

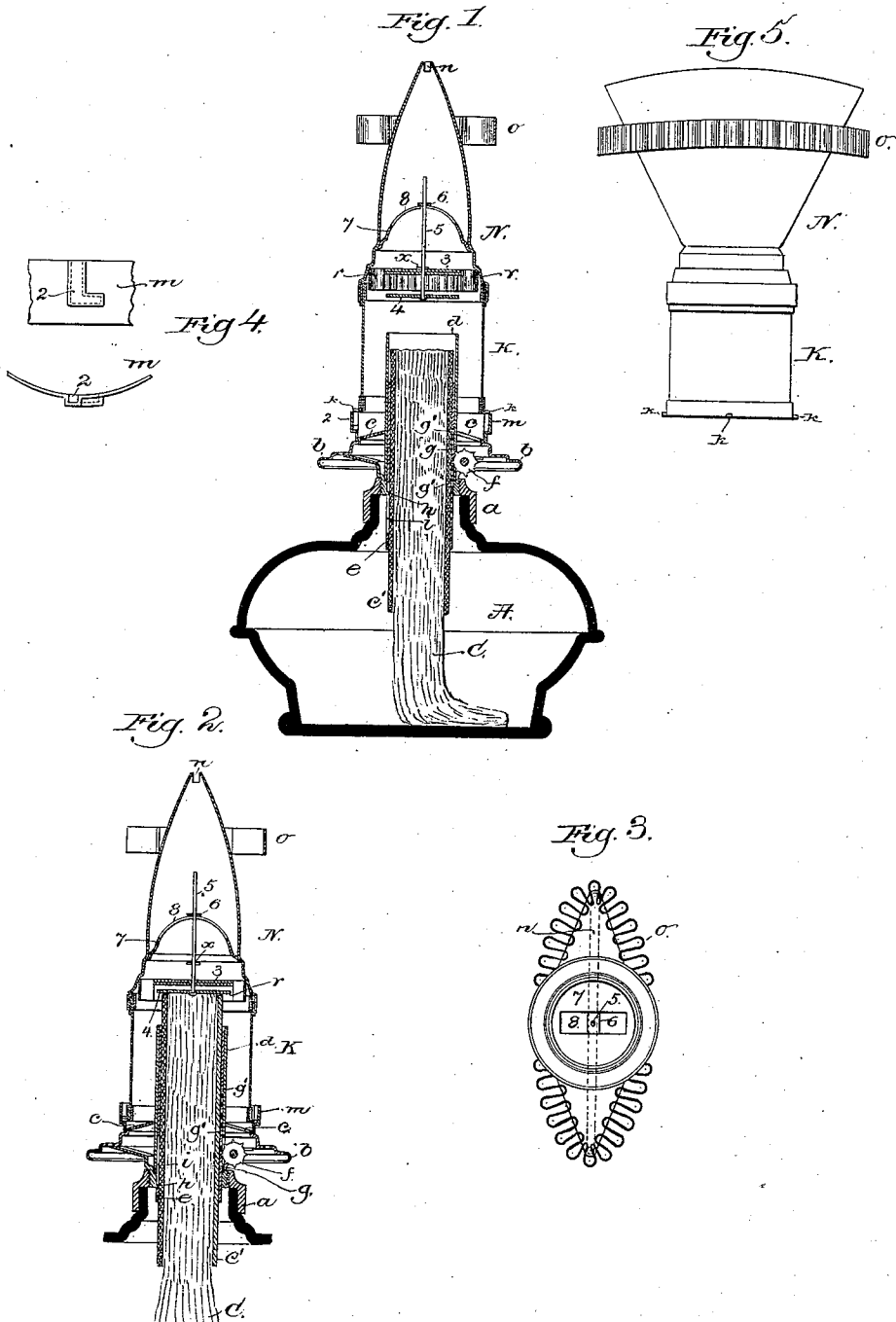
(No Model:)

W. W. BATCHELDER.

LAMP.

No. 312,317.

Patented Feb. 17, 1885.



Witnesses,
 H. C. Prinkert,
 Henry Marsh.

Inventor:
 William W. Batchelder,
 by Crosby & Gregory attys.

UNITED STATES PATENT OFFICE.

WILLIAM W. BATCHELDER, OF NEW YORK, N. Y.

LAMP.

SPECIFICATION forming part of Letters Patent No. 312,317, dated February 17, 1885.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. BATCHELDER, of New York, county and State of New York, have invented an Improvement in Lamps, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention has for its object the production of a new and improved lamp for producing gas or vapor from illuminating-oils and other vaporizable compounds for burning the gas or vapor so produced and provide a flame of great brilliancy and power.

A secondary object of my said invention is to protect the illuminating-flame and prevent it from smoking and flickering by means of currents of heated air which surround the flame, the said currents also acting as a wall or barrier to give steadiness and direction to the flame.

A further object of the invention is to provide simple yet effective means for raising and lowering the wick, and also for limiting its movement in the wick-tube and preventing it from being lowered too far to escape from the wick-tube and drop into the body or oil-receptacle of the lamp.

The nature of my invention is fully disclosed in the following description, and is particularly pointed out in the claims.

Figure 1 shows in longitudinal vertical section a lamp embodying my invention, the parts being shown in the position required after the wick is lighted for generating the illuminating vapor or gas and for heating the vapor-burner to cause an upward current of vapor and before the vapor is ignited at the vapor-exit; Fig. 2, a similar section with the lamp-body or oil-holder removed and the other parts in the position required after the vapor is ignited; Fig. 3, an under side view of the burner to clearly illustrate the means for generating currents of heated air to pass up about the flame, and also to show the passage or slot in the contracted neck; Fig. 4, a view in detail to show the bayonet-slots in the rim of the base to enable the locking of the non-conducting tube therein; Fig. 5, a front elevation of the vapor-burner.

The base *b* is secured in the neck *a* of the

lamp-body *A* in usual manner, and supports the wick-tube *d*, as with wires *c*. The said base is of open-work, as usual, for the admission of air into the burner. The wick-tube *d* is in the form of a hollow cylinder, and receives the wick-holding tube *e*, which has free movement in said wick-tube *d*, and holds the circular wick by frictional contact. The wick itself is preferably composed of ordinary lamp-wicking, *C*, having a wrapper or covering of asbestos, *c'*. The wick may be moved in either direction in the wick-holder *e*, it being held therein, as stated, by frictional contact with said holder, whereby the wick may be trimmed when necessary. A spur-wheel, *f*, having bearings in the base *b*, and provided with the ordinary wheel or nut (not shown) to enable it to be rotated, projects into a slot, *g*, in the wick-tube *d*, and its teeth enter tooth-slots *g'* in the wick-holder *e*, whereby the said wick-holder carrying the wick may be easily raised or lowered in the wick-tube. A pin, *h*, on the base *b* projects into an elongated slot, *i*, in the wick-holder, to limit the amount of the upward or downward movement of said wick-holder in the wick-tube *d*, and prevent any disengagement of parts and the falling of the wick into the lamp-body *A*. Several projections, *k*, on the base of a non-conducting tube, *K*, which is made of mica, asbestos, or other suitable material, fit and lock into bayonet-slots *2*, cut in the projecting rim or seat *m* of the base *b*, the purpose of which being to lock the non-conducting tube *K* to said base when desired, and also to permit its ready removal therefrom. In the present instance the non-conducting tube *K* forms a part of the vapor-burner *N*, which latter is preferably constructed with a broad vapor-exit, *n*, and an attached air-heater, *O*, connected with the burner on the outside thereof and at a point below the vapor-exit, the said air-heater being constructed in the present instance of a band of metal bent back and forth upon itself, or corrugated, as shown, to provide a great extent of heating-surface. The band encircles the vapor-burner and is heated by conduction. A ring, *r*, corrugated or fluted as shown, is fitted into the contracted portion of the burner *N*, above the non-conducting tube *K*, and is provided with a cap-plate, *3*, fitting the in-

terior diameter of the ring at its top, to close such portion thereof and prevent the passage of air, gas, or vapor therethrough. A disk or follower, 4, adapted to move within the ring 7, has a rod, 5, which passes through an orifice in the cap-plate 3, receives a cross-pin, *x*, and enters the guide 6, attached in this instance to the contracted neck 7, which has a slot, 8, the said guide being arranged across said slot 8.

The slot in the neck 7 is in the present instance arranged at right angles to the vapor-exit *n*. The disk or follower, as shown in Fig. 2, rests on the top of the wick when said wick is projected above the top of the wick-tube, and when the lamp is not in use the wick is moved slightly below the top of said tube, so that the disk will rest on the tube and extinguish the vapor-producing flame, as well as to prevent the escape of vapor or gas from said tube.

The vapor-burner (the non-conducting tube being a part thereof) is lifted from the base *b* and the wick lighted while it is slightly below the top of the wick-tube, when said vapor-burner is placed upon the base *b*, with the pins *k* resting on top of the rim or seat *m*, so that the follower-disk will be held by the cross-pin *x* (engaging the cap-plate 3) sufficiently above the wick-tube to prevent the flame from smoking, when, after the burner is heated, the wick is thrown up and the burner moved into place on the base *b*, and the end of the wick is encircled by the ring *r*, while the top thereof is covered by the follower-disk. While the follower-disk 4 and ring *r* are held above the wick, a strong heat-giving flame, without smoke, is produced, which burns all the generated vapor, so that no vapor for the time being will pass out of the vapor-exit. The vapor-burner is properly placed and locked within the projecting rim *m* of the base by the pins *k* and bayonet-slots 2, after which the vapor is ignited at the vapor-exit. The projecting wick forces the follower-disk 4 up in the ring and against the cap-plate 3, as indicated in Fig. 2, the end of the wick itself being within the ring. While in this condition, the corrugated or fluted ring *r* acts as a barrier to prevent the flame issuing at the top of said rim and igniting the volume of vapor or gas in the burner, the said ring being vertically corrugated or fluted, and the corrugations being sufficiently narrow and deep to prevent the flame from passing through such passage, so that nothing issues from the top of the ring but the generated vapor or gas mingled with currents of air that also pass up through said corrugated ring. The mingled vapor and air moves up through the slot 8 in the contracted neck of the burner, and then escapes at the vapor-exit *n*, where it, in burning, gives forth a strong and brilliant flame. The slot 8 in the contracted neck 7, when arranged crosswise of the vapor-exit, spreads or distributes the vapor in the burner, causes said vapor to be more thoroughly mingled with the air, and increases the effective-

ness of the lamp. The non-conducting tube K prevents the metallic parts below said tube becoming heated, whereby any liability of the generation of vapor in the body of the lamp A or the ignition of the oil therein is prevented. The wick-tube projects into the non-conducting tube K, as clearly shown. The air-heater O, in contact with the heated burner and heated by conduction, surrounds the flame with currents of heated air, which prevent the flame from smoking or flickering and give great steadiness thereto. The band or air-heater O is corrugated simply to provide a greater extent of surface than otherwise.

The heater may be modified to a considerable extent without departing from the spirit of my invention. The fluted ring *r* can also be modified in various ways so long as the object for which it is designed is accomplished. I find in practice that when the vapor-burner is heated and the vapor ignited at the vapor-exit the bottom of the corrugated ring should be sufficiently removed from or above the wick-tube to cause a blue flame only to issue from the wick. Should the ring be placed too high above the top of the wick-tube, the flame at the wick-tube will be luminous and deposit soot, which objections are to be avoided.

I claim—

1. The combination, with the base of a lamp having a wick-tube and a vapor-burner, of an interposed heat-non-conducting tube to prevent the passage of heat from the vapor-burner to the base, and provided with a bayonet-joint connection with the base, as set forth.

2. The combination, with the base provided with a wick-tube and contained wick and means to raise and lower them, of a vapor-burner and a disk or follower suspended therein and capable of a limited vertical movement with relation to the wick and wick-tube, substantially as and for the purpose described.

3. The combination, with a lamp having a wick-tube support and a wick-tube partly projecting above the support, of a vapor-burner adapted to be fitted on the support to surround the projecting portion of the wick-tube, and provided with an inclosed corrugated or fluted ring having a cap, as specified, and supported above the wick-tube, said ring being adapted to be lowered to encircle the end of the wick after it is projected beyond the top of the wick-tube, substantially as set forth.

4. The combination, with a lamp having a rim or seat, of a vapor-burner adapted to be detachably connected with the rim or seat, and provided with an inclosed corrugated or fluted ring closed at its upper interior diameter, as specified, and adapted to surround the end of the wick after the latter is projected beyond the top of the wick-tube and the vapor-burner is secured to its seat, substantially as set forth.

5. In a lamp, a wick-holding tube having a slot, *i*, combined with a wick-tube adapted to receive the wick-holding tube, and provided

with a pin or tooth, *h*, projecting into the slot *i* of the wick-holding tube, substantially as specified.

5 6. The combination, with a base of a lamp provided with a wick-tube and contained wick, of a vapor-burner having a disk or follower arranged in the interior of said burner, and adapted to close the mouth of the wick-tube when the wick is lowered below the top of said
10 wick-tube, substantially as set forth.

7. In a vapor-burning lamp, a vapor-burner provided with a vapor-exit and a contracted neck having a slot crosswise of the vapor-exit, substantially as set forth.

8. The base provided with a rim or seat to 15 support the burner in elevated position above the wick-tube while the burner is being heated, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub- 20 scribing witnesses.

WILLIAM W. BATCHELDER.

Witnesses:

G. W. GREGORY,
B. J. NOYES.