

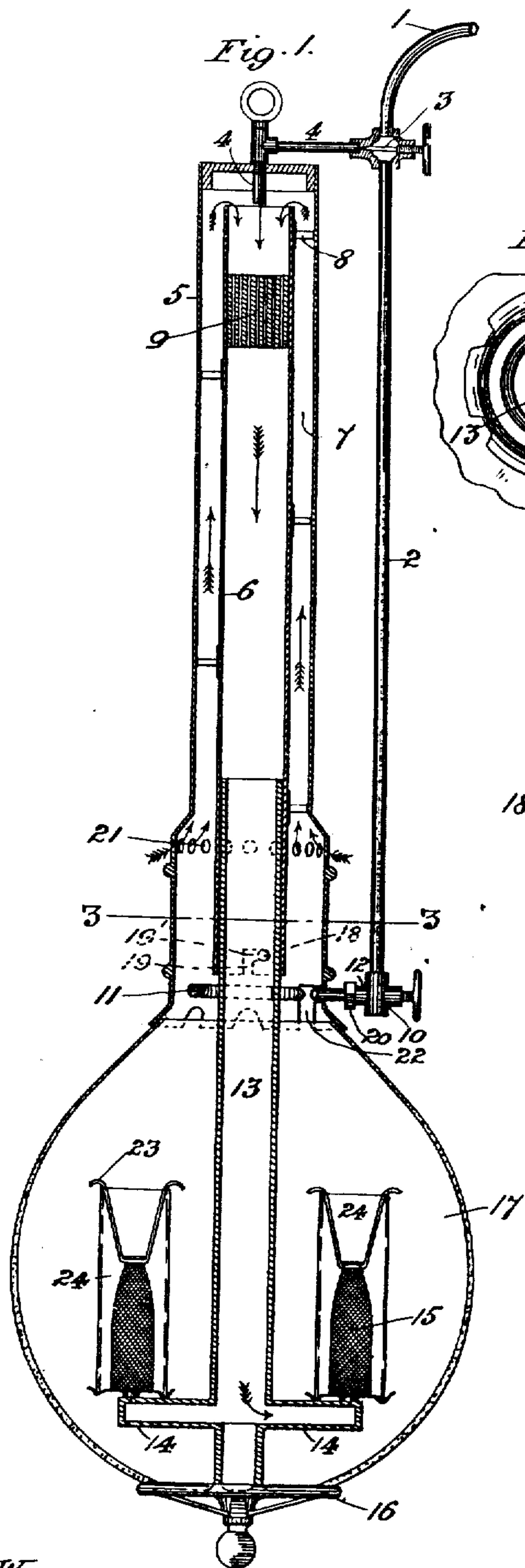
**No. 626,986.**

**Patented June 13, 1899.**

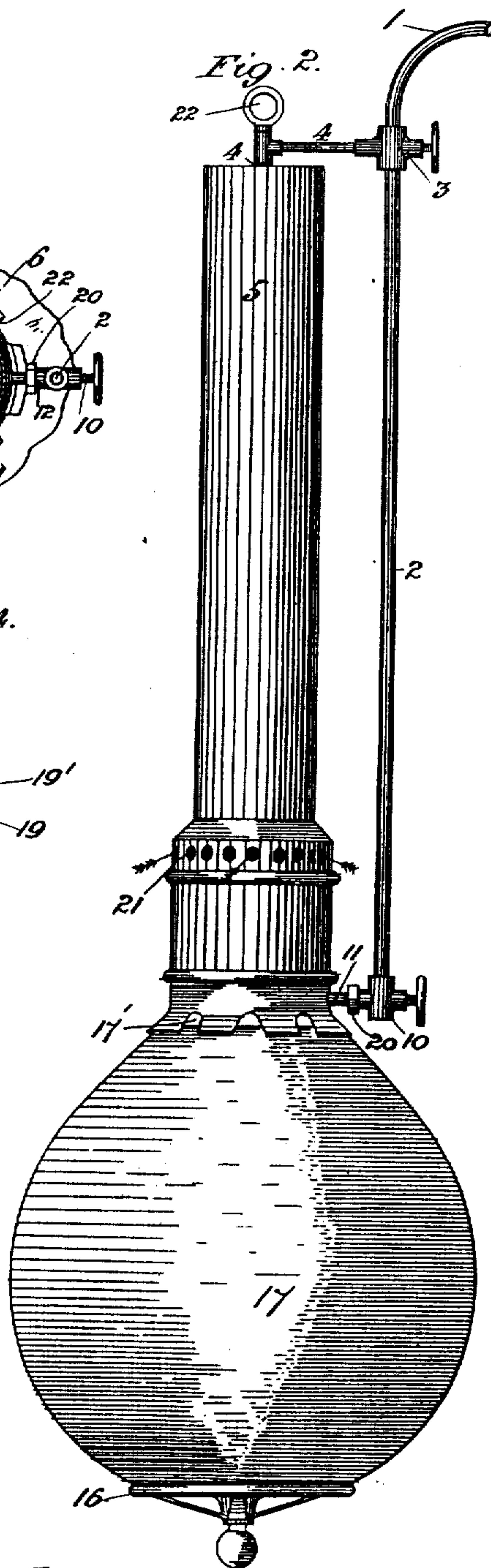
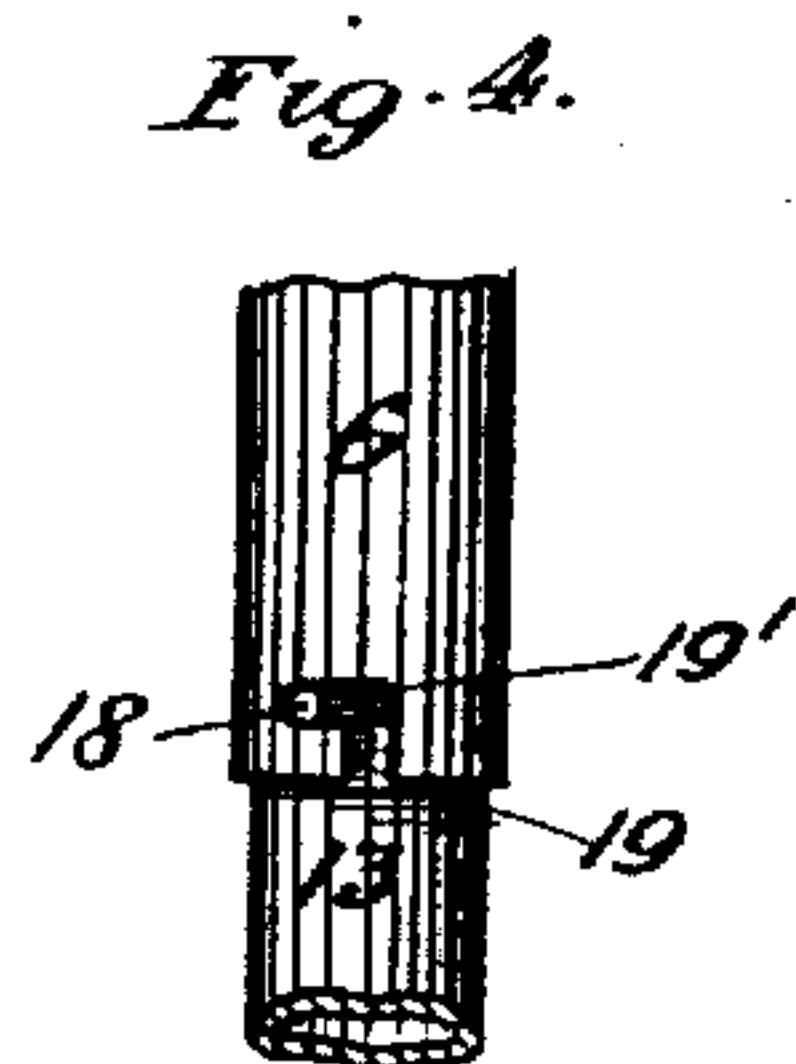
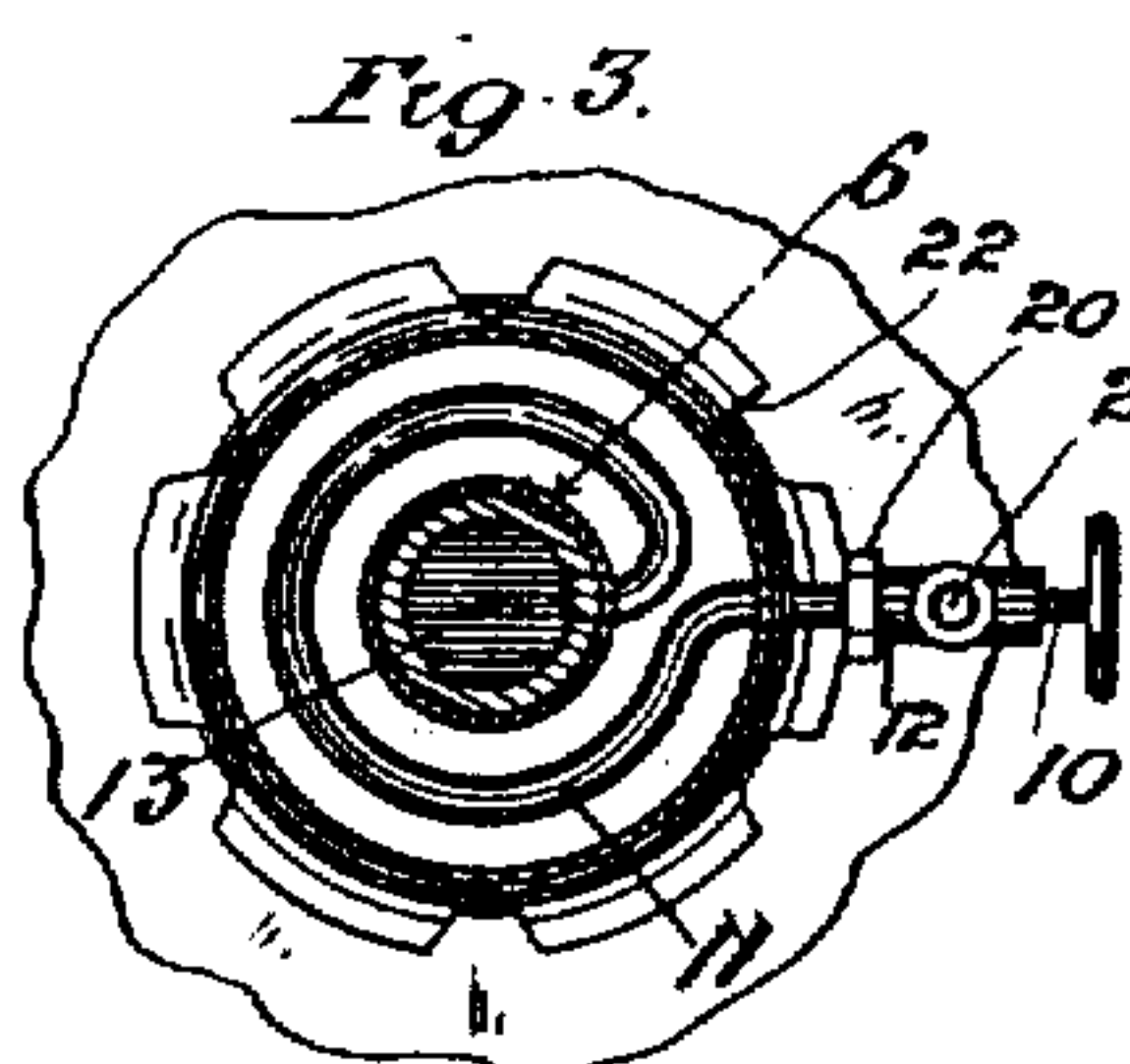
C. DEXTER.  
VAPOR BURNER.

(Application filed Feb 16, 1899.)

(No Model.)



WITNESSES  
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# UNITED STATES PATENT OFFICE.

CHARLES DEXTER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO  
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## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 626,986, dated June 13, 1899.

Application filed February 16, 1899. Serial No. 705,689. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES DEXTER, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention has relation to improvements in vapor-burners; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a middle vertical longitudinal section of the lamp. Fig. 2 is a side elevation thereof. Fig. 3 is a section on line 3 3 of Fig. 1, and Fig. 4 is a detail showing the manner of coupling the tube of the burner-supporting casting to the inner member of the air-induction pipe or cylinder.

The object of my invention is to construct a gasolene-burning lamp which shall be simple in construction, reliable, durable, one containing a minimum number of parts, one capable of generating a large amount of candle-power, one which will feed positively under any and all circumstances, one reducing the danger of explosion to a minimum, one which can be readily started by a ready and easy initial supply of the hydrocarbon to the burner-tip, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents a supply-tube, which may be of drawn seamless copper tubing covered in the manner of electric wire leading to any gasolene-tank. (Not shown.) Said tube couples with a feed-pipe 2, at the upper end of which is located a needle-valve 3, controlling (as will subsequently better appear) the initial supply of gasolene for starting the lamp, the said valve 3 controlling the admission of such initial supply into a shunt or short pipe 4, leading from the pipe 2. The inner end of the pipe 4 passes through the upper end wall of an air-induction pipe or cylinder 5 and communicates with the upper open end of an inner pipe or

cylinder 6, carried within the outer cylinder 5. The two cylinders are separated by an annular air-space 7, the inner cylinder being held frictionally in place within the outer cylinder by the pins or lugs or similar projections 8, distributed along the inner wall of the outer cylinder. Frictionally supported within the inner pipe or cylinder 6 is a perforated (preferably metallic) plug 9, which serves to break up the stream or drippings fed thereto from the pipe 4, said drippings being converted, owing to the volatile nature of the gasolene, into gas, which thus fills the interior of the cylinder 6. The lower end of the feed-pipe 2 is provided with a controlling-valve 10, which controls the quantity of gasolene fed to the vaporizing-coil 11, detachably coupled at its outer end to the casing 12, in which the valve 10 is mounted, but (preferably) permanently tapped into or coupled with the upper tubular extension 13 of the casting constituting the globe and burner support. From the base of the tube 13 radiate the tip-supporting or burner arms 14, provided with any of the prevailing types of the Welsbach burner and mantle 15. The lower end of the tube 13 carries an open annular globe-supporting ring 16, on which the lower edge of the globe 17 may directly rest, the upper edge of the globe bearing against the inner surface of the flaring scalloped edge of the lower expanded end of the cylinder 5, the scallops leaving openings 17', from which the products of combustion may in a measure escape. The entire casting constituting the globe and burner support (and composed of the parts 13 14 16) is detachable from the upper portion of the device and can be removed at any time for purposes of cleaning. It is held in place by a pin 18, projecting from the outer surface of the tube 13, the pin being first inserted into the vertical slit 19, cut from the lower end of the peripheral wall of the cylinder 6, after which by a slight turn or twist of the said casting the pin is made to enter the lateral or horizontal extension or recess 19' of said slit, the pin thus resting along the lower edge of such lateral slit and securing the parts in place, it being understood, of course, that the upper portion



of the tube 13 enters some distance into the cylinder 6 before the pin 18 engages the slit 19 and the recess 19'. It is to be further understood that it is only after the parts just described are suspended in the manner indicated that the outer end of the coil 11 is in position to be coupled to the valve-casing 12 by means of the union or coupling-ring 20, carried by said casing. When the coupling is made, the lamp is ready to be started. The walls of the outer cylinder 5 are provided with air-induction openings 21 at a suitable point above the lower end of the inner cylinder 6, the coil 11 occupying a position or plane below the lower end of said inner cylinder 6. It is apparent, of course, that the lower end of the wall of the outer cylinder 5 must be provided with a recess 22, corresponding to recess 19 19', in order to allow for the necessary play of the outer end of the coil 11, which passes through said wall, when the tube 13 is given the necessary twist or turn essential to either its coupling to or removal from the cylinder 6.

The operation is as follows: When the lamp is to be started, the needle-valve 3 is turned so as to permit an initial flow of the gasolene into the shunt 4, the fluid dripping onto the plug 9, thereby being divided into fine particles, which are in turn converted into gas. The gas finds its way by diffusion into the tube 13 and into the burner-tips. A lighted match can then be inserted through the open ring 16 into the globe and the lamp started. When once started, the heat of the flame superheats the walls of the coil 11, and when the valve 10 is opened the fluid passing through the coil from the feed-pipe 2 is heated to a high temperature and fed at such high temperature direct to the burners, as is obvious from the arrows. At the same time the walls of the outer cylinder 5 become heated, thereby inducing a flow of atmospheric air through the openings 21, as seen by the arrows, the current flowing into the inner cylinder 6 and in a measure mixing with the hydrocarbon gas fed into the tube 13 prior to its passage into the burner-tips.

By the construction here described a flame of high temperature is generated, and when the cock 10 and valve 3 are closed for purposes of extinguishing the lamp the combustion will have been so complete that no odor of unconsumed hydrocarbon can be detected. 22' represents a loop by which the device can be suspended.

It is apparent that minor changes may be made without departing from the spirit of my invention.

In the present device I have suspended the mantle of the Welsbach light by means of a hollow wire 23, the ends of which hook over the chimney 24. By making the wire 23 hollow the air is free to circulate therethrough, thus keeping it cool and preventing the melting thereof under the intense heat generated by the burner.

Having described my invention, what I claim is—

1. In a vapor-burner, a suitable feed-pipe, a burner, a pipe or cylinder interposed between the feed-pipe and burner for supplying an initial quantity of fluid to the burner sufficient to start the same, a valve-controlled shunt leading from the feed-pipe to said cylinder, means operating in connection with the cylinder for breaking up the stream fed thereto, and an independent controlling-valve carried by the feed-pipe and communicating with the burner, substantially as set forth.

2. In a vapor-burner, a suitable feed-pipe, a burner, a burner-support for said burner, a tube forming a part of said burner-support, a coil coupled to said tube, an air-induction pipe surrounding and communicating with the interior of the tube, whereby the air and hydrocarbon gas can mix before entering the burners, and means for coupling the coil to the feed-pipe, the coil being substantially in a position above the burners whereby the heat from the latter can impinge against the walls of said coil, substantially as set forth.

3. In a vapor-burner, a globe and burner support comprising a tube, hollow burner-arms radiating from the bottom of the same, an open ring depending from the base of the tube, a pin projecting from the walls of the tube whereby the tube and parts carried thereby can be secured in position, a feed-pipe, a vaporizing-coil adapted to couple respectively to the feed-pipe and tube, the latter passing through and projecting a suitable distance above the coil, and an air-induction pipe surrounding the tube and adapted to feed air into the interior thereof, substantially as set forth.

4. A vapor-burner comprising an outer perforated air-induction pipe or cylinder, closed at its upper end, a second pipe or cylinder confined within the same but separated therefrom by a suitable annular space, the lower end of the inner cylinder extending a slight distance above the lower edge of the outer cylinder, a feed-pipe having a valve-controlled shunt communicating through the closed top of the outer cylinder with the interior of the inner cylinder, a perforated plug confined within the inner cylinder a suitable distance below the upper end thereof, a vaporizing-coil confined within the outer cylinder at a point below the lower edge of the inner cylinder, and having one end projecting through and coupled to the lower end of the feed-pipe, a burner-support having a tube partially inserted within, and detachably coupled to the inner cylinder, the inner end of the coil communicating with the interior of said tube, burner-arms radiating outwardly from the tube and carrying burners or tips whose products of combustion impinge against the coil, thereby vaporizing the fluid passing through the same, the base of the burner-support being adapted to carry a globe inserted between the base thereof, and the lower edge of the

outer cylinder, the air admitted into the outer cylinder passing upward through the annular space between the cylinders, and downward through the inner cylinder and tube inserted  
5 into the same, whereby the superheated gases and air are mixed before entering the burners, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES DEXTER.

Witnesses:

EMIL STAREK,

JAMES J. O'DONOHUE.