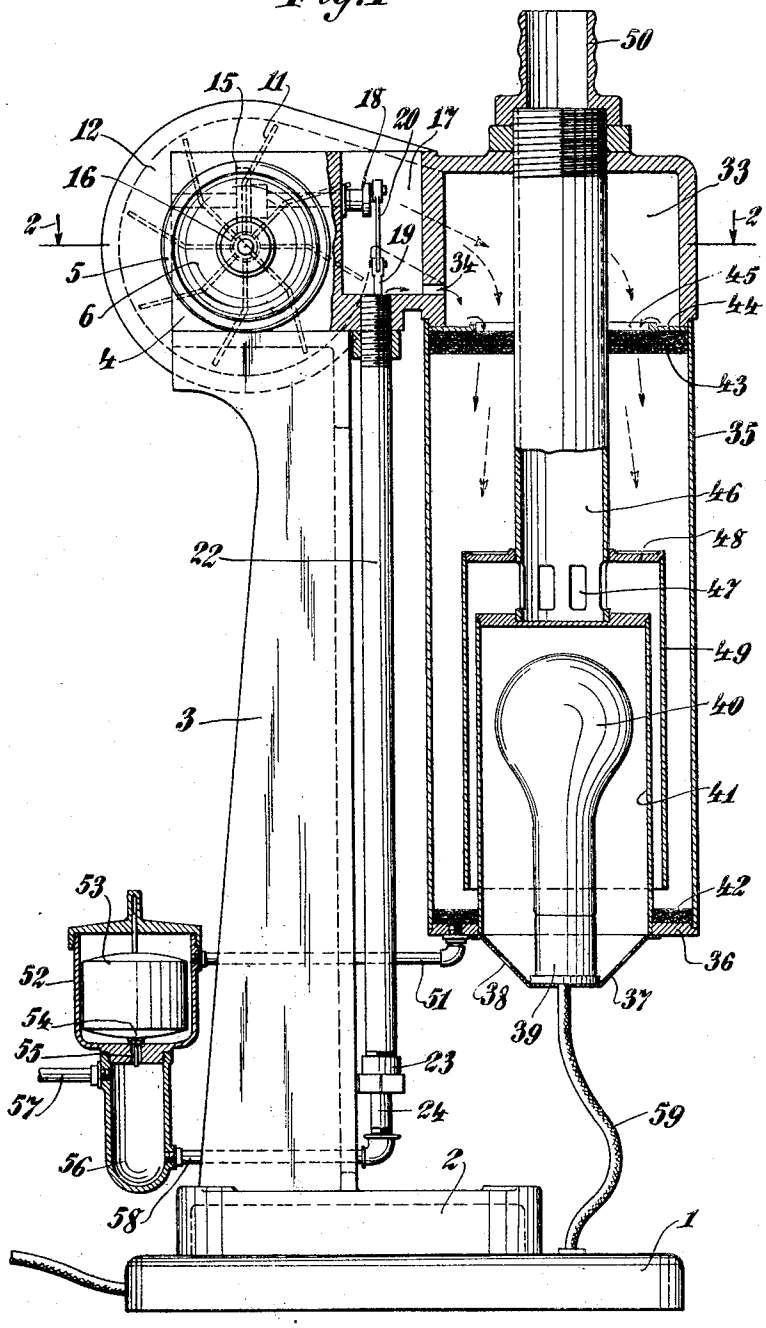
Oct. 11, 1932. A. CURIONI 1,882,318

VAPORIZING APPARATUS

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Fig. 1



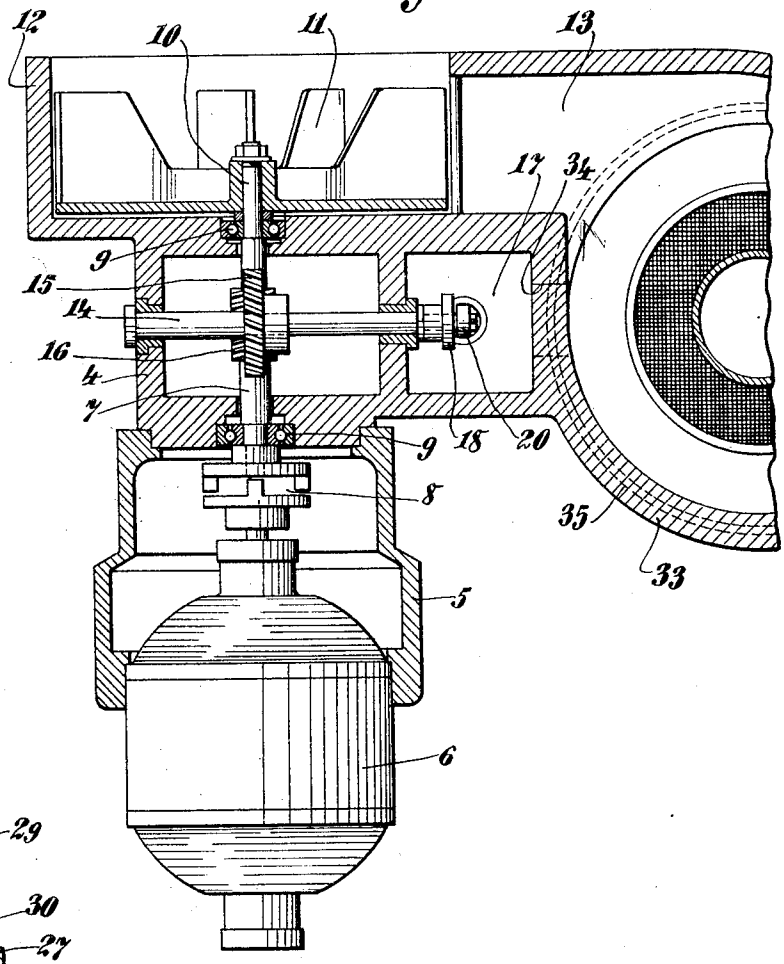
INVENTOR
Aldo Curioni,
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HIS ATTORNEYS

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Fig. 2



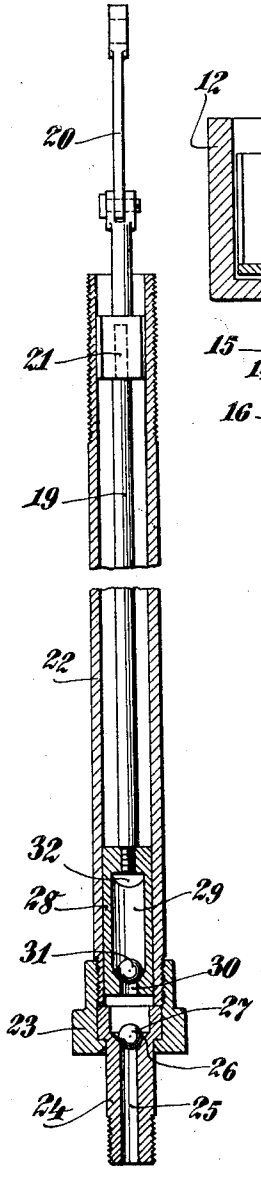


Fig. 3

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REISSUED

UNITED STATES PATENT OFFICE

ALDO CURIONI, OF LARCHMONT, NEW YORK, ASSIGNOR TO CURIONI BROS. INC., A CORPORATION OF NEW YORK

VAPORIZING APPARATUS

Application filed August 1, 1930. Serial No. 472,302.

The present invention relates to devices for gasifying volatile liquid fuels in sufficient volume and pressure to afford a source of combustible gas for domestic appliances. More particularly, the invention relates to an improved mechanism by means of which the vaporization of a liquid fuel is fully and completely effected, the quality of the resulting gas being entirely uniform over an extended period of operation. It has been found, in the operation of devices of this character, that the heavy ends of a liquid fuel which are less readily vaporized are returned to the liquid fuel supply tank and thus gradually collect therein to reduce the quality of fuel in the tank.

In accordance with the present invention it is proposed to provide an apparatus which more effectively vaporizes the liquid fuel than has heretofore been done in existing devices and which likewise insures the complete vaporization of the liquid fuel in a cycle of operation, thus preventing the heavier ends of the fuel from being returned to the supply tank.

A further object of the invention is to provide an improved vaporizing apparatus in which a mechanism is incorporated to prevent the back flow of heavy ends from the vaporizing chamber to the supply tank.

A further object of the invention is to provide a device of the above character, wherein a suitable trap is incorporated for collecting the heavy ends of the liquid fuel which are not readily vaporized, in an auxiliary chamber from which such ends are pumped and directed into the vaporizing chamber to cause their complete vaporization.

Further objects, not specifically enumerated above, will be apparent as the invention is described in greater detail in connection with the accompanying drawings wherein:

Figure 1 is a view in side elevation, partly broken away and in section, showing a device constructed in accordance with the present invention.

Figure 2 is a view in section, taken on line 2—2 of Figure 1, and looking in the direction of the arrows.

Figure 3 is a view in longitudinal section, taken through the pump mechanism shown in Figures 1 and 2.

Referring to the above drawings, a suitable plate is shown at 1 for mounting a base 2 upon which a standard 3 is secured. This standard is formed with a head 4, to one side of which a motor supporting housing 5 is secured. An electric motor 6 is secured in the housing 5 and drives a shaft 7 through a suitable clutch mechanism 8. The shaft 7 is journaled in the sides of the head 4 at 9 and is formed with an overhang 10, upon which a fan 11 is mounted. The head of the standard 3 is formed with a fan housing 12 having a tangential duct 13 communicating therewith.

Likewise journaled within the head 4, but lying at right angles to the axis of shaft 7, is a shaft 14 provided with a worm wheel 15. This worm wheel is engaged by a worm 16 which is carried by the shaft 7 and thus the rotation of shaft 7 is imparted to shaft 14. A chamber 17 is formed adjacent the head 4 of the standard 3 and receives the projecting end of shaft 14. A suitable crank 18 is secured to the end of shaft 14 and drives a pump plunger 19 through a connecting rod 20. A bushing 21 on the plunger 19 restricts the movement of the latter to a truly restricted axial motion within a pump cylinder 22. The cylinder is preferably threaded into the bottom wall of chamber 17 to communicate therewith as clearly shown in Figure 1.

The lower extremity of cylinder 22 is provided with a nut 23 which secures a fitting 24 to the lower extremity of the pump cylinder. This fitting is formed with an axial bore 25 and a check valve 26, upon which a ball check valve 27 normally seats. Upon the lower end of plunger 19, a piston 28 is secured, this piston being formed with an axial bore 29 and a restricted portion 30, upon which a ball check valve 31 rests. An aperture 32 is provided in the piston to afford a suitable communication between the pump cylinder and the axial bore 29 of the piston. The foregoing structure, it will be apparent, forms a pump mechanism, the purpose of which will be pointed out more fully hereinafter. It is preferred that the bushing 21 be

formed with longitudinal grooves in order that the fluid pumped to the pump cylinder 22 may overflow the same and pass into the chamber 17.

Formed upon the head 4 is a manifold 33 which communicates with the duct 13. A suitable duct 34 provides the necessary communication between manifold 33 and the chamber 17, thus permitting the liquid in such chamber to flow into the manifold 33. Depending from the manifold is a tubular housing member 35 formed with a bottom plate 36 and a lamp mounting 37. The lamp mounting is preferably apertured at 38 and formed with a lamp base 39 within which an electric lamp 40 is mounted. A lamp housing 41 is secured to the bottom 36, the latter being preferably of annular profile and a suitable filter or flow retarding device 42 is mounted over the base.

Within the housing 35, a plurality of filters or flow retarding devices 43 are mounted, a plate 44 being positioned at the top of housing 35 and apertured at 45 to permit the fluid within the manifold to percolate downwardly through the filters 43.

A conduit 46 is axially mounted within the manifold 33 and extends downwardly, preferably being seated in the top of the lamp housing 41. Adjacent the lower extremity of the conduit 46 are a plurality of apertures 47, above which flange 48 is secured to the conduit. A downwardly depending cylindrical baffle 49 is secured to the periphery of flange 48 and directs the flow of the liquid and gasified fuel over a circuitous course before it reaches the apertures 47 and the gaseous fuel pipe 46. A suitable fitting 50 is secured to the outlet of the pipe 46 to facilitate the connection of a suitable supply pipe or line to the apparatus and the manner in which liquid fuel is vaporized will be readily apparent from the above description. Fuel which is pumped through the pump cylinder 22 will overflow in the manifold 33 and percolate downwardly through the filters 43. Simultaneously, the fan 11 will direct a blast of air downwardly through the housing 35 and thus vaporize the liquid fuel, the vaporized fuel passing upwardly between the baffle 49 and the lamp housing 41, through the apertures 47 and into the supply pipe 46.

In accordance with one of the objects of this invention, it is proposed to collect the portions of the liquid fuel which have not been initially vaporized and return them to a collecting chamber from which they are again pumped into the vaporizing chamber. In furtherance of this idea a return pipe 51 is provided which communicates with the housing 35 through the bottom plate 36. A trap chamber 52 receives the fluid returned through pipe 51 and collects the same temporarily. Within the chamber 52 a float 53 is provided, this float being formed with a valve 54 which seats over the entrance of a duct 55.

A collecting chamber 56 is secured to the bottom of the chamber 52 and communicates therewith through the duct 55, a supply pipe 57 communicating with the collecting chamber 56 and with a suitable source of liquid fuel. Adjacent the bottom of the collecting chamber 36, is a connection with a suction pipe 58 which communicates, at its other end, with the fitting 24.

It will thus be seen that the heavy ends from the vaporizing chamber 35 will collect in the trap chamber 52 until the quantity thereof is sufficient to lift the float 53 and permit the same to flow into the collecting chamber 56. When the heavy ends have risen to a sufficient height in the collecting chamber 56, the suction pump draws them into the chamber 17 from which chamber they overflow into the vaporizing chamber and are finally vaporized. The heat from lamp 40 materially aids in the vaporization of the fuel particularly of the heavier ends and a suitable wire 59 is provided to enable the lamp preferably to be connected in the circuit with the motor 6.

While the invention has been described with specific reference to the accompanying drawings, it is not to be limited, save as defined in the appended claims.

I claim as my invention:

1. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a source of liquid, means to direct liquid from the source into the chamber to be vaporized, means to collect liquid from the chamber and maintain the same separate from the source, and means to supply the collecting liquid to the fluid directing means in place of the liquid from the source to return the collected liquid to the chamber.

2. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber whereby the flow thereof is directed out the outlet, a source of liquid, means to direct liquid from the source into the chamber to be vaporized, means to collect liquid from the chamber and maintain the same separate from the source, and means to return the collected liquid to the chamber through the fluid directing means to the exclusion of the liquid from the source.

3. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a source of liquid, means to direct liquid from the source into the chamber to be vaporized, means to collect liquid from the chamber and maintain the same separate from the source, and means to return the collected liquid to the chamber through the fluid

directing means to the exclusion of the liquid from the source after a predetermined quantity thereof has been collected.

4. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a source of liquid, means to direct the liquid from the source into the chamber to be vaporized, means to collect liquid from the chamber and maintain the same separate from the source, and a valve to return the collected liquid to the fluid directing means to the exclusion of liquid from the source.

5. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a source of liquid, means to direct liquid from the source into the chamber to be vaporized, means to collect liquid from the chamber and maintain the same separate from the source and a valve actuated by the level of the liquid in the collecting means to return the collected fluid to the fluid directing means to the exclusion of the liquid from the source.

6. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a suction collecting chamber, a supply connection between the collecting chamber and the vaporizing chamber including a suction pump, a return connection between the said chambers, a source of liquid supply communicating with the collecting chamber above the level of the connection to the vaporizing chamber, and means in the return connection to subject the collected liquid to the suction to the exclusion of the liquid from the source.

7. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed out the outlet, a collecting chamber, a trap superposed on the collecting chamber, a float valve communicating between the trap and collecting chamber, a feed line between the collecting and vaporizing chambers, a pump in the line, a return line between the trap and vaporizing chamber, and a source of liquid supply communicating with the collecting chamber above the level of the feed line.

8. A vaporizing device comprising a vaporizing chamber having a gas outlet, means to introduce a current of air into the chamber, whereby the flow thereof is directed at the outlet, a collecting chamber, a source of liquid connected to the collecting chamber, a connection below the connection of the source to the last named chamber to direct liquid from the collecting chamber into the vaporizing chamber, means to receive liquid from the vaporizing chamber and maintain the same separate from the source including a trap above the second named chamber and connected thereto, a float in the trap, a valve actuated by the float to form a communication between the trap and collecting chamber, and a pump in the first connection to return the collected fluid to the vaporizing chamber.

9. A vaporizing chamber including a manifold, a housing communicating with the manifold, a flow retarding device in the housing at one end thereof, an outlet pipe in the flow retarding end of the housing and coaxial therewith, an inwardly projecting housing in the first housing at the end distant from the flow retarding end and coaxial therewith, a baffle mounted at the inlet end of the outlet overlying the second housing and concentric therewith, and a heating means in the second housing.

This specification signed this 31st day of July A. D. 1930.

ALDO CURIONI.