Dec. 20, 1927. 1,653,468

E. T. PAYNE ET AL

OIL BURNER

Filed Aug. 24, 1926 2 Sheets-Sheet 1

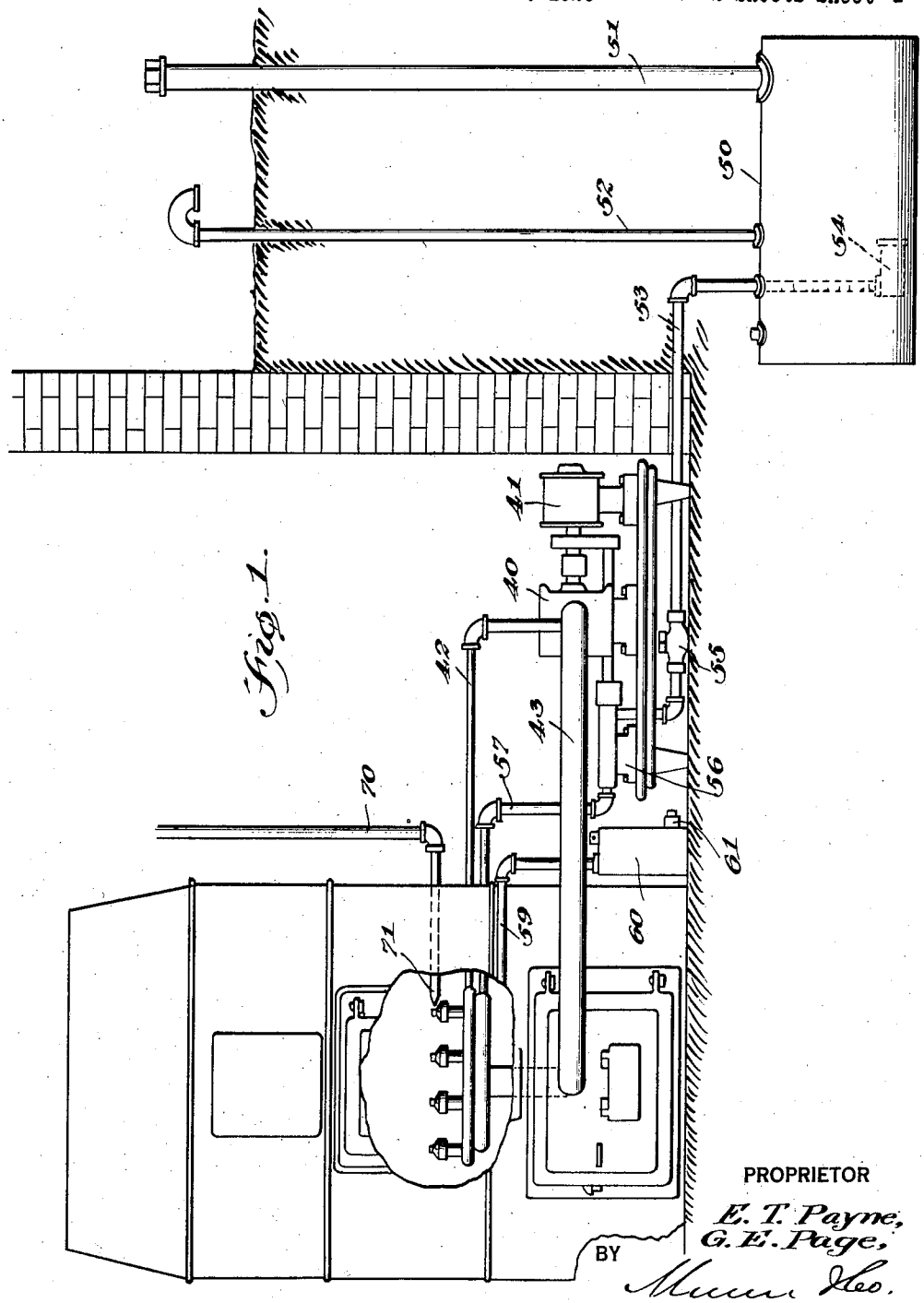


Fig. 1.

PROPRIETOR

E. T. Payne,
G. E. Page,

BY Munn & Co.

ATTORNEYS

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Fig. 2

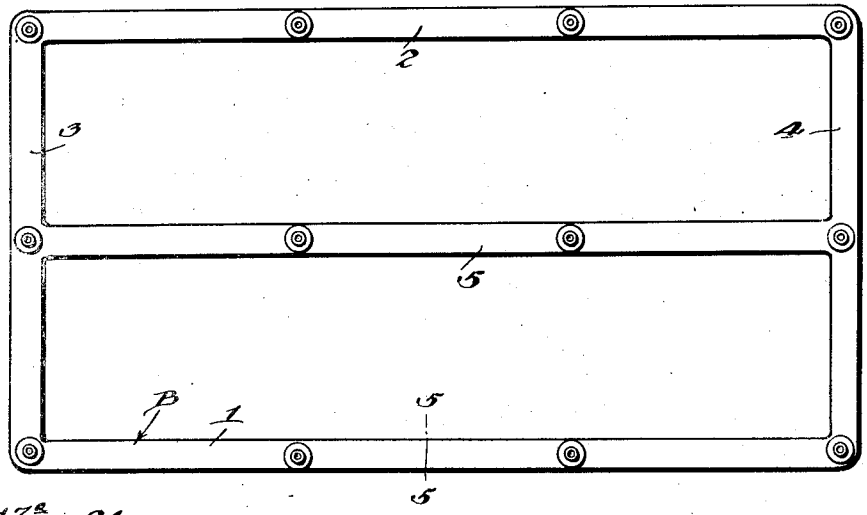


Fig. 3.

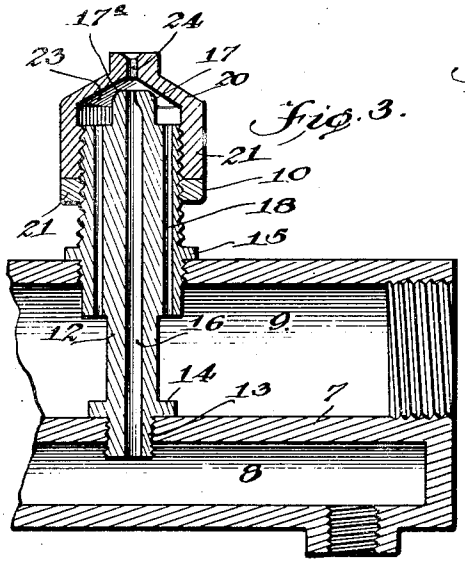


Fig. 4.

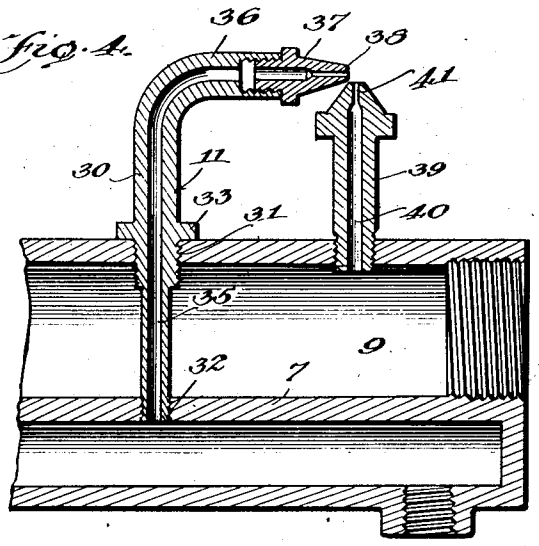
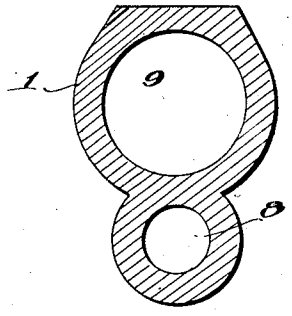


Fig. 5



PROPRIETOR
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Patented Dec. 20, 1927. 1,653,468

UNITED STATES PATENT OFFICE.

EDWARD T. PAYNE AND GLENN E. PAGE, OF PERU, INDIANA.

OIL BURNER.

Application filed August 24, 1926. Serial No. 131,237.

This invention relates to an oil burner and among the objects of the invention are to provide a burner which efficiently burns raw and ungasified liquid fuel quietly, economically and without the generation of odors or smoke. Practically any kind of oil may be used and the oil is consumed without forcing the fuel to the burners under pressure and utilizing any moving mechanical devices within the combustion chamber. Flooding is eliminated and complete combustion is had without danger of back-firing and with a minimum fire hazard. A maximum degree of heat is generated so that practically all of the available heat units are had of the oil supply.

A further object is to provide an oil burner which is of simple and durable construction, reliable and effective in operation and easy and comparatively inexpensive to install, operate and maintain.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claim, reference being had to the accompanying drawings forming a part of this specification, and in which:—

Figure 1 is a view in elevation illustrating the burner installed in the furnace of a heating plant,

Figure 2 is a plan view of the burner,

Figures 3 and 4 are sectional views on the line 3—3 and 4—4, respectively, of Figure 2, and

Figure 5 is a view in transverse section on the line 5—5 of Figure 2.

Referring to the drawings it will be seen that the burner comprises a tubular body B which may be of any desired shape but which is shown as consisting of side bars 1 and 2, end bars 3 and 4 and an intermediate bar 5 connecting the end bars 3 and 4. All of the tubular bars of the frame are hollow and have an internal portion 7 which divides the interior of the bar into a passage 8 for the oil or liquid fuel and a passage 9 for the compressed air. Each of the bars carries a plurality of burners, there being burners designated generally at 10 and burners designated generally at 11. The burners 10 have body portions 12 which extend through the passages 9 and have their inner ends 13 threaded through the partition 7. Shoulders 14 and 15 abut the partition 7 and the outer wall of the hollow bar to limit the extent to which the body of the burner may be screwed into the bar. If desired gaskets may be interposed between the shoulders and the parts with which they co-act. The body 12 of each burner is provided with an axial opening 16 which communicates with the fuel oil passage 8 and which leads out through the perforated boss 17. A plurality of air supply passages 18 are provided and are radially spaced from the fuel supply passage 16. The passages 18 communicate at one end with the air supply passage 9 and through the opposite ends that discharge around a perforated boss 17. The discharge ends of the passages 18 and the perforated boss 17 are located within a tip or cap 20 having a flange 21 threaded on the body portion 12 and held in adjusted position thereon by means of a nut 21. At its outer end the cap 20 has an inclined wall 23 which converges to a jet opening 24 aligned with the opening of the boss 17. The boss 17 has its outer end rounded off, as indicated at 17a, so that the air that flows out through the passages 18 is caused to traverse the outer end of the jet and to entrain and atomize the fuel oil, the air serving to pull the fuel oil through the passage 16 from the passage 8.

The nozzles 11 have elongated body portions 30 threadedly connected, as at 31, with the body of the hollow bars and threadedly connected, as at 32, with the partitions. In this form it may be desirable to employ only one shoulder 33 engageable with the hollow body but, of course, the shoulder may be provided to engage the partition 7 if this is desirable. As before gaskets may be employed beneath the shoulders. The elongated body portion 30 has a single fuel passage 35 extending therethrough and the outer end of this body portion is bent over and extends horizontally, as indicated at 36. The horizontally extending portion 36 carries a tip 37 which has a restricted discharge passage 38 overlying a nozzle 39 screwed into the body portion of the bar and having an opening 40 which freely communicates with the air supply passage 9. The discharge end of the passage 40 is restricted, as at 41, and is located closely adjacent to the discharge end of the tip 37 so that the air issuing from the nozzle 39 in the form of a jet travels across the discharge opening of the tip 37 and entrains and atomizes the liquid fuel.

As shown in Figure 1 the passages 9 of the hollow body of the burner are provided with air under pressure from a blower 40 driven by a motor 41 and supplying the air line 42. This same blower may supply air for combustion through an air duct 43 leading up into the combustion chamber and communicating with the combustion chamber just below the body of the burner. Deflecting plates 44 may be provided for distributing the air supplied for supporting the combustion and for properly deflecting the heat. The supply of fuel is contained in the fuel tank 50 having the usual cap filling pipe 51 and vent pipe 52. A fuel supply pipe 53 communicates with the tank through the usual jet and strainer 54 and also has a check valve 55 incorporated therein adjacent its communication with a fuel pump 56. This pump is operated from a motor 41 and pumps the oil slowly through a fuel line 57. The oil when flowing into the passage 8 exists under atmospheric pressure and the level of the oil is determined by means of an overflow 59 communicating with the hollow passages 8 at the desired level and leading back through a safety switch 60 from which a line 66 returns to the fuel supply tank. When the fuel level exceeds a predetermined height in the passages 8 or in the fuel supply passages 16 or 35 the switch is automatically operated to cut off the fuel supply pump. The manner in which this operates is conventional and as these details form no part of the present invention they need not be set out in this application.

For the purpose of facilitating starting, a gas line 70 leads to the furnace and terminates in a gas tip 71 adjacent the burner.

We claim:—

A burner comprising a hollow frame having a partition therein defining an air supply passage and a fuel supply passage, an elongated burner body threadedly connected with the frame and with its partition and having a passage extending therethrough communicating with the fuel supply passage, the outer end of the body being angularly extended and provided with a tip, and a nozzle connected to the frame and communicating with the air supply passage and having a passage therein discharging adjacent the tip whereby the fuel is entrained and atomized.

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