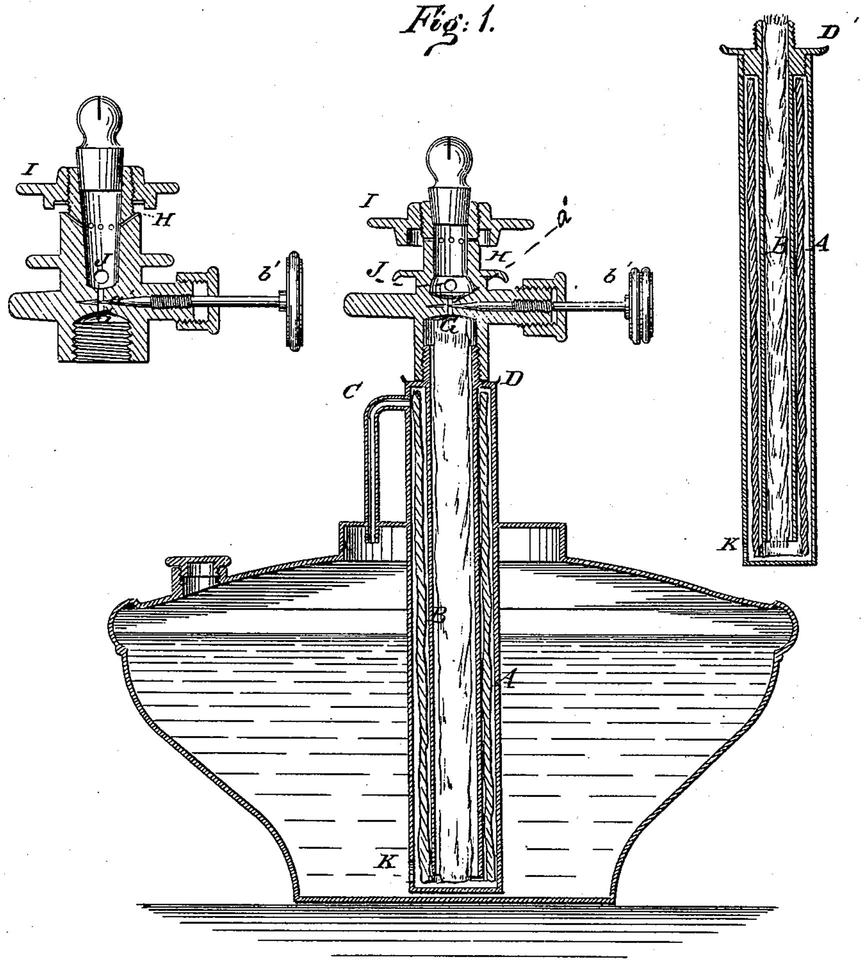
J. S. WOOD.
Vapor Burning Lamp.

No. 207,471 Patented Aug. 27, 1878.

Fig: 3. Fig: 1. Fig: 2.



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JOSEPH S. WOOD, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN VAPOR-BURNING LAMPS.

Specification forming part of Letters Patent No. 207,471, dated August 27, 1878; application filed February 5, 1878.

To all whom it may concern:

Be it known that I, JOSEPH S. WOOD, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Gas Generator and Burner for Lamps, of which the following is a specification:

In the accompanying drawings, Figure 1 is a vertical central section of a lamp with my improved gas-generating device and burner. Fig. 2 is a detail vertical central section of the gas-generator for supplying the necessary pressure to force up the oil to the burner; and Fig. 3 is a detail vertical central section of the burner.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish for petroleum-lamps an improved gas-generating attachment and vapor-burner, by which the oil is pressed up in uniform manner from the bowl to the point of combustion in the burner, and there heated up and formed into gas for illuminating purposes; and the invention consists of a lamp with an interior oil-supply tube surrounded by an exterior wick or packing that extends to the top of the lamp-bowl. The packing may be inclosed by an outer tube, having communicating top and bottom holes. A dish or cup at the top of the bowl is to contain alcohol for heating up the oil in the packing, so as to create sufficient pressure in the bowl to force up the oil through the central oil-tube to the burner at the upper end of the same, and thereby start the lighting of the lamp. The heating up of the upper part of the supply-tube then keeps up the interior pressure in the bowl and the supply of oil to the burner. The vapor-burner receives its supply of oil through a small orifice, whose size is regulated by a small screw-valve, while jet-holes and a vertically-adjustable heating-plate regulate the size of the flame.

Referring to the drawings, A represents an exterior tube, and B an interior oil-supply tube, which are both arranged at the center of a lamp-bowl of any suitable material. An encircling wick or packing is placed around the inner tube, so as to fill the space between the exterior and interior tubes. The packing extends from the lower end of the inner tube to the top of the bowl, or to a suitable height above the same in case the tubes are extended above the bowl. A vapor-burner is attached to the upper end of the supply-tube B at a suitable distance from the bowl.

A cup or dish, D, is arranged on the upper end of the packing on the top of the lamp-bowl, or above the same if the outer tube is extended. The dish D is filled with alcohol or oil, which is lighted when it is desired to start the lamp. The outer tube, A, is connected with the bowl by a small return-pipe, C, when the tubes and packing are extended above the top of the bowl; but when the packing and tubes are not extended above the bowl a small interior orifice in the tube A close to top of the bowl has to be provided.

The outer tube, A, is closed at the bottom and arranged with one or more small orifices, K, through which the oil is conducted to the oil-supply tube and also to the intermediate packing. The lighting of the alcohol in the dish D heats up the upper part of the tubes and packing, and generates a certain quantity of gas, that fills the upper part of the bowl and exerts a sufficient pressure on the oil therein to force it up through the inner supply-tube to the orifice a' of the vapor-burner, where it is heated up, changed into gas or vapor, mingled with the required quantity of atmospheric air, and finally burned in the customary manner in vapor-burners.

When the flame of the burner is lighted the heating up of the oil-supply tube by the same continues the generation of gas at the upper end of the packing, and keeps up thereby a certain pressure on the body of oil, so that the same is continually fed to the burner.

The vapors generated by the heat of the supply-pipe in the packing or in the chamber between the tubes are conducted to the interior of the bowl above the oil, so as to press on the surface of the same and force it through the lower hole into the supply-tube and up to the burner.

The outer tube, A, may be omitted, as the generation of vapors, and consequently the gas-pressure on the oil in the bowl, may be accomplished without the same; but as the outer tube, A, serves to retain the heat and to

keep the packing in place, it is preferable to employ it, as it accelerates the generation of the vapors at the upper end of the packing.

The excess of the pressure of the gas generated above the oil over that generated at the upper part of the supply-tube causes the oil to rise to the upper part of the supply-tube, where it is vaporized by the heat of the burner, and then fed to the same. A wick may be used in the supply-tube B; but it has been found by actual tests that when the wick in the supply-tube is removed the oil is still pressed up to the burner above the level of the oil in the bowl, the wick serving mainly to prevent the thumping of the oil in the tube. In place of the wick, a bundle of brass wires or other device would accomplish the same object.

The vapor-burner is constructed of a solid portion, G, with the central orifice *a'*, and an air-supply hole, J, above the same, and of a heating-plate, I, at some distance above the the orifice *a'*. The heating-plate turns on an exterior screw-thread of the solid portion G, so as to be raised or lowered for regulating the size of the jet-holes H, and thereby the pressure in the lamp-bowl. A screw-valve, *b'*, with conical or tapering inner end, extends across the orifice *a'* and regulates the quantity of vapors fed to the burner, and thereby the size of the flame.

When the lamp is once started the oil will be continually forced up in the supply-tube, changed into vapors, mingled with the air, and burned for illumination, furnishing a clear and uniform light, by means of a simple gas-generating arrangement in the bowl, the light being conveniently regulated by the vapor-burner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a lamp-bowl having a central oil-supply tube and an exterior burner, of a packing or wick that encircles the supply-tube and extends up to or above the top of the lamp-bowl, substantially as specified.

2. The combination, with a lamp-bowl having a central oil-supply tube and an exterior vapor-burner, of a packing or wick that encircles the supply-tube at the inside of the bowl, and of a second tube around the packing having communicating top and bottom holes, substantially as described.

3. As an improvement in vapor-burners, the combination of the solid portion G, arranged at the upper end of the oil-supply tube, and having a central supply-orifice, *a'*, air-hole J, and jet-holes H, with a screw-valve, *b'*, and with a vertically-adjustable heating-plate, I, to regulate size of flame and gas-pressure in the bowl, substantially as and for the purpose specified.

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