

Lamp.

Patented March 13, 1866.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN KEROSENE-LAMPS.

Specification forming part of Letters Patent No. 53,103, dated March 13, 1866.

To all whom it may concern:

Be it known that we, JACOB H. BEIDLER and AYLETT R. CRIHFELD, of Lincoln, in the county of Logan and State of Illinois, have invented a new and improved illuminator for the purpose of producing artificial light by burning kerosene-oils, which we style or name "Beidler and Carihfield's Illuminator;" and we do hereby declare the following to be 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 perspective view of our invention as seen when in operation. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a view of the lower end of the cylinder E, as shown by the letter E in Fig. 1. Fig. 4 is a view of the upper end of the cylinder E, as shown by the letter E in Fig. 1. Fig. 5 is a view of a detached part of the cylinder or tube B B, Fig. 1, represented in part in Fig. 1 by the letter N, and which is placed inside of the cylinder or tube D D, Fig. 1, to give stiffness and to receive the lower end of the cylinder or tube E, Fig. 1, in order to make an air-tight tube from the heater J, Fig. 1, to the cone F, Fig. 1. Fig. 6 is a view of the cone F, Fig. 1. Fig. 7 is a view of the screw-cap K K, Fig. 1. Fig. 8 represents a fastening to secure the feeders *ff* to the bottom of the inverted cone or perforated partition *vv*, Fig. 3. Said fastenings are as long as the wick is wide and one-half as wide as long, with points turned at right angles with the main piece, indicated by the letters *m n m n*, which are for convenience of fastening to the bottom of the partition *vv* of the cylinder aforesaid. Fig. 9 is a view of the perforated plate, as shown in Fig. 8, with the feeder *f* of Fig. 3 attached. Fig. 10, Sheet 2, is an elevation of the illuminator in the form and proportions which we have found best adapted to use, differing from that represented in Figs. 1 and 2 only in having the length of the wooden pipe B considerably increased, and in having an annular oil-reservoir, A', instead of the two lateral reservoirs A A shown in Figs. 1 and 2.

A A, Fig. 1, represent two oil-reservoirs for supplying oil to the illuminating-burner. B B is a pipe or tube supporting the reservoirs A A and the illuminating-burner. This column or pipe is made of wood or some other non-conductor or very slow conductor of heat.

In its base C C is a cavity large enough to admit the setting of a small lamp therein on a perforated or wire-gauze floor, M.

D D, Fig. 1, is a metal collar surrounding the pipe or tube B B, serving as a stay to hold in place the reservoirs A A, by means of the pipe *y y*, to which the said collar D D is fastened, as shown at the points *q q*, Fig. 2.

E, Fig. 1, is a metal cylinder surrounding and extending a little above the oil-cup *o o o*, Fig. 2.

F, Fig. 1, is a dome-deflector, in which the current generated or induced by the heat of the auxiliary lamp J is brought immediately to the point of combustion at the flame G, Fig. 1. G, Fig. 1, is the illuminating-flame.

H, Fig. 1, is the cavity in the base C, to receive the auxiliary lamp or heat-generator J, and I is a door to close up the same.

J is a small lamp set in the cavity H on the perforated floor M, to serve as a heat-generator and create an ascending current of hot air through the pipe or tube B.

L, Fig. 1, is a rack-work or notched wheels to raise and lower the wick *w w*, as shown in Fig. 2 by the letters *r r r*.

N, Fig. 1, is the upper portion of the wooden pipe or tube B, which is separated from the lower portion at the bottom of the oil-cup *o o o* and within the collar D.

P, Figs. 1 and 2, are feet for raising the base C C above the table or floor to admit air under and through the perforated bottom M.

p p p, Fig. 2, represent the passage-way through which the heated air and gases generated by the heater J pass freely to the interior of the dome-deflector F.

v v, Fig. 2, represent a perforated partition in the metal cylinder E, through which the current of heated air and gas generated by the heater J passes in reaching the deflector F and the point of combustion. This plate supports and keeps in place the flat wick-tube *u*, as shown in Fig. 4. It also holds in position the ratchet-wheels *r r r* by means of the axle *x*. Said perforated partition *vv*, which is in the form of an inverted bell, as shown in Fig. 2, has within its cavity a conical unperforated partition (shown by the line *c d*, Fig. 2) to support the tube *u*.

L, Fig. 2, is the wheel or thumb-screw for turning the ratchet-wheels to raise and lower the wick.

o o o is the oil-cup for holding the kerosene-oils, and is made with a female screw at the top to receive a male screw upon the apex of the inverted cone or bell shaped partition *v v*, the point of connection being indicated by the letters *l-l*, Fig. 2. Said cup *o o o* receives the wick *w* and the feeders *f f*, and is in constant and perfect communication with the reservoirs *A A* by means of the pipe *y y*.

f f, Fig. 3, are two feeders fastened to the bottom of the inverted cone or bell shaped partition *v v*, and are placed immediately touching the wick *w*, for the purpose of supplying oil to the same when the oil in the cup gets low.

We have found by experiments that in order to produce the best effects the distance between the heat-generator *J* and the illuminating-flame should be from two and a half to three feet, which will give the illuminator about the proportions shown in Fig. 10.

It is absolutely necessary that the pipe or tube *B* should be made of wood or of some non-conductor or very slow conductor of heat, as we have ascertained by experiment that if made of metal it will conduct off so much heat from the ascending column of air as to seriously impair its effect.

The operation of the illuminator is as follows: The auxiliary lamp or heat-generator *J* being lighted and set in the cavity *H*, a current of heated air begins to ascend through the perforated floor *M* and the wooden pipe *B*, carrying with it any unconsumed gases that may escape from the said heat-generator, and this current of heated air and gas, passing through the perforated plate *v v*, is fed to the illuminating-flame *G* inside of the deflector *F*, causing it to burn with a steady white flame fully equal to the best gas-light, no chimney around said illuminating-flame being necessary. A glass globe may be used, if desired, but is not necessary unless to protect the flame from strong currents of air or to soften the light.

When the illuminator is constructed as shown in Fig. 10 and set upon the floor the illuminating-flame will be elevated from three to three and a half feet from the floor, which will be found a convenient height for reading or writing. It can be elevated, however, to any desired height by placing the heat-generator *J* higher from the floor or suspending the illuminator. Being principally made of wood,

the illuminator is light and easily removable from place to place.

Our invention is peculiarly adapted to lighting streets. The heat-generator *J* may be set in an ordinary wooden lamp-post at a suitable distance from the top, and the post, being bored, will constitute the conducting-pipe *B*. The illuminator will afford as strong and as clear a light as the best gas-lamp and at much less expense. It is also peculiarly adapted to the lighting of churches and large halls. A very small flame to the auxiliary lamp or heat-generator *J* is all that is required, and, in fact, all that is admissible, to produce a good effect.

This illuminator is adapted to the use of kerosene and other carbonaceous oils which are not explosive.

We are aware that it is not absolutely new to supply air to the flame of a lamp through pipe or tube below it, through which a current of air is induced by means of an auxiliary lamp placed at the bottom of said pipe or tube, but so far as we are advised all such attempts to produce a good, clear, and steady light have proved unsuccessful because the conducting-pipe from the heat-generator to the illuminating-flame has been made of metal. We do not, therefore, claim the principle of supplying air to the flame of a lamp by means of a pipe or tube through which a current of air is induced by an auxiliary lamp or heat-generator; but

What we claim as our invention or discovery, and desire to secure by Letters Patent, is—

1. In a lamp constructed and operating on the principles above described, making the conducting-pipe from the heat-generator to the illuminating-burner of a non-conducting or slow-conducting material, as described.

2. The combination of the conducting-pipe *B*, made of wood or of some other non-conductor or slow conductor of heat, the heat-generator *J*, the perforated plate *v v*, the deflector *F*, and the illuminating-burner, all constructed, arranged, and operating substantially as and for the purpose described.

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Witnesses:

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