

A. CROOK.
Lamp Burner.

No. 90,428.

Patented May 25, 1869.

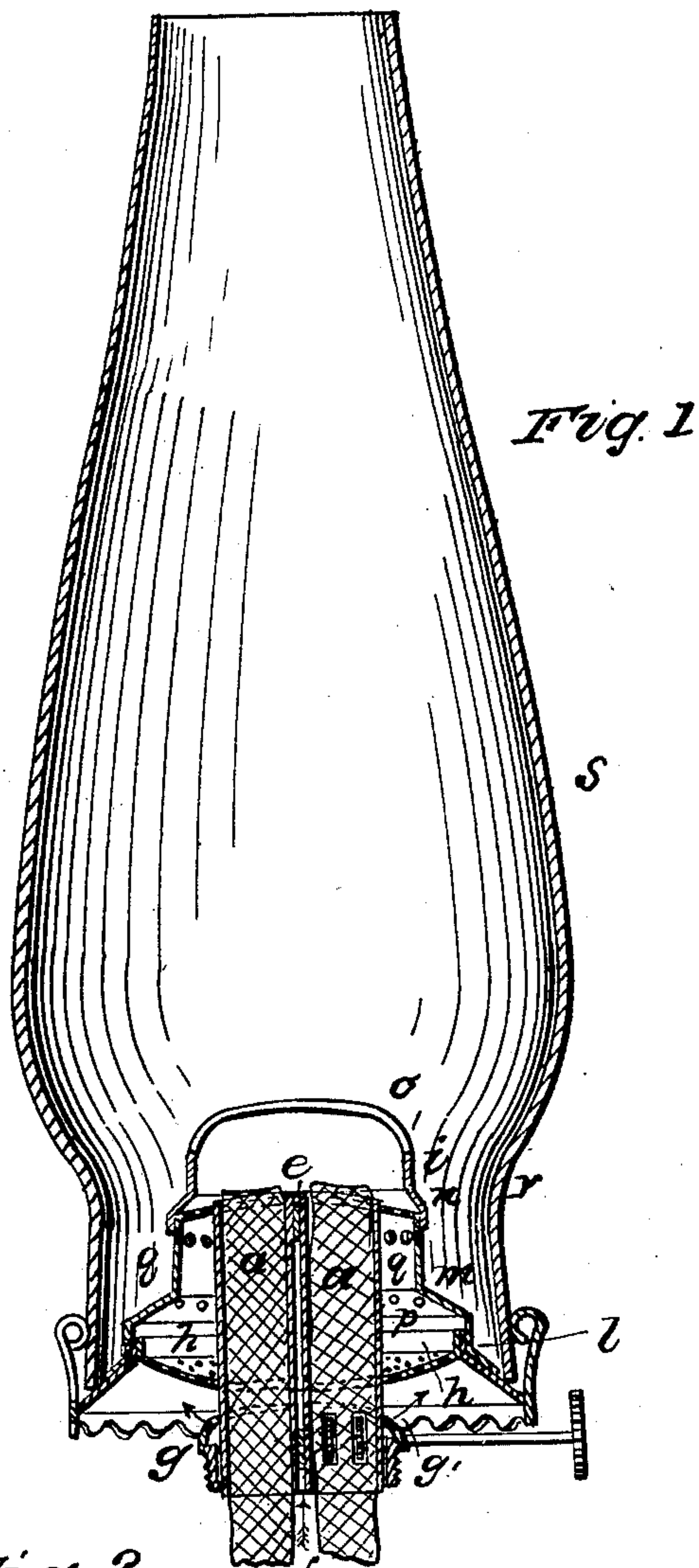
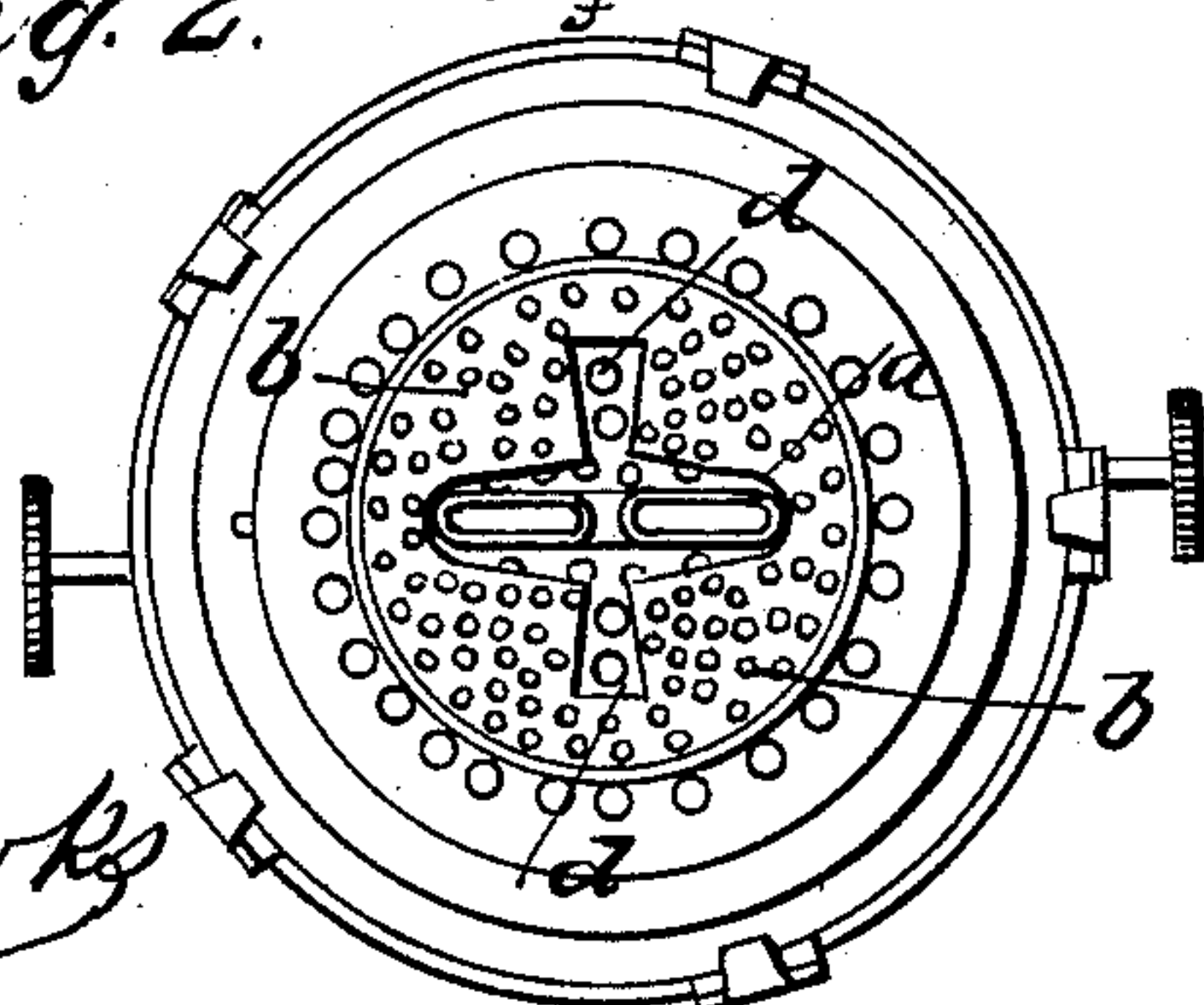


Fig. 2.



Witnesses

E. Woff
John F. Crook

Inventor:
Abel Crook.

pr. Wm. H. Co
Attorneys

United States Patent Office.

ABEL CROOK, OF NEW YORK, N. Y.

Letters Patent No. 90,428, dated May 25, 1869.

IMPROVEMENT IN LAMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ABEL CROOK, of New York city, in the county and State of New York, have invented a new and useful Improvement in Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to improvements in lamps for burning kerosene and other similar oils, designed to provide an arrangement of the burner, whereby more perfect combustion of the oil may be attained, and in a manner to develop a greater, purer and more brilliant flame than is now obtained with burners of like capacity.

This invention consists in the construction and arrangement of the various parts, as will be hereinafter more fully described.

Figure 1 represents a vertical sectional elevation of my improved lamp.

Figure 2 represents a plan view, with the chimney and the top of the cone removed.

Similar letters of reference indicate corresponding parts.

I divide the usual wick-tube vertically into two parts, *a a*, or substitute an equivalent in separate tubes, and set them in line with each other, edge to edge, a slight distance apart.

I also make them very much narrower in the direction of the shortest axis.

The object of this arrangement is to provide greater breadth of flame, with the same capacity of wick, which I reduce in thickness in the same proportion that I increase the breadth.

The flames produced from wicks thus arranged have a natural tendency to diverge from each other, and in lamps, as ordinarily constructed, my object would be by this tendency defeated. But I have found that by a proper management of the volume of air supplied to the flame to support combustion, the flame may be caused to unite over the gap between the two wicks, thus spreading it in that direction, while it may also be caused to spread at each outer end in the usual manner, thus producing a very wide and thin flame, of very great brilliancy.

I accomplish this formation of the flame by means of an air-regulating plate, *b*, interposed in the burner near the top, above which the wick-tubes rise a slight distance.

I provide an elliptical opening, *c*, in the said plate surrounding the wick-tubes, sensibly greater than the capacity of the tubes, and at the axis of the minor diameter thereof; and coincident with the dividing-line between the tubes, I form large lateral openings, *d*, one on each side. These openings I make sensibly larger at the outer ends.

The remaining portion of this plate is perforated with small holes thickly dispersed throughout the surface.

The elliptical opening affords a uniform supply of air, in a compact volume, around the ends and sides of the flame, while the openings *d* afford a much increased supply, and thereby promote combustion at the centre of the flame in a greater degree, causing the two parts to spread, and thus unite.

Moreover, the increased volume at the ends of the openings *d*, affords such a supply, that a portion thereof must rise to a considerable height, before coming into contact with the flame, thereby becoming heated to a considerable degree, and, encountering the flame at a high point thereof, serves to give the full and rounded form at the top.

The air rising through the small perforations, serves, while adding to the supply, to prevent the above-described essential currents from being deflected from their direct courses by air-eddies that might otherwise be formed above the plate. It also serves, measurably, to arrest any sudden flow of air to the flame, in gusts, that might otherwise occur, or be generated, by moving the lamp suddenly, or by other causes.

For greater accuracy, I provide a ratchet for each wick, but one may suffice for regulating both; and I prefer, also, to facilitate turning the wicks, to give the upper ends of the wick-tubes a slightly-rounded form.

I make a solid connection at *e*, between the wick-tubes, to prevent the concentrated jet of air before described, from separating the flame at the lighting-point, but allow an open space between them from this point to the ratchet-chamber, to admit a free circulation between them, closing them at that point, to prevent, as much as possible, the vapor of the fluid in the lamp coming in direct contact with the flame.

I also form a slight depression in the top of the connection at *e*, for the purpose of forming a slight air-space, which prevents undue charring of the wicks at these edges, which would otherwise occur from contact with metal, which, between the flames of the two wicks, would be greatly heated.

To ventilate the lamp, I provide one or more small openings through the base of the screen at *f*, and lateral openings from the same at *g*, in the side, to cause the vapor to encounter the air as much as possible, before ascending to the flame.

The base-plate *h* of the burner is convex on its lower surface, for the better preservation of the flame against sudden gusts, and the tubes rise through it, and are attached thereto immediately above the ratchet-chamber.

The cone is divided at the point where the plate *b* is connected to it, and the cap *i* above it is readily removable, for trimming the wick, or other purposes, thereby avoiding the necessity of removing the cone at the base, *k*, except for renovating the lamp.

The exterior form of my improved burner, including

the top thereof, represents four annular reflecting-surfaces, *l*, *m*, *n*, and *o*, which adds materially to the brilliancy of the flame.

Provision is made for the admission of air for ventilating the chimney, and to the top of the cone, by the two rows, *p* and *q*, of perforations through the burner, the one, *p*, through the ring *n* at the base, and the other immediately below the junction of the cap.

I prefer to employ a chimney of the form of a frustum of a hollow cone, from the base to the point *r*, about opposite to the top of the wick-tubes, thence swelling into a bulb at *s*, and thence tapering to the top.

By means of this form, and the plan of ventilation I have described, the chimney is greatly protected from heat.

I have found, by experiment, that I may apply the

air-regulating plate *b* to lamps having single wick-tubes, with slight modifications of the large air-passages, with good results, and I contemplate such application.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The passages *f* and *g*, tubes *a a*, plate *b*, provided with the elliptical opening *c*, and lateral opening *d*, and the cone made in sections, when constructed, arranged, and combined as set forth.

2. The plate *b*, constructed and adapted for shaping the inflowing air, as described, and combined with the tubes *a a* and the burner, substantially as specified.

ABEL CROOK.

Witnesses:

FRANK BLOCKLEY,
ALEX. F. ROBERTS.