(No Model.)

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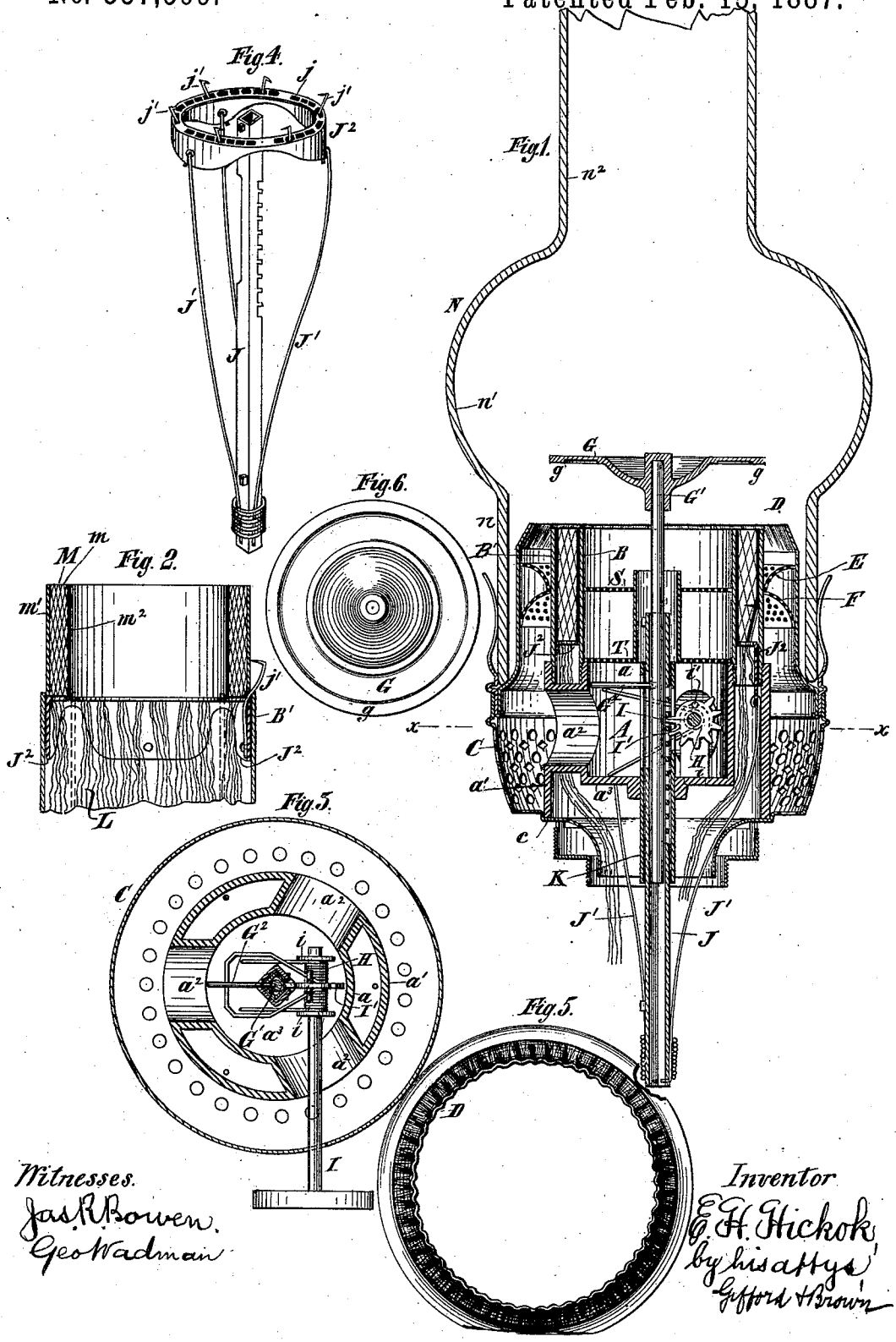
LAMP BURNER.

No. 357,599. Patented Feb. 15, 1887.



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LAMP-BURNER.

SPECIFICATION forming part of Letters Patent No. 357,599, dated February 15, 1887.

Application filed September 5, 1885. Serial No. 176,219. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. HICKOK, of Brooklyn, in Kings county, and in the State of New York, have invented a certain new and useful Improvement in Lamp-Burners, of which the following is a specification.

I will describe in detail a lamp-burner embodying my improvement, and then point out the various novel features in the claims.

In the accompanying drawings, Figure 1 is a central vertical section of a lamp-burner embodying my improvement. Fig. 2 is a central vertical section of the upper part of the outer wall of the wick-tube, the upper part of a wick, and a wick-carrier ring. Fig. 3 is a horizontal section taken at the plane of the dotted line *x x*, Fig. 1. Fig. 4 is a perspective view of the wick-carrier. Fig. 5 is a top view of an outer deflector. Fig. 6 is a bottom view of an inner deflector or spreader.

Similar letters of reference designate corresponding parts in all the figures.

A designates the body of the burner. It consists, essentially, of an inner tubular portion, *a*, an outer concentric tubular portion, *a'*, and tubular portions a^2, extending transversely between the tubular portions *a a'*. All these parts are made integral, preferably by casting them in one piece of metal. The inner tubular portion, *a*, has a bottom, a^3, formed with it. The body A made in the manner described is very much cheaper than if otherwise constructed. As it is applicable to other burners, I file another application for Letters Patent for it alone.

B B' designate two wick-tube tips, which may be made in any suitable manner of sheet brass. They are secured to the upper ends of the tubular portions *a a'* of the body A. Preferably, they are secured by means of screw-threads. Then they will be detachable. It is desirable that at least the outer wick-tube tip, B', should be detachable, because its detachment will facilitate the introduction of the lower section of the wick which I employ, and also a wick-carrier ring.

C designates the main shell of the burner. It is made of sheet metal and perforated to form an air-distributer. It has in the lower portion a rabbet or recess, *c*, in which the lower end of the tubular portion *a'* of the body A fits and is supported. Solder may be used to fasten the body A in the shell C. The shell C has a screw-threaded boss, whereby it may be attached to an oil reservoir or fount. The construction of this boss is somewhat peculiar, but, as I have made it the subject of another application for Letters Patent, I will not further describe it here.

D designates a deflector, made of sheet metal and surrounding the wick-tube tips B B'. It is contracted considerably at the upper end, so as to deflect air ascending through it from the shell C toward the outer wick-tube tip. At the upper edge it is corrugated or crimped, its corrugations or crimps extending from the upper edge downwardly. The extreme upper edge is preferably about on a level with the top of the wick-tube tips. Then the air will be directed by it against the hottest part of the outer wick-tube tip, and by this means the burner will be kept cooler than otherwise would be possible, and also a better combustion will result. Between this deflector D and the wick-tube tip B' are two air-distributers, E F. They may be fastened to the interior of the deflector. They are arranged quite high up. As they form no part of my present invention they need no further explanation here, except to say that they divide the air passing to the outer side of the flame into numerous fine jets just before it reaches the flame.

S T designate two perforated disk-shaped air-distributers employed to divide into jets the air passing to the inner side of the flame. They are arranged in the space encircled by the inner wick-tube tip, B. Both are secured to a centrally-arranged tube, and the lower rests upon the upper end of the tubular portion *a* of the body A. Air passes from the shell C into the tubular portions a^2 of the body A, and thence through the tubular portion *a* of said body, and through the wick-tube tip B and air-distributers S T to the inner surface of the flame.

The base portion of the deflector D is provided with a chimney-gallery and spring-fingers for holding a chimney, N, in place. The deflector is supported by the upper edge of the shell C in the ordinary manner.

G designates a button-like deflector or spreader, made of iron or other suitable material, in circular form, and supported by a rod, G′. This deflector throws or turns outward against the flame the air extending to it from the tubular portion *a* of the body A and the wick-tube tip B, which together form the central air-tube. This deflector G is utilized as an extinguisher; hence it and its rod are rendered vertically movable toward and from the top of the wick-tube tips. An annular rib or projection, *g*, formed on the under side of the deflector G, bears upon the wick-tube tip B′ when the said deflector descends to its lowest position, and effectually cuts off all smoke which otherwise might issue from the wick after the extinction of the flame. This rib or projection is more easily turned off than the whole under surface would be, and by its use the necessity for having the two wick-tube tips absolutely on the same level at the top is overcome.

The rod G′ of the deflector is normally supported in its highest position by means of a spring, H. This spring consists of a wire coiled loosely around a shaft, I, and having the middle portion extended to form a loop and bent in a reverse direction from the ends, so that, while the ends will rest on the bottom a^3 of the tubular portion *a* of the body A, the looped middle portion will impinge against a rod or arm, G^2, extending laterally from the rod G′.

The shaft I is journaled in standards *i*, affixed to the body A. One end extends out through the shell C, and is provided with a hand-piece, whereby it may be turned.

Affixed to the shaft I is a mutilated spur-wheel, I′, or, in other words, a wheel having teeth around a portion of its periphery only. The teeth of this wheel engage with a rack on a tubular rod, J, (shown as rectangular in form.) This rack is shown as formed by perforating the tubular rod longitudinally at intervals along one of the corners. The rod G′ extends down into the tubular rod J, and is maintained by the latter in its vertical position. The rod or arm G^2 of the rod G′ extends through a longitudinal slot in the tubular rod J; hence the latter may be moved vertically without affecting the rod G′. The tubular rod forms part of a wick-carrier, whose construction I shall presently more fully describe. This rod works in a tubular guide, K, that is also made rectangular, as here shown, and therefore keeps the rod J from turning. The guide K extends through and is fastened in the bottom a^5 of the tubular portion *a* of the body A.

Close to the portion of the periphery of the spur-wheel I′ that is destitute of teeth a cross-pin or laterally-extending lug, *i′*, is arranged. It bears upon the looped middle portion of the spring H when the spur-wheel I′ is moved into the proper position. Then a further movement of the wheel will cause the looped middle portion of the spring H, that bears against the arm G^2 of the rod G′, to descend, whereupon the rod G′ and the deflector G will descend until the latter extinguishes the flame. When the spur-wheel I′ moves in the reverse direction, the looped middle portion of the spring H will raise the deflector to its normal position. The arm G^2, coming in contact with the top of a slot in the guide K, through which it extends, limits the upward movement of the deflector G.

The tubular rod J, as I have before explained, forms part of the wick-carrier. Its lower end has fastened to it a number of rods, J′, that extend up through the body A, between the tubular portions *a a′*, and are fastened at the upper end to a flange extending downwardly from a ring, J^2, fitting between the wick-tube tips B B′. This ring is preferably made of sheet metal. The flange of the ring is scalloped, so that it may descend farther without contact with the tubular portions a^2 of the body A than otherwise would be possible.

The ring J^2 has in it a number of holes, *j*. Strands or cords, L, of wicking are severally passed up through one hole and down through the next, the ends hanging down far enough to extend from the ring through the body A and into an oil-reservoir.

M designates a cylindrical wick, which may in the main be made, in the usual manner, of fibrous material, *m*, but which comprises an outer portion, *m′*, of scrim or like stiff substance, and, preferably, also an inner portion, m^2, of like substance or paper, secured to the main portion, preferably by glue or cement. I do not herein claim this wick, but reserve the right to make the same the subject of a separate application for Letters Patent. The wick M fits between the wick-tube tips B B′ and rests upon the ring J^2, it being secured to the ring, so that it may be adjusted by moving the latter. The ring is provided with a number of claws, *j′*. These claws consist of pieces of resilient metal—such, for instance, as strips of sheet-brass—pointed at one end and bent transversely at the pointed end. They are secured to the inside of the flange of the ring and extend through certain of the holes *j* in the ring. They are bent so that their upper ends have a tendency to spring outward.

The carrier, with the wicking L attached, can best be inserted by removing the wick-tube tip B′. The wick M, however, can easily be engaged with the ring by elevating the ring to the top of the wick-tube tips, so that its claws may spring outward, and then placing the wick M upon the ring and subsequently lowering the ring with the wick M upon it. As the ring is lowered its claws will be forced inwardly into the wick M as the upper ends of the claws pass within the wick-tube tip B′.

The wick M, and of course the wicking L, both being attached to the ring J^2, can be adjusted up and down without affecting the deflector G, because the spur-wheel I′ is capable of a partial rotation without affecting the latter, and the deflector G can be lowered after the lowering of the wick and wicking.

N designates a chimney, made of glass and having a large cylindric base portion, *n*, an enlarged globular portion, *n'*, and a small cylindric portion, n^2. The globular portion *n'* of the chimney commences shortly above the wick-tube tips B B' and surrounds the deflector G. The deflector G is almost as large diametrically as the tip of the deflector D. The combination of the deflector D, the deflector G, and the lamp-chimney N is such that the flame will, directly above the wick, flare abruptly outward between the two deflectors, and then be curved upwardly and inwardly by the globular portion *n'* of the chimney and the upper cylindrical portion, n^2, of small diameter.

I have filed an application July 18, 1884, for an improvement in lamp-burners, in which there is shown and described a wick-adjusting mechanism, a vertically-movable spreader or deflector, and mechanism for effecting the vertical movements of the spreader or deflector, said two mechanisms being actuated at different times from a common prime mover. In said application is also shown and described an Argand burner having a central air-tube, wick-operating mechanism arranged in said tube, an extinguisher, a vertically-sliding rod supporting the same and extending into the central air-tube, and intermediate connections between the extinguisher-support and the wick-operating mechanism. I also show and describe in said application a rack arranged within the air-tube and operated by a ratchet-wheel, and arms operated from the rack, extending outside the air-tube and provided with wick-engaging devices on their ends. I also show these arms operating in conjunction with a wick ring or holder. I do not herein claim anything claimed in said application.

I have also filed an application for an improvement in lamp-burners January 31 1885. In said application I show and describe a burner-tube and a cone or deflector with air-distributers in zigzag relations to each other arranged between them. In that application I also show and describe an Argand burner having a central air-tube, a rack arranged within the air-tube, a wheel for operating said rack, arms connected to the rack and projecting outside the air-tube, wick-engaging devices on said arms, and an upright guide for the rack. I also show and describe in said application a tubular guide within the air-tube, an extinguisher, a supporting-rod for the same within the tubular guide, a projection on the supporting-rod, and a spring bearing at one end upon a stationary part of the burner and at the other against said projection. The tubular guide is also shown and described as slotted and having the projection on the supporting-rod extending through said slot. I also show and describe in said application a wheel for operating the wick-raising rack, a spring for moving an extinguisher upwardly, and means connected with the shaft of said wheel for drawing said spring down or back and causing the descent of the deflector. I also show and describe a lock for said spring. I also show and describe the above-mentioned wheel as mutilated and operating in conjunction with the devices just set forth. I do not herein claim anything claimed in said application.

I have also filed an application September 7, 1885, Serial No. 176,419, for an improvement in lamps. In that application I show and describe a supplemental shell surrounding the lower portion of the main shell of a burner and attached thereto at a distance therefrom, said supplemental shell being of larger diameter throughout its extent than the portion of the main shell which it surrounds and being provided with circular portions constructed to interlock with a reservoir. I also show and describe the main shell or body of the burner as open at the bottom and communicating with the wick-space. I do not herein claim anything claimed in said application.

I have also filed an application September 2, 1885, Serial No. 175,962, for an improvement in lamp-burners. In that application I show and describe a body for a lamp-burner having in one integral piece two upright tubular portions and one or more intermediate transversely-extending tubular portions. I also show the inner of the upright tubular portions as provided with a bottom. I do not herein claim anything claimed therein.

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

1. In a lamp-burner, the combination, with a body made in one integral piece and having two upright tubular portions and intermediate transversely-extending tubular portions, of wick-tube tips separately made and secured to the upright tubular portions, the outer wick-tube tip being detachably secured in place, substantially as specified.

2. In a lamp-burner, the combination, with a body made in one integral piece and having two upright tubular portions and intermediate transversely-extending tubular portions, of wick-tube tips separately made and secured to the upright tubular portions of the body by screw-threads, substantially as specified.

3. In a lamp-burner, the combination, with a wick space or tube, of the ring J^2, having the holes *j* and the resilient claws *j'*, substantially as specified.

4. In a lamp-burner, the combination, with a body comprising in one integral piece two upright tubular portions and intermediate transversely-extending tubular portions, of a wick-tube tip forming a prolongation of the inner tubular portion, a detachable wick-tube tip forming, when in place, a prolongation of the outer tubular portion, and a wick-carrier ring located between the inner and outer wick-tube tips, substantially as specified.

5. The combination, with a lamp-burner having deflectors arranged substantially in the relations described, of the chimney N, having

the large cylindrical base portion, n, the globular portion n', occupying such position with relation to the said deflectors that the flame emanating from the burner will be deflected abruptly outward into it directly from the wick, and the upper small cylindrical portion, n^2, substantially as specified.

6. In a lamp-burner, the combination of the body A, comprising the tubular portions a a' a^2, the wick-tube tips B B', and the air-distributers S T, connected together and the lower resting on the tubular portion a of the body A, said distributers being located within the space formed by the wick-tube tip B, substantially as specified.

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