(No Model.) 3 Sheets—Sheet 1.

B. J. M. MENGE.

LAMP.

No. 489,488. Patented Jan. 10, 1893.

FIG. 1.

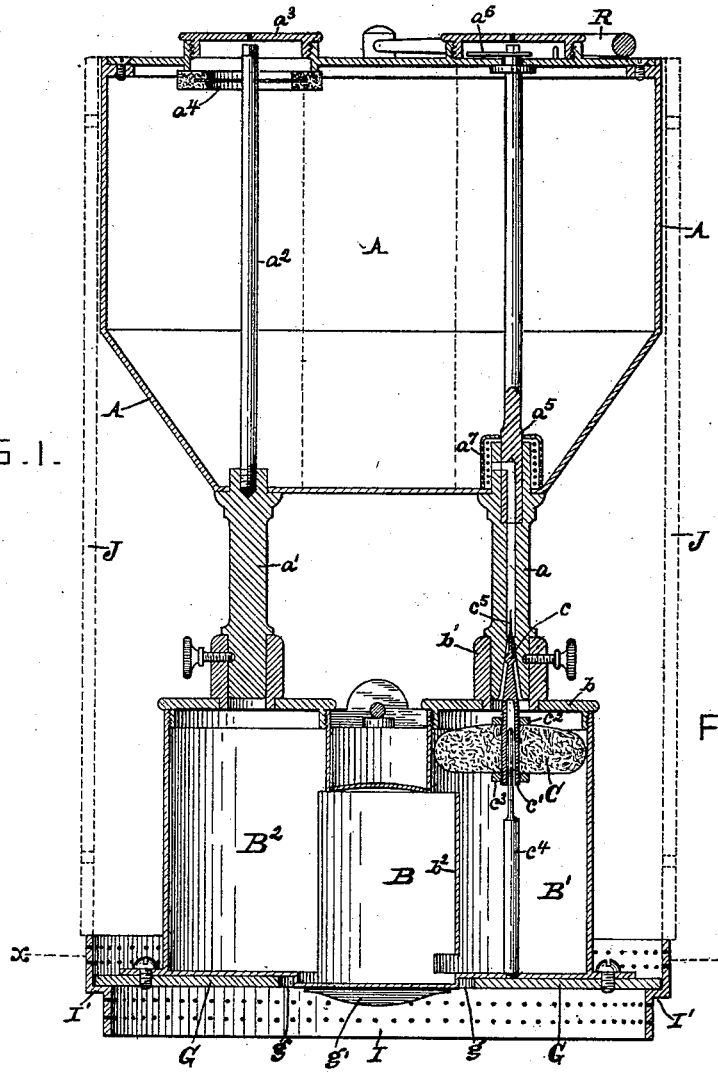


FIG. 2.

Witnesses
Frank L. Millward.
Frank Davis.

Inventor
B. J. M. Menge
By his Attorney
Geo. J. Murray

(No Model.) 3 Sheets—Sheet 2.

B. J. M. MENGE.

LAMP.

No. 489,488. Patented Jan. 10, 1893.

FIG. 3.

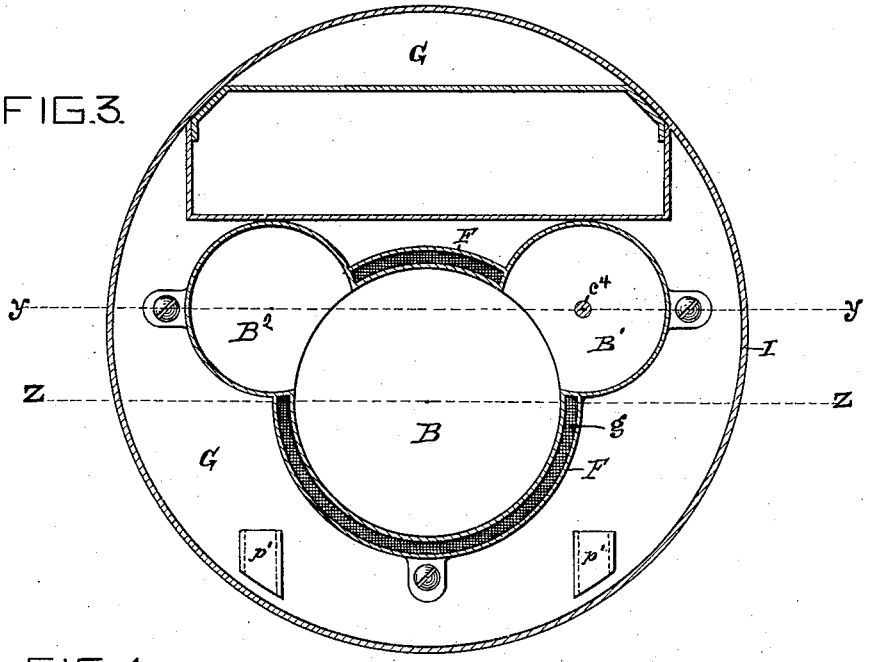


FIG. 4.

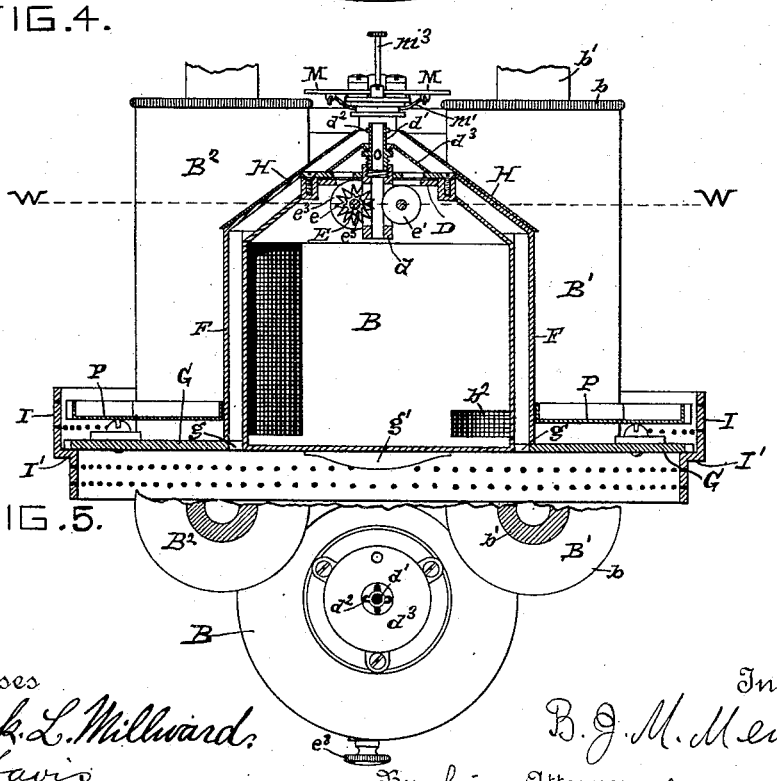


FIG. 5.

Witnesses

Frank L. Millward.

L. Davis

Inventor

B. J. M. Menge

By his Attorney

Geo. J. Murray

(No Model.) 3 Sheets—Sheet 3.

B. J. M. MENGE.

LAMP.

No. 489,488. Patented Jan. 10, 1893.

FIG. 6.

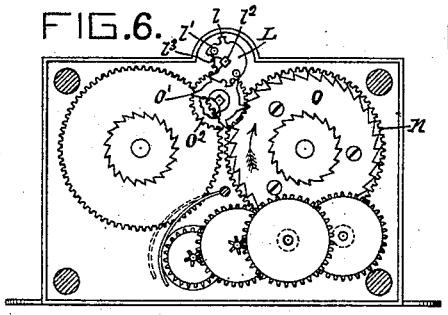


FIG. 7.

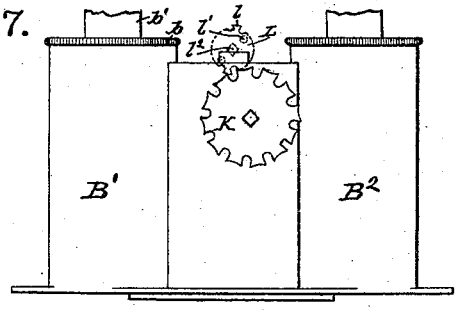


FIG. 8.

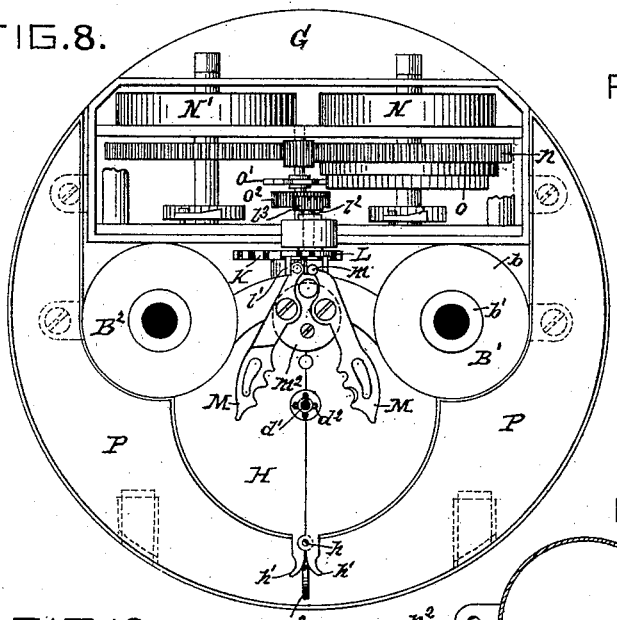


FIG. 9.

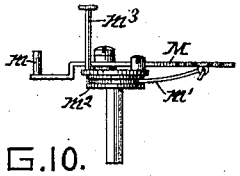


FIG. 10.

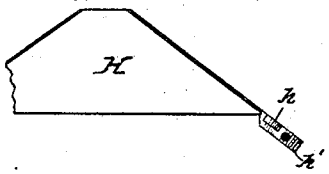


FIG. 11.

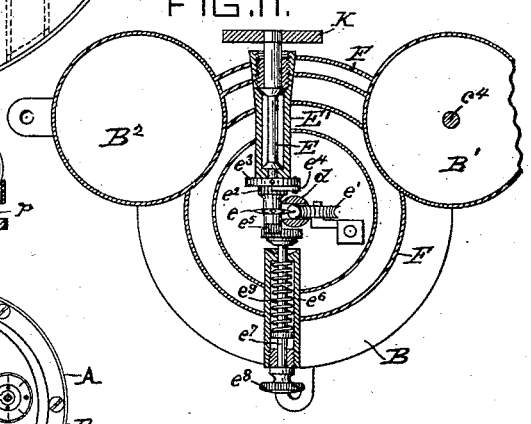


FIG. 12.

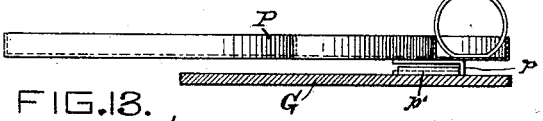


FIG. 13.

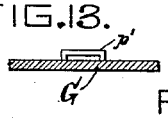
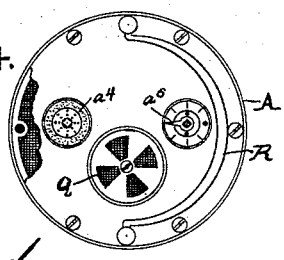


FIG. 14.



Witnesses
Frank L. Millward.
J. Davis

Inventor
B. J. M. Menge
By his Attorney
Lee J. Murray

UNITED STATES PATENT OFFICE.

BERNARD JOS. M. MENGE, OF CINCINNATI, OHIO.

LAMP.

SPECIFICATION forming part of Letters Patent No. 489,488, dated January 10, 1893.

Application filed December 19, 1889. Serial No. 334,258. (No model.)

To all whom it may concern:

Be it known that I, BERNARD JOS. M. MENGE, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Lamps, of which the following is a specification.

The object of my present invention is to improve the lamp for which Letters Patent No. 373,083 were granted to me, dated November 15. 1887. While my previous lamp accomplished the results then sought to be attained I have since discovered some defects in it, and have invented means to overcome these defects. By these new means the lamp is rendered more reliable, made more compact, is produced at less cost, and requires less attention in use.

My present improvements relate particularly to the means for automatically feeding the oil to the lamp, raising and trimming the wick, and supplying the flame with oxygen to insure perfect combustion and produce a bright unvarying flame.

The invention will be first fully described in connection with the accompanying drawings, and will then be particularly referred to and pointed out in the claims.

Referring to the drawings, in which like parts are indicated by similar reference letters wherever they occur throughout the various views:

Figure 1 is a vertical sectional view of the lamp taken through line *y y* of Fig. 3. Fig. 2 is a detail view in transverse section of the oil valve guide. Fig. 3 is a transverse section taken through line *x x* of Fig. 1. Fig. 4 is a vertical section through line *z z* of Fig. 3. Fig. 5 is a plan view of part of the wick vase with the hood removed. Fig. 6 is a front elevation of the spring movement with the cap removed. Fig. 7 is a rear elevation of the wick vase. Fig. 8 is a plan view of the lamp, the oil reservoir and top of the case which contains the spring movement being removed. Fig. 9 is a side elevation of the snuffers with one of the jaws removed. Fig. 10 is a central edge elevation of the removable hood or cap which covers the wick vase. Fig. 11 is a transverse section through the lamp, taken on line *w w* of Fig. 4. Fig. 12 is a detail view of the lamp base and crust receptacle taken in central vertical section. Fig. 13 is a similar detail view of a portion of the base, taken in a plane at right angles to the view shown in Fig. 12. Fig. 14 is a detail plan view of the oil reservoir upon a reduced scale.

The lamp, in its general construction, like my former patent comprises a wick vase, an oil reservoir located above it, wick raising devices, a wick trimming device or snuffers, a spring actuated movement to automatically and intermittently raise the wick, means to conveniently insert a new wick, and means to supply the flame with oxygen above and below the flame.

The reservoir A is supported above the wick vase B upon columns, *a*, *a'*, through one of which, *a*, the oil is supplied from the reservoir to the wick vase. In the top of the opposite column, *a'*, is secured a rod, a^2, which projects up centrally through the oil supply opening in the top of the reservoir, which opening is closed by a screw cap, a^3. Around the rod, a^2, is fitted, to slide, a swimmer, a^4, to indicate the amount of oil in the reservoir and to prevent overflow in filling the reservoir. The upper end of column, *a*, is fitted with a faucet plug, a^5, the stem of which extends through an opening in the top of the reservoir and is formed angular to receive a key to open or close the faucet. It is also provided with an index finger, a^6, to indicate whether the faucet is opened or closed, and the extent of the opening. The supply port to the faucet is guarded by a perforated metal strainer, a^7, to prevent any impurities in the oil from passing to the faucet and through it to the wick vase. The flow of oil from the reservoir to the wick vase is automatically regulated by a valve in the lower end of the perforated column, *a*, which valve is controlled by a swimmer C which floats upon the oil in the chamber B' of the wick vase. By this arrangement the oil is fed to the wick vase drop by drop as required to keep the vase supplied with the requisite quantity of oil and prevent overflow.

Referring now to Fig. 1: It will be seen that the chamber B' is covered by a screw cap, *b*, which has an upward tubular extension, *b'*, into which the lower end of the col-

umn, a, fits and is secured by a set screw. The oil duct in column, a, is flaring or cone shaped at the bottom, and is fitted with a ball valve, c, upon the stem, c', of which is secured, between collars, c^2, c^3, the swimmer C. The stem, c', is bored from the bottom upward and in the bottom of chamber B′ is secured a rod, c^4, the diminished upper end of which enters the perforation in the stem, c', and serves as the lower guide for the swimmer and its valve. The upper guide is the triangular upper extension, c^5, (Fig. 2) of the valve stem. It will thus be seen that so soon as the oil in the wick vase is, by consumption lowered, the swimmer C will fall, carry with it the ball valve, c, and allow oil from the reservoir to flow into the wick vase; and that when the requisite amount is supplied the swimmer will rise, carry the valve, c, up until it is seated, and close off the supply of oil until the valve is again opened by the swimmer or float dropping as the oil is consumed.

The wick vase, as seen in Figs. 3, 5, 8 and 11, is divided into three chambers, the central chamber or wick vase proper and the two chambers B′ and B², one upon each side of it. The chamber B′ is divided from the central chamber, except at the bottom, as seen clearly at, b^2, (Figs. 1 and 4.) The object of this arrangement is to prevent impurities reaching the wick near the burner. The oil being fed to the central chamber near the bottom the light impurities will float upon the oil in the chamber B′, while the heavier impurities will settle at the bottom and will not be carried to the burner.

I will now describe my improved burner and wick-raising devices: These are clearly shown in Figs. 4, 5 and 11. The top of the central chamber of the wick vase inclines inward in the shape of the frustum of a cone. The central opening in the top is closed by a perforated disk D, in the central opening of which is secured rigidly the lower portion of the wick tube, d. This tube is slotted upon each side to allow the spur wheel, e, and pressure wheel, e', to bear against the wick upon opposite sides to insure its being carried either up or down by the revolution of the spur wheel. The pressure wheel is journaled upon a stud pin, in a bracket which projects from the vase. Its office is to hold the wick against the bite of the wick-moving spur wheel. The spur wheel, e, is journaled upon a shaft E, which shaft passes through a bearing E′, and has ground joints between the bearing and shaft to prevent the escape of oil. The spur wheel, e, has a ratchet wheel, e^2, secured upon its hub, and upon the shaft E adjacent to this ratchet is secured a wheel, e^3, to the face of which is pivoted a pawl e^4, which is held in contact with the teeth of ratchet, e^2, so that the ratchet wheel and its connected spur wheel, e, are driven in one direction by the time movement to raise the wick, while permitting the spur to be turned in the opposite direction to introduce a new wick. For this purpose there is secured upon the hub of the spur wheel a pinion, e^5, and projecting inward from the front of the wick vase is a tubular bearing, e^6, in which is fitted a shaft, e^7, upon the inner end of which is secured a pinion, which, when the shaft is pushed in, engages the pinion, e^5, upon the spur wheel, so that by turning the shaft, e^7, in the reverse direction, by its knurl, e^8, a new wick, which is introduced from the top into the bite of the spur wheel, will be drawn down into the vase. When the knurl is released a coiled spring, e^9, throws the shaft outwardly, disengages the pinions, and presses the shoulder of the shaft against its bearing, forming an oil tight joint. In the upper end of the wick tube, d, is fitted by a screw thread connection, a short tube, d'. This has upon its periphery pins or projections, d^2, (Fig. 5) to receive a key to elevate or lower the tube, d', by turning it, for the purpose of regulating the volume of the flame. The tube, d, is perforated at the sides to admit oil to the wick near the flame. Over the tube, d', is dropped a cone shaped cap, d^3, which is secured to the disk D by screws passing through its outwardly projecting lugs. The central chamber of the wick vase is surrounded by a shell or mantle F (clearly shown in Fig. 3) which forms an air chamber between the vase and mantle. The base G of the lamp is centrally perforated at, g. The central chamber or wick vase passes through this perforation leaving a space for air to pass up between the vase and mantle. The top of the mantle F inclines inward to the central disk D, and is covered by a removable hood H, which is made in two parts. The parts are hinged together at, h, and have outwardly projecting curved lugs, h', which may be grasped and pressed together to separate the hinged members of the hood, in order to remove and replace it. The hood is centrally perforated for the wick tube, the perforation being large enough to allow free passage for the air from the chamber between the wick vase and mantle to the flame. It has also a smaller perforation in rear of the central opening to receive a pin which projects up from the cap, d^3, to steady the hood in place.

The lamp is provided with a perforated foot or base I. This is a hoop having an offset, I′, upon which the base or bottom plate of the lamp rests, when the lamp is supported, as it usually is, upon a bracket. Air enters through the perforations in the lower or smaller portion of the base I, and passes thence up through the central opening, g, in the base plate G, and is deflected by the inclined top of the mantle F and hood H, to the burner. While the air entering the incased lamp through the perforations in the upper or enlarged portion of the hoop I passes up in proximity to the top of the flame, being drawn in that direction by the central flue in the reservoir, thus supplying the necessary amount of oxygen above and below the flame to in-

sure perfect combustion and a bright unvarying flame.

The outer glass casing J of the lamp may be of any approved design, either in shape or color. It rests upon the top edge of the hoop I, and is secured in place by screws or other appropriate fastenings. The glass case is provided with a cover, so that the only escape for the air or heated products of combustion is through the flue in the oil reservoir.

Upon the wick raising shaft E, outside of the wick vase is secured a notched wheel K. This wheel is intermittently rotated the distance of one notch at each half revolution of the driving wheel L, by teeth, *l*, which engage the notches. The periphery of wheel L fits into the concave depressions in the circumference of wheel K, and prevents it from turning so soon as one of the teeth *l* clears the notch. The disk L has two pins, *l'*, projecting from its face to engage pins, *m*, *m*, which project from the rear of the snuffer blades M, M. The pin on one blade projects upward and the pin on the other downward, so that as the wheel L revolves its pins, *l'*, will engage the pins, *m*, *m*, separate the rear of the snuffer blades, close the shearing edges and snuff the wick. The snuffer blades are thrown suddenly open by the spring, *m'*, which is turned around the spool, m^2, upon top of which the snuffer blades are pivoted, and has its end secured in lugs which project from the under sides of the snuffer blades (see Fig. 9.)

The time movement which actuates the snuffers and wick raising device is substantially the same as in my former device; that is it is provided with a main spring going barrel N and a supplementary going barrel, N', both being geared to run together, but requiring but one balance wheel to control both. The last pinion of the train engages directly with a large spur wheel, *n*, upon the shaft of the barrel N. There is a ratchet wheel, *o*, connected to this spur wheel, which is engaged by a tappet, *o'*, which is secured upon a shaft journaled in the case of the movement. Upon the same shaft is secured a pinion which meshes with the spur wheel of the supplementary going barrel and also with a pinion secured upon the shaft, l^2, upon which the wick raising and snuffer-actuating disk or wheel L is secured. The tappet or escapement, *o'*, has six teeth which alternately engage with and are released from the teeth of the ratchet, *o*. When the ratchet, *o*, is rotated in the direction indicated by the arrow (Fig. 6) the tooth of the detent in engagement with the ratchet will be released, the tappet will whirl suddenly around until its next tooth is arrested by the next tooth of the ratchet, *o*. The teeth *l* of the wheel which rotate the disk K are arranged in advance of the pins, *l'*, which actuate the snuffers; so that the wick will be first raised and then instantly snuffed, and the snuffer pins released, when the spring, *m'*, throws the blades suddenly apart and throws the wick crust into the receptacle, P. The cog wheel, o^2, upon the tappet shaft has three times as many teeth upon it has the pinion, l^3, upon the shaft of driving wheel L, so that each time a detent escapes from one of the teeth of ratchet, *o*, and the tappet flies around one-sixth of a revolution, the wheel L will be revolved very rapidly one-half a revolution, thus quickly raising the wick and suddenly snapping the blades of the snuffers and trimming the wick.

To the bottom of the receptacle P are secured U-shaped metal hooks, *p*, which fit into loops, *p'*, secured upon base G, to retain the receptacle in place. The ring —p^2— secured to the top of the receptacle, is for the purpose of conveniently handling, removing and replacing the receptacle.

The bottom of the base G is provided with feet, *g'*, to support the lamp when it is lifted out of its case.

The oil reservoir has, like my former one, a flue through it directly above the burner, the top of which is provided with a register or damper Q (Fig. 14). The top of the reservoir has also a handle R, by which the lamp may be lifted out of its case when desired.

The snuffers have an upwardly projecting handle, m^3, by which it is lifted out and replaced.

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

1. The combination of the wick vase, the oil reservoir A having central draft flue and located directly over said vase, the supply pipe connecting the reservoir and vase, the mantle or shell surrounding the vase, the perforated base to admit air between the vase and mantle and to pass it in proximity to the burner and thence through the draft flue in the reservoir, substantially as shown and described.

2. The combination of the wick vase, the reservoir, the oil supply tube leading from the reservoir to the vase, the perforated base for the wick vase, the casing surrounding the vase, the perforated hoop or foot I, and the outer glass case resting upon said hoop whereby air is supplied to the burner from below and also above the base, substantially as shown and described.

3. The combination substantially as hereinbefore set forth of the wick vase B, having side compartment, B', the reservoir directly above the base, the oil supply tube connecting the reservoir and side compartment and the opening between the wick vase and compartment, B', near the bottom for the purpose of feeding oil to the bottom of the wick chamber.

4. The combination of the wick chamber B inclined at the top, the base G perforated to receive the base of the wick chamber and leave a space around it, the wick tube fixed centrally in the top of said chamber, the outer casing for the wick chamber, the lower edge of which rests upon the base around the opening, and the cone-shaped hood H covering the top of

the wick chamber and extending to near the top of the wick tube to deflect the air to the burner, substantially as shown and described.

5. The combination of the wick vase inclined at the top, the reservoir having central openings located directly above it the perforated disk D covering the top of said vase the wick tube, d, secured centrally in said disk, the vertically adjustable tube, d', in the tube, d, and the cone shaped cap, d^3, centrally perforated to allow the tube to pass through it, substantially as hereinbefore set forth.

6. The combination of the wick tube, the shaft E and spur wheel secured upon said shaft to raise the wick, the tubular bearing E′, the notched wheel K having concave depressions between its notches secured upon the shaft E outside of the case, the toothed driving wheel L, the periphery of which fits the concave depressions in wheel K its shaft, and the spring movement to drive said shaft for the purpose of intermittently raising the wick and preventing the wick raising shaft from revolving more than the distance of one of the notches in wheel K, substantially as shown and described.

7. The combination of the wick tube, the shaft E and its bearing, the star wheel journaled upon said shaft and having a ratchet wheel upon one side and a gear wheel upon the other, the disk secured upon the shaft E the pawl carried by said disk to engage the ratchet upon the spur wheel to revolve it with the shaft in one direction, the time movement to revolve the shaft E, the shaft, e^7, extending in from the front of the wick vase, the pinion, upon said shaft to engage the pinion upon the spur wheel, whereby the said spur wheel may be revolved in the opposite direction to introduce a wick without interfering with the time movement or removing the wick tube.

8. The combination of the independently pivoted snuffer blades having oppositely projecting pins at the rear, the wheel mounted upon shaft, l^2, and having pins, l', to engage the pins upon the snuffer blades, the time movement, the ratchet wheel, o, the escapement having six detents to alternately engage the ratchet teeth, the cog, o^2, upon the escapement shaft and the pinion, l^3, upon the shaft, l^2, and meshing with the cog, o^2, said cog and pinion being geared three to one, so as to rapidly snap the snuffer blades together, and the spring, m', to rapidly separate them when released from the pins on wheel L, substantially as shown and described.

9. The combination of the wick raising devices, the notched wheel K upon the wick raising shaft and having concave depressions between its notches, the snuffers having pins projecting in opposite directions, the wheel L, having teeth to engage the notches in wheel K, and pins to engage the snuffer pins, the said teeth being arranged in advance of the snuffer actuating pins, the time movement and escapement whereby the wick is first intermittently raised and then instantly snuffed, substantially as shown and described.

BERNARD JOS. M. MENGE.

Witnesses:
GEO. J. MURRAY,
FRANK. L. MILLWARD.