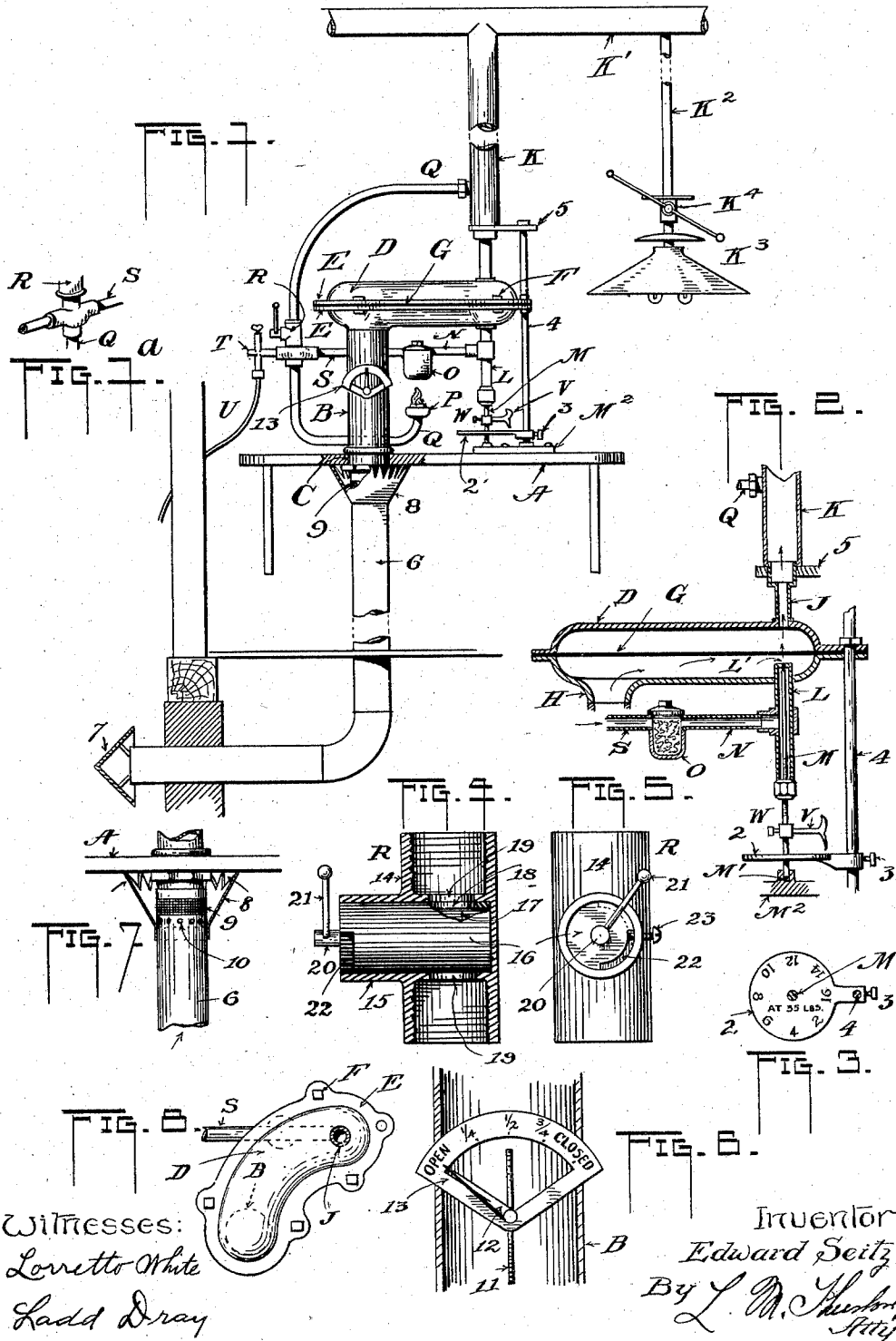


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LIGHTING APPARATUS.
APPLICATION FILED OCT. 18, 1907.

967,067.

Patented Aug. 9, 1910.



UNITED STATES PATENT OFFICE.

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LIGHTING APPARATUS.

967,067.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed October 18, 1907. Serial No. 398,128.

To all whom it may concern:

Be it known that I, EDWARD SEITZ, citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Lighting Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a vapor generator for gasolene-vapor lighting-systems.

The object of the invention is to produce a generator of novel construction for supplying vapor to a lamp system combining therewith a peculiar form of air mixer the opening of which is far removed from the vicinity of the vapor-jet so that drafts of air cannot affect the steady burning of the lamps.

An object, also, is to combine with the generator an air intake pipe preferably extending outside of the room in which the mechanism is installed whereby air rich in oxygen can be supplied to the burners to improve the quality of the light and also to introduce air more free of dust particles than when taken from the room.

A further object lies in utilizing the air pipe just mentioned as a drain for carrying any leaking combustible fluid out of doors thereby avoiding danger of explosions there being the added advantage of causing the air drawn through the pipe to become enriched by passing over the fluid thereby further assisting in the bettering of the quality of the light. And an object is to provide a valve in the air pipe by which the amount of air admitted to the mixer can be varied at will.

In the drawings Figure 1 is an elevation of the lighting system as I prefer to arrange it. Fig. 1^a is a perspective view of a peculiar form of vapor and fluid conduit. Fig. 2 is a sectional elevation of a mixing chamber showing a vapor valve and a vapor conduit in connection therewith and my improved governor for the vapor supply. Fig. 3 is a plan of a dial used in connection with the needle valve of the generator. Fig. 4 is a vertical section of a valve used in connection with the generator. Fig. 5 is a front elevation of said valve. Fig. 6 is a vertical sec-

tion of an air supplying pipe showing a valve for the same and an indicator for properly adjusting said valve. Fig. 7 is an elevation of an air tube used in connection with that shown in Fig. 6. Fig. 8 is a plan of the mixing chamber shown in Fig. 2.

A indicates a suitable support, as for instance, a wall bracket or shelf having mounted thereon a vertical air tube B its lower end extending through an aperture C in said shelf. On the top of the air tube is carried a hollow horizontally disposed mixing chamber D, a vertical section of which is shown in Fig. 2. This for convenience in constructing it preferably consists of an upper and a lower section each having a flange E connected by means of suitable bolts F, there being an asbestos gasket or packing G between said flanges to form a tight joint. Said chamber is provided at one end with a flange at H opening into said tube B and suitably connected therewith. The opposite end of the horizontal member or mixer D has connected therein to a vapor tube J which terminates within a vapor conducting pipe K forming part of the lighting system. Beneath the opening of the pipe J and entering through the bottom of the member D is a needle valve comprising a tube L having a jet orifice at L' and provided with a needle or stem M threaded as shown to engage the valve body.

Connecting into the tube L is a horizontal pipe N carrying and opening into a suitable generator O consisting, for instance, of a receptacle for an asbestos or other suitable filling through which the gasolene passes, and beneath which is a generator burner P as shown in Fig. 1. This generator burner is of the type commonly employed and needs no further explanation. Connected therewith is a pipe Q extending up to and opening into the pipe K of the vapor system as shown in Fig. 1 there being interposed in said pipe a vapor valve R which will be described presently. Connected with said generator O is a pipe S virtually forming a continuation of the pipe N and this said pipe terminates in a valve T through which the gasolene flows and by which it is governed; said valve having connected therein to a hollow wire U for conducting the fluid from a suitable source not shown. Connected into the vapor pipe K of the

vapor system by a pipe K' is a pipe K² from which is suspended a lamp K³ of any approved type, there being a valve K⁴ for governing the vapor entering said lamp.

5 The needle M of the valve L described above, extends downward and its lower end preferably terminates in a socket M' in a plate M² secured to the shelf A said stem being provided with an indicating member

10 or pointer V secured thereto as by means of a set screw W. This said stem extends through a plate 2 secured, as by means of a set screw 3, to a rod 4 the upper end of which is held in an arm 5 secured to and

15 extending horizontally from the generator tube K said rod extending through the flanges E of the mixer D whereby the latter is firmly supported and the lower end of the rod is suitably secured in the plate M² described. The set screw 3 provides for vertical adjustment of the plate 2 so that it can be brought as near to the indicator V as may be desired. Said plate is provided

20 on its upper surface with a series of numerals to correspond with the lamps being used in the lighting system. When the needle valve is closed and seated in the jet orifice L' the indicator V is adjusted on said stem so as to lie between the lowest and

30 highest figures of the plate 3 as the starting point which will be more fully described below.

Beneath the shelf A and connected in any desired manner with the air pipe B is an

35 air pipe 6 extending downward and, if desired, outside the building as shown in Fig. 1 but this pipe may terminate in the basement if desired so long as fresh air can be supplied thereto. However, it is my preference to extend it into the outer air, the

40 purpose of which will be presently shown there being a hood 7 on the end of the pipe outside the building so that the wind cannot enter the pipes and mixing chamber and

45 thus affect the steady burning of the lamps. To the pipe 6 below the shelf is secured a funnel 8 having a serrated upper edge forming openings for the entrance of air and within said funnel and forming a part of

50 the pipe 6 is a perforated portion 9 for the entrance of air to the pipes 6 and B. This may consist, if desired, of wire gauze or a perforated ring as may be deemed best for the purpose. Below the perforations the

55 said pipe 6 is provided with perforations 10 just above the connection between the funnel and said pipe.

In the pipe B is a flap valve 11 as shown in Fig. 6 designed to pivot within the pipe and

60 operated by means of an indicator 12 on the outside of the pipe and serving as a handle, by which to move said flap valve. Behind the indicator is a quadrant 13 on which are indications of the size of the pipe opening

65 when the indicator is placed opposite one

or the other of them. This is clearly shown in Fig. 6.

The operation of the entire device is as follows: Gasolene under pressure is admitted through the valve T into the pipe S and

70 the generator O after a small quantity of combustible fluid has been poured into the generator burner P and ignited. The heat generated thereby vaporizes the gasolene in the generator and the vapor immediately

75 passes into the needle valve and when the same is opened, will be discharged across the air space within the mixer D into the pipe J and finally into the vapor pipes K to the lamps. The vapor from the pipe K

80 also passes into the pipe Q and down into the generator burner where it is ignited and burns in the form of a flame of intense heat which serves to keep the generator hot so that as the gasolene steadily enters said gen-

85 erator it will be vaporized and carried to the lamps. The valve R in the pipe Q serves for varying the size of the flame of the burner P so that more or less vapor can be generated according to the number of lamps

90 in use. Air is supplied to the chamber D through the pipes 6 and B and mixes with the vapor and by being drawn from a considerable distance and there being no opening in the chamber other than the opening

95 to said pipe B, it will be readily seen that drafts can in no way affect the steady burning of the lamps or affect the continuous and even generation of vapor.

The advantage of drawing all the air from

100 a considerable distance will be apparent. By admitting it near the mixing point as in many devices of this class the effects of air currents are instantly noticeable at the burners. But by extending the pipe 6 outside

105 of the building much oxygen can be supplied to the burner to produce a brighter and better light there being little chance in this way of heavy gases or bad air affecting the quality of the light.

110

If for any cause gasolene is injected into the pipe J from the needle valve it will run down into the mixer and thence into the pipes B and 6 and will be delivered out of

115 doors and can thereby create no damage by being ignited from open lights within the building. Another advantage arises in this method in that the air drawn into the generator through the pipe 6 is enriched with vapor necessarily generated by passing over the escaping fluid. Furthermore

120 when drawn from outside no dust will be likely to be drawn up into the pipe line to be deposited upon the mantles of the lamps to diminish their light giving qualities. The

125 valves T and R regulate the amount of fluid and vapor respectively passing therethrough and by the adjustment of the needle valve a perfect governing of the vapor supply can be had according to the number of lamps in

130

use. The latter is accomplished as follows:

If the gasoline has a pressure, of say 35 pounds, with but two lamps in use the indicator V is moved to figure 2 of the dial on plate 3 thereby opening the valve a distance sufficient to supply the necessary vapor thereto. If a series of lamps are to be used corresponding in number to any one of the numbers on the disk the indicator is placed opposite that number. By this means an inexperienced person can readily adjust the valve for vapor of an amount proper for a given number of lamps and he may adjust the valve R so that a large or small flame at the generator burner P will, in his judgment, be proper for the generation of the desired amount of vapor. Evidently a dial corresponding to 2 may be supplied with a greater number of figures so that the valve may be given other adjustments to provide for a larger opening of the jet orifice to supply a greater number of lamps.

The valve 11 in the pipe B may be readily adjusted by means of the pointer 12 so as to provide a full opening or but a partial opening to cut down the amount of air drawn into the mixer D thereby to provide for any degree of mixture of the vapor. Evidently as the mixer and its parts will be heated to a greater or less degree a draft will be set up through the pipe B to said mixer so that air regulation through means such as just described is of use.

The funnel 8 is preferably attached to the pipe 6 in a fluid tight manner just below the apertures 10 in said pipe so that if gasoline accidentally enters the funnel from above or runs down the pipe and not through the perforations at 9 said funnel will direct the fluid back into and through the said perforations 10 so as to run down through said pipe 6. By using a wire gauze at 9 as already described, the air entering the mixer D will be relieved of dust particles and lint that would naturally be drawn into the pipe and this prevents the lamps being charged with dust.

In the first two figures of the drawing I have indicated a fitting of peculiar form through which the vapor and fluid pass in separate conduits the fluid being heated by the passage of the heated vapor through the same casting. But this has been described in my former application filed September 11 1905, No. 277,850 and therefore requires no further description here.

The valve R used in connection with the lamp is shown in detail in Figs. 4 and 5. This consists of a casting cut in the form of a T the central limb 15 of which is bored out to receive a cylinder 16 which is turned off smooth on its outer surface to fit the bore wherein it is designed to rotate. The cylinder is cast hollow as shown at 17 in Fig. 4 and has transverse openings situated op-

posite one another as at 18 to correspond with openings 19 of the said body 14. A stem 20 on the member 16 is provided with an arm 21 by which to rotate said member 16 within its bore. One extremity of the member 16 is cast with a recess 22 as in Fig. 5 and a screw 23 extending through the limb 15 normally lies within the recess and limits the rotating movement permitting but a quarter turn whereby the openings 18 and 19 are brought into register and also whereby the flow of vapor through the valve can be entirely cut off. The valve K³ of the lamp K³ corresponds in construction to this valve just described.

As shown in Fig. 8 the mixer D is formed substantially in the arc of a circle this being done as a matter of preference thereby to accommodate the pipes S and N and Q which pass beneath it or so that the air pipe B will be out of the way of said pipes S and N and Q. This mixer could, of course, be made in other forms or made perfectly straight if desired.

I do not limit myself to the construction of my device as shown and described as many changes may be made that would still come within the spirit and intent of the invention.

What I claim in my invention is:

1. In an apparatus of the class described, the combination of a mixing chamber, a gas injector nozzle therefor and a service pipe connection cooperating with said nozzle, and an air supply pipe connected to said mixing chamber at a distance from said nozzle and extending downwardly, the said air supply pipe being provided with a foraminous auxiliary air intake in its wall.

2. In an apparatus of the class described, the combination of a mixing chamber, a gas injector nozzle therefor and a service pipe connection cooperating with said nozzle, and an air supply pipe connected to said mixing chamber at a distance from said nozzle and extending downwardly, the said air supply pipe being provided with an annular foraminous section constituting an auxiliary air intake.

3. An apparatus of the class described comprising an air and gas mixing device, and a downwardly extending air supply pipe communicating therewith and provided with a foraminous air intake formed in its walls in the path of fluid fuel condensed and flowing down said walls.

4. An apparatus of the class described comprising an air and gas mixing device, a service pipe and system cooperating therewith, a downwardly extending air supply pipe communicating with said mixing device and provided with an annular foraminous auxiliary air intake formed in its wall, and a protecting funnel surrounding said auxiliary air intake and secured to said pipe

therebelow, said pipe formed with means for draining said funnel into said air supply pipe.

5 An apparatus of the class described comprising a gas generating retort, a liquid fuel supply pipe extending into said retort, a burner for heating said retort, a gas discharge pipe extending from said retort and in substantial alinement with said supply
10 pipe, a valve-controlled discharge nozzle, connected to said gas discharge pipe, a horizontally disposed mixing chamber overlying said retort having one end connected to said nozzle and the other end curved laterally so
15 as to clear said supply pipe, and an air intake pipe extending downwardly from the last mentioned end of said mixing chamber.

6. An apparatus of the class described comprising a base, a horizontally disposed
20 mixing chamber composed of flanged members secured together, a flange extension at one end of said mixing chamber, a supporting standard uprising from said base and secured to said extension, and means for
25 supporting the other end of said mixing chamber.

7. An apparatus of the class described comprising a base, a horizontally disposed
30 mixing chamber composed of flanged members secured together, a flange extension at one end of said mixing chamber, a supporting standard uprising from said base and secured to said extension, means for supporting the other end of said mixing chamber, a
35 valved gas-supply nozzle extending into said

mixing chamber adjacent said extension and having a downwardly extending valve stem, an indicator dial carried by said supporting standard, and an index for said dial carried by said valve stem.

8. In an apparatus of the class described, the combination with a vapor conduit and lamps supplied therefrom, of a horizontally disposed mixing chamber into which the conduit is connected at its top at one end, an
45 air supply tube connected into its other end at the bottom, there being a perforated portion in connection with said air pipe below the mixing chamber, a protecting funnel surrounding the said perforations, a pipe con-
50 nected into the chamber beneath the first said conduit and having a discharge nozzle, a valve to regulate the discharge through the latter, a generator included in said pipe and consisting of a receptacle suspended from
55 said pipe and provided with a straining material and having an opening in its top also connecting with the pipe, a closure for the opening, a source of fluid supply, a valve in the pipe to govern the flow of fluid to the
60 generator, a burner beneath the generator, and a valve controlled vapor conduit to supply said burner with vapor and connected with the conduit leading to the lamps.

In testimony whereof I affix my signature, 65
in presence of two witnesses.

EDWARD SEITZ.

Witnesses:

L. M. THURLOW,
A. KEITHLEY.