

939,799.

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UNITED STATES PATENT OFFICE.

ARTHUR BURTON, OF WHITESBORO, TEXAS.

LIQUID-FUEL-LIGHTING SYSTEM.

939,799.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR BURTON, a citizen of the United States, residing at Whitesboro, in the county of Grayson and State of Texas, have invented new and useful Improvements in Liquid-Fuel-Lighting Systems, of which the following is a specification.

This invention relates to a liquid fuel lighting system of that type in which the fuel is vaporized at the lamp by the head of the flame, and it relates more particularly to a pilot means for initially lighting the lamp so that the preliminary heating of the vaporizer by a torch is dispensed with.

The invention has for one of its objects to improve and simplify the construction and operation of lighting systems of this character so as to be comparatively inexpensive to manufacture and install, and thoroughly reliable and efficient in use.

Another object of the invention is the provision of a lighting or heating system in which two pipes lead from the fuel tank of the burner, one serving to convey liquid fuel such as gasoline to the vaporizer of the burner during normal operation while the other serves to conduct the vapor from the tank to the burner for starting purposes.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a view illustrating the system, the fuel tank being shown in section. Fig. 2 is an enlarged detail sectional view of the mantle burner designed for use in connection with the system.

Similar reference characters are employed to designate corresponding parts throughout the several views.

In the present instance, I have elected to illustrate the system as applied for lighting purposes, but it is to be understood that it can be used in connection with stoves as well.

Referring to the drawing, A designates a lamp or burner of the mantle type comprising a base 1 of any approved construction which supports the chimney 2 and is provided with a burner body 3, over which is

arranged the mantle 4, the base of the burner being equipped with a device 5 for adjusting the supply of air in the usual manner.

Supported on the base 1 is a valve casing 6 to which is connected the inlet end of an inverted U-shaped vaporizing tube 7, the tube extending upwardly along one side of the mantle 4, then across the top of the same, and down the opposite side to a point below the burner body where the tube is bent horizontally under the latter. The burner body has a mixture opening 8 into which a jet of vapor is discharged by the nozzle 9 secured to and supported by the vaporizer centrally below the burner body and as the jet of vapor enters the latter, it induces the flow of air to mix with the said jet as it passes to the mantle. This vaporizer serves as a support for the mantle, and being located in close proximity to the latter, effectively vaporizes the gasoline.

Within the valve-casing 6 is a valve 10 which is adjusted by the screw 11, and discharging into the valve-casing is a liquid supply pipe 12 connected with a suitable source of supply.

Entering the base 1 is a vapor supply pipe 13 which has its discharge end bent upwardly and entered in an opening 14 in the burner body for delivering vapor to the latter to initially start the burner. After the supply of vapor is opened, a lighted match is applied to the lamp, and after a few seconds heat generated by the flame will warm the vaporizer sufficiently to generate vapor when liquid gasoline is applied thereto so that the flame will be supported by the vapor discharged by the nozzle 9, after which time the supply of vapor passing through the pilot pipe 13 can be cut off at the burner.

The pipes 12 and 13 lead to a tank B which is so designed as to furnish liquid or vapor fuel, according to the necessities of operation. The tank is air-tight so that the liquid fuel will also be under a sufficient head to insure proper feed to the lamp, and the pipe 12 that leads into the tank has a cut-off valve 15, and in the top of the tank is an air pipe 16 connected with the pump for supplying air to the tank, the pipe being normally closed by a valve 17. The tank is filled through an opening 18 closed by a screw cap 19, and the pressure of the fuel is indicated by the gage 20. In the bottom of the tank are superimposed horizontal partitions 21,

22 and 23 dividing the tank into separate compartments, the adjacent compartments being connected by tubes 24 arranged on and extending above and below the respective partitions, as shown. The pipe 12 leads down into the upper or larger compartment to a point adjacent the uppermost horizontal partition and extends below the top end of the tube 24 carried by such partition to convey liquid fuel to the vaporizer of the lamp, and the vapor pipe 13 communicates with the bottom compartment of the tank so as to receive vapor therefrom, and in this pipe is a cut-off valve 25. In filling the tank B, the gasoline or other liquid fluid flows from one compartment to the other through the tubes 24 until the fuel reaches the level of the cock 26 for the lower compartment, which cock is, during the filling operation, left open. As soon as the fuel runs out of the cock, the same is closed so that no more liquid will flow down from the upper compartment to the bottom one and thus provide an air space in the bottom compartment for the accumulation of vapor to be used for starting the lamp. After the tank has been filled with the desired amount of liquid fuel, the air pump is operated to place the fuel in the tank under about fifteen pounds pressure.

To start the burner, the valve 25 is opened so that vapor can flow through the pipe 13 to maintain a pilot flame which would quickly bring the vaporizer to a sufficient temperature to vaporize the liquid fuel. The valve 10 is next opened to admit fuel to the vaporizer and as soon as the vapor issues from the nozzle 9, a mixture will be produced which is automatically ignited by the pilot flame. After this time, the valve 25 is closed to put out the pilot flame and the lamp will continue to burn with vapor supplied from the vaporizer. As the vapor in the lowermost compartment of the tank is consumed, air will pass from the main compartment through the tubes 24 and intermediate compartments and in its passage be enriched with gasoline, so that a highly inflammable mixture or vapor will be produced. It will thus be seen that as long as pressure is maintained in the main compartment of the tank, there will be a constant supply of vapor for starting the lamp.

Having thus described the invention, what I claim is:—

1. The combination of a main burner, a pilot burner adjacent thereto, a tank, partitions sub-dividing the tank into a vertical series of intercommunicating compartments, tubes supported by the partitions and extending above and below the same to form an air space and a liquid fuel space in each of said compartments, an air pipe leading from the upper part of the air space of the lowermost compartment to the said pilot burner, and a liquid fuel pipe leading from the bottom of the liquid fuel space of the uppermost compartment to the main burner.

2. The combination of a main burner, a mantle therefor, a vaporizer disposed adjacent the mantle and arranged to deliver vapor to the burner, a pilot burner arranged to deliver vapor to the mantle, an air-tight liquid-containing tank having superimposed compartments in the bottom thereof, tubes extending into adjacent compartments to afford a means of communication therebetween, a valve controlled pipe connecting the pilot burner with the vapor space in said tank, and a second valve-controlled pipe arranged to convey liquid fuel from the tank to the vaporizer.

3. An incandescent lamp comprising a burner base, a burner body supported on the burner base and spaced therefrom, a valve casing mounted on the burner base at one side of the burner body, a vaporizer connected at one end with the said valve casing and consisting of an inverted U-shaped tube, a nozzle at the opposite end of the tube arranged beneath the burner body for delivering a jet of vapor thereto, a mantle supported by the vaporizer and arranged over the vapor body, a liquid fuel supply pipe connected with the aforesaid valve casing, and a vapor supply pipe on the burner base and leading into the burner body and constituting a pilot burner.

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

ARTHUR BURTON

Witnesses:

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