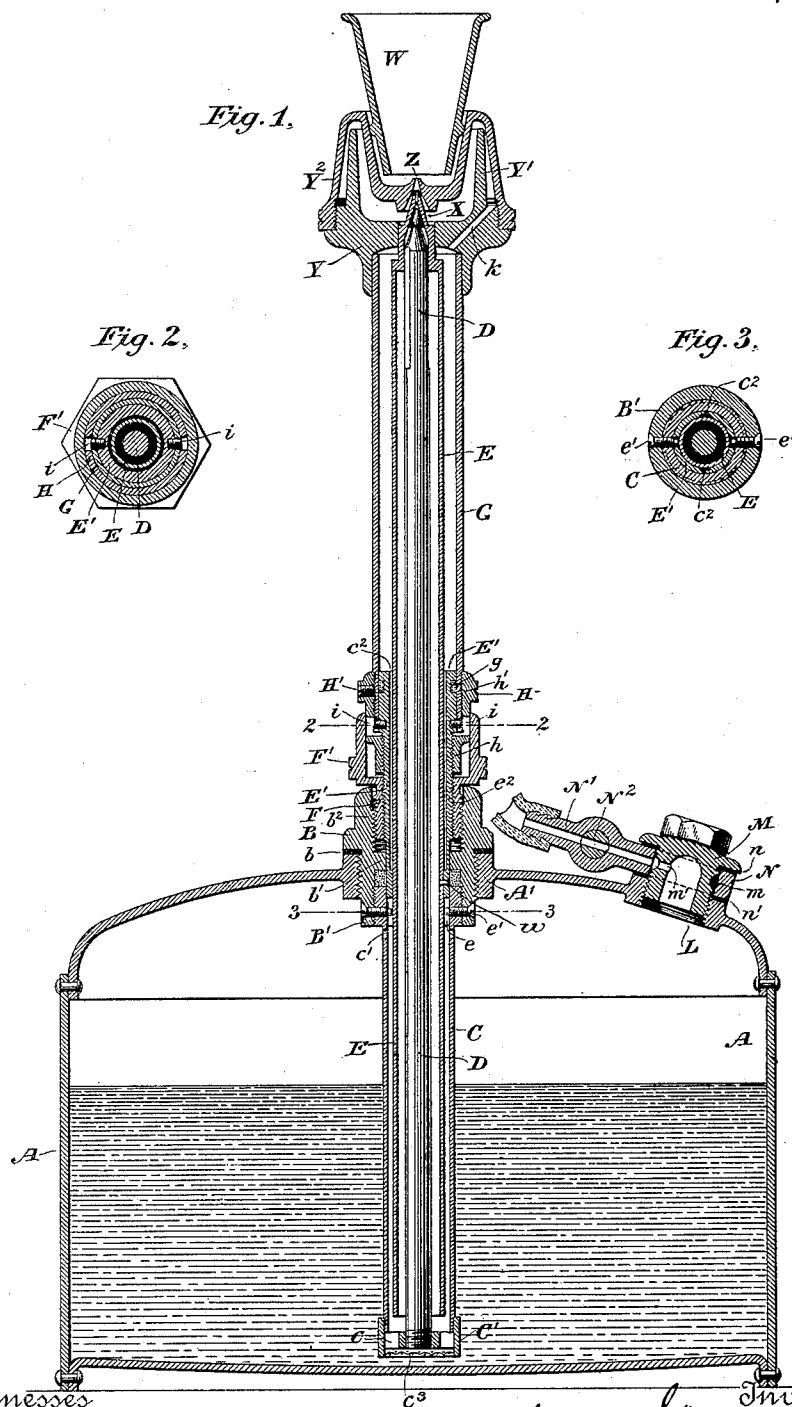


(No Model.)

A. SHEDLOCK.
OIL SPRAY LAMP.

No. 468,065.

Patented Feb. 2, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED SHEDLOCK, OF JERSEY CITY, NEW JERSEY.

OIL-SPRAY LAMP.

SPECIFICATION forming part of Letters Patent No. 468,065, dated February 2, 1892.

Application filed January 30, 1891. Serial No. 379,717. (No model.)

To all whom it may concern:

Be it known that I, ALFRED SHEDLOCK, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Oil-Spray Lamps, of which the following is a specification.

In lamps of this character the oil is supplied to a nozzle by the pressure of compressed air, which is also discharged at the nozzle to break up or spray and mingle with the oil to insure complete combustion, and consequently a clean flame of high candle-power.

15 The purpose of this invention is to provide improved means for adjusting the oil and air supplies at the discharge-nozzle. Usually in lamps of this character this has been accomplished by adjusting a valve-rod. In this organization I effect the adjustment by moving the oil-pipe by differential-screw mechanism, the interior spindle or valve-rod being stationary. The adjustment of the air-supply, or rather the discharge of air at the nozzle, is similarly effected by adjusting the surrounding air-pipe relatively to the oil-pipe, the air-pipe carrying a head equipped with a nozzle arranged above and concentric to the oil-nozzle, the head of the oil-nozzle constituting the valve, which is seated in the interior of the nozzle carried by the air-pipe. As is well known, in lamps of this character the nozzle or orifice through which the oil or the mingled oil and air are discharged is extremely small relatively to dimensions of other parts of the apparatus. It is therefore very difficult in small lamps to effect a proper and ready adjustment of the air and oil valves, or either of them, by an ordinary screw adjustment, unless very fine micrometer-screws are employed, and such screws would unduly increase the cost and delicacy of the apparatus. In my improved organization I effect the adjustments of the air and oil supplies by the differential action between two screws of different pitch. The organization is such that the adjustments are effected by the rotation of collars or nuts surrounding the air and oil pipes, so there are no projecting valve-stems and no projecting handles or wheels to operate them. This enables me to

construct a compact symmetrical apparatus, all as hereinafter described.

The invention further comprehends an improvement by which the plug that closes the inlet to the oil-tank also permits the entrance of the compressed air to the tank.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a lamp constructed in accordance with my invention; Fig. 2, a transverse section on the line 2 2 of Fig. 1; Fig. 3, a transverse section on the line 3 3 of Fig. 1.

A is the oil-tank, having in its top the interiorly-screw-threaded hub of socket A', into which the body B, that supports the parts of the lamp proper, screws, a suitable packing-washer *b* being interposed between the top of the hub A' and the projecting annular flange of the body B. The annular portion B' of the body B, that extends into the tank, is screw-threaded on its interior, and above the thread is provided with an interior flange *b'*. A pipe C is screwed into the interior of the part B', and between its end and the flange *b'* a packing-ring is inserted, as shown. On the end of the pipe C is a ferrule C', having a cross-piece *c*, in which is screwed the end of the stationary oil-valve rod D. The open end of this ferrule is provided with a strainer *c'* to prevent foreign particles from passing up into the oil-valve. The valve-rod is surrounded by the oil-pipe E, which is open at the bottom and carries at its top the oil-nozzle X, the interior of which constitutes the seat for the conical end of the valve-rod D. The oil-pipe is surrounded by a sleeve E', rigidly connected therewith by soldering or otherwise. In the drawings, Fig. 1, this rigid connection is indicated by a key *w*. The lower end of this sleeve has its bearing in the annular flange *b'* and the upper end of the pipe C. At its bottom two notches or slots *e* are cut, and into these slots the ends of screws *e'*, that pass through the lower end of the body B and through the pipe C, project. The screws serve to hold the oil-pipe E against rotation, but permit its vertical movement. Above the flange *b'* the sleeve E' is threaded upon its exterior, as shown at *e''*. The sleeve being rigidly attached to the oil-pipe E, the screw-thread thereon is equivalent in construction to the

cutting of the thread upon the pipe itself, and the pipe may therefore be said to be screw-threaded. The interior of the body B is also screw-threaded, as indicated by b^2 and the annular space between the threads e^2 , and b^2 is sufficient to receive the annular sleeve F of a nut F'. The portion F' of the nut above its sleeve F is of larger diameter than the sleeve F, and is so made to accommodate within it another nut, hereinafter described, for the purpose of adjusting the air-valve. The nut-sleeve F is screw-threaded upon both the exterior and interior and engages with both the screw-threads e^2 and b^2 . The thread b^2 and the corresponding thread on the exterior of sleeve F are of coarser pitch than the thread e^2 and the corresponding thread on the interior of sleeve F. When, therefore, the nut F' is rotated, the sleeve F will travel up the body B, through the action of the screw-thread b^2 , while the action of the interior thread on the sleeve F on the screw-thread e^2 will lift the oil-pipe and effect the adjustment of its nozzle X with reference to the conical end of the valve-rod. The resultant movement of the oil-pipe is due, therefore, to the differential action between the two screws, and I am enabled to obtain the minutest adjustment with facility and without having to provide especially-fine screw-threads, the adjustment being dependent upon the difference in pitch, and may therefore be graded as delicately as desired.

The passages by which the compressed air passes from the tank to the discharge-nozzle are hereinafter described.

I will now describe the means for effecting the adjustment of the air-valve which regulates the amount of air discharged at the nozzle. The upper end of the sleeve E', and that part of it which is above the screw-thread e^2 , is of slightly-larger diameter and is not screw-threaded upon its exterior. It forms the bearing for the exterior air-pipe G, and is provided with an annular recess in which a packing-ring g is seated. The lower end of the pipe G is screw-threaded upon its exterior, and a correspondingly-threaded nut H works thereon. The lower end of this nut is of smaller diameter, is screw-threaded upon its interior, as indicated, and works upon the thread e^2 on the exterior of the sleeve E'. The lower part h of the nut H is inclosed within the portion F' of the other nut. Two screws i , that pass through holes formed in the nut H, are screwed into the sleeve E', and their heads are straddled by notches or slots in the lower edge of the pipe G, so as to prevent its rotation, but permit its vertical movement. In the construction shown the apertures in the nut H, through which the screws i pass, are covered by the upper portion of the nut F'. The screw-thread on the part h , that corresponds with and engages the screw-thread e^2 , has a coarser pitch than the screw-thread h' of the nut H, that works on the thread on the lower end of the pipe G. Consequently the vertical

motion of the pipe G is equal in extent to the difference in pitch between the screws. The upper end of the pipe G carries a head Y, having an upwardly-projecting annular flange Y', that forms a chamber into which the oil-nozzle X projects, and the upper end of the oil-pipe E has its bearings in a central aperture in the head Y. The head Y is screw-threaded upon its exterior and has screwed thereon a cap Y², the top of which is cup-shaped and extends into the chamber formed by the vertical flange Y'. The bottom of this cup-shaped portion carries or has formed therein the discharge-nozzle Z, which is arranged concentrically above the nozzle X, and in the interior of which the nozzle X, which is the valve, is seated. Compressed air passes from the pipe G, through an aperture k in the head Y, up between the walls of Y² and the flange Y' and down to the nozzle Z. The air therefore becomes somewhat heated before its escape from the nozzle, and when certain oils are used the efficiency of the lamp is correspondingly increased. The cup-shaped cap constitutes a combustion-chamber, and in it may be seated a flame-guard W.

In the drawings both valves are shown closed, and obviously the arrangement is such that the oil-nozzle cannot be lifted from its valve-rod until the air-valve is first opened. This insures that the air-valve must always be opened first.

Compressed air from the tank finds its way up into the pipe G, as follows: It passes by aperture c' in the pipe C, into and through channels c^2 , formed in the interior face of the sleeve E'. These channels are seen in Fig. 1, where they extend vertically from the top of the sleeve to a point near its bottom, where they then turn laterally and finally open into the interior of the pipe C on opposite sides between the screws e' . The tank being supplied with oil and compressed air admitted thereto, the oil and the air rise to the discharge-nozzle and emerge therefrom in a mingled condition, the oil being in the form of a spray, as is well understood by those familiar with lamps of this character, and, as before described, the adjustments of the air and oil valves may be effected very readily and with the utmost nicety. As appears from the drawings, there are no projecting parts connected with the valve-operating devices and no exposed openings, the exterior of the lamp presenting a continuous metallic surface of symmetrical shape. A set-screw H' may be employed to lock the nut H in fixed position, if desired, so that the manipulation of the nut F' or improper or accidental handling of the nut H may not disturb the adjustment of the air-valve.

The oil-inlet L of the tank is closed by a hollow screw-plug M, having a laterally-projecting flange at the top. The screw-threaded plug has an annular recess m around its exterior. A collar N surrounds the plug M, a suitable packing-washer n being placed be-

tween the collar and the lateral flange at the top of the plug, and between the collar and the hub of the opening L a similar washer *n'* is placed. The collar N has a lateral tubular projection N', provided with an ordinary stop-cock N², on which the pipe or tube leading from the compressor or source of compressed-air supply is connected. The compressed air therefore passes through the pipe N' into the annular recess *m* in the plug, and from thence through an aperture *m'* to the interior of the plug and into the tank. With this construction one inlet answers for both the charging of oil into the tank and the admission of compressed air, and the air-supply pipe may extend direct from the plug in any direction.

I claim as my invention—

1. In an oil-spray lamp, the combination, with a pipe having an outlet and valve-seat, of a valve for said seat and a differential screw-adjusting device surrounding and connected with the pipe, all substantially as hereinbefore set forth.

2. The combination, with the oil-tank, of the body B, the non-rotary vertically-adjustable oil-pipe passing therethrough and having a valve seat, a screw-threaded nut having screw-threads of different pitch that respectively engage corresponding screw-threads, one on the oil-pipe and the other on the body B, and the stationary valve-rod, whereby the extent of movements of the oil-pipe is dependent upon the differences in pitch between the screws.

3. The combination of the oil-tank, the body B, the non-rotary vertically-adjustable oil-pipe passing therethrough and having a valve-seat, the valve for said seat, a screw-thread upon the exterior of the oil-pipe, a screw-thread of different pitch upon the interior of the body, and an annular screw-threaded nut having interior and exterior screw-threads, respectively corresponding with and engaging the screw-threads on the oil-pipe and on the body, whereby an adjustment of the oil-pipe due to the differential action of the two screws may be effected.

4. The combination of the screw-threaded air-pipe, the valve-seat therein, the oil-pipe having a screw-thread *e*² and whose end constitutes a valve for said seat, and the screw-threaded nut H, having two screw-threads of different pitch, one working on the air-pipe and the other on the screw-thread *e*² of the oil-pipe.

5. The combination of the non-rotary vertically-adjustable pipe G, the interior pipe E, whose end constitutes a valve, both pipes being provided with screw-threads of different pitch, and a nut having screw-threads of different pitch, respectively corresponding to and engaging the screw-threads on said pipes, whereby an adjustment of one pipe relatively

to the other is effected by the differential action between the two screws.

6. The combination, with the pipe G, of the head Y, carried thereby and having the vertical annular flange Y', the cap Y², secured to the head Y and having a cup-shaped top provided with a valve-seat extending into the chamber formed by the flange Y', an air-passage *k*, leading from the pipe G into the cap Y² between the outer walls of the cap and the flange Y', and an oil-pipe whose end constitutes a valve for said valve-seat.

7. The combination, with the oil-tank, of the tubular body secured therein, the pipe C, extending from said body down into the oil-tank, an upwardly-projecting stationary valve-rod supported by the pipe C, a vertically-adjustable oil-pipe arranged within the pipe C and around the valve-rod, an oil-nozzle carried by said pipe, means for adjusting the oil-pipe vertically, an exterior air-pipe carrying an outlet-nozzle arranged above and concentrically to the oil-nozzle, and means for adjusting the air-pipe to vary the relation of the outlet-nozzle to the oil-nozzle.

8. The combination, with the oil-tank and body, of a pipe C, carried by the body and extending down into the tank, a strainer in the end of the pipe, and an oil-pipe inside the pipe C.

9. The combination of the screw-threaded oil-pipe and its valve, the surrounding screw-threaded air-pipe, the screw-threaded body also surrounding the oil-pipe, the nut consisting of two parts F F', the part F being of smaller diameter and having screw-threads engaging the threaded body and oil-pipe and the part F' being of larger diameter, and the nut H, engaging the air-pipe and having a reduced portion *h* engaging the oil-pipe, the part *h* being surrounded by the part F' of the other nut.

10. The combination of the oil-tank having the screw-threaded aperture L, a hollow screw-threaded plug M, provided with air-passages *m m'* and closing said aperture, a collar surrounding the plug, and the tubular projection from the collar, for the purpose set forth.

11. The combination of the nozzles X and Z, the screw-threaded pipes by which they are carried, the screw-threaded body B, and the threaded nuts H *h* and F F', whereby the air-valve must first be opened before the oil-valve can be opened, all substantially as hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name.

ALFRED SHEDLOCK.

Witnesses:

FRANK S. OBER,

EDWARD C. DAVIDSON.