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BURNER ASSEMBLY

Filed April 11, 1928

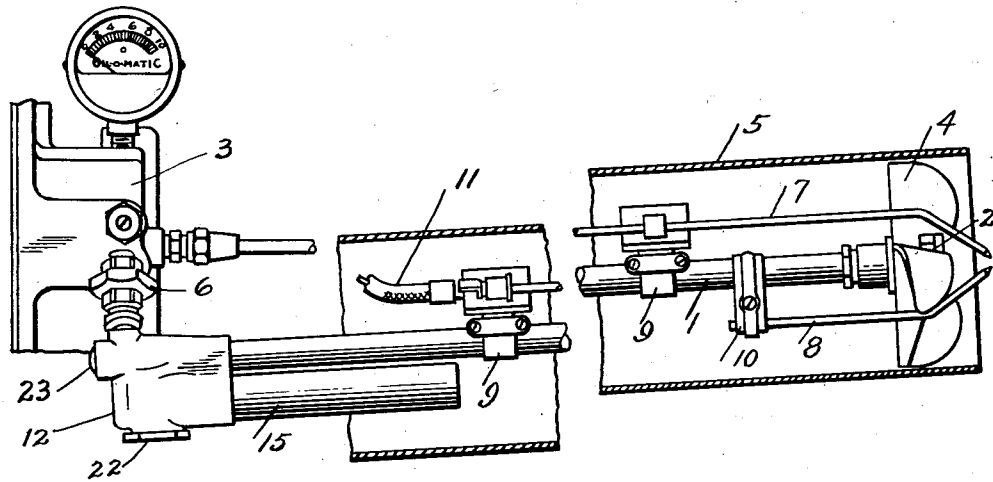


FIG. 1.

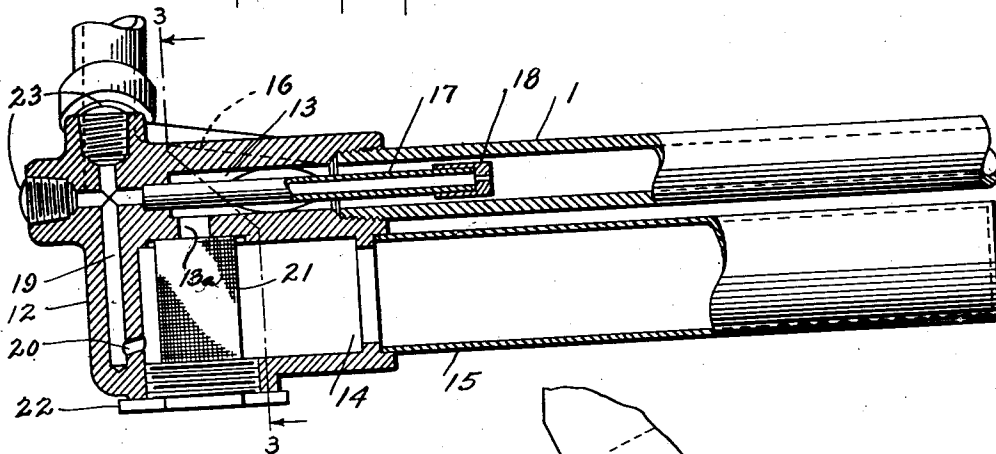


FIG. 2.

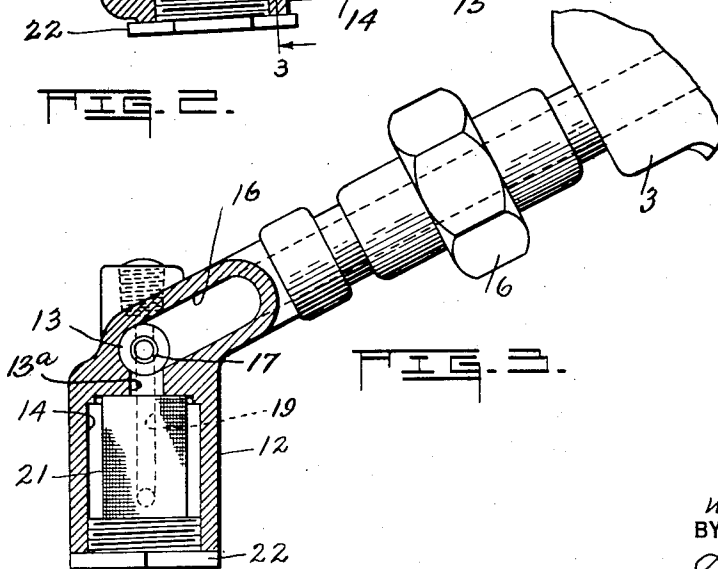


FIG. 3.

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BURNER ASSEMBLY

Application filed April 11, 1928. Serial No. 269,187.

This invention relates to improvements in electrically operated liquid fuel burning devices for domestic heating purposes and more particularly to what is commercially termed the "burner assembly" of such a device.

It is an object of this invention to provide a device of this character of the type, such as shown and described in the applicant's prior Patent No. 1,637,670, August 2, 1927, in which an electric motor operates a fan blower for supplying additional air through a draft pipe surrounding a nozzle discharging a mixture of liquid fuel and air from an atomizing pump also operated by said motor, with the improved "burner assembly" as contemplated by this invention. The pipe leading from the atomizing pump to the nozzle, the aid spiral vanes upon the nozzle, and the ignition electrodes carried upon the pipe of this type of liquid fuel burning device are commercially termed a "burner assembly", inasmuch, as these parts are assembled separately and are ready for application to a new device before it leaves the factory or may be shipped separately for application or substitution for the corresponding parts upon a completed device that has left the factory or is in use. During the normal operation of this type of liquid fuel burner an emulsion or beat up mixture of oil and air is passed under pressure through the burner assembly pipe and when the motor ceases to operate the burner assembly pipe behind the nozzle remains filled with this mixture and this invention contemplates the providing of a drain or oil trap into which the contents of this pipe are collected each time the motor ceases operation.

When the motor normally starts operation, the electric ignition device is energized for a predetermined time during which the burner will become ignited and it has been found that if the burner assembly pipe is drained before the motor and ignition device are energized the burner flame will more readily ignite, thereby reducing the possibility of a delayed ignition which at times produces dangerous results.

In describing the invention reference is made to the accompanying sheet of drawings

which illustrate a preferred embodiment of this improved device.

In the drawings:—

Figure 1 is a fragmentary view, partly in section and partly in side elevation, illustrating a draft pipe surrounding this improved burner assembly which in turn is shown connected to the chamber of the atomizing pump.

Figure 2 is an enlarged detail view partly in central vertical section illustrating the construction of the drain and oil trap of this improved burner assembly.

Figure 3 is a similar view taken on the line 3—3 of Figure 2.

Since this invention relates only to the burner assembly, the motor, fan blower and other parts are not illustrated. The burner assembly comprises the mixture discharge pipe 1 mounting the nozzle 2 at one end and communicating at the other end with the interior of the atomizing or mixing chamber 3. The air spiral 4 mounted on the nozzle 2 centers that end in the draft pipe 5 and the joint 6 to the mixing chamber centers the pipe 1 at the other end. The draft pipe 5 enters the combustion chamber of the heater to which the liquid fuel burning device is installed and continues to the rear of the burner assembly to a fan blowing housing not shown. The ignition device comprises electrode 7 and 8 held in parallel relation to the mixture pipe 1 by clamps 9 and 10 and which extend through the vanes of the air spiral 4, are bent towards each other and terminate in a spark gap in front of the nozzle 2. The electrode 7 is insulated from the mixture pipe 1 and is connected by the lead 11 to a source of electricity while the other electrode 8 is grounded through its supporting bracket 10 to the mixture pipe 1, as shown and described in the applicant's co-pending application Serial No. 753,167, filed December 1, 1924, in which the operation of the ignition device is described.

In order to drain the mixture pipe 1 when the mixing pump ceases operation the burner assembly is mounted so as to incline at a slight angle downward from the nozzle 2 and to catch the mixture as it drains therefrom a trap in the form of a casing 12 is provided be-

tween the rear end of the mixture pipe 1 and the joint 6 to the mixing chamber 3. This casing 12 is provided with a bore 13 in prolongation of the mixture pipe and with which the mixture pipe is screw threaded. The rear
 5 of the bore 13 communicates through port 13^a, with the trap chamber 14 in the casing thereunder. If desired the capacity of the chamber 14 may be increased by providing
 10 a forward extension in the form of a tube 15 which extends from the forward wall thereof under the mixture pipe 1, as shown. A passageway 16 is provided in the casing 12 leading rearwardly from one side of the bore 13
 15 to the joint 6 to the mixing chamber 3.

In order that the mixture caught in the trap 14 may be removed and utilized an aspirator pipe 17 is mounted in the casing 12 centrally of the bore 13 to extend a short distance into the rear of the mixture pipe 1 and
 20 that end is preferably provided with a nozzle cap 18 having an opening of less diameter. The other end of the aspirator pipe 17 communicates with a passageway 19 in the casing
 25 12 which opens through a port 20 into the bottom of the trap chamber 14. It is preferable to provide a cylindrical strainer screen 21 extending between the upper and lower walls of the trap chamber 14 arranged concentrically with the communicating passage
 30 to the bore 13. The casing 12 may also be provided with screw plugs 22 and 23 which may be removed to clean the screen 21 or clear the passageway 19, if desired.

As above stated when the motor starts the normal operation of the burner mechanism, the mixture pipe 1 will be empty. The energizing of the motor also energized the ignition device and the mixture pump will force a
 40 mixture of oil and air through the mixture pipe 1 to the nozzle 2 where it is discharged against the train of sparks passing between the electrodes 7 and 8 and the burner becomes ignited, at the same time the passage of
 45 the mixture through pipe 1 sets up an aspirator action and empties the trap chamber 14 through the port 20, passageway 19 and aspirator pipe 17. When the motor ceases operation, the mixture pump ceases, and the
 50 mixture remaining in the mixture pipe 1 drains out into the trap chamber 14, so that the mixture pipe will be empty when the motor starts operation thereafter.

What I claim is:—

55 In a liquid fuel burning device including a mixture pump and a burner nozzle, a mixture pipe leading from the nozzle to the pump, a casing interposed between the said pipe and said pump having a chamber into
 60 which the mixture in said pipe is adapted to drain when the pump ceases to operate, an aspirator pipe arranged within the mixture pipe and communicating with the bottom of said chamber adapted to withdraw the collected mixture from the chamber when the
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pump begins to operate and discharge it into the mixture passing thereabout from the pump towards the nozzle.

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