2 Sheets—Sheet 1.

H. WELLINGTON.

VACUUM-LAMP.

No. 190,104. Patented April 24, 1877.

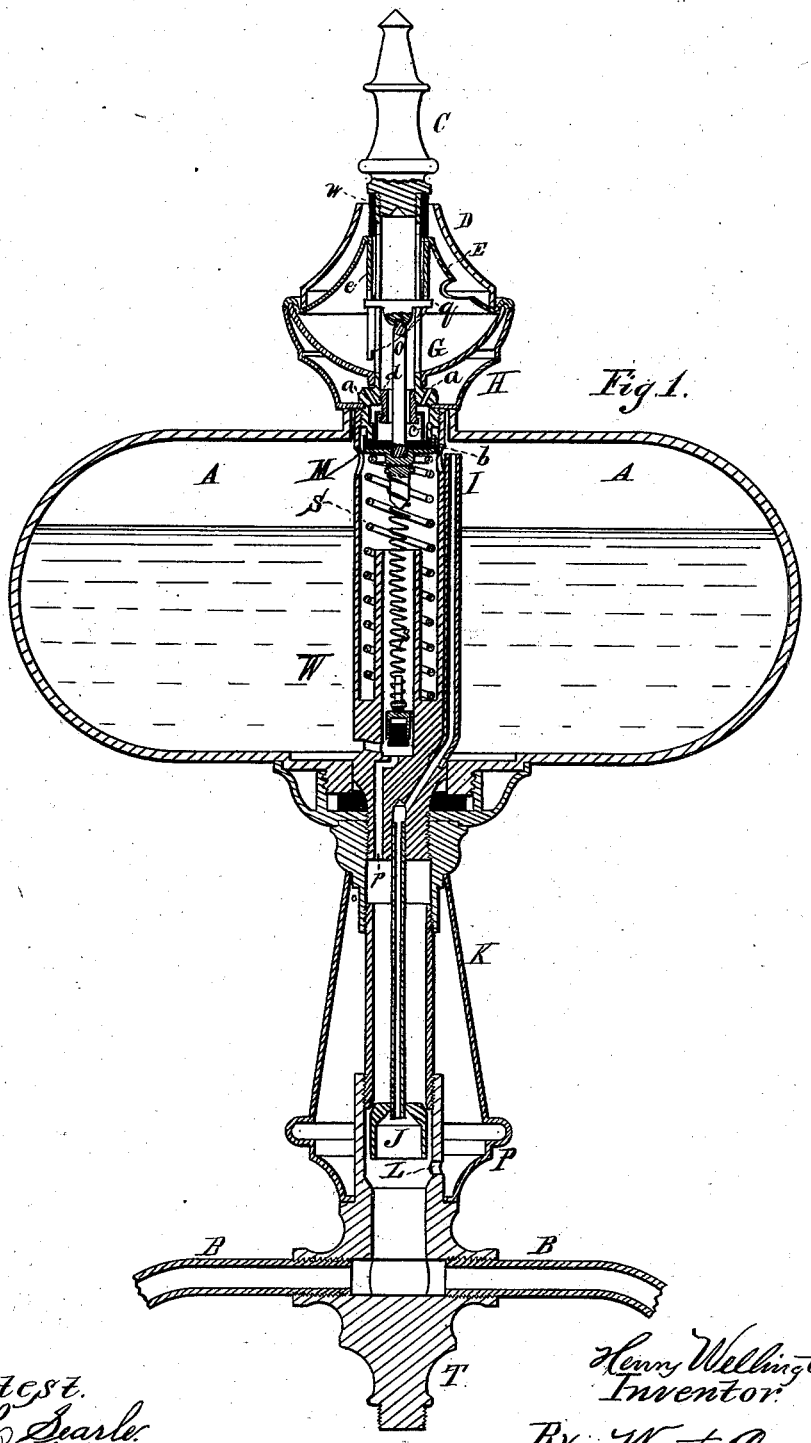

Fig 1.

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2 Sheets—Sheet 2.

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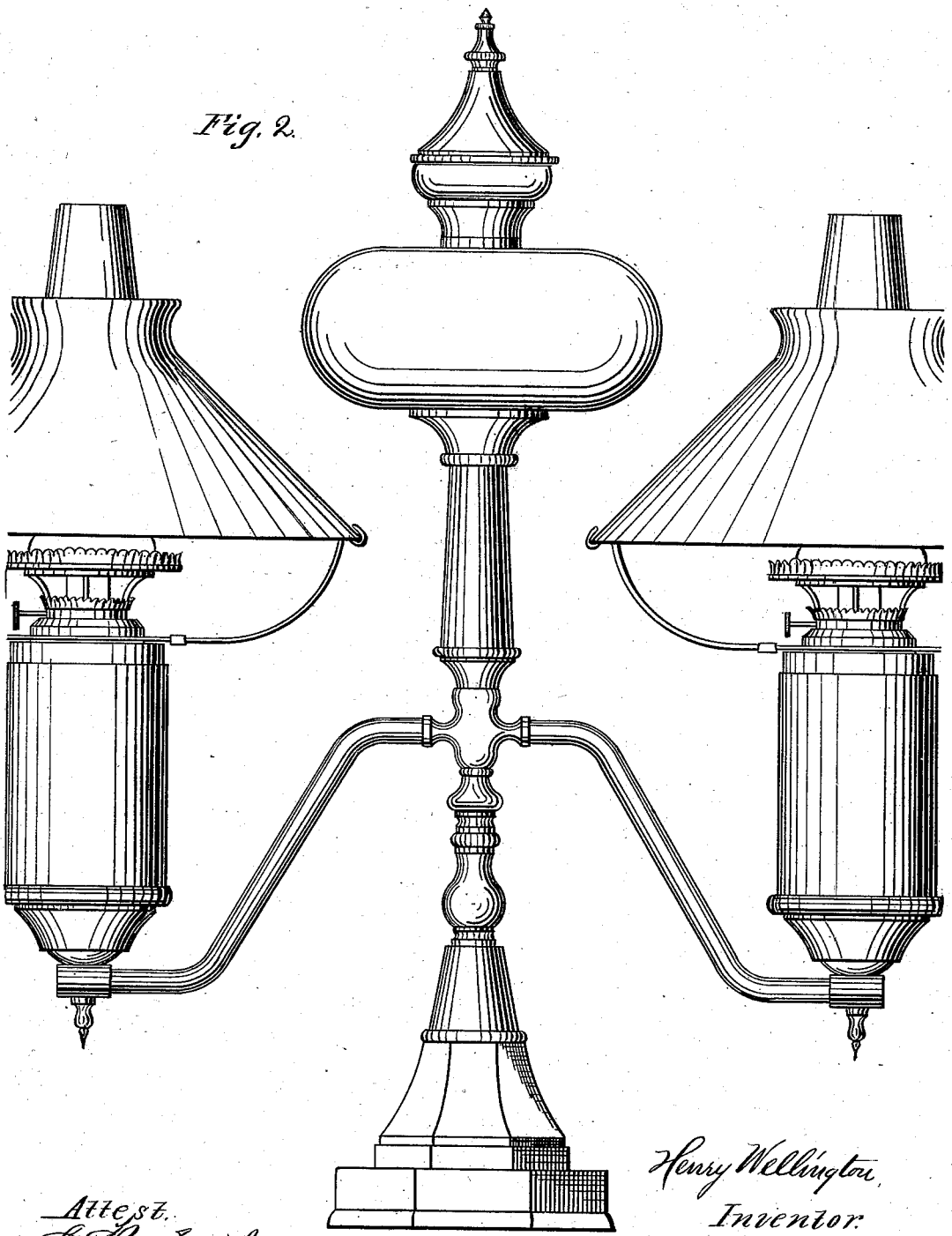
Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY WELLINGTON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN VACUUM-LAMPS.

Specification forming part of Letters Patent No. 190,101, dated April 24, 1877; application filed March 13, 1877.

To all whom it may concern:

Be it known that I, HENRY WELLINGTON, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Vacuum-Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an axial section of a lamp, showing the working parts of my improvement in detail; and Fig. 2, an elevation of an ordinary stand-lamp, showing the side lights, &c.

The object of my invention is to produce a lamp having a central oil-reservoir and side lights or burners, (one or more,) to which the oil may be fed automatically and continuously, and which may be filled from the top without the necessity of withdrawing and inverting an oil-cup, as is done in the well-known "German student's lamp," and in others of the class known to the trade as "vacuum-lamps;" to accomplish all of which it (the invention) consists in certain novel arrangements and combinations of parts, all of which will be first fully described, and then pointed out in the claims.

A is an air-tight elevated reservoir, from which the oil is fed to the side lights through the pipes B B. As the oil is burned away and sinks below the opening L, air from the exterior flows in, finding its inlet near the top of the ornament K, or through a suitable perforation therein, and passes up through the pipe I, which opens near the top of the oil-reservoir, as shown. This affords the requisite supply of air above the oil, in order that a sufficient quantity thereof may flow down from its reservoir until the opening L is again closed, when the exclusion of air prevents any further discharge. In this manner the side lights are automatically and continuously fed.

In order to fill the reservoir A, the oil-discharge tube *p* must be closed, and this should be doneat the same time that the filling-orifice is opened. For this purpose the valve V, which is pressed to its seat by the spring *s*, is closed by the downward movement of the valve *b*, at the same time that the passage is opened for the oil, which is poured into the cup G after the ornamental piece D has been removed. During the filling the air from the top of the reservoir finds a vent through the perforations *a a*, between the two plates G and H, the plate G being smaller than the one H, and serving to conduct the oil into the openings cut in the central pipe. The space between these two plates or cups G and H is sufficient not only to afford an escape for the air, as explained, but also to permit any oil to drip over from the cup G into the plate H, in case any should be blown up from the reservoir during the process of filling.

The valve *b* is forced downwardly through the medium of a cross-piece, *q*, which is operated upon by the inclined faces of the part *e*. This cross-piece is movable within suitable slots cut in the central tube, and receives a projection upon the top of the stem *o*, which is connected with the valve-plate *b*. The plug C, being screwed into the top of the central tube, serves to prevent the parts *e* E from rising when turned; and in order to avoid friction and noise as much as possible, I usually place a wooden washer, *w*, between the projecting ledge shown upon the plug C and the movable parts *e* E. To fill the lamp, the hand-piece E is turned to the left, when the upper valve is forced away from its seat, and the lower valve V is closed. The ornamental part D is then elevated to uncover the filling-orifice, and the oil poured in. It (the oil) finds its way into the reservoir through the ports *m m*, and when a sufficient quantity has been introduced the hand-piece is reversed, when the spring S carries the upper valve to its seat, and the spring *s* elevates the lower valve, after which the flow is automatically regulated, as previously explained.

The spring S is contained within the central tube, and surrounds a smaller interior tube, which is intended as a guide and support for the spring *s*. This latter spring is attached to the lower portion of the upper valve-plate *b*, and when the upper valve is forced against its seat the lower one is held a trifle above its seat, so that the oil may flow down to the trap. Beneath the reservoir the oil and air pipes are located in close proximity, and are drilled through the solid portion shown, so as to economize space as much as possible, and bring them within the tubular ornamental piece, in

order to preserve the symmetrical appearance of the lamp.

To prevent the oil from entering the lower extremity of the air-pipe I and becoming clogged therein, which it would otherwise be liable to do, on account of the small diameter of said pipe, I place thereon an enlarged bell, (shown at J,) which obviates any such disadvantages; and to prevent the oil from clogging up the air-passage as it is being poured into the reservoir, I place a small screw-threaded section, *d*, within the central tube, and depend a movable collar, *c*, from it. This, when the upper valve is unseated, will drop down below the mouth of the oil-tube, and thus serve as a conductor or conveyer of the oil below said mouth, affording a clear unobstructed passage for the air between it and the outer tube.

By making the central reservoir of glass, the height of the oil therein is always apparent, and thus one of the annoyances attending the use of the "student's lamp" is obviated.

It is found that a ground joint will not effectually prevent the flow of oil, and therefore the style of valves shown has been adopted. They are movable vertically and entirely from their seats, and are preferably made of a compound of glue and glycerine, which is not affected by the oil, and which, by reason of its elastic nature, affords a perfectly tight joint with the valve-seat. They may be made in any convenient or desirable form, and attached to the valve-stems in any suitable manner.

The principles of the invention are applicable to any style of hand or hanging lamps, to street-lamps, and all manner of illuminating apparatus or oil-fixtures, and it is obvious that one or any number of lateral burners may be employed, it being only necessary that they take their supply of oil from below the air and oil trap P.

The lamp as thus constructed is easily operated, and not liable to get out of repair. It affords all the advantages of any of the class of automatically-feeding lamps, with the additional important features of permitting at all times a knowledge of the quantity of material in the reservoir, and very much superior facilities for feeding. The glass reservoir is, moreover, admitted to be the best medium for containing the hydrocarbon oils, and preventing that disagreeable and disadvantageous sweating of oil common in the metallic lamp-bowls.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a central glass reservoir, supplying oil to one or more lateral burners, the upper and lower valves, operated by springs, and adapted to govern the inlet and outlet ports, substantially in the manner and for the purposes explained.

2. In an automatically-regulated feeding-lamp, the combination of the upper and lower valves, adapted to govern the inlet and outlet ports, as specified, the same being simultaneous in their motion, and movable directly and bodily from their seats, as hereinbefore set forth.

3. The combination, with the valve mechanism in an automatically-feeding lamp, of the hand-piece E, carrying the cam-faces *e*, and the cross-key *g*, movable within the central tube, for the purpose of operating the valve, substantially as shown and described.

4. In an automatically-feeding lamp of the character herein specified, the air-pipe I, conducting air from the vent L upwardly through the oil-tube, and thence to the top of the closed reservoir, substantially as set forth.

5. In combination with the central tube, slotted to receive and hold the cross-key, and to afford a passage for oil to the central reservoir, the cup G, located above the air-vents, for the purpose of directing the inflowing oil, in the manner shown and described.

6. In combination with the pipe conducting oil to the central reservoir from the filling-orifice, the movable collar *c*, affording an air-passage between it and the outer tube, as and for the purposes explained.

7. In combination with a central glass reservoir, supplying oil to one or more lateral burners, a central pipe running therethrough and sustaining above said reservoir mechanism, substantially such as described, for operating the valves within, and affording a chamber within which said valves and their closing-springs are located, substantially as shown and described.

8. In combination with the oil-inlet at the top of a reservoir in an automatically-feeding lamp, a vertically-adjustable valve, held to its seat by the spring S, and adapted to operate substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

HENRY WELLINGTON.

Witnesses:
C. R. SEARLE,
GEO. T. GRAHAM.