

**Sept. 22, 1970**

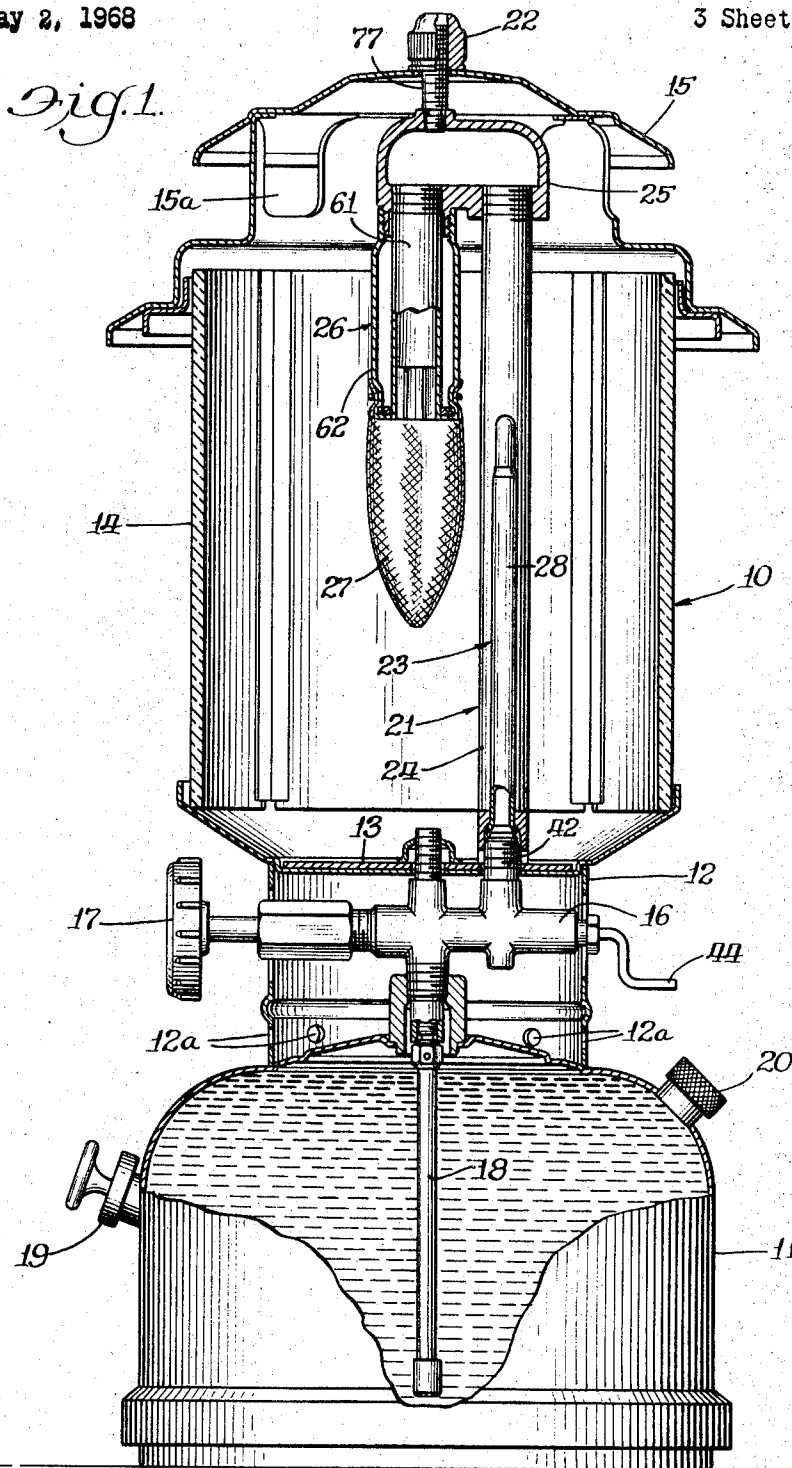
**W. J. TOWNSEND**

**3,529,911**

## BURNER ASSEMBLY FOR GASOLINE LANTERN

Filed May 2, 1968

3 Sheets-Sheet 1



Inventor:  
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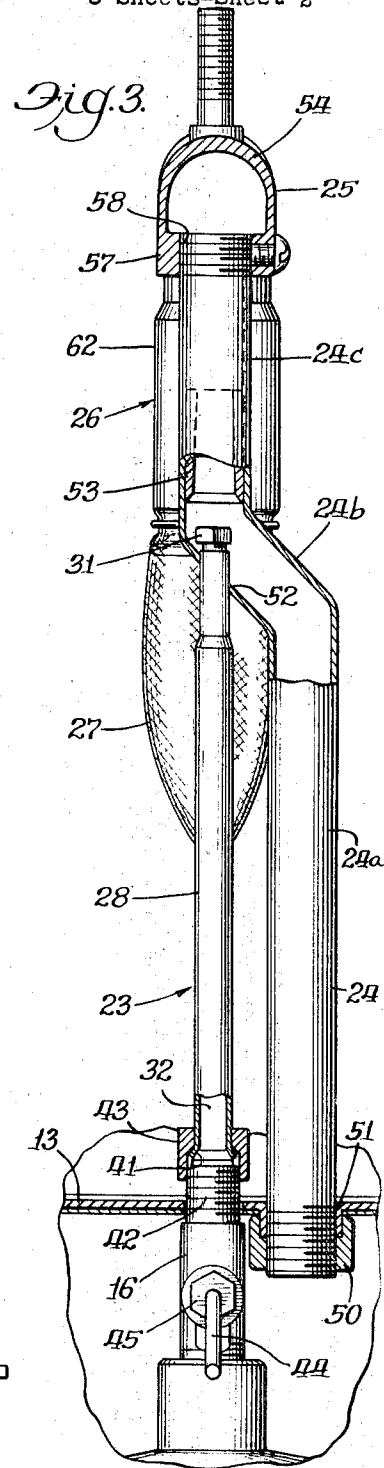
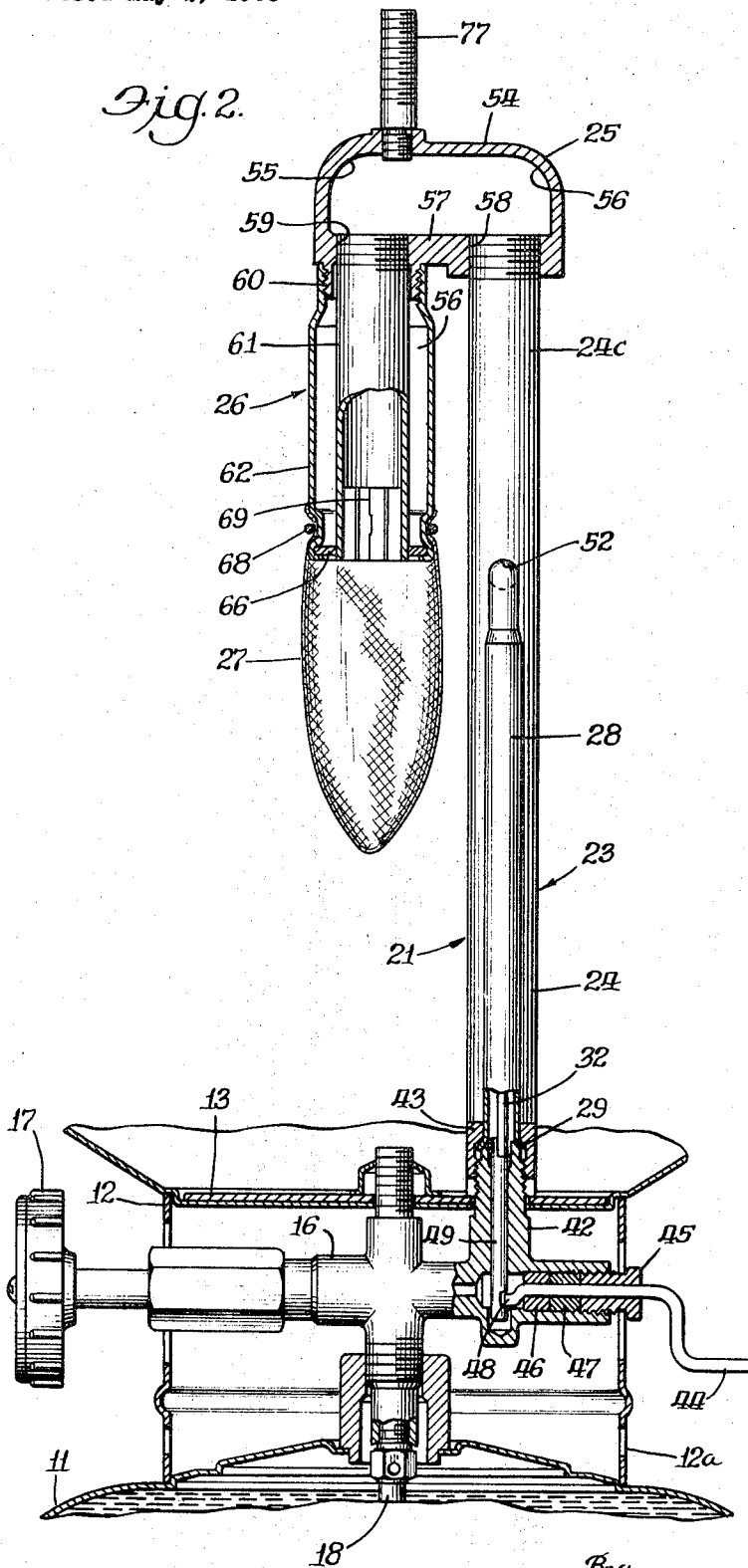
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BURNER ASSEMBLY FOR GASOLINE LANTERN

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3 Sheets-Sheet 2



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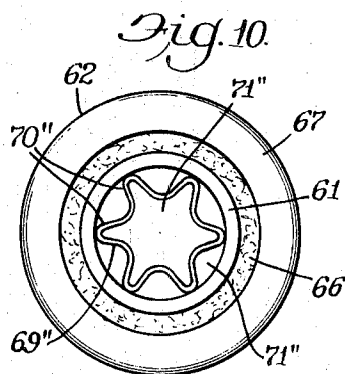
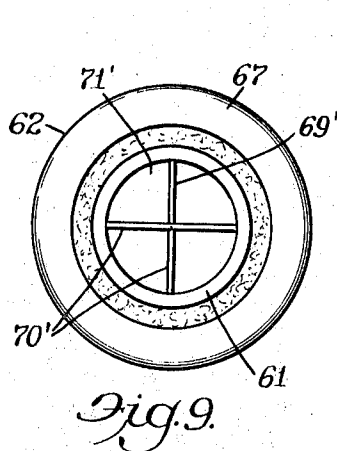
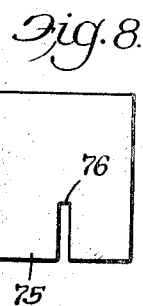
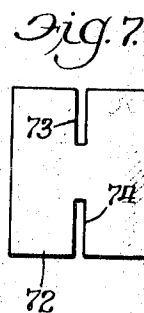
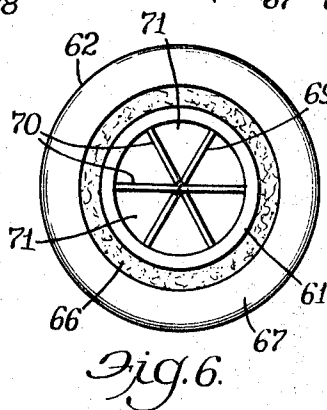
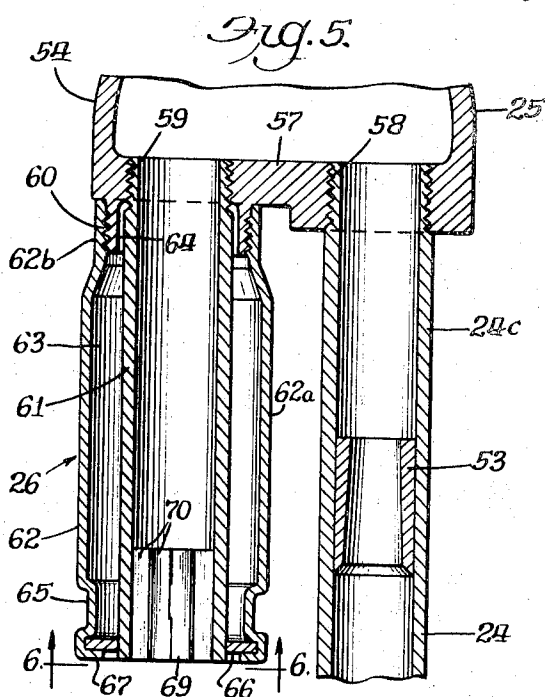
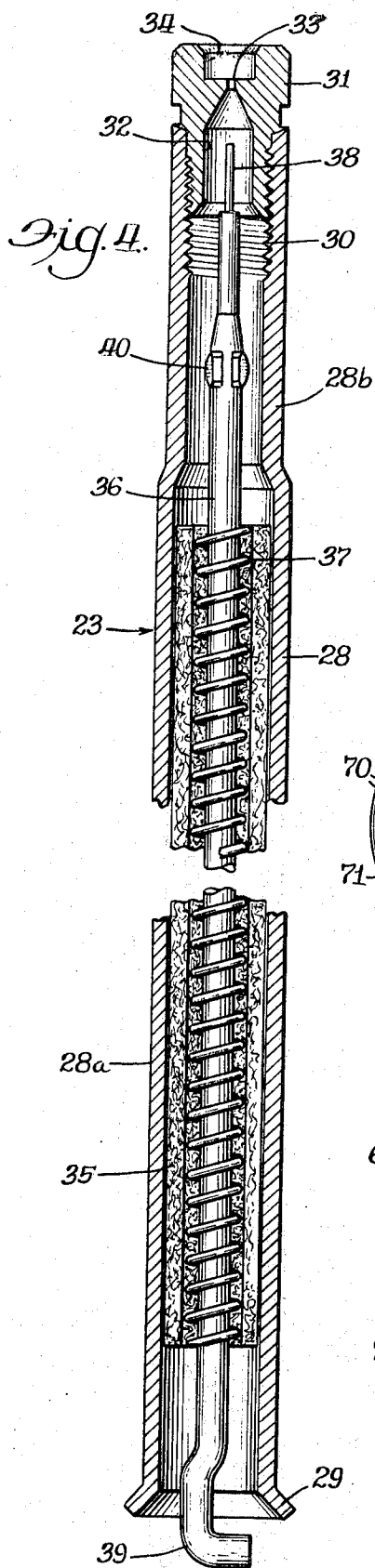
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BURNER ASSEMBLY FOR GASOLINE LANTERN

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3 Sheets-Sheet 3



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**BURNER ASSEMBLY FOR GASOLINE LANTERN**  
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Int. Cl. F21h 1/00

U.S. Cl. 431-107

5 Claims

## ABSTRACT OF THE DISCLOSURE

A burner assembly for adapting a lantern to burn leaded gasoline. The assembly includes an elongated generator tube which communicates with the fuel reservoir and extends upwardly therefrom. A non-combustible sheath is received by the generator tube and provides wick means for transporting liquid fuel by capillary action from the lower end of the generator tube to the upper end. The upper end of the generator tube communicates with a burner tube which delivers the fuel to a mantle, and the burner tube and generator tube are provided with heat-reflective surfaces to maintain the fuel below the temperature at which the lead components of the fuel will decompose. The burner tube is further insulated by a protective shroud which covers the burner tube and is spaced therefrom.

## BACKGROUND

This invention relates to gasoline lanterns, and more particularly, to burner assemblies for adapting lanterns to burn leaded gasoline.

Heretofore, efficient use of gasoline lanterns generally required that white gas be used as the fuel. However, since white gas is not always readily available, it has long been desirable to provide a lantern which may burn leaded gasoline, or gasoline containing tetraethyl lead compounds.

Gasoline lanterns operate by first vaporizing the fuel and then feeding this vapor to a catalytic mantle where the vapor is burned, resulting in an intense light. However, as the vapor burns, the tetraethyl lead compounds present in the gasoline will deposit on the lantern globe and gradually decrease the intensity of the light transmitted through the globe. The heat from the mantle will also raise the temperature of the components of the burner assembly, such as the generator, mixing chamber, and burner tube, to the point at which some of the lead compounds will decompose and become deposited on these parts, causing corrosion and malfunctioning of the lantern by blocking the flow of fuel and primary air necessary for proper combustion. Lead compounds present in leaded gasoline generally begin to decompose about 625° F. to about 700° F.

If the lead compounds are not decomposed in the burner assembly, they are carried by the fuel vapor to the mantle flame, where decomposition or "cracking" will be substantially complete. Much of the decomposed lead compounds and carbonaceous material will be deposited on the lantern globe, thereby reducing the transmission of light through the lantern and eventually making the lantern too dim for use.

Heretofore, if leaded gasoline were burned in a standard lantern, the deposits of the lead compounds on the globe would render the lantern almost useless for many applications in a period of only ten to twenty hours. After this time the globe must be removed and cleaned, and it may also be necessary to clean the components of the burner assembly to prevent clogging and corrosion.

The armed services frequently use gasoline lanterns in military operations, and short useful life of the lanterns can prove both burdensome and hazardous to the soldier who is operating the lantern. Since white gasoline is sometimes difficult, if not impossible to obtain overseas, it is desirable to have a lantern which will burn leaded gasoline and which will have a relatively long useful life without maintenance. Long useful life is also desirable in lanterns intended only for civilian use.

One approach to adapting a gasoline lantern to burn leaded gasoline was to design the parts of the burner assembly to cause maximum decomposition and collection of the lead compounds within the burner assembly before the fuel reached the mantle, the theory being that if substantially lead-free fuel were delivered to the mantle, the globe would remain relatively clean. This approach did provide a substantial increase in the useful life of the lantern, but the intentionally trapped lead compounds had to be removed from time to time.

## SUMMARY

The inventive burner assembly adapts a lantern for burning leaded gasoline for a substantially longer useful life than heretofore possible. The interior of the burner assembly is maintained at a relatively low temperature to substantially prevent any decomposition of the lead compounds until the fuel reaches the mantle flame. The leaded gasoline fuel is maintained in the liquid state as it travels upwardly through the generator tube and is heated to vaporization only in the upper portion of the generator tube. The fuel is then mixed with primary air and transported through the burner tube to the mantle. The generator tube, mixing chamber, and burner tube are all provided with heat-reflecting surfaces to maintain the temperature of the fuel below the decomposition range, and the burner tube is further provided with an insulating shroud which covers the burner tube and is spaced therefrom. Unique baffle means are provided in the end of the burner tube to prevent combustion within the burner tube and to reduce the rate of fuel flow into the baffle to protect the fragile mantle while at the same time providing as little interference as possible to the fuel flow.

## DESCRIPTION OF THE DRAWING

FIG. 1 is an elevational view partly in section of a gasoline lantern embodying the features of this invention;

FIG. 2 is an enlarged fragmentary view of a portion of the lantern illustrated in FIG. 1;

FIG. 3 is a side view of FIG. 2;

FIG. 4 is an enlarged sectional view of the generator assembly;

FIG. 5 is an enlarged fragmentary sectional view of the upper portion of FIG. 2 with the mantle removed;

FIG. 6 is a view taken along the line 6-6 of FIG. 5;

FIGS. 7 and 8 are plan views of the baffle components; and

FIGS. 9 and 10 are views similar to FIG. 6 illustrating alternative embodiments of the baffle.

## BRIEF DESCRIPTION OF SPECIFIC EMBODIMENT

Referring now to FIG. 1, the numeral 10 designates generally a lantern having the usual fount or reservoir 11, collar 12, base plate 13, a cylindrical globe 14, and top 15. The collar 12 is provided with air intake openings 12a, and top 15 is provided with vents or exhaust openings 15a. Mounted on fount 11 is valve body 16 which includes the usual fuel control handwheel 17 and fuel tube 18 extending into the fount. The fount also carries air pump 19 and is provided with a fuel opening closed by cap 20. A more detailed description of these

parts can be found in U.S. Pat. No. 2,263,659, issued Nov. 25, 1941.

Burner assembly 21 extends upwardly from the base plate 13. Globe 14 is supported by base plate 13 and carries top 15, and top 15 is secured to the top burner assembly 21 by nut 22.

Burner assembly 21 includes an elongated vaporizer or generator assembly 23, air intake tube 24, burner manifold 25, and burner tube assembly 26. As can be seen best in FIG. 3, the air intake tube 24 includes a lower portion 24a which is spaced from the generator assembly and extends generally parallel therewith, and inclined central portion 24b which extends toward the generator assembly and receives the upper end thereof, and an upper portion 24c which extends upwardly in general axial alignment with the generator assembly.

After start up of the lantern, which will be described fully hereinafter, fuel flows through the fuel tube 18 and the valve body 16 into the generator assembly 23. The fuel then travels upwardly in the generator assembly and is vaporized at the upper portion thereof. Fuel vapor is discharged from the upper end of the generator assembly and is mixed with primary air in the upper portion 24c of the air intake tube, which acts as a mixing chamber for the fuel and air. The fuel vapor and air mixture then passes through the burner manifold 25 and the burner tube assembly 26 into mantle 27 where it burns.

#### DETAILED DESCRIPTION

Referring now to FIGS. 3 and 4, the generator assembly 23 includes an elongated generator tube 28 which has a major portion 28a of relatively constant diameter and an upper vaporizing portion 28b of reduced diameter. The lower end of the generator tube is flared outwardly as at 29, and the upper end of the generator tube is internally threaded as at 30 to receive gas tip 31. The gas tip 31 is provided with an axially extending bore 32 which flares outwardly at its lower end and narrows at its upper end to an orifice 33 of relatively small diameter, for example, of the order of 6 mils, and the upper end of the gas tip 27 is counterbored as at 34, the diameters of the bores 32 and 34 being approximately equal. The outer surface of the upper portion of the gas tip 31 may be provided with a rectangular or other polygonal shape to adapt the gas tip for insertion into the generator tube by means of a wrench.

A generally cylindrical tube or sheath 35 providing wick means is received by the generator tube 28 and extends substantially along the entire length of the major portion 28a of the generator tube. The tubular wick 35 is designed to provide insulation for the fuel and to carry the fuel upwardly within the generator tube by capillary action. I have found that making the wick 35 of asbestos provides good insulation, and using woven asbestos facilitates the capillary or wicking action desired. However, it is to be understood that solid asbestos or other materials may be used to make the tube 35, non-combustible materials being preferable.

Cleaner rod 36 extends coaxially within the generator tube 28 and wick tube 35 and is slidably supported within the wick tube 35 by spirally wound coil 37, the inside diameter of the turns of coil 37 being slightly greater than the outside diameter of the cleaner rod. A needle 38 is carried by the upper end of the cleaner rod, and the diameter of the needle is only slightly less than the diameter of the orifice 33. The lower end of the cleaner rod is provided with a hook or elbow 39, and, if desired, the cleaner rod may be provided with outwardly extending flanges 40 above the coil 37 to prevent complete withdrawal of the cleaner rod from the coil.

The generator tube 28 is provided with heat-reflective inner and outer surfaces to insulate the fuel as it passes upwardly within the generator tube and to prevent the fuel from becoming heated to the point at which the lead compounds will decompose. Excellent operating charac-

teristics have been obtained by using aluminum as the heat-reflective surface, and the generator tube may be made of either solid aluminum or of other metal which is aluminum coated on the inside and outside. It has been found that aluminum retains good heat reflection properties even when oxidized, but other heat-reflective metals may be used such as stainless steel, chrome, and the like.

Referring now to FIGS. 2 and 3, the generator assembly 23 is supported by the valve body 16. The flared end 29 of the generator tube is received on beveled end 41 of a threaded nipple 42 which is provided by the valve body 16 and which extends upwardly through the base plate 13. The generator tube is sealingly retained on the threaded end of the nipple 42 by nut 43.

The valve body 16 receives a crank 44 which is rotatably mounted within packing nut 45 and washer 46. Surrounding crank 44 between packing nut 45 and washer 46 is packing 47 which prevents leakage of fuel around the crank. The inner end of the crank 44 is provided with an eccentric 48 which engages an eccentric block 49. The eccentric block 49 extends upwardly through a central bore provided in the nipple 42 and is connected to elbow 39 of the cleaner rod 36. In the event that the orifice 33 of the gas tip becomes clogged, rotation of the crank 44 causes the cleaner rod 36 to reciprocate, passing the needle 38 through the orifice of the gas tip.

Referring to FIG. 3, the air intake tube 24 extends upwardly through an opening in the base plate 13 and is secured therein by nut 50 which threadedly engages downwardly extending flange 51 provided about the opening in the base plate. The wall of the inclined central portion 24b of the air intake tube is provided with an opening 52 which receives the upper end of the generator tube 28, and a suitable sealing material may be positioned between the juncture of the air intake tube and the generator tube. The upper portion 24c of the air intake tube may be provided with the usual venturi fitting 53 which is provided with an upwardly and inwardly inclined central bore.

The air intake tube is also provided with heat reflective inner and outer surfaces to insulate the primary air passing through the lower and central portions 24a and 24b and the vapor and air mixture passing through the mixing portion 24c. I have found that the tube 24 may advantageously be formed of aluminum coated steel.

Referring to FIGS. 2 and 5, the upper end of the air intake tube 24 threadedly engages the burner manifold 25, which is seen to be generally hollow and serves to direct the fuel and air mixture into the burner tube assembly 26. The burner manifold 25 is essentially a C-shaped pipe connector and may advantageously be formed of cast brass to provide an elongated somewhat dome-shaped top wall 54 having rounded corners as at 55 and 56 and a bottom wall 57. The bottom wall 57 is formed with openings 58 and 59 which may be internally threaded after the casting operation. A generally cylindrical externally threaded collar 60 depends from the bottom wall 57 about the opening 59, and the inside diameter of the collar 60 is somewhat greater than the maximum diameter of the threaded opening 59.

The burner assembly 26 includes an elongated burner tube 61, which is threadedly engaged with the threaded opening 59 of the burner manifold 25 and which communicates through the hollow burner manifold with the air intake tube 24. The burner tube 61 is covered by burner shroud 62, which is generally cylindrical in shape and which includes a central portion 62a of generally constant diameter and an attaching portion 62b at the upper end thereof of reduced diameter which is threadedly engaged with the collar 60 of the burner manifold. The inside diameter of the burner shroud 62 is somewhat greater than the outside diameter of the burner tube 61 to provide an air space 63 between the walls of the shroud and the burner tube. The outside diameter

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of the burner tube 61 is also less than the inside diameter of the collar 60 to provide an air space 64.

The burner shroud 62 is provided with an annular recess 65 adjacent the bottom thereof, and the burner tube 61 is centered within the shroud by annular washer 66 which is secured between the annular recess 65 in the wall of the shroud and inwardly turned lower edge 67 of the shroud. The washer 66 is preferably made of asbestos or other non-combustible insulating material.

Referring to FIG. 2, catalytic mantle 27 is removably attached to the burner shroud by an asbestos band 68 which cooperates with the recess 65 to support the mantle.

Both the burner tube 61 and the burner shroud 62 are also provided with heat-reflective inner and outer surfaces, and may advantageously be made of aluminum-coated steel.

The lower end of the burner tube 61 is provided with a baffle 69 to reduce the pressure under which the fuel and air mixture enters the extremely fragile mantle, to distribute the mixture uniformly over the surface of the mantle, and to prevent combustion from occurring within the burner tube. However, in accordance with the present invention it is desirable to have the vapor and air mixture pass from the burner tube into the mantle relatively quickly, and the baffle 69 is designed to permit relatively fast flow of the vapor through the burner tube while at the same time accomplishing the above-mentioned objects of the baffle.

The baffle 69 illustrated in FIGS. 5 and 6 provides six vanes 70 which extend radially outwardly from the axis of the burner tube to the inner wall of the tube. The outer ends of the vanes 70 are circumferentially spaced equally about the inner wall of the burner tube, and the vanes extend axially along part of the length of the tube to provide axially extending flow passages or ports 71 for the fuel.

The six vanes 70 may be conveniently provided by three metal rectangular plates of the type illustrated in FIGS. 7 and 8. Plate 72 illustrated in FIG. 7 is provided with a pair of notches 73 and 74 extending inwardly from opposed sides of the plate, and plate 75 illustrated in FIG. 8 is provided with a single notch 76. The length of the sides of the plates 72 and 75 which extend transversely of the notches are approximately equal to the inside diameter of the burner tube 61, and, by engaging the notch 76 of each of a pair of plates 75 with one of the notches 72 and 73 of plate 72, the six-vane configuration illustrated in FIG. 6 can be obtained. After the plates 72 and 75 are received by the burner tube, they may be suitably secured therein by silver soldering or may be sized to provide a wedge fit within the tube.

Alternative embodiments of a baffle suitable for use with the inventive burner assembly are illustrated in FIGS. 9 and 10. In FIG. 9 the baffle 69' comprises four radially extending vanes 70' which may be provided by using only two of the type of plates illustrated in FIG. 8. The baffle 69'' of FIG. 10 comprises a fluted pipe providing outwardly extending flutes or vanes 70''. Both of the baffle 69' and 69'' likewise provide axially extending flow passages 71' and 71'', respectively. Although the four-vaned baffle illustrated in FIG. 9 provides suitable operation, it has been found that the baffle should preferably have 6, 8, or more vanes.

Stud 77 may be threaded into the top of the burner manifold 25 to hold the top 15 of the lantern snugly against the globe 14. Referring to FIG. 1, the stud 77 extends through the center of the top 15 and threadedly engages the nut 22.

In one specific embodiment of the invention, the generator tube 28 had an overall length of 4.123 inch, with the upper or vaporizing portion 28b being  $\frac{3}{8}$  inch long. The wall of the generator tube was 32 mils thick. The wick tube 35 and the coil 27 were both  $3\frac{3}{8}$  inches long.

The burner manifold 25 was cast brass, and the cen-

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ters of the threaded openings 58 and 59 were  $\frac{15}{16}$  inch apart. The internal diameter of the collar 60 was  $\frac{9}{16}$  inch.

The burner tube 61 was  $2\frac{1}{4}$  inches long, having an outside diameter of  $\frac{1}{2}$  inch and a wall 42 mils thick. The burner shroud 62 had a total length of  $2\frac{1}{8}$  inches, the outside diameter of the central portion 62a and  $\frac{7}{8}$  inch, and its wall was 35 mils thick. The upper end of the shroud was swaged to provide the reduced attaching portion 62b with an inside diameter of about .65 inch.

Each of the plates 72 and 75 had a length in the direction parallel with the slots therein of  $\frac{1}{2}$  inch, and the dimension transverse of the slots was .415 inch, to provide a snug fit within the burner tube.

## OPERATION

After the fount is filled with leaded gasoline, pressure is built up in the fount by hand pump 19. Turning hand wheel 17 about  $\frac{1}{4}$  turn allows fuel to flow through the fuel tube 18, valve body 16, and into the generator assembly 23. The liquid fuel is carried upwardly within the generator tube 28 by capillary action in the wick 35. The mantle 27 hangs from the burner tube assembly 26 adjacent the upper portion 28b of the generator tube, and lighting the mantle causes this portion of the generator tube to heat, thereby vaporizing the liquid fuel adjacent the upper end of the wick 35. The hand wheel 17 is then fully opened, and the vaporized fuel within the upper portion 28b of the generator tube flows through the orifice 33 of the gas tip 31 and is mixed with primary air within the upper portion 24c of the air intake tube, which acts as a mixing chamber. The primary air delivered by the air intake tube 24 flows through the openings 12a provided in the collar 12 of the lantern and upwardly through the air intake tube. The fuel and air mixture passes through the venturi 53, which improves the entrainment of the primary air in the fuel vapor, and the vapor and air mixture passes from the upper end of the air intake tube, through the manifold 25, and into the burner tube 61. The rounded corners 56 and 57 of the upper wall 54 of the burner manifold facilitate the flow of the mixture from the air intake tube to the burner tube. The mixture then flows downwardly through the burner tube and is distributed by the baffle evenly over the surface of the mantle, where it is burned to provide the intense light desired.

Although the invention is only imperfectly understood, it has been discovered that, by preventing cracking or decomposition of the lead compounds while the fuel flows through the burner assembly, deposition of lead and carbonaceous material on the globe 14 is substantially reduced to provide a surprising increase in the useful life of the lantern. Some deposits occur at the upper portion of the globe and on the surfaces of the top 15, but the central and lower portion of the globe remains relatively clean.

I have found that by substantially eliminating decomposition of the lead before the fuel mixture reaches the flame, the useful life of the lantern is increased to 240 and more hours. After burning for 240 hours, the intensity of the light given off by the lantern will usually still be above 80 candle power, which is considered to be the lower limit for a useful lantern for most purposes.

Even though the burning of the fuel within the mantle gives off substantial heat, the heat reflective outer surface of the generator tube 28 and the insulation provided by the wick 35 maintains most of the fuel in the liquid state as it travels upwardly through the wick, although some of the volatile fuel may vaporize in the lower portion of the generator. When the fuel reaches the upper end of the wick 35, it is no longer insulated by the wick and becomes vaporized. However, the heat-reflecting surface of the generator tube 28 still maintains the temperature of the fuel vapor well below the temperature at which decomposition will occur. The fuel vapor passes from the generator tube into the air intake tube, which is also

provided with a heat-reflecting outer surface to inhibit decomposition.

I have found that it is not necessary to aluminum coat the brass burner manifold 25, and this may be because the burner manifold is somewhat removed from the hot mantle. The fuel vapor and air mixture thus enters the upper end of the burner tube still at a temperature below which decomposition of the lead compounds will occur.

Although the lower end of the burner tube 61 is adjacent the mantle, the upper end of the elongated burner tube remains relatively cool. The burner tube is insulated from the heat given off by the flame by the protective shroud 62, which is provided with heat-reflecting surfaces, and by the air spaces 63 and 64 between the shroud and the burner tube. The shroud and the burner tube are maintained in a non-heat-conductive relationship by the air spaces and by the washer 66 of insulating material. Heat which does pass through the wall of the shroud 62 will tend to be reflected by the heat-reflecting outer surface of the tube 61, which provides further insulation for the vapor and air mixture which flows through the burner tube. The vanes 70 of the baffle 69 restrain heat from passing upwardly from the mantle, as does the constant downward flow of the fuel and air.

The fuel mixture is thus substantially maintained below the temperature at which the lead compounds will decompose until the fuel mixture enters the mantle and is burned. It is not certain whether the lead compounds do not have time to decompose within the mantle or whether, if they are decomposed, they are immediately carried out of the lantern by the exhaust gases. In any event, deposition of the lead compounds on the majority of the globe 14 is substantially eliminated, and the deposition is generally restricted to the upper portion of the globe and the interior surfaces of the top 15, particularly adjacent the vents 15a. Deposition of lead compounds within the components of the burner assembly is, of course, minimized, and not only does this decrease the frequency at which these components must be cleaned but prolongs their useful life by reducing the corrosive effects of the lead compounds.

While in the foregoing specification, I have described my invention in considerable detail in conjunction with a specific embodiment, it is to be understood that many of the details hereingiven may be varied considerably by those skilled in the art without departing from the spirit and scope of my invention.

I claim:

1. In a gasoline lantern having a fuel reservoir, a base, a globe supported by said base and extending generally upwardly therefrom, and a top above said globe, an improved burner assembly for adapting said lantern to burn leaded gasoline comprising:

- (a) an elongated generally vertically extending generator tube supported by said base, said generator tube having a heat-reflective outer surface and having a lower end communicating with said fuel reservoir and an upper end provided with an orifice of relatively small diameter, said generator tube providing a vaporizing section adjacent said upper end,
- (b) an elongated generally cylindrical wick tube received by said generator tube, said wick tube extending upwardly from adjacent said generator tube lower end and terminating adjacent said vaporizing section, said wick tube adapted to carry liquid fuel upwardly within said generator tube by capillary action,
- (c) an air intake tube supported by said base and communicating with air outside of the enclosure formed by said base, globe, and top, said air intake tube extending generally upwardly from said base and providing a mixing chamber in the upper portion thereof, the upper end of said generator tube communicating with said mixing chamber, said air intake tube having a heat-reflective outer surface,
- (d) an elongated downwardly extending burner tube

spaced from said mixing chamber and providing an upper and a lower end,

- (e) a plurality of axially extending vanes received by the lower end of said burner tube, said vanes extending radially inwardly from the inner wall of said burner tube to provide a plurality of axially extending flow passages,
- (f) means connecting the upper end of said burner tube and the upper end of said air intake tube,
- (g) a generally cylindrical burner shroud supported by said connecting means, said burner shroud being disposed about said burner tube and extending generally coextensive therewith, the wall of said burner shroud being spaced from the wall of said burner tube to provide an insulating air space therebetween, and
- (h) a mantle extending downwardly from said burner shroud and supported thereby.

2. The structure of claim 1 including an annular non-combustible washer of insulating material carried by the lower end of said burner shroud, the lower end of said burner tube being received by said washer, said burner tube and said burner shroud being provided with heat-reflective inner and outer surfaces.

3. The structure of claim 2 wherein said wick tube is formed of woven asbestos, and receives an elongated spirally wound coil, an elongated cleaner rod being slidably received by said coil.

4. In a gasoline lantern having a fuel reservoir, a burner assembly for adapting said lantern to burn leaded gasoline including

- (a) an elongated, generally vertically extending generator tube, the lower end of said generator tube communicating with said fuel reservoir and the upper end of said generator tube being provided with an orifice of relatively small diameter, the upper portion of said generator tube providing a vaporizing section,
- (b) an elongated generally cylindrical wick tube received by said generator tube and extending upwardly from adjacent said generator tube lower end and terminating adjacent said vaporizing section, said wick tube being formed of woven asbestos for carrying liquid fuel by capillary action upwardly from adjacent said generator tube lower end to said vaporizing section, said liquid fuel being vaporized in said vaporizing section,
- (c) mixing chamber means communicating with the upper end of said generator tube for mixing air with fuel passing through said orifice,
- (d) a burner tube extending generally parallel to said generator tube, the upper end of said burner tube communicating with said mixing chamber means,
- (e) a plurality of axially extending vanes received by the lower end of the burner tube, said vanes extending radially inwardly from the inner wall of the burner tube to provide a plurality of axially extending flow passages, each of said generator tube, mixing chamber means and burner tube being provided with a heat-reflective outer surface whereby the interior of the burner assembly is maintained at a relatively low temperature to substantially prevent decomposition of the leaded gasoline.

5. In a gasoline lantern having a fuel reservoir, a burner assembly for adapting said lantern to burn leaded gasoline including

- (a) an elongated, generally vertically extending generator tube, the lower end of said generator tube communicating with said fuel reservoir and the upper end of said generator tube being provided with an orifice of relatively small diameter, the upper portion of said generator tube providing a vaporizing section,
- (b) an elongated generally cylindrical wick tube received by said generator tube and extending upwardly from adjacent said generator tube lower end and terminating adjacent said vaporizing section, said wick tube being formed of woven asbestos for carrying

liquid fuel by capillary action upwardly from adjacent said generator tube lower end to said vaporizing section, said liquid fuel being vaporized in said vaporizing section,

(c) an elongated spirally wound coil received by the wick tube,

(d) an elongated cleaner rod slidably received by the spirally wound coil,

(e) mixing chamber means communicating with the upper end of said generator tube for mixing air with passing through said orifice,

(f) a burner tube extending generally parallel to said generator tube, the upper end of said burner tube communicating with said mixing chamber means,

(g) baffle means in said burner tube adjacent the lower end thereof,

each of said generator tube, mixing chamber means and

burner tube being provided with a heat-reflective outer surface whereby the interior of the burner assembly is maintained at a relatively low temperature to substantially prevent decomposition of the leaded gasoline.

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EDWARD G. FAVORS, Primary Examiner

U.S. Cl. X.R.

431—241



UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,529,911 Dated September 22, 1970

Inventor(s) Wilbur J. Townsend

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In column 9, line 11, insert --fuel-- before  
"passing".

SIGNED AND  
SEALED  
DEC 15 1970

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

WILLIAM E. SCHUYLER, JR.  
Commissioner of Patents