

(No Model.)

R. HITCHCOCK. FORCED DRAFT LAMP.

No. 345,900.

Patented July 20, 1886.

Fig. 2.

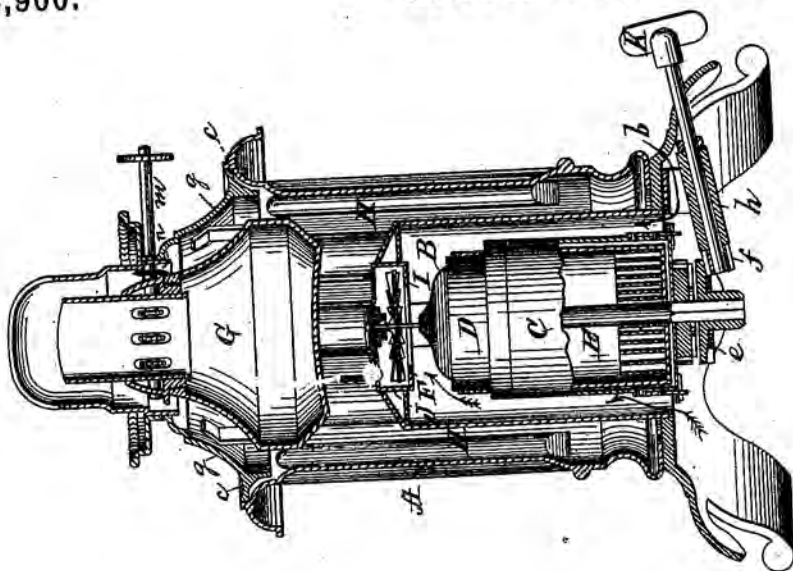
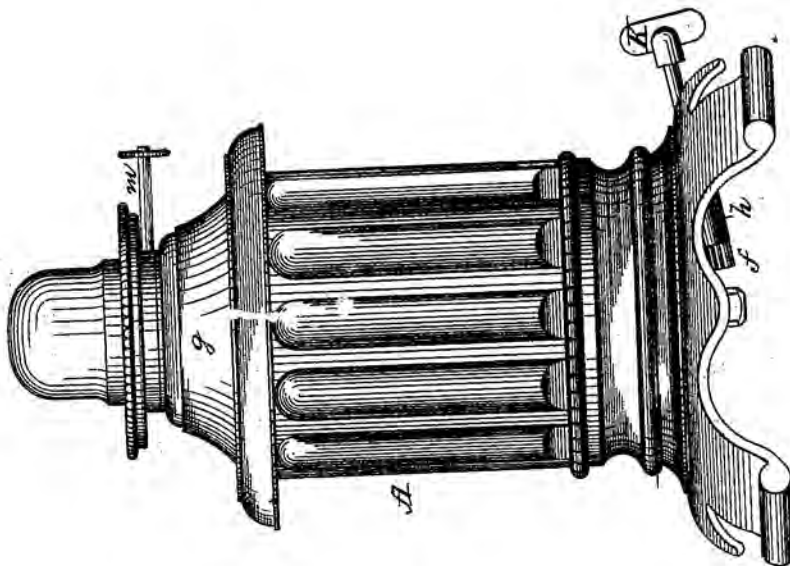


Fig. 1.



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Fig. 4.

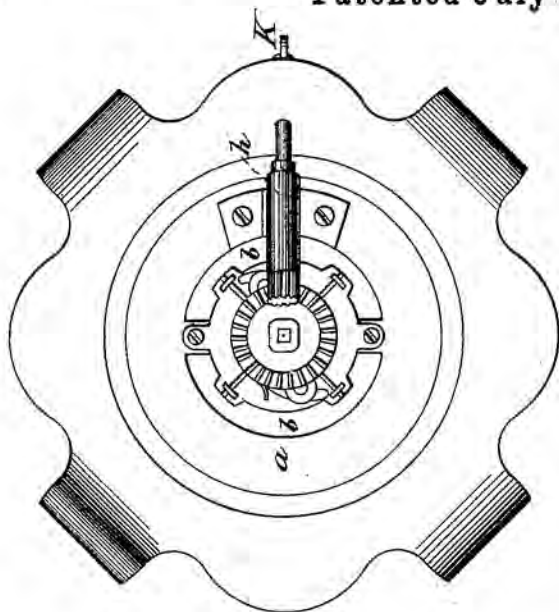
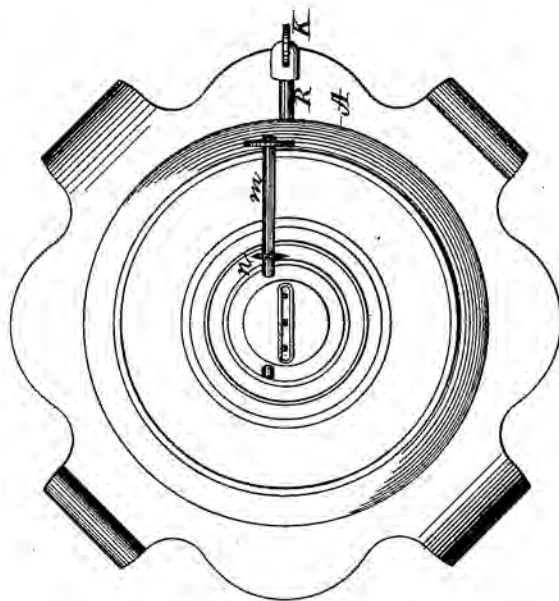


Fig. 3.



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UNITED STATES PATENT OFFICE.

ROBERT HITCHCOCK, OF WATERTOWN, NEW YORK.

FORCED-DRAFT LAMP.

SPECIFICATION forming part of Letters Patent No. 345,900, dated July 20, 1886.

Application filed March 15, 1886. Serial No. 195,216. (No model.)

To all whom it may concern:

Be it known that I, ROBERT HITCHCOCK, of Watertown, in the county of Jefferson and State of New York, have invented a new and useful Improvement in Forced-Draft Lamps, which improvement is fully set forth in the following specification.

The present invention relates to what are called "mechanical" or "forced-blast" lamps—such as described, for example, in Patent No. 158,084, granted to me December 22, 1874. As at present constructed, said lamps consist of an outer shell or casing contracted near the middle and made large at the top, so as to receive the oil-tank and burner. The works are so constructed (as described in my aforesaid patent) that the train of gears turn on vertical axes, and are all arranged within the compass of the mainspring-barrel. A cylindrical jacket surrounds the whole, which cylinder extends up into the contracted part of the shell, leaving only sufficient space for the passage of the air to the blower. To prevent access of dirt, wick-trimmings, oil-drippings, &c., to the movement, I have been accustomed to place a thimble just above the contracted part of the shell, and to make the bottom of the oil-reservoir flat or concave, as described in my Patent No. 234,916, dated November 30, 1880. For parlor or ornamental lamps, however, the above construction is not suited, because of the shape of the shell and because not susceptible of ornamentation. Heretofore it has been customary, when an ornamental lamp is desired, to set the entire lamp, as above described, in a vase or stand of the desired shape and design. This plan has many objections. When winding or cleaning is necessary, the lamp, works and all, must be lifted entirely out of the vase. The outer shell or casing of the lamp becomes superfluous, adding to the weight and cost of the whole, and all drippings of oil on the outside of the shell flow down over the ornamental portion of the lamp.

The present invention has for its object to produce a vase-lamp which shall be free from these and other objections; and it consists in certain improvements in the construction and arrangement of parts of such lamps, as well as in the works thereof, as hereinafter fully

described. The usual outer shell or casing is dispensed with, and the works, simply inclosed in a cylindrical jacket, are permanently set in the middle of the ornamental vase, which may be cylindrical or of other desired shape. The floor of the vase is properly perforated or cut away to form an air-inlet communicating with the air-passage within the jacket of the works. An open space or cavity is left between the jacket and inner wall of the vase, extending down to the floor of the latter. The oil-reservoir and burner rest upon an internal shoulder of the vase, so as to be readily removed for filling or other purpose. The supporting-shoulder is so placed that the top of the vase projects slightly above the edge of the outer shell or cover of the oil-reservoir, which rests upon said shoulder, so as to arrest any drippings of oil and prevent their running down the ornamental sides of the vase. Such drippings will, when the reservoir is lifted, flow into the receptacle before referred to. The bottom of the oil-reservoir is flat or slightly concave, so that any drippings coming through the air-flue cannot fall upon the blower, but will drop into the said receptacle. The capacity of the latter is such that cleaning out will be necessary only at long intervals.

By the improvements above indicated the necessity of moving the heavy lamp is to a large extent obviated. The oil-well can be lifted out separately from the works, the interior seldom requiring cleaning, and the blower and works are effectually protected from access of dirt, drippings of oil, wick-trimmings, and the like.

In the lamp-movement as heretofore made the size of the mainspring-barrel was comparatively small, requiring a spring of great strength. This in turn necessitated a large train of gears between the spring and blower to prevent the former from uncoiling too fast.

In the present invention the diameter of the barrel is increased about one-half of an inch, there being plenty of space inside the vase to admit of this increase. Consequently greater room for expansion is given the spring, so that it would drive the blower a greater length of time. As this is not desired, however, the weight of the spring can be greatly reduced, admitting a corresponding reduction

in the number of the gears or in the number of teeth, until practically I am enabled, by means of a spring of about half the width of that formerly employed, to drive a blower the same number of hours, with the additional saving in space and cost consequent upon decreasing the number of gears.

In lamps as heretofore made it has commonly been found difficult to secure a perfectly steady and regular delivery of air, owing in part, it is believed, to the reverberation of the air. I have found that this difficulty may be obviated by means of what I term a "wind-collar" placed directly below the fan or blower, so that the supply-current enters around the center and not at the edges thereof. This device acts as a regulator, steadying the current and rendering it uniform. It includes between it and the fan a zone of comparatively still air. The efficiency of the device depends largely upon the width of the collar in proportion to the diameter of the blower, and it has required many experiments to determine the proper size. I have found that with a blower of twenty-five sixteenths of an inch in diameter the width of the wind-collar should be about seven-sixteenths of an inch.

In the accompanying drawings, which form part of this specification, Figure 1 is a front elevation of the vase-lamp; Fig. 2, a vertical section of the same, partly in elevation; Fig. 3, a top view with the burner removed, and Fig. 4 a bottom view.

A is the ornamental vase or jar forming the outside shell of the lamp. The movement, inclosed in a jacket or cylinder, B, is permanently fixed to the bottom *a* of vase A, which is cut away at *b* to afford access to the air, which passes up between the jacket B and the casing C of the mainspring-barrel E to the fan or blower F, which is placed below the center of the oil-reservoir G. The upper edge of vase A is formed with an interior shoulder, *e*, to receive the oil-reservoir G, which fits within the vase. The cover *g* of the reservoir is on a lower level than the upper edge of vase A; consequently the dripping of oil outside the reservoir cannot run down on the ornamental vase, but is arrested at the edge, and would find its way inside the vase. Most of the oil that drips, however, runs down inside the cover *g* of the reservoir and over the sides thereof. It cannot cross the bottom, but must drop off the lower edge thereof. To prevent this and similar refuse reaching and clogging the works, a large annular space, H, is left between jacket B and vase A. From the construction of the lamp the use of a thimble, as described in my Patent No. 234,916, would not be admissible, and, moreover, it would not practically answer in a lamp of this character, as it requires frequent cleaning, whereas the extended cavity H will hold the accumulations of a year, whose presence therein will not interfere with the working of the movement.

With a lamp of the kind illustrated it would

of course be extremely difficult and inconvenient to lift the lamp whenever necessary to wind it. To obviate this difficulty the arbor *d* of the mainspring is provided on its lower end with a gear, *e*, (here shown as a crown-gear.) Engaging therewith is the pinion *f* on the end of a spindle, *h*, the outer end of which carries the key *k*. This spindle is carried in a long bearing, *l*. By this means the winding can be done at the side, although the mainspring-arbor is vertical.

As already stated, the diameter of the mainspring-barrel E is made larger than heretofore, giving the spring space to expand fully, so that to drive the blower F for the same length of time and at the same speed as heretofore a spring of only about one-half the width is required. In diminishing the weight of the spring a reduction in the number of gears is also rendered possible. A shorter barrel than heretofore required is also available by this construction, and is an important advantage, for the reason that the height of the movement and its casing was such that it would not leave sufficient room above the blower for the oil-reservoir.

The arrangement and operation of the works being substantially the same as in my aforesaid patent need not be particularly described. The blower, as heretofore, is placed directly above dust-cap D, carrying the movement. It has been found in practice that, owing to the rebound of the air against this dust-cap, the current delivered by the blower is not perfectly uniform, and a flickering of the light is the result. I have found that this defect is entirely obviated by the use of the collar or ring I, placed under the blower and supported by the band J surrounding the same. With this device the air supplied to the fan enters near the center thereof and distributes itself around the edges above the wind-collar I. The presence of the latter prevents any down current from the ends of the fan-blades, and forms, as it were, a reservoir from which the fan-blades can draw and deliver to the burner a regular supply of air.

The collar I may be inclined slightly toward its center, so that any dust or refuse falling thereon would not remain to clog the blower, but would drop off into the space H.

The band and collar may be in one piece, and may present a curve in cross-section, instead of an angle, as shown.

It is found that when the lamps are set upon an incline, as on a desk, drops of oil will sometimes run along the thumb-shaft *m*, by which the wick is regulated, and fall upon the outside of the lamp. To prevent this a small disk or collar, *n*, Fig. 3, is placed on this shaft just above the air-passage, so that such drippings of oil would find their way into the receptacle H. This disk or collar *n* is preferably notched, so as to present a number of points around its periphery, whereby the oil will more easily drop off into the space below.

It is obvious that modifications may be made in the details of construction without departing from the spirit of the invention, and that, if desired, one or more of the improvements described could be used without the others.

Having now fully described my said invention and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the vase, the jacketed works for producing a forced draft permanently secured in the bottom thereof, the reservoir and its cover, forming between them an air-passage, said reservoir and cover being supported removably at the top of said vase, substantially as described.

2. The combination, with the vase inclosing the works for producing a forced draft, and provided near the top with an internal shoulder, of the oil-reservoir and cover supported by said shoulder in such position that the top of said vase projects slightly above the edge of said cover, substantially as described.

3. The combination of the vase, the jacketed or inclosed movement for producing a forced draft permanently set in the vase, the bottom of the vase having openings communicating with the air-passages within the jacket, the latter being of less diameter than the vase, so as to form a cavity between the two, and the oil-reservoir independently supported at the top of said vase, substantially as described.

4. The combination of the vase, the works and fan-blower for producing a forced draft, the jacket inclosing said fan and blower, and also the air-passage leading to the latter, said jacket being of less diameter than the vase, so as to form a cavity for dust and refuse between the two, and the oil-reservoir having a flat or concave bottom, substantially as described.

5. In a forced-draft lamp, the combination, with the fan or blower, of a wind collar or ring placed below the same, and adapted to regulate the supply of air and render the same uniform and steady, substantially as described.

6. The combination, with the blower and band encircling the same, of the wind-collar, supported by said band and adapted to render uniform the supply of air to the burner, substantially as described.

7. The combination of the outer shell or casing, the oil-reservoir supported therein, the wick-tubes, the wick-spindle passing through the same, and a notched disk fixed on said spindle between the casing and reservoir, substantially as and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ROBERT HITCHCOCK.

Witnesses:

PHILIP MAURO,
C. J. HEDRICK.