

F. P. SCHMITT.
BURNER FOR LIQUID HYDROCARBON FUEL.
APPLICATION FILED MAR. 18, 1920.

1,421,031.

Patented June 27, 1922.

FIG. 1.

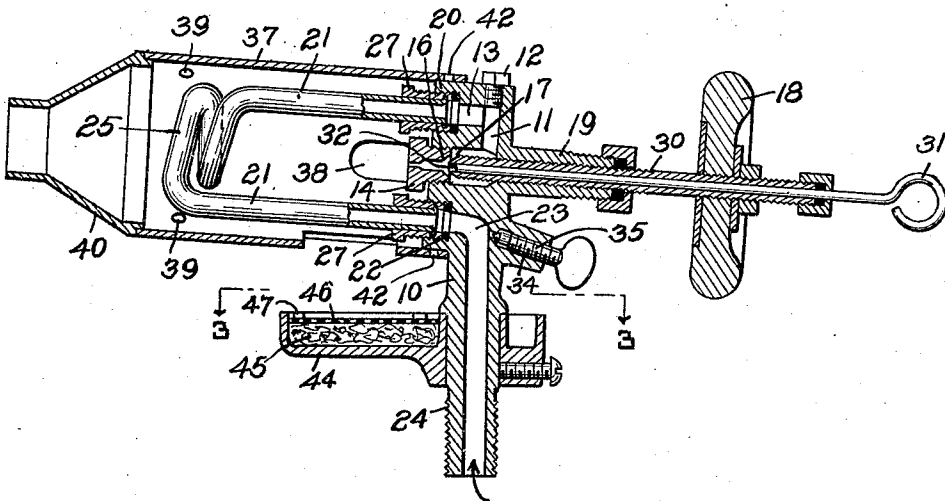


FIG. 2.

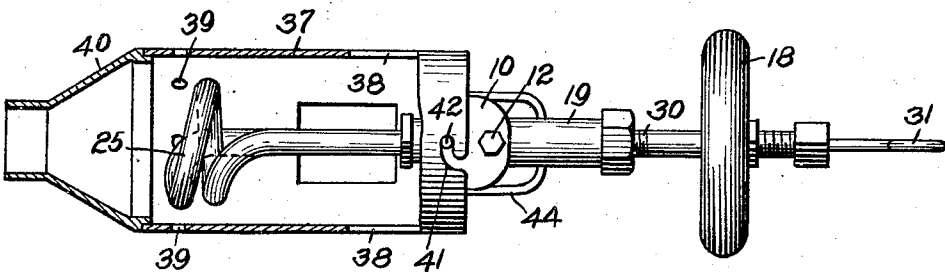


FIG. 3.

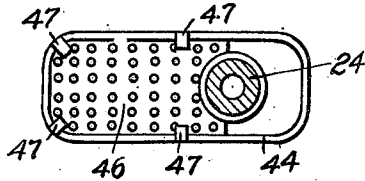
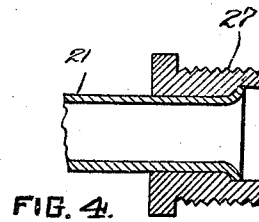


FIG. 4.

WITNESSES

J. Herbert Bradley.

INVENTOR

Francis P. Schmitt,
By *Frederick W. Hunter*
Attorney.

UNITED STATES PATENT OFFICE.

FRANCIS P. SCHMITT, OF LEETSDALE, PENNSYLVANIA, ASSIGNOR TO PEERBLOW MANUFACTURING COMPANY, OF LEETSDALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BURNER FOR LIQUID HYDROCARBON FUEL.

1,421,031.

Specification of Letters Patent. Patented June 27, 1922.

Application filed March 18, 1920. Serial No. 366,839.

To all whom it may concern:

Be it known that I, FRANCIS P. SCHMITT, a citizen of the United States, and a resident of Leetsdale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Burners for Liquid Hydrocarbon Fuel, of which the following is a specification.

This invention relates to liquid fuel burners and especially to burners to be used in connection with torches.

The invention is an improvement upon the burner illustrated and described in Swanson Patent No. 1,135,072, granted April 13, 1915. Its objects are to so construct such burners that the nozzle can be readily cleaned and so that the pre-heating tubes can be readily renewed in case they burn out.

In the accompanying drawings Fig. 1 is a vertical longitudinal section through the burner; Fig. 2 is a plan view of the same showing the heat retaining shell in section; Fig. 3 is a horizontal section through the head on the line 3—3, Fig. 1, and Figure 4 is a sectional detail view showing the method of attaching the preheating tube to the head.

The improved burner comprises a head 10 having therein a vertical passage 11 which extends downwardly somewhat more than half the height of said head and which is closed at its upper end by the plug 12 and which near its upper end communicates with the horizontal passage 13 and near its lower end with the nozzle 14, the latter being a separate piece and screwed into a tapped hole in the head. Adjacent to, and preferably on the inner end of the nozzle 14, is a valve seat 16 which is engaged by the needle valve 17 controlled by the handle 18, and having a threaded engagement in an outwardly projecting boss 19 which is shown as integral with the head 10.

At its upper end the head is provided with an inwardly projecting boss 20 through which the passage 13 extends and to which is fastened one end of the U-shaped pre-heating tube 21. At the lower end of the head is another inwardly projecting boss 22 to which the other end of the preheating tube is attached, and through which boss extends a fuel inlet passage 23 which extends down through a tube 24 adapted for attach-

ment to a suitable fuel tank in any convenient way. As this forms no part of the present improvement it is not illustrated. A single pre-heating tube 21 is illustrated, of substantially U-shape and having its outer end coiled one or more times, as shown at 25, to provide an enlarged heating surface. Since such pre-heating tubes frequently burn out, provision is made for attaching the same to the head 10 in a manner to permit the ready renewal of the tube. As illustrated the outer ends of the passages 13 and 23 are enlarged and threaded to receive the external threaded couplings 27 provided with polygonal end portions to receive a wrench, and which couplings telescope the ends of the tube 21 and are provided with internal shoulders (shown as formed on the inner ends of said couplings) which engage external shoulders or flanges on the ends of the tube, by means of which the tube is securely but detachably connected to the head 10, as will be obvious.

The valve 17 is in alignment with the nozzle 14, the stem of said valve being hollow and within it works a cleaning rod 30 provided on its outer end with a handle 31, and having its inner end reduced or carrying a fine wire, as shown at 32, which can be projected through the nozzle to clean the same.

Preferably also the lower end of the head is provided with a passage 34 communicating with the upper end of passage 23 and closed by a plug 35, so that a cleaning wire can be inserted therethrough to clean the pre-heating tube.

The burner is also provided with a heat retaining shell 37 which will be of the usual form provided with air inlet apertures 38 near its base and similar apertures 39 at its end, and with a reducing end or nozzle portion 40. This shell is attached to the head 10 by a pair of bayonet joint slots 41 engaging lugs 42 on the head.

The improved burner is so constructed that the pre-heating tubes can be readily renewed when burned out, and since the needle valve is in alignment with the nozzle, said nozzle can be readily cleaned, as is obvious. In the Swanson burner above described the pre-heating tubes are soldered or brazed in sockets in the inner face of the head, and since the head is made of copper or the like,

said tubes can not be disconnected without practically destroying the head. Furthermore the nozzle was not in alignment with the needle valve and could only be cleaned by stopping the operation of the burner and inserting a clean wire through the outer end of the burner, or by removing the nozzle from the head. In both of these features the new burner is a distinct advantage over the Swanson burner.

The priming cup 44 in the new burner is shown as a pan shaped member suitably attached to the tube 24 and containing a body of fibrous material 45 covered by a perforated metal plate 46, held in place by bent over lugs 47 on the edges of the pan.

I claim:

1. In a liquid fuel burner, the combination of a pre-heating tube adapted for connection to a source of fuel, a head having a passage therein communicating with said pre-heating tube, the tube being removably connected to said passage by connectors telescoping the tube ends and internally shouldered to engage external shoulders on the tube ends, a portion of said passage being at substantially a right angle thereto, a nozzle communicating with a portion of said passage which is substantially at a right angle to the pre-heating tube and arranged to direct the ignited fuel in proximity to the pre-heating tube, said head being provided with a valve seat in alignment with the nozzle, and a valve in alignment with the nozzle and engaging said valve seat, said valve being provided with an axial passage receiving a cleaning rod.

2. In a liquid fuel burner, the combination of a U-shaped pre-heating tube, a head having an inlet passage communicating with one end of said pre-heating tube and an outlet communicating with the other end of said pre-heating tube, the tube being removably connected to said passage by connectors telescoping the tube ends and internally shouldered to engage external shoulders on the tube ends, a nozzle communicating with the outlet passage and located substantially midway between the points of communication of the pre-heating tube with said outlet and inlet passages, a valve seat in alignment with said nozzle, and a removable needle valve co-operating with said valve seat and in alignment with said nozzle, said needle valve being provided with an axial opening containing a cleaning rod.

3. A liquid fuel burner comprising a pre-heating tube adapted for connection to a source of fuel, a head having a passage therein communicating with said preheating tube, the tube being removably connected to

said passage by connectors telescoping the tube ends and internally shouldered to engage external shoulders on the tube ends, a nozzle communicating with said passage and arranged to direct the ignited fuel in proximity to the preheating tube, said nozzle being provided with a bore and a valve seat in alignment therewith, a valve in alignment with the nozzle, said valve being provided with an axial passage receiving a cleaning rod, the cleaning rod having a reduced end adapted to be projected throughout the entire extent of the nozzle bore.

4. A liquid fuel burner comprising a pre-heating tube adapted for connection to a source of fuel, a head having a passage therein communicating with said preheating tube, the tube being removably connected to said passage by connectors telescoping the tube ends and internally shouldered to engage external shoulders on the tube ends, a removable nozzle communicating with said passage and arranged to direct the ignited fuel in proximity to the preheating tube, said nozzle being provided with a bore and a valve seat in alignment therewith, a valve in alignment with the nozzle, said valve being provided with an axial passage receiving a cleaning rod, the cleaning rod completely filling the axial passage and having a reduced end adapted to be projected throughout the entire extent of the nozzle bore.

5. A liquid fuel burner comprising a pre-heating tube adapted for connection to a source of fuel, a head having a passage therein communicating with said preheating tube, the tube being removably connected to said passage by connectors telescoping the tube ends and internally shouldered to engage external shoulders on the tube ends, a nozzle communicating with said passage and arranged to direct the ignited fuel in proximity to the preheating tube, said nozzle being provided with a bore and a valve seat concentric therewith, a valve in alignment with the nozzle, the stem of said valve being provided with an axial passage concentric with said stem for receiving a cleaning rod having a reduced end adapted to be projected well within the nozzle bore, the seating of the valve upon the seat acting to center the reduced end of the cleaning rod in the nozzle bore.

In testimony whereof, I have hereunto set my hand.

FRANCIS P. SCHMITT.

Witnesses:

G. G. PRICE,
HOWARD L. SNIVELY.