

No. 735,548.

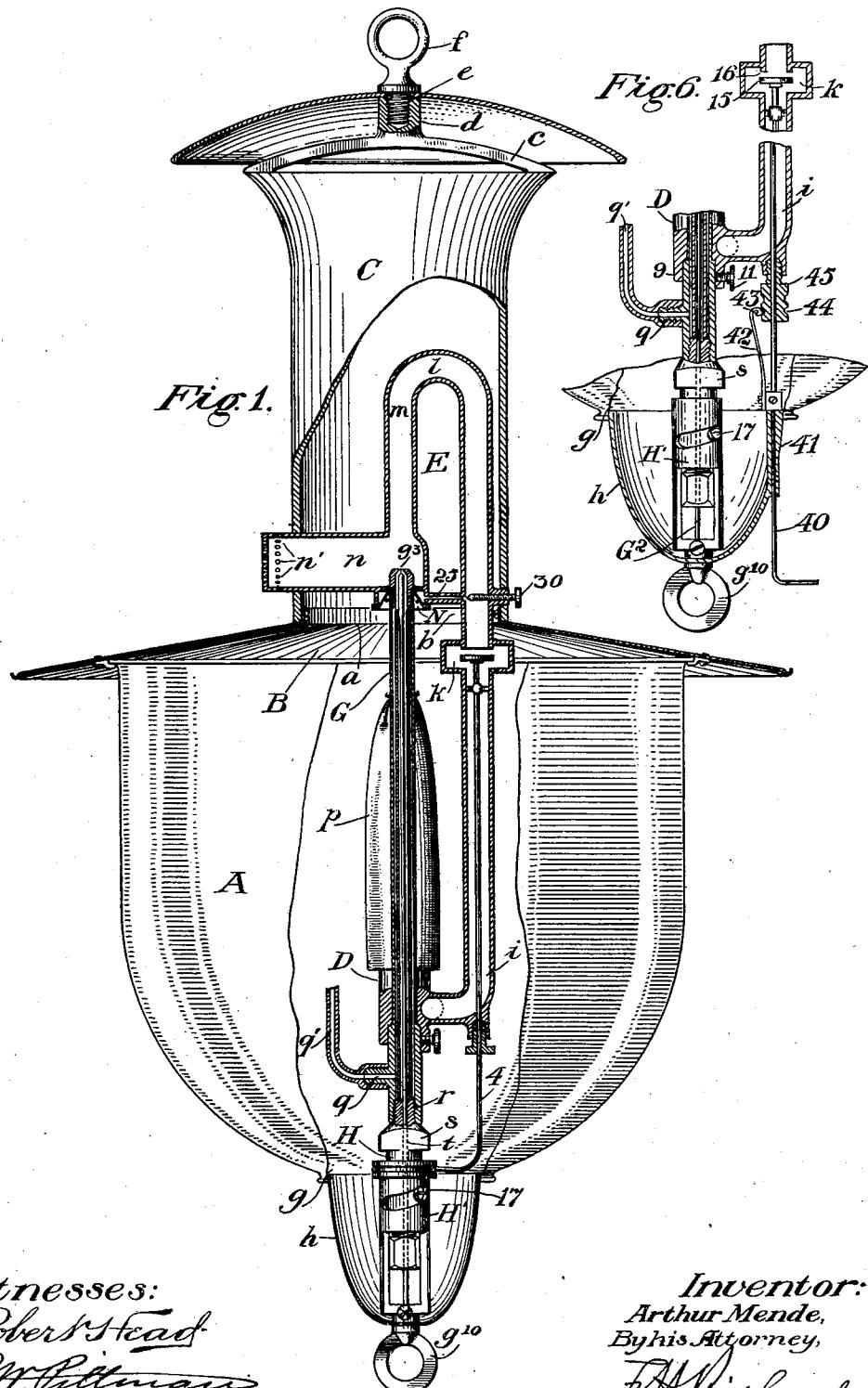
PATENTED AUG. 4, 1903.

A. MENDE.
VAPOR LAMP.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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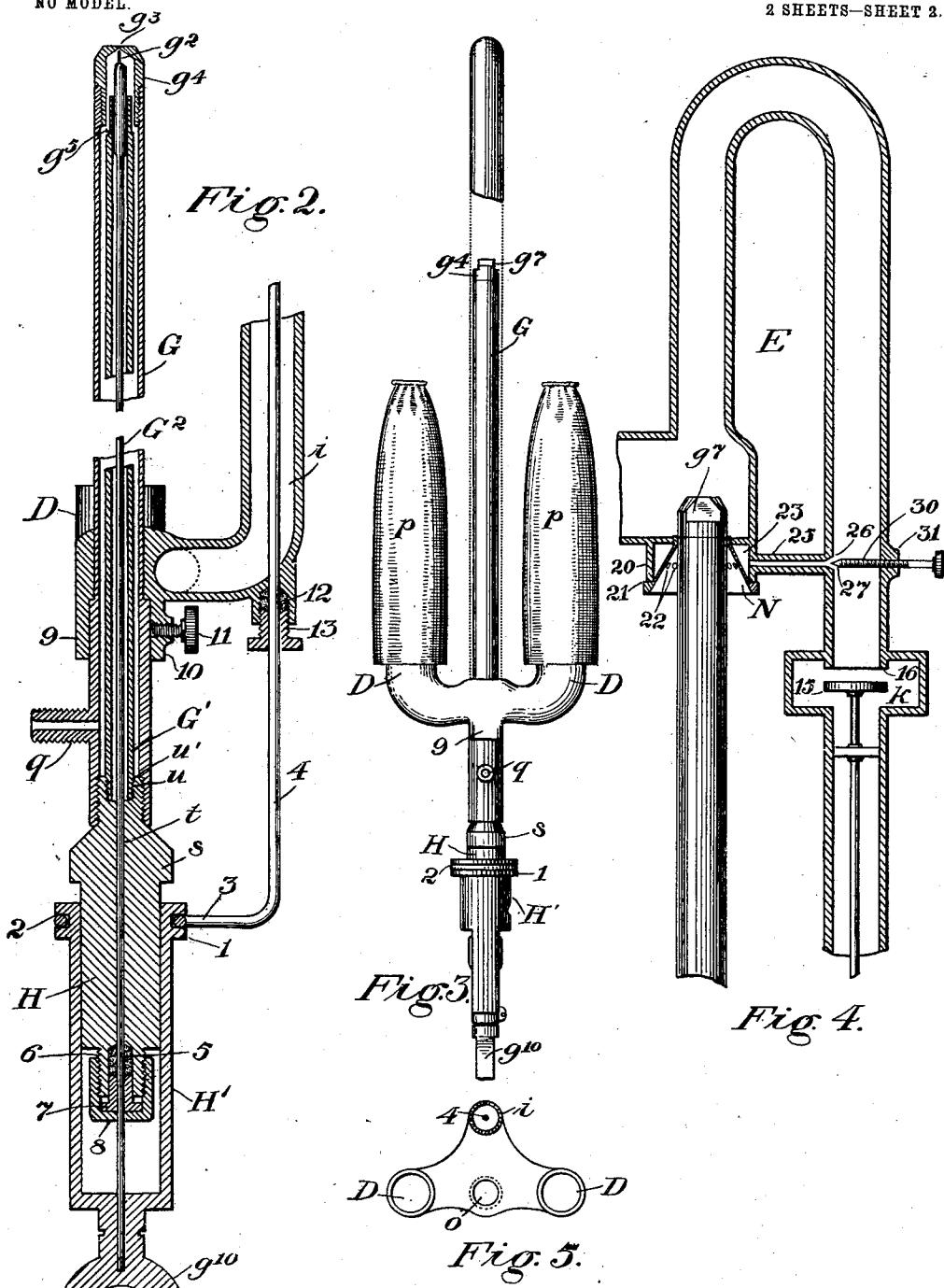
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2 SHEETS—SHEET 2.



Witnesses:
Robert Foad
A. F. Pea

Inventor:
Arthur Mende,
By his Attorney,
F. A. Richards.

UNITED STATES PATENT OFFICE.

ARTHUR MENDE, OF NEW YORK, N. Y., ASSIGNOR TO ARTHUR LIGHT COMPANY, OF NEW YORK.

VAPOR-LAMP.

SPECIFICATION forming part of Letters Patent No. 735,548, dated August 4, 1903.

Application filed May 13, 1902. Serial No. 107,061. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR MENDE, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Vapor-Lamps, of which the following is a specification.

This invention relates to gas or vapor lamps; and it consists substantially in the improvements hereinafter more particularly described.

The invention has reference more especially to that class of gas or vapor lamps in which a suitable hydrocarbon oil is generated into vapor, which is mixed with air and consumed at one or more burners for illuminating purposes, and also in which a continuously-lighted auxiliary burner or pilot is located sufficiently within the region of the main burner or burners to cause the latter to become ignited or relighted each time the gas or vapor is caused to issue therefrom on proper manipulation of a suitable cock or valve for the purpose.

The present invention has for its object to so construct and organize the vapor-tube and auxiliary burner as to yield good results in practice, and whereby the gas or oil-vapor is superheated at a point immediately in advance of the exit or outlet therefor to the mixing-chamber.

A still further object of the invention is to provide means whereby the pressure of the supply of gas or oil-vapor to the auxiliary burner may be increased or diminished or controlled at will, and also to provide means whereby the outlet for the gas or oil-vapor to the mixing-chamber may also be controlled either simultaneously with the extinguishment of the main burner or burners or independently thereof.

A still further object is to simplify the construction and operation of the lamp and to cheapen the cost of manufacture thereof as compared with many former constructions heretofore devised with similar ends in view.

The above and additional objects I attain by means substantially such as I have illustrated in the accompanying drawings, in which--

Figure 1 is a side elevation, partially broken

away and partly in vertical section, of a gas or vapor lamp embodying my improvements; and Fig. 2 is an enlarged vertical sectional view showing the construction and organization of certain parts or elements more clearly. Fig. 3 is a side view in detail of the main burners and vapor tube or generator; and Fig. 4 is an enlarged detail view, in part section, showing more clearly the construction and organization of the mixing-chamber, the shut-off valve for the gas or air to the main burners, and the auxiliary burner and pressure-regulating devices therefor. Fig. 5 is a plan view of the main burners; and Fig. 6 is a part-sectional detail view, on a reduced scale, showing a modification of the means for operating the needle-valve of the generator-tube and the shut-off valve of the gas or vapor supply to the main burner or burners.

Specific reference being had to the accompanying drawings by the designating characters marked thereon, A represents an ordinary lamp-globe of glass, to the top of which is suitably mounted a metallic reflector B, 75 provided with a central opening a, which is surrounded by a flange b, to which is fitted and detachably secured the lower end of a vertical or upright metal cylinder or chimney C, the upper end of which is open, and 80 extending across the cylinder at this end is a transverse curved member c, formed or provided with a tapped boss d, in which is screwed the threaded member e of an eye-loop f or other suspensory device for the lamp. 85 The said globe is also formed at the under or lower side thereof with a central opening g, in which is fitted a cage or housing h for the operating devices for the valves of the burner to be hereinafter described. Supported centrally within the globe are preferably two main burners D D, suitably connected together, and communicating with which at a suitable intermediate point of the connection between them is a branch pipe or tube i 95 from a mixing-chamber E for supplying said burners with gas or vapor, said branch or supply pipe being provided with a valve-chamber k, directly communicating with the said mixing-chamber, as shown. The mixing-chamber extends upwardly in the cylinder C for a suitable height, and being arched

or bent at *l* and returned downwardly at *m* such return portion is in communication with a conduit *n* leading therefrom substantially at right angles and passing through an opening therefor in the adjacent side of said cylinder, the outer end of said conduit being provided with a number of openings or perforations *n'* for the admission or ingress of air to the mixing-chamber. Entering the said mixing-chamber *E*, preferably in line with the said return portion *m* thereof, is the upper end of a vapor tube or generator *G*, which passes upwardly through an opening *o* therefor intermediate the main burners *D D* and extends intermediate of and parallel with the incandescent mantles *p p*, with which the said main burners are provided. When these burners are lighted, the heat of the mantles is imparted to the vapor tube or generator, and thus is the vaporization of the oil effected and maintained after first starting the same by the application of a torch or other flame to the tube or generator. The said vapor tube or generator is provided in one side thereof with an oil-inlet *q*, to which is attached the end of an oil-supply tube *q'*, which may be led up and out through the top of the lamp to any suitable oil-supply, and said vapor tube or generator is formed with an internal thread *r* at the lower end thereof, where it is screwed onto a threaded central projection *s*, formed on a plug or guide *H*, on which is fitted to operate a partially-rotatable sleeve *H'* for actuating the valves of the lamp in the manner hereinafter explained, said plug or guide being formed with a central opening *t*, extending all the way through the same. The said central projection *s* of the said plug or guide is also tapped internally at *u* for the reception of the externally-threaded end *u'* of an inner tube *G'*, which constitutes a guide for a needle-valve *G²*, the upper end of which is provided with a needle-point *g²*, which works in and out through a vapor exit or outlet port *g³*, formed centrally of a cap *g⁴*, which screws upon the upper end of the vapor tube or generator, as shown. The upper end of the inner tube *G'* is contracted at *g⁵*, so as not to obstruct the passage of oil-vapor to the said exit or outlet port *g³*, and the said cap *g⁴* is preferably flattened at *g⁷* to receive a wrench for tightly screwing the cap in place or for unscrewing the same. The said operating-sleeve *H'* is partly open at the sides for the lower portion thereof, and at its lower end it is provided with a key *g¹⁰*, which is grasped by the fingers whenever it is desired to turn the sleeve to operate the valves of the lamp. The upper end of said sleeve is provided with a flange *1*, formed or provided with a groove *2*, in which is received a portion of a bend or branch *3* of the main-valve rod *4*, to be presently described, and passing through a suitable threaded opening therefor in one side of the lower portion of the said sleeve *H'* is a set-screw, which bears against the lower part of the needle-valve *G²*, and it may be here

stated that said needle-valve works through a packing *5*, held in place in a hollow externally-threaded projection *6* on the lower end *70* of plug or guide *H* by means of a gland *7*, which is tightened up by means of a cap *8*, screwing onto such projection. By this arrangement any oil which may by any possibility find its way into the inner tube around *75* the needle-valve will be caught and absorbed by such packing and prevented from dripping from the lamp. The vapor tube or generator is held in position between two projections *9* and *10*, pendent from the under *80* side of the burners *D D*, by means of a setscrew *11*, working in a threaded opening in said projection *10* and pressing the said tube tightly against the said projection *9*, and in this way it will be seen that the parts are *85* securely united together for conjoint operation. The said rod *4* passes upwardly through a packing *12* and stuffing-box and gland *13*, located at an opening in the lower side of the bend in the gas-supply pipe *i*, leading to the *90* main burners, and at its upper part the rod is guided by a spider thereon working in the tube. Said rod is provided at its upper end with a main valve *15*, which closes against the seat *16*, formed at the point of communication of the mixing-chamber *E* with the valve-chamber *k*, and it should be also explained that the operating-sleeve *H'* is formed in one side, near the upper end thereof, with an inclined slot, through which projects a *100* pin or projection *17* on the side of the inner plug or guide *H*. It is thus apparent that by turning said sleeve in one direction the needle-point of the needle-valve will be projected through the vapor-exit port in the upper end *105* of the vapor tube or generator, while by turning said sleeve in the reverse direction the said needle valve and point will be retracted or withdrawn. Simultaneously with these operations of the said needle-valve the main *110* valve will also be operated to close and open communication between the mixing-chamber and valve-chamber, as is evident from the construction and organization of elements already described. *115*

Surrounding the upper part of the vapor tube or generator immediately beneath the adjacent portion of the mixing-chamber is an auxiliary or pilot burner, comprising an annular ring or flange *20* of increased diameter *120* over said vapor tube or generator and combined with an inner cone *N*, the base or enlarged end of which is fitted at *21* to the lower edge of said ring or flange *20*, while the smaller or contracted end thereof fits within *125* the opening of the mixing-chamber through which the upper portion of the vapor-tube passes and closely fits said tube, as shown in Figs. 1 and 2. Said cone is formed all around with perforations or openings *22*, and communicating with the space *23* intermediate the cone and the ring or flange *20* is one end of a short tube *25*, the other end of which *130* communicates with the inner side of the mix-

ing-chamber and is conical at 26 to form a seat for the conical end 27 of a regulator device or screw-valve 30, which works in an internally-threaded boss or bearing 31 therefor 5 formed on the outer side of the said mixing-chamber at that point. Said regulator or screw also extends through an opening in the side of the cylinder on the globe, so as to be readily accessible whenever it is desired to 10 adjust the same for regulating the pressure at which gas or vapor is admitted to the auxiliary burner from the mixing-chamber.

As shown in Fig. 6, I employ substantially the same operating device or sleeve for the 15 needle-valve; but instead of operating the main valve simultaneously therewith I disconnect the main-valve rod 40 from the said sleeve and extend the length of said rod through a lower bearing 41 therefor, so as to 20 bring the same in convenient reach of the operator for independently operating the main valve, if desired. In this example or modification also I prefer to use some means for holding the main valve to its closed position 25 against the pressure exerted by the gas or mixed oil-vapor and air, and in the present instance I provide for this purpose a spring-arm 42 on the valve-rod, which is formed at its upper end into a hook 43, to 30 engage or take into notches 44 in an upper bearing 45 for said rod pendent from the under side of the adjacent portion of the mixing-chamber. This or some equivalent construction may be resorted to in some instances, if desired; but it will be understood 35 that in practice I prefer the general construction and embodiment of my invention first described with reference to Figs. 1 to 5 of the drawings.

Having described my invention, I claim—

1. In a gas or vapor lamp comprising a globe and a chimney, a burner, a vapor-generator alongside the burner constructed of a tube having a vapor-exit port at an end thereof, a 45 regulating-valve for the port within the tube, a mixing-chamber communicating with said port and having a lateral perforated air-conduit projecting through the side of the chimney, said chamber being arched and having 50 a branch in communication with the burner, and said branch having therein a valve-chamber, a main valve in said valve-chamber and means for operating the same, and suitable intermediate connections whereby on closing 55 said main valve to extinguish the flame at the burner the said regulating-valve is operated to partially close the vapor-exit port.

2. In a gas or vapor lamp comprising a globe and a chimney, a burner, a vapor-generator 60 alongside the burner constructed of a tube having a vapor-exit port at an end thereof, a regulating-valve for the port, a mixing-chamber communicating with said port and having a lateral perforated air-conduit projecting 65 through the side of the chimney, said chamber being arched and having a branch in communication with the burner, and said branch

having a valve-chamber, a valve in said valve-chamber for opening and closing such communication, an auxiliary burner or pilot and 70 means of communication between the same and the mixing-chamber, and means for operating said valves.

3. In a gas or vapor lamp comprising a globe and a chimney, a burner, a vapor-generator 75 alongside the burner constructed of a tube having a vapor-exit port at an end thereof, a regulating-valve for the port, a mixing-chamber communicating with said port and having a lateral perforated air-conduit projecting through the side of the chimney, said chamber being arched within the chimney and having a branch in communication with the burner, and said branch having a valve-chamber, a valve in said valve-chamber for 85 opening and closing such communication, an auxiliary burner or pilot surrounding the vapor-generator at the exit-port thereof, and serving to superheat the oil-vapor prior to its entrance to the mixing-chamber, and means 90 for operating said valves.

4. In a gas or vapor lamp comprising a globe and a chimney, a burner, a vapor-generator alongside the burner constructed of a tube having a vapor-exit port at an end thereof, 95 a regulating-valve for the port, a mixing-chamber communicating with said port and having a lateral perforated air-conduit projecting through the side of the chimney, said chamber being arched within the chimney 100 and having a branch in communication with the burner, and said branch having a valve-chamber therein, a valve in said chamber for opening and closing such communication, an auxiliary burner or pilot surrounding the vapor-generator at the exit-port thereof, means 105 of communication between the pilot and mixing-chamber, and means for operating said valves, the said pilot being constituted of a ring and a perforated cone therein, the two 110 being joined at their lower edges.

5. In a gas or vapor lamp comprising a globe and a chimney, a burner, a vapor-generator alongside the burner constructed of a tube having a vapor-exit port at an end thereof, 115 a regulating-valve for the port, a mixing-chamber communicating with said port and having a lateral perforated air-conduit projecting through the side of the chimney, said chamber being arched within the chimney 120 and having a branch in communication with the burner, and said branch having a valve-chamber therein, a valve in said chamber for opening and closing such communication, an auxiliary burner or pilot surrounding the vapor-generator at the exit-port thereof, a communicating tube between the pilot and mixing-chamber, and a valve controlling entrance 125 to the tube, and means for operating said regulating and main valves, said pilot being constituted of a ring and a perforated cone therein, the two being joined at their lower edges.

6. In a gas or vapor lamp, duplicate main burners, a vapor-generator tube located

between said burners, a plug or guide to which the lower end of said tube is secured, said plug having an opening therethrough and a pin or projection, a sleeve turning on said guide and having an inclined slot in which said pin works, said sleeve also having a grooved flange at its upper end and provided at its lower end with an operating-key, a needle-valve passing through the opening in the plug and working in the generator-tube, said valve being secured at its lower end to said sleeve, a mixing-chamber with which the

generator-tube is in communication, a gas or vapor supply pipe leading to said burners from the mixing-chamber, a valve in said pipe for opening and closing communication between said mixing-chambers and burners, said valve provided with a rod having movable connection with the grooved flange of the sleeve, and an auxiliary burner.

ARTHUR MENDE.

Witnesses:

FRED. J. DOLE,
JOHN O. SEIFERT.