A. H. KNAPP.

Lamp Burner.

No. 26,071. Patented Nov. 8, 1859.

Fig. 3.

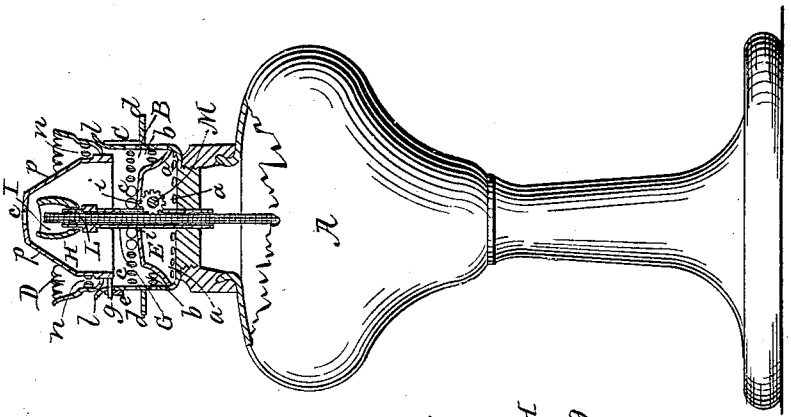


Fig. 5.

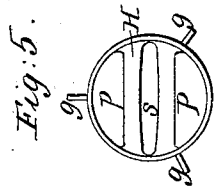


Fig. 2.

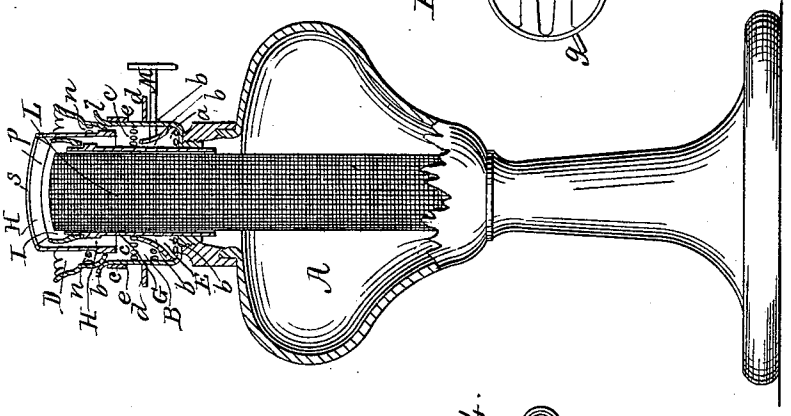
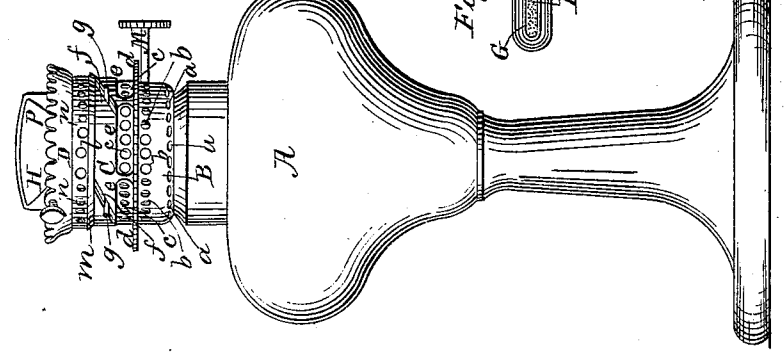


Fig. 4.



Fig. 1.



Witnesses.

L. L. Brown.

R. F. Osgood.

Inventor.

A. H. Knapp

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

A. H. KNAPP, OF NEWTON CENTER, MASSACHUSETTS, ASSIGNOR TO HIMSELF, E. H. BARSTOW, AND A. E. TROWBRIDGE, OF SAME PLACE.

LAMP.

Specification of Letters Patent No. 26,071, dated November 8, 1859.

To all whom it may concern:

Be it known that I, A. H. KNAPP, of Newton Center, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Burner for Rosin-Oil Lamps; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1, is a side elevation of the improved burner applied to a common glass-lamp; Fig. 2, a central, vertical section thereof, in a plane parallel with the wick; Fig. 3, a central, vertical section, in a plane transverse to the wick; Figs. 4, and 5, plans of detached parts.

Like letters designate corresponding parts in all the figures.

The supporting tube B, is screwed into the top of any kind of lamp-body A, adapted to receive it. To this tube is attached the wick-holder G, at the bottom; and in a flaring rim *l*, on its upper edge, is secured the chimney-holder D, in any convenient manner. The inner draft is admitted through the tube by three rows or sets of small apertures *a*, *b*, and *c*, each arranged around in its entire periphery, as represented in the drawings. The larger row of holes, *a*, admits a portion of the draft beneath a cap E, which offers only a very narrow passage *i*, close around the wick-holder G, to this portion of the draft into the space above; the object of this arrangement being to keep the temperature of the wick-holder as low as possible, so as not to engender gas from the oil, in the wick, below the part whence the flame proceeds. The larger portion of the inner draft enters through the two rows of holes, *b* and *c*. The object of this double row, in connection with a projecting ring *d*, between them, is to insure steadiness and constancy of draft, as follows: The ring *d*, is fitted close around the tube B, between said rows of holes *b*, *c*, and projects outward, all around, about one fourth of an inch, more or less. Its effect is this:—When a sudden blast of air comes downward over the draft holes, this ring arrests the motion thereof, and causes it to turn into the upper holes *c*, in sufficient quantity to supply the combustion; and when a blast, or sudden motion, of air passes upward by the holes, the ring, in like manner, arrests the same, and directs it inward through the lower holes *b*. Thus, in connection with two sets or rows of holes, one above, and the other below, it is effectual to promote a steady draft coming from either direction. Were it not for this ring, a sudden motion of the air, either upward or downward, would cause an interruption of the draft, and consequently smoking of the lamp, for the time.

I generally attach the ring *d*, to, or form it on, a short tube or cylinder C, which is placed around the supporting tube B, and is provided with cam-acting slots *f*, *f*, for the purpose of raising and lowering the "draft-cap" H, the said ring thereby serving the additional purpose of a rim, whereby to turn said cam-tube. It may have a milled edge for the purpose, as represented. The cam-tube C, has open spaces *e*, *e*, above the rim or ring *d*, so as to admit the air freely to the upper draft holes *c*, *c*.

The "draft cap" H, is provided with projecting pins *g*, *g*, *g*, which extend outward through vertical slots in the supporting tube B, and thence through the slots *f*, *f*, in the cam-tube; the vertical slots preventing the turning of the draft cap, but allowing it to move freely up and down, while the cam-slots move the "draft cap" up and down, by the turning of the cam-tube. The "draft cap" H, is open at the bottom, to admit the inner draft; and fills the space inside of the lower end of the chimney-holder D, so as to separate the inner draft from the outer draft. It has a long and narrow aperture *s*, in its top, corresponding in size, shape and position, with the top of the wick beneath. Its adjustability in height, enables the drafts to be properly regulated in relation to each other, and to increase or diminish according to the height of the wick, and of the flame desired.

In order to adapt the "draft cap" to the form of the wick, so as to prevent eddies of air and the consequent formation of lamp-black by such disarrangement of the draft, and also so as to render the supply of air even to all parts of the wick, and in the most direct and uninterrupted course to the flame, both from the inside and outside drafts, I form slopes *p*, *p*, on the top of the draft cap, substantially as represented in the drawings; the slopes being parallel with the wick, and flame aperture *s*. This construction and arrangement I find to be quite effectual for the purposes mentioned. The flame is thereby

enabled to be thinner, a very desirable object in burning rosin-oil, and other highly carbonaceous oils.

I employ a "wick-protector" I, placed around the projecting part of the wick, and at a little distance therefrom, all around, sufficient to allow room for the combustion to take place, and extending upward about as high as, or a little higher than, the wick ordinarily extends, substantially as shown in the drawings. It is secured on the upper end of the wick-holder G, generally so as to be removable therefrom, in order to furnish greater convenience for trimming the wick, which can be better done when the "wick-protector" is not in the way. The object of this "wick-protector" is to retain the heat of the flame as much as possible, just where the oil is gasified and ignited. At the same time, it does not exclude the draft from the flame. By this arrangement, the cooling of the lower part of the wick holder by the draft, may be carried to any practicable extent, without affecting the combustion of the flame. By thus increasing the vividness of the combustion, the "wick-protector" also allows a narrower aperture *s*, in the draft cap H, and consequently a thinner, higher and more illuminating flame.

A lamp constructed with the above described improvements, not only freely and cleanly burns rosin-oil, but also completely burns the heavy coal oils, while other lamps (so far as I am aware,) will only burn about 33 per cent. of the most volatile of said oils.

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

The "wick-protector" I, arranged and operating substantially as, and for the purpose, herein described.

In witness that the above is a true specification of my improved burner for rosin-oil lamps I hereunto set my hand this 17th day of May, 1859.

A. H. KNAPP.

Witnesses:

J. S. BROWN,

EDW. F. BROWN.