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B. W. TULLIS

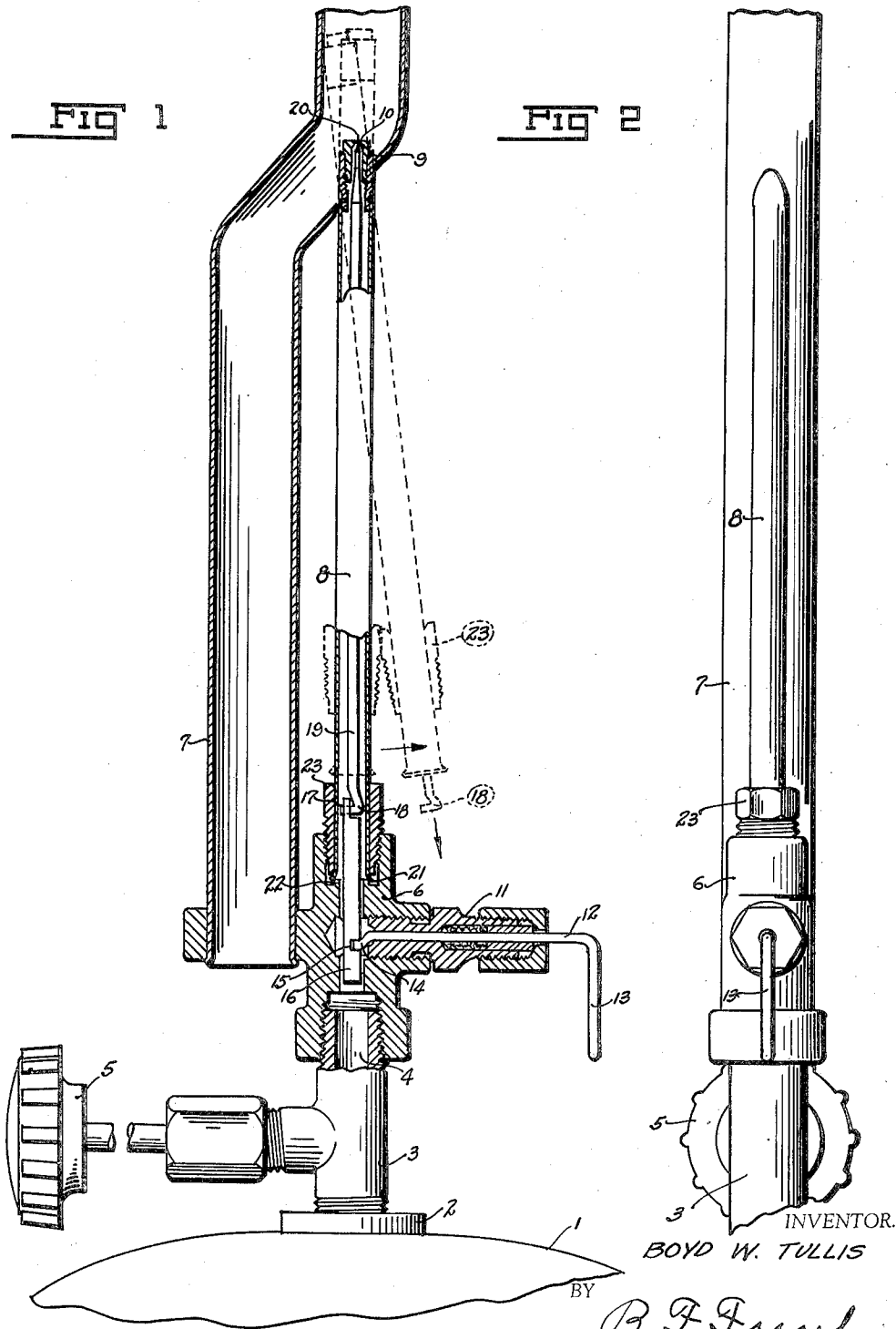
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REMOVABLE TIP CLEANING NEEDLE AND GENERATOR

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FIG 1

FIG 2



INVENTOR.  
BOYD W. TULLIS

BY *B. F. Frank*  
ATTORNEY.

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## REMOVABLE TIP CLEANING NEEDLE AND GENERATOR

Boyd W. Tullis, Wichita, Kans., assignor to The Coleman Lamp and Stove Company, Wichita, Kans.

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9 Claims. (Cl. 158—120)

This invention relates to tip cleaning needles for hydrocarbon generators. Ordinarily, generators which convert liquid fuel into the vapor phase to combine with air to form a combustible mixture consist of elongated tubes into which the liquid fuel flows where it is converted into vapor by external heat. The outlet for such generators is very small and sometimes the outer orifice clogs, so prior to my invention, it has been the practice to project a needle through the orifice to clean it. Sometimes this needle is on the valve stem which controls the flow of liquid fuel into the generator. The needle frequently becomes bent or broken, so according to prior practice when the needle became useless, it was necessary to supply an entirely new valve and valve stem. I have provided means for releasably connecting the needle to the actuator, whatever it may be, so when the needle becomes broken or unfit for use, a new one can be easily substituted.

The novelty of the invention will be apparent by reference to the following description in connection with the accompanying drawing in which:

Fig. 1 is a vertical, longitudinal sectional view, partly in elevation, showing my invention applied on a conventional hydrocarbon liquid fuel burning device.

Fig. 2 is side elevational view of the same.

The reference numeral 1 designates a font or receptacle to contain liquid fuel under pressure in contact therewith. The liquid fuel is discharged through the outlet collar 2 on which is a valve body 3, the passageway 4 of which is controlled by a hand valve 5. The valve body 3 carries a hollow casting or fitting 6, which supports the burner part consisting of the open ended tube 7, at the top of which is the usual mixing chamber having one or more downwardly disposed fuel tubes to which a mantle or mantles are fastened in the usual manner.

Secured to the outlet end of the hollow casting 6 is a tubular generator 8 having a tip 9 at its upper end with a small orifice 10 discharging into the air tube 7 so that the air and liquid may combine before entering the mixing chamber (not shown), it being understood that the mantles or burners located near the generator will afford sufficient heat to cause the generator to vaporize the liquid passing there-through on its way to the mixing chamber.

The above construction is old but as heretofore stated, my invention has to do particularly with a cleaning needle for cleaning the orifice

10 and associated mechanism whereby the needle may be readily replaced. To this end I provide a stuffing box 11 in the hollow casting 6 in which is a rotatable shaft 12 having a handle 13 at its outer end. The shaft 12 is provided with an eccentric end 14 which engages a notch or slot 15 in the sliding bar 16. The sliding bar extends up into the generator tube and it has an opening 17 to receive the hooked end 18 of a needle body 19 provided at its upper end with a needle point 20. It will be noted that the lower end of the generator tube has a flared portion 21 which fits over the shoulder 22 of the fitting 6 and that it may be secured thereto by screwing down the ferrule 23 in threaded connection with the casting or fitting 6. Therefore the generator can be easily removed should the needle point become dull or broken and a new needle easily substituted because the needle body 19 can be unhooked and a new needle substituted. This reduces the cost of renewal because only the needle need be replaced.

Instead of requiring that the casting supporting the air tube and other appurtenances be removed to substitute a new generator it will be necessary only to unscrew the ferrule or jamb-nut 23, slide it up the generator tube exposing the hook 18 which can be detached from the bar, then by slightly raising the generator and swinging it to the dotted line position shown in Fig. 1 the generator can be removed with the needle and a new generator can be substituted by inserting the new generator through the opening in the air tube, swinging it over to the full line position shown in Fig. 1 and hooking the needle in the bar, then screwing the ferrule down into the casting.

Sometimes carbon accumulates in the generator so if the needle sticks it is difficult to move the bar. To this end I have provided the hooked end of the needle of such a shape and structure that an extra hard pull exerted by the bar will bend the hooked end to release the connection. This will enable the generator to be removed in an easy manner even should the needle stick in the generator.

What I claim and desire to secure by Letters-Patent is:—

1. In a lamp in which the burner is fed from a font containing liquid hydrocarbon fuel under air pressure in contact therewith, a fitting for the font having a valved fuel passageway, an air tube for the burner, an elongated vaporizing generator having its tip end passing through an opening in the tube and its inlet end in com-

munication with the passageway in the fitting, a generator tip cleaning needle actuator in the fitting, a tip cleaning needle in the generator, connected to the actuator and a jamb nut for fastening the inlet end of the generator in position to communicate with the passageway in the fitting, the jamb nut being removable to release the generator so that the generator can be moved longitudinally of the needle to expose the connecting means so the connection can be broken to remove the generator and needle from the fitting.

2. In a lamp in which the burner is fed from a font containing liquid hydrocarbon fuel under air pressure in contact therewith, a fitting for the font having a valved fuel passageway, a burner part, an elongated vaporizing generator tube having its tip end passing into an opening in the burner part and its inlet end in communication with the passageway in the fitting, a generator tip cleaning needle in the generator, an actuator in the fitting removably connected to the needle to positively reciprocate the same, a jamb nut connecting the vaporizing generator to the fitting in line with the fuel passageway, said generator tube being slidable on the needle when the jamb nut is released to permit access to the connection between the needle and the actuator so that the needle and actuator connection can be broken.

3. In combination a font, a fitting communicating with the font and having a fuel passageway therethrough, a reciprocatory bar in the passageway, a shaft for operating the bar accessible exteriorly of the fitting, a vaporizing generator, a tip cleaning needle in the generator removably connected to the bar, and a jamb nut sleeved on the generator removably engaging the fitting so that when the jamb nut is released from the fitting the generator may be moved longitudinally of the needle to expose the connection whereby the needle may be detached from the bar.

4. A hydrocarbon fuel burner including a fitting for the font of a lamp having a through passageway for the passage of fuel, an actuator in the fitting, a vaporizing fuel generator removably connected to the fitting, a generator tip cleaning needle in the generator having a connection with the actuator releasable from the actuator under strain, caused by the needle sticking in the generator, without injuring the actuator.

5. In a lamp in which the burner is fed from a font having liquid hydrocarbon fuel under air pressure in contact therewith, a fitting connected to the font having a fuel passageway therethrough, a vaporizing generator having a flared end engaging the fitting, a jamb nut sleeved on the generator connecting the flared end to the fitting, an actuator in the fitting, and a tip cleaning needle in the generator having a connection with the actuator disruptable under strain without injuring the actuator.

6. In a lamp in which the burner is fed from

a font having liquid hydrocarbon fuel under air pressure in contact therewith, a fitting connected to the font having a fuel passageway therethrough, a vertical vaporizing generator, a tip cleaning needle in the generator provided at its lower end with a hook, a jamb nut on the generator engaging the fitting and an actuator in the fitting engaged by the hook but quickly releasable therefrom upon an abnormal pull on the needle to bend the hook when the needle is stuck in the generator.

7. In a lamp in which the burner is fed from a font, containing liquid hydrocarbon fuel under air pressure in contact therewith, a fitting for the font having a fuel passageway, a burner part, an elongated vaporizing generator tube having its tip end in communication with the burner part and its inlet end in communication with the passageway in the fitting, a tip cleaning needle in the generator, a sliding actuator in the fitting, a releasable part on the end of the needle held in operative engagement with the actuator by the wall of the generator so that the actuator can positively reciprocate the needle, the generator being removably connected to the fitting so that upon release therefrom it can be slid upon the needle to expose the connection between the needle and the actuator to permit manual release of the needle from the actuator.

8. In a lamp in which the burner is fed from a font containing liquid hydrocarbon fuel under air pressure in contact therewith, a fitting for the font having a fuel passageway, a burner part, an elongated vaporizing generator tube having its tip end in communication with the burner part and its inlet end in communication with the passageway in the fitting, a tip cleaning needle in the generator, a sliding actuator in the fitting, a hook on the end of the needle held in engagement with the actuator by the wall of the generator so that the actuator can positively reciprocate the needle, the generator being removable from the fitting so that upon release therefrom, it can be slid upon the needle to expose the hook and actuator so that the hook can be disengaged from the actuator.

9. In a hydrocarbon fuel burning device in which the burner is fed from a font containing liquid hydrocarbon fuel under air pressure in contact therewith, a fitting for the font, an elongated vaporizing generator tube removably connected to the fitting, the fitting and generator tube having a continuous passageway from the font to the burner, an actuator in the fitting, a tip cleaning needle in the generator having a part releasably secured to the actuator to provide a connection between the two, held in operative engagement by the wall of the continuous passageway, so that when the parts are in place the actuator can positively reciprocate the needle, and when the generator is detached from the fitting, the connection will be accessible so that the two parts can be disconnected.

BOYD W. TULLIS.