

July 23, 1935.

B. W. TULLIS

2,008,882

LAMP

Filed Nov. 3, 1933

2 Sheets-Sheet 1

FIG 1

FIG 2

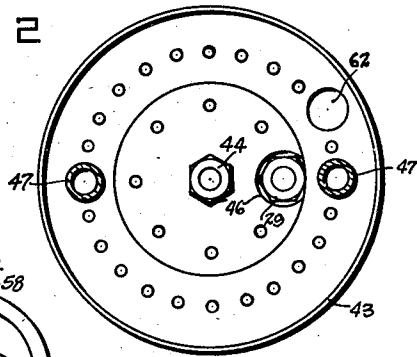
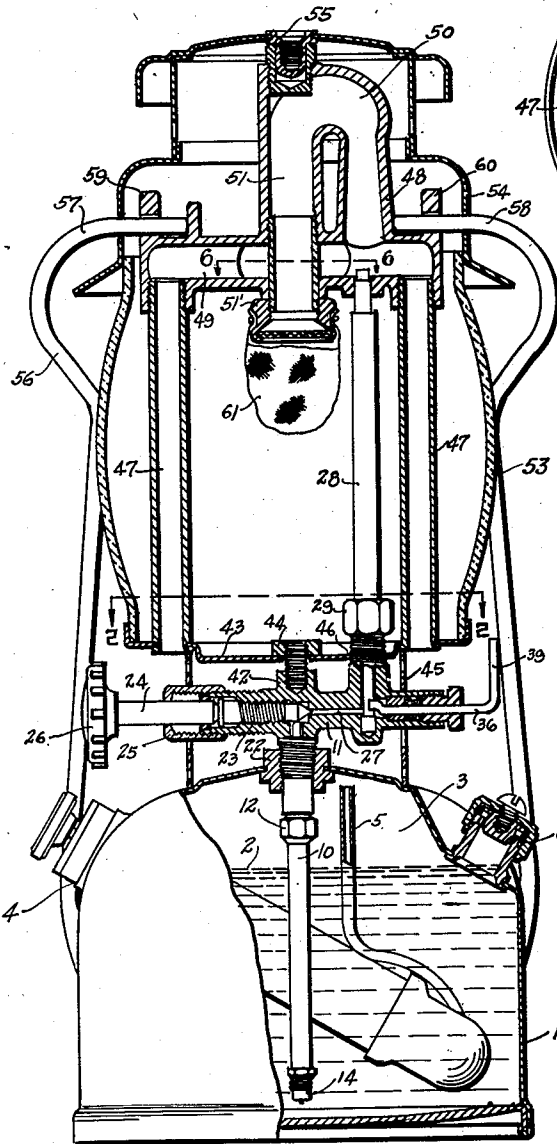
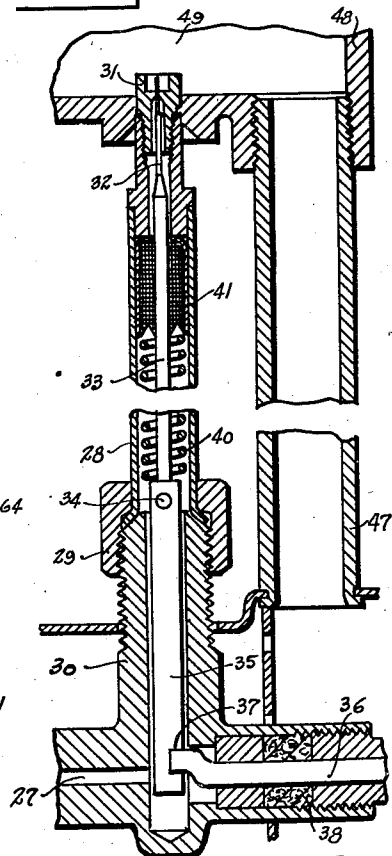


FIG 3



INVENTOR.

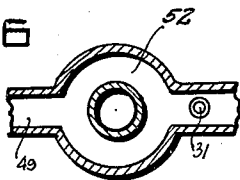
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FIG 6



July 23, 1935.

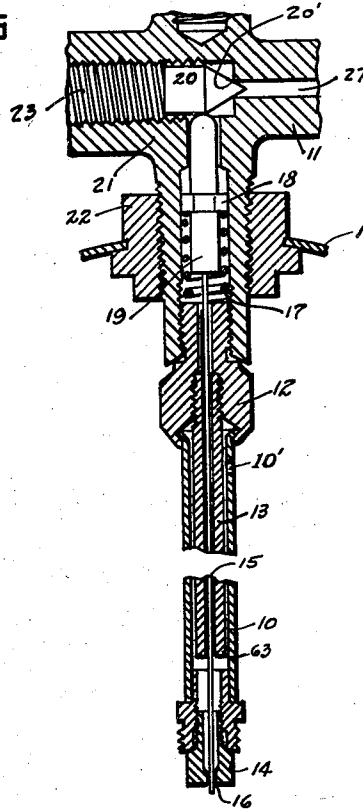
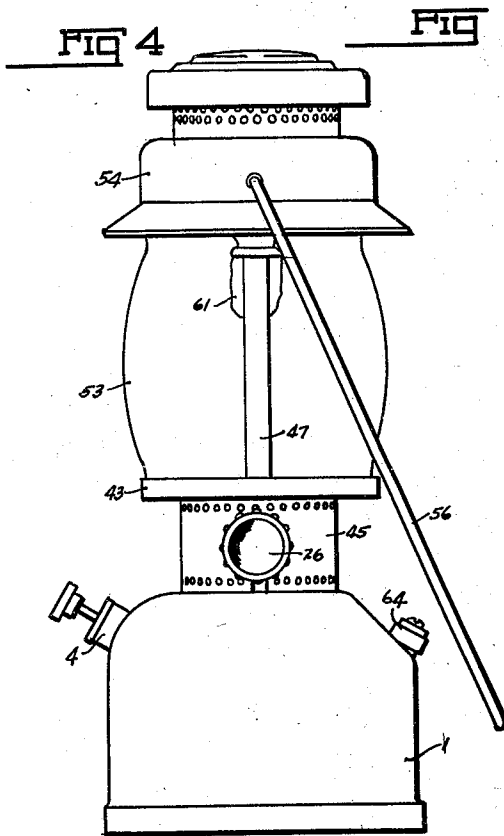
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UNITED STATES PATENT OFFICE

2,008,882

LAMP

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Application November 3, 1933, Serial No. 696,504

9 Claims. (Cl. 67—50)

This invention relates to hydrocarbon fuel burning devices and more particularly to a lamp or lantern in which liquid hydrocarbon fuel is contained in a font or receptacle, under air pressure to deliver the liquid hydrocarbon in a vaporized form into a fuel combusting burner.

Prior to my invention it was the practice to support a burner above the font by a frame within which was located a globe. The outside frame obstructed the light and was otherwise objectionable. My invention contemplates the provision of means whereby the lamp or lantern can be so constructed that the frame will be inside the globe leaving an unobstructed zone for the light. In carrying out my invention I have located a throttle valve and a vaporizing generator cleaning needle actuator between the font and the globe so that the fuel supply can be controlled and the cleaning needle operated without disturbing the globe.

I have also simplified the usual lamp or lantern construction by making a frame consisting of a base, burner and burner supports all in one structure so that the cost of manufacture of the lamp is reduced.

I have also improved the construction of the burner so that an adequate amount of atmospheric air will be supplied to the burner to combine with the vaporized liquid hydrocarbon fuel to support combustion.

I have also generally improved the construction and appearance of lamps and lanterns of this general class and to this end the invention consists in certain parts and combination of parts all of which will be specifically described hereinafter, reference being had to the accompanying drawings in which:

Figure 1 is a vertical longitudinal sectional view of a lamp constructed in accordance with my invention.

Figure 2 is a plan view of the frame base or deck.

Figure 3 is a longitudinal sectional view through the vaporizing generator, the air tube and part of the burner.

Figure 4 is a side elevational view of the lamp or lantern, and

Figure 5 is a vertical longitudinal sectional view through the fuel supply pipe and the operating valve.

Figure 6 is a sectional view of the burner on the line 6—6 of Figure 1.

Referring now to the drawings by numerals of reference, 1 designates a font to contain hydrocarbon liquid fuel under air pressure in contact

therewith. The normal liquid level of the font is indicated at 2, the air space being indicated at 3. The air is supplied to the enclosing font through a built-in-pump 4 which has a discharge tube 5 extending up into the air space. The pump can be of any preferred construction so it is not necessary to show and describe any particular construction in this application. The liquid hydrocarbon fuel is supplied to the burner through a valve body and a vaporizing generator. The air supply pipe 10 is connected to the valve body 11 by a nipple 12 in which is screwed an inner tube 13 terminating short of the tip 14 on the tube 10.

Within the tube 13 is a valving needle 15 normally urged out of the tip opening 16 by a spring 17 one end of which bears against the nipple 12 and the other end of which bears against the collar 18 on the sliding member 19 movable against the spring by the cone-shaped valve 20, it being understood of course that the valving needle 15 is connected to the member 19 and it should be here stated that the needle 15 is slightly smaller in diameter than the diameter of the tip opening as will be explained hereinafter.

The tube 10 has air inlet opening 10' which admits air from air space 3 in the font to the interior of tube 10 so that it can flow up through the tube 13 past the valve 20 to the burner, it being understood that the air is enriched by liquid fuel passing through tip 14 on the tube 10. By this arrangement the burner can be lighted by a match flame without preheating and after the burner has been burned long enough to heat the generator to vaporizing temperature the constricted end on needle 15 is withdrawn from the tip 14 so that liquid will flow into tube 10 in such quantities as to seal off the passage communicating with opening 10', as will be hereinafter explained more fully.

The valve body 11 is shown as comprising an elongated horizontal casting having a T connection 21 screwed into a bushing 22 in the font. The valve 20 is carried on the end of a threaded stem 23 having an extension 24 projecting through a stuffing box 25 in one end of the valve body and provided with a disc 26 so that the valve can be operated to control the effective port area of the supply tube 10.

It will be noted that the valve body has a passageway 27 adapted to communicate with a vaporizing generator 28 connected to the valve body by a collar 29 threaded on the boss 30 of the valve body. The vaporizing generator has a tip 31 for the cleaning needle 32. The clean-

ing needle has an elongated body member 33 with a hook 34 which can be hooked into the sliding actuator 35 in the boss 30 and actuated by a crank 36, engaging the notch 37. The crank 36 extends through the wall of the valve body which is backed by a gland 38, the crank having a handle 39 to move the needle up and down against the action of the expansion spring 40 one end of which bears against the member 35 and the other against the strainer 41.

It will be noted that the valve body carries a boss 42 on which is fastened a frame base or deck 43 by the nut 44 which can be turned to draw the deck down on the deck or base rest 45 located on the font. The deck or frame base has an opening 46 through which the generator 28 projects. The base is shown as carrying a plurality of vertical supports 47 at the upper end of which is a burner 48. The burner has a horizontal air receiving chamber 49 into which the tubes 47 supply atmospheric air and into which the tip of the vaporizing generator discharges.

The vaporizing generator is in line with the short leg of an inverted U-shaped passageway 50 having a long leg 51 extending down through the chamber 49 and carrying a mantle support 51'. The air to support combustion of the vaporized fuel passes into the chamber 49 and due to the enlarged middle portion 52 of chamber 49, it passes around the long leg 51 into the inverted U-shaped passageway 50 where it commingles with the vaporized fuel to provide a combustible mixture.

I have shown both supports 47 as hollow, although sufficient air can be supplied to the burner through a single tube having the proper cross-sectional area. I therefore would have it understood that I do not wish to be limited to a construction in which all of the supports are air tubes.

From the foregoing description it will be apparent that the frame consisting of the base, the upstanding supports and the burner, can be conveniently constructed so that the globe 53 can rest upon the base 43 and be held at its top by a ventilating cowl 54 fastened to the inverted U-shaped passageway by a screw 55 it being obvious that the screw can be taken out to remove the cowl so that the globe can be attached or removed. A ball 56 has its two ends 57 and 58 projecting through the cowl and thru the ears 59 and 60 on the burner so that it can be securely fastened to the lantern.

When the parts are in place the whole burner frame structure is held against the base support 45 by the nut 44 so that by unscrewing the nut 44 the entire base can be lifted off the valve body and attention is called to the fact that the valve for controlling the effective port area of the discharge or supply pipe 10 and the actuator for the vaporizing generator are accessible beneath the globe and frame so it is possible to use a glass globe with an unbroken wall, instead of the usual mica globe commonly employed and which was provided with a window opening to give access to the valves inside the globe.

When it is desired to light the lamp or lantern, the valve 20 is moved off its seat 20' which permits the end of member 19 to slide on the cone end of valve 20 so that the valving needle or plunger 15 is withdrawn from the opening in the tip 14. The air from air space 3 passes down between the tubes 13 and 10 to pass up into the passageway

27 to the vaporizing generator. Since the tube 10 is open to the air space 3 through the opening 10', the air will flow into the generator picking up enough liquid fuel to enrich it so that a rich gas is supplied to the mantle 61. By inserting a match flame through the hole 62 the gas will be combusted so that the mantle will be heated to incandescence.

The heat from the mantle will heat the generator 28 so that it will soon begin to vaporize the fuel. As soon as this happens the fuel will be vaporized increasing the volume of the liquid hydrocarbon to such an extent that the vapor will be supplied much faster than required at the mantle. Since the liquid will continue to flow through the tip opening at a uniform rate it will soon find its level above the end 63 of pipe 13 so that further supply of air from space 3 will be cut off. Then, only liquid hydrocarbon will be furnished the generator where it will be vaporized in the usual way by the heat from the mantle 61. The pump of course supplies the air pressure in the well understood manner and the fuel can be filled through the filler plug opening 64.

What I claim is:

1. A lamp comprising a font to contain liquid fuel under air pressure in contact therewith, a fuel discharge pipe having its inlet below the liquid level in the font and its outlet above the font, a valve body connected to the discharge pipe, a fuel vaporizing generator supported by the valve body, a valve between the discharge pipe and the generator provided with a stem extending through one end of the valve body, a cleaner needle for the tip of the generator, an operating member for the cleaner needle having an end projecting through the other end of the valve body, a frame base supported on the valve body, a plurality of upstanding burner supports carried by the frame base; a burner carried by the supports having a mantle support, and provided with an opening to receive the tip end of the generator and a substantially cylindrical globe surrounding the supports above the base so that the globe will be unobstructed by the supports.

2. A hydrocarbon fuel burning lamp comprising a font to contain liquid hydrocarbon fuel under air pressure in contact therewith, a burner frame supported above the font having a base, an air tube extending from the base and a burner supported by the air tube, the burner comprising a horizontal chamber to receive air and fuel vapor, an inverted U-shaped passageway leading from the horizontal chamber, one leg of the inverted U-shaped passageway communicating with the horizontal chamber and the other extending down through the bottom of the horizontal chamber in spaced relation with the side walls thereof, and means for attaching a mantle to the lower end of the last named leg.

3. A hydrocarbon fuel burning lamp comprising a font to contain liquid hydrocarbon fuel under air pressure in contact therewith, a burner frame supported above the font having a base, an air tube extending from the base and a burner supported by the air tube, the burner comprising a horizontal chamber to receive air and fuel vapor, an inverted U-shaped passageway leading from the horizontal chamber, one leg of the inverted U-shaped passageway communicating with the horizontal chamber and the other extending down through the bottom of the horizontal chamber in spaced relation with the side walls thereof, and means for attaching a mantle to the lower end

of the last named leg and bail receiving means on the burner for attaching a ventilating cowl to the burner.

4. A burner for vaporized liquid hydrocarbon fuel under pressure comprising an air receiving chamber, an air supply tube communicating with the air receiving chamber, an inverted U-shaped fuel receiving passageway, having one leg communicating with the air receiving chamber and the other leg passing through the air receiving chamber in spaced relation to the inner walls thereof and means for combusting the fuel at the free end of the second mentioned leg.

5. A burner for vaporized liquid hydrocarbon fuel under pressure, comprising a chamber to receive air, said chamber having an enlarged portion intermediate its ends, means for admitting air into such chamber, means for supplying vaporized hydrocarbon fuel to said chamber, a hollow member leading from said chamber having a part passing through the enlarged portion of the chamber to receive a fuel combusting member.

6. A burner for vaporized liquid hydrocarbon fuel, comprising a chamber to receive air, said chamber having an enlarged portion intermediate its ends, means for admitting air into said chamber, means for supplying vaporized hydrocarbon fuel to said chamber, a hollow member leading from said chamber having a part passing through the enlarged portion of the chamber to receive a fuel combusting member, the means for supplying vapor to the chamber being adjacent to the inlet to the hollow member and the means for supplying air to the chamber being offset with relation to the vapor admitting means.

7. A burner comprising a hollow member having an air receiving chamber open to the atmosphere, an inverted U-shaped fuel receiving passageway having one leg connected to the air receiving chamber and the other extending through the air receiving chamber, provided on its end with the mantle support, the air receiving chamber having a greater volumetric capacity than the

fuel receiving passageway, and provided with an opening in line with the short leg of the U-shaped passageway to receive the tip of the vaporizing generator.

8. A lamp comprising a font to contain liquid fuel under air pressure in contact therewith, a fuel discharge pipe having its inlet below the liquid level in the font and its outlet above the font, a valve body connected to the discharge pipe, a fuel vaporizing generator supported by the valve body, a valve between the discharge pipe and the generator provided with a stem extending through one end of the valve body, a cleaner needle having an end projecting through the other side of the valve body, a frame base connected to the valve body, a plurality of up-standing burner supports carried by the frame base, a burner carried by the supports having a mantle support, and provided with an opening to receive the tip end of the generator and a substantially cylindrical globe surrounding the supports above the base, so that the globe will be unobstructed by the supports.

9. A hydrocarbon fuel burning lamp comprising a font which contains liquid hydrocarbon fuel under air pressure in contact therewith, a burner frame supported above the font having a base, an air tube extending from the base and a burner supported by the air tube, the burner comprising a base portion having a horizontal chamber to receive air and fuel vapor, the chamber part of the base having an enlarged portion intermediate its ends, an inverted U shaped passageway leading from the horizontal chamber, one leg of the inverted U shaped passageway communicating with the horizontal chamber and the other extending below the bottom of the horizontal chamber in spaced relation with and surrounded by the side walls of the enlarged portion and means for attaching a mantle to the lower end of the last named leg.

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