

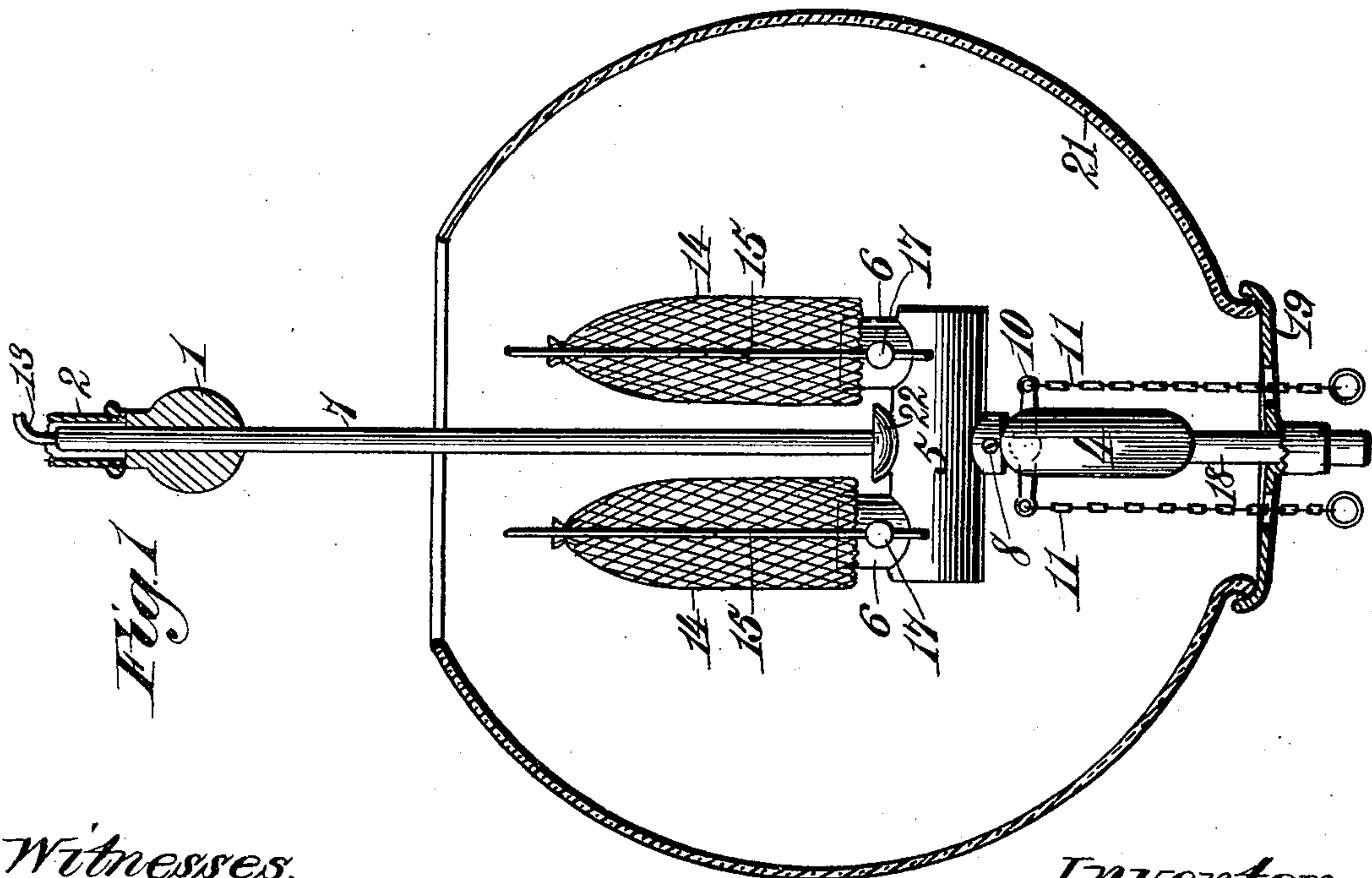
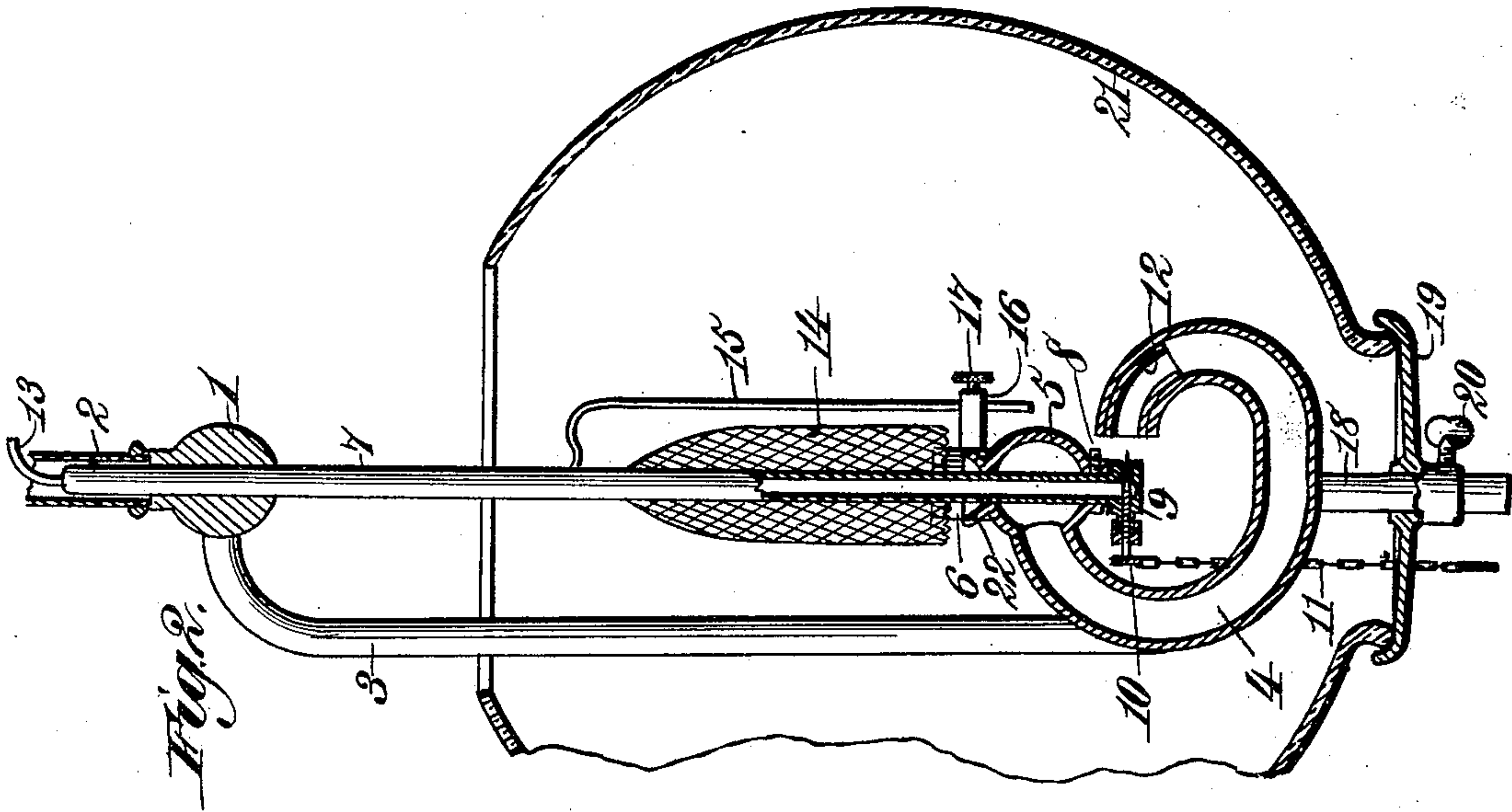
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Patented Mar. 27, 1900.

A. P. DORAN.
VAPOR BURNING INCANDESCENT LAMP.

(Application filed Apr. 12, 1899.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT P. DORAN, OF NASHVILLE, TENNESSEE.

VAPOR-BURNING INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 646,365, dated March 27, 1900.

Application filed April 12, 1899. Serial No. 712,770. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. DORAN, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented new and useful Improvements in Vapor-Burning Incandescent Lamps, of which the following is a specification.

This invention relates to a vapor-burning incandescent lamp of that general character in which a refractory mantle is rendered incandescent by ignition of a mixture of hydrocarbon vapor and atmospheric air; and it is the object of my invention to provide a novel construction and arrangement of the vapor-generator, mixing chamber or tube, burner or burners, and other parts of the lamp, as hereinafter set forth.

In the annexed drawings, illustrating the invention, Figure 1 is a part-sectional elevation of my improved lamp. Fig. 2 is a central vertical section of the same at a right angle to the preceding view.

The reference-numeral 1 designates a vertically-perforated boss or collar secured to the lower end of a section of pipe 2, through which the lamp may be suspended from the ceiling or other support. The lamp-frame comprises a preferably-tubular pendant 3, that may have an upper laterally-curved end secured in one side of the boss or collar 1 and projecting therefrom. To the lower end of this pendant 3 there is connected a depending convolute mixing chamber or tube 4, having a burner 5, connected to or integral with the upper end of said mixing-tube. This burner 5 is preferably double or provided with twin burner-tips 6, as shown.

The vapor-generator consists of a straight vertically-arranged tube 7, that is extended downward from within the pipe 2, through the boss 1, and through the body portion of the burner 5, below which the lower end of said vapor-generator tube is extended. This vapor-generator may be secured to and supported by the burner, as by means of a set-screw 8, clamping a lower end portion of said vapor-generator tube to an under portion of the burner-body. At its upper end portion the vapor-generator tube 7 fits closely within the perforated boss 1, which thus assists in holding said vapor-generator in an upright posi-

tion, but leaving it free to expand and contract in a vertical direction.

On the lower end of the vapor-generator, 5: below the body portion of the burner, there is provided an atomizing-valve 9, with which said vapor-generator communicates. The stem of this atomizer-valve is provided with a double-armed lever 10, having chains 11 at- 60 tached for operating said valve to control the discharge of vapor into the mixing-tube 4, thus regulating the burner or burners.

It will be observed that the depending convolute mixing-tube 4 has its upper end con- 65 nected with a central portion of the burner-body 5 on one side thereof. This convolute mixing-tube 4 is curved downward and across below the burner 5 and lower depending end of the generator-tube 7 and then upward and 70 inward and has its open inlet end turned toward and opposite the discharge-orifice of the atomizing-valve. This open or inlet end of the convolute mixing-tube 4 surrounds the discharge-orifice of the atomizing-valve at a 75 sufficient distance therefrom to provide for free admission of a large proportion of atmospheric air drawn in by injection of vapor from the generator-tube, and it will be obvious that the convolute form of the said 80 mixing chamber or tube 4 will afford ample opportunity for a thorough commingling of the vapor and air before the mixture reaches the burner. If desired, a tubular adjusting device 12 may be inserted in the inlet end of 85 the mixing-tube 4 to regulate the distance of said inlet from the discharge-orifice of the atomizing-valve 9 and so control the proportionate quantity of atmospheric air admitted to the mixing-tube. 90

The oil to be vaporized enters the vertical generator-tube 7 at the top through a tube 13, leading from a tank or reservoir (not shown) which may be conveniently located, and the oil may be supplied by gravity or by 95 the pressure of a pump, according to the elevation of said tank with respect to the lamp. A cut-off may be provided at any suitable point.

A mantle 14, composed of incandescing ma- 100 terial, is suspended over or around each burner-tip by means of a rod 15, supported by a lug 16 and set-screw 17 on the burner.

The under side of the convolute mixing-

tube 4 is provided with a depending stem 18, to which a vertically-adjustable globe-support 19 is attached by means of a set-screw 20, so that by loosening this set-screw the globe 21 and its holder may be raised or lowered, as desired, or may be disconnected from the lamp.

To start the lamp, a little oil or alcohol is to be ignited in a cup or recess 22 or on some asbestos packing located between the burner-tips 6 and around a portion of the vapor-generator tube 7, as shown. When the generator-tube is thus heated enough to vaporize the oil that is to be passed through said tube, the oil will be turned on at the supply-tank or other point where the cut-off is located. The vapor generated in the tube 7 will issue therefrom at the atomizing-valve 9, as controlled by the opening or closing of said valve to any desired degree, and the injection of this vapor into the mixing-tube 4 will form a combustible mixture with the atmospheric air drawn into said tube for steady and continuous supply of the lamp burner or burners, the vaporization of oil being kept up by the heat of the burners and mantles, that are closely adjacent to the generator-tube. By means of the lever and chains connected with the atomizer-valve the light can be turned down very low and be so left until wanted, when it can be again turned on by pulling the proper chain in a manner similar to a gas by-pass.

It will be observed that the vertically-extended vapor-generator 7, burner 5, and depending convolute mixing-tube 4 are suspended in such manner as to occupy a central position within the lamp-globe. The vertical vapor-generator 7 is located between the mantles 14, in close proximity thereto, and is extended downward through the main body portion of the burner 5, to which it is secured. By this arrangement of the several parts of the lamp the vapor-generator is exposed to such degree of heat as will provide for a steady and uniform generation of vapor while the lamp is in operation, besides affording a simple, compact, and practical lamp construction.

What I claim as my invention is—

1. In a vapor-burning lamp, the combination of a burner-tube carrying a burner-tip on its upper side, a vertical, vapor-generating tube extending directly through the interior of said burner-tube and provided in its lower end, directly under the burner-tube, with a lateral vapor-discharge orifice, and an

air and vapor mixing tube connected at its upper end with the burner-tube, extended down and under the lower end of the vapor-generating tube and having its other open air-receiving end located directly opposite the said lateral vapor-discharge orifice in the lower end of the generating-tube which projects down from the under-side burner-tube, substantially as described.

2. In a vapor-burning lamp, the combination of a burner-tube carrying a burner-tip on its upper side, a vertical vapor-generating tube extending directly through the interior of the burner-tube and having its lower end, directly under said burner-tube, provided with a lateral vapor-discharge orifice and a needle-valve which controls said orifice, and the convolute air and vapor mixing tube communicating at its upper end with the interior of the burner-tube, extended down and under the lower end of the vapor-generating tube and having its other open air-receiving end located directly opposite the said lateral vapor-discharge orifice in the lower end of the generating-tube which projects down from the under side of said burner-tube, substantially as described.

3. In a vapor-burning incandescence lamp, the combination of a burner, a depending convolute mixing-tube communicating with one side of the burner and curved downward and across beneath said burner and then upward and inward and terminating in an inlet end open to the atmosphere, a lamp-frame comprising a pendant from which said mixing-tube and burner are suspended and having a laterally-curved upper end and a vertically-perforated boss connected therewith, a vertically-arranged vapor-generator tube to be supplied with oil at the top, said generator-tube being extended downward through said boss and through the burner and secured to the burner, an atomizing-valve connected with the lower end of the vapor-generator tube below the burner and having a discharge-orifice opposite the inlet to the convolute mixing-tube, a depending stem connected with the under side of the mixing-tube, a globe-holder on said stem, a globe, and a mantle, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT P. DORAN.

Witnesses:

T. E. WEBSTER,
FRANK M. SMITH.