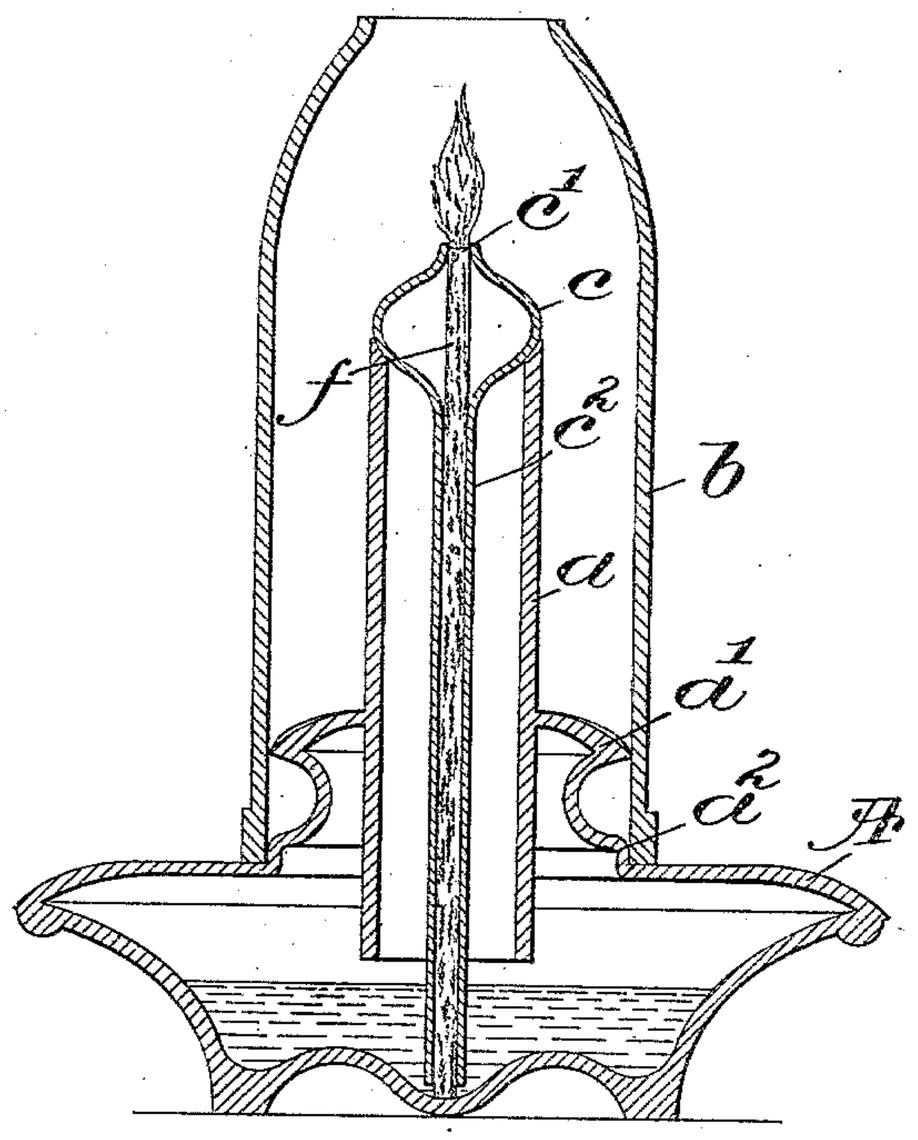
(No Model.)

R. J. ROBERTSON.

LAMP.

No. 545,313. Patented Aug. 27, 1895.



Witnesses.
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UNITED STATES PATENT OFFICE.

RONALD J. ROBERTSON, OF CHELSEA, MASSACHUSETTS.

LAMP.

SPECIFICATION forming part of Letters Patent No. 545,313, dated August 27, 1895.

Application filed May 2, 1894. Serial No. 509,777. (No model.)

To all whom it may concern:

Be it known that I, RONALD J. ROBERTSON, a subject of the Queen of Great Britain, residing at Chelsea, county of Suffolk, State of Massachusetts, have invented an Improvement in Lamps, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of a novel lamp, particularly desirable for use as a night-lamp. Lamps for this purpose need not produce a large flame. On the contrary, a comparatively small flame is more desirable, and it is also desirable that the lamp be capable of burning for a long period of time without refilling and without attention.

In lamps as usually constructed at the present time the oil conducted to the burner by the wick is vaporized by the flame more rapidly and in larger quantities than can be properly consumed by the natural combination with it of the oxygen in the air, rendering it necessary to employ a burner of such construction as shall create an artificial draft of air to supply the latter to the flame in such quantities as shall effect a perfect combustion of the vapors. This artificial draft of air, however, necessarily increases the size of the flame and the rapidity with which the oil is consumed, and in ordinary lamps it is practically impossible to turn the flame down to a low point and obtain perfect combustion without causing an objectionable odor. I have accordingly conducted experiments to devise a lamp which would be capable of producing a small flame and capable of burning for a long period of time without refilling. To meet these requirements it is necessary, first, to dispense with the artificial draft, and when the artificial draft is dispensed with some means must be provided for taking care of the surplus vapors which cannot be consumed except by artificial draft. To accomplish this I have provided what I term a "vaporizing and condensing chamber," located close to and immediately below the burner, and in which the oil drawn to the burner is vaporized and stored. All the vapor necessary to support perfect combustion at the burner is drawn by the flame from this chamber and all surplus vapor condenses in the chamber and is returned to the reservoir. In the preferred construction the vaporizing and condensing chamber is formed by an enlargement of the wick-tube immediately below its upper end, constituting the burner.

The invention consists in a lamp constructed and arranged to include these features, as hereinafter more particularly specified and claimed.

The drawing represents in vertical section one form of lamp embodying my invention.

Referring to the drawing, in the particular lamp there shown to illustrate my invention A is an oil-reservoir more or less ornamental in shape and shown as provided with a central vertical supporting tubular neck a, surrounding which is an ornamental base a' a^2, which constitutes a lateral support for the protecting globe or shade b. Resting in the open end of the neck a is a bulb c, which is shown as constituting a part and an enlargement of the wick-tube c^2, the upper open end c' of which constitutes the burner, the said tube extending down into the oil contained in the reservoir. The bulb c contains or forms a chamber which I have designated the "vaporizing and condensing chamber," through which, in the construction shown is passed the wick f, which leads from the reservoir through the wick-tube to the burner, the said wick terminating at a level with the top of the burner or immediately below the same. The oil is drawn by capillary attraction to the burner, the wick being at all times saturated with the oil, as in all burners.

To light the lamp a match is applied at the burner to ignite the oil contained in the same, as in any lamp, the flame thus produced gradually warming the bulb c and raising the temperature within the vaporizing-chamber to such a degree that the oil, as it is drawn to the chamber by the wick, is there vaporized. At this point begins the distinction between my lamp and the ordinary lamp. In the ordinary lamp the heat of the wick-tube and flame vaporizes the oil just before it reaches the burner and creates more vapor than can possibly be consumed by the natural combination, with the same, of the oxygen in the surrounding air. This makes it obligatory to provide an artificial draft in the form of a pe-

culiarly-constructed burner and chimney to supply such additional quantity of air as is necessary to consume this surplus vapor. In my burner, however, the vapor is generated and stored in the chamber within the bulb *c*, and only such portion of the vapor thus generated and stored rises to the burner and is consumed thereat as will be perfectly consumed by the natural combination therewith of the oxygen in the surrounding air. All the surplus gas generated within the vaporizing-chamber remains therein and gradually cools and condenses in the bottom of the chamber and falls back to the reservoir through the wick-tube. By this construction I am enabled to maintain a small flame at the burner—that is, such a flame as results from the natural union or combination of the oxygen with such portion of the vapor as would perfectly combine with it—and all surplus vapor, which it has hitherto been necessary to burn, and which therefore increased the size of the flame, is in my improved burner condensed and returned to the reservoir.

I prefer to embody my invention in a lamp constructed substantially as herein shown, I having found the same productive of excellent results, although my invention is not necessarily restricted to the same, for the same may be varied and still come within the spirit and scope of the invention.

The lamp shown is preferably constructed of glass, the reservoir and supporting neck *a* being shown as integral, while the wick-tube and bulb are formed independent of the neck *a* and simply rest thereon.

I prefer glass for the reason that it is a poorer conductor of heat than metal and does not heat the vaporizing-chamber to such a high degree, and, therefore, does not generate so much vapor as would a metallic chamber, the glass chamber more quickly condensing and causing to be returned the surplus vapors which cannot be consumed at the burner.

I have herein shown and prefer to employ a globe or shade *b* to protect the flame from side drafts, which would tend to make the flame flicker or become extinguished; but it should be understood that the globe or shade in my improved lamp is not provided for the purpose of creating any artificial draft to supply the flame with additional oxygen, but that the said globe or shade need admit no air whatever below the burner, its sole function being to shield the flame from drafts of air and to form a sort of air-chamber in which the air is heated that it may more readily combine with the oil-vapors to form perfect and ready combustion.

In my improved lamp the wick need never be raised above the top of the burner, and therefore the said wick is not consumed to any appreciable extent, a single wick lasting for between two and three weeks of continuous burning without renewal.

I claim—

A lamp comprising an oil reservoir, a supporting tube projecting upwardly therefrom, a burner having a flame opening surrounded by the material of said burner, a wick tube arranged within the said supporting tube leading to said burner and having an enlarged bulb portion resting upon the end of said supporting tube and forming a vaporizing and condensing chamber close to said burner and through which the wick passes to the burner, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RONALD J. ROBERTSON.

Witnesses:

FREDERICK L. EMERY,

AUGUSTA E. DEAN.