J. L. LANDRY.

OIL BURNER.

APPLICATION FILED JULY 21, 1913.

1,114,994.

Patented Oct. 27, 1914.

2 SHEETS—SHEET 1.

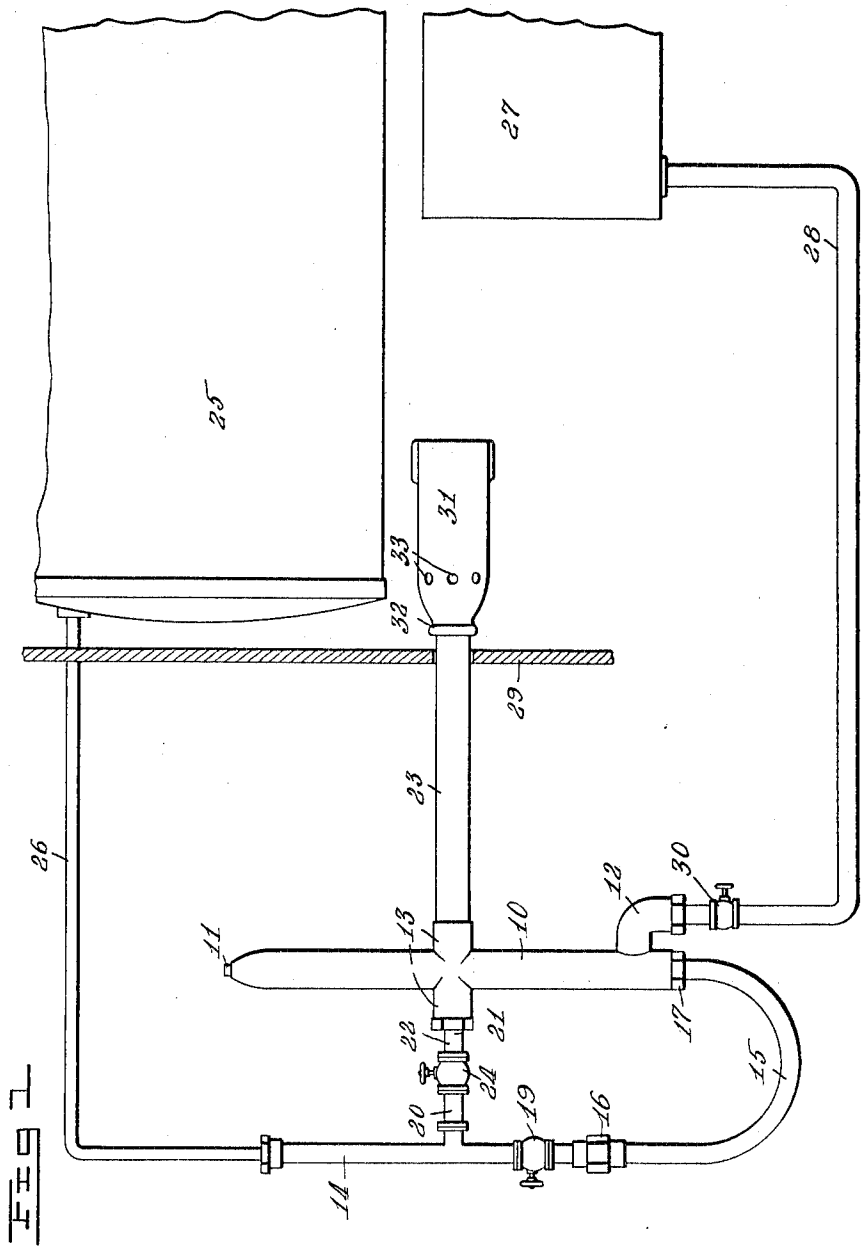


FIG 1.

Witnesses

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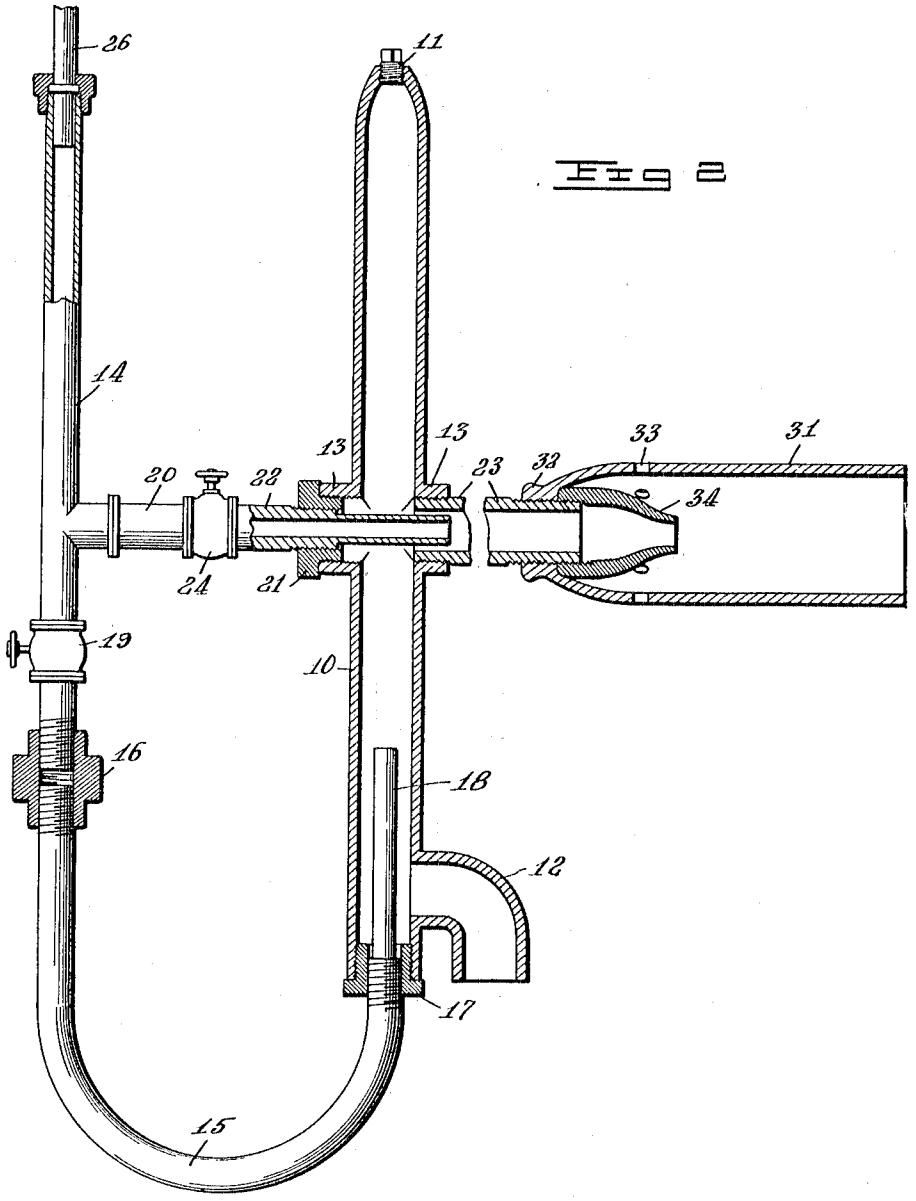


Fig 2

Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH LEO LANDRY, OF NAPOLEONVILLE, LOUISIANA.

OIL-BURNER.

1,114,994. Specification of Letters Patent. Patented Oct. 27, 1914.

Application filed July 21, 1913. Serial No. 780,270.

To all whom it may concern:

Be it known that I, JOSEPH LEO LANDRY, a citizen of the United States, residing at Napoleonville, in the parish of Assumption and State of Louisiana, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to liquid fuel burners, particularly to that type wherein steam or air under pressure is utilized in the operation of the burner, and is an improvement upon the burner disclosed in Letters Patent No. 1,047,250, granted December 17, 1912.

The present invention has among its objects and advantages to generally improve the operation and efficiency of the above noted patented burner; to feed heated air and combustion products to the admixed fuel and steam issuing from the said burner; to provide a burner with an increased suction and a relatively heavy blast and to provide an improvement wherein the fuel, air and steam are admixed during the direct passage of the fuel to the blast and to the burner.

It is a further object of the invention to provide a burner attachment which is of simple construction, the same comprising but two parts adapted for interlocking engagement upon the outlet pipe or nozzle of a burner whereby to effect an increased suction and also to effect a more thorough mixing of air and gases with the fuel after it issues from the burner.

In carrying out these objects and advantages this invention comprises an attachment to the burner set forth in the said Letters Patent No. 1,047,250. This attachment is secured to the free end of the outlet pipe of the burner which extends into the furnace beneath the boiler and is in the form of an induction tube of relatively large diameter provided at its rear end with a plurality of openings communicating with the interior of the induction tube and with the furnace. A reducer is also mounted upon the forward end of the outlet pipe and is contained within the induction tube and from which passes the blast of the burner to thereby create a suction in the rear end of the induction tube for drawing in the heated air and combustion products of the furnace and admixing the same with the already admixed oil and steam.

Other objects and advantages of this invention will be more particularly brought out in the following detail description of the present embodiment of this invention disclosed in the referred to accompanying drawings in which—

Figure 1 is a side elevation of a burner in position upon a steam boiler furnace, the furnace plate being in section, and showing the improvement applied thereto. Fig. 2 is a sectional elevation of the burner and attachment in detail.

Referring to the drawings in which like parts are designated by similar numerals of reference, and wherein the improved attachment is shown as applied to a burner, the burner of said prior patent being shown, 10 designates the body or main portion of the burner. This body 10 comprises, preferably, a hollow elongated cylindrical member, slightly reduced and internally threaded at its upper end, which end is closed by a screw-plug 11. At the lower end of the body 10, and at one side is a fuel inlet branch 12 through which the oil, or other liquid fuel is introduced into the burner. The intermediate portion of the body 10 is provided in its opposite sides with diametrically opposed internally threaded projections 13, providing a passage through the body 10 at right angles to the longitudinal axis of the same. Adjacent to the body 10 is arranged a fluid supply pipe 14 having connection at one end with a pipe or other suitable source of steam or air supply. The lower end of the pipe 14 is connected to a U-shape feeding branch 15 by means of a coupling 16. The feeding branch extends from the supply pipe 14 to the lower end of the body 10 and is secured to the body by a gland nut 17. An initial feed nozzle 18 is mounted in the lower portion of the body 10 and communicates with the adjacent end of the branch 15. This initial feed nozzle 18 is of relatively small diameter and extends up past the fuel inlet 12 whereby to effect a suction in the lower end of the body 10 when steam or air under pressure issues from the nozzle 18. A feed control valve 19 is located upon the supply pipe 14 to regulate the supply of air or steam to the branch 15.

The supply pipe 14 is provided, at a point preferably directly opposite the inner projection 13, with a by-pass 20 terminating in a controlling valve 24. From the valve 24 extends a blast nozzle 22 which nozzle projects

into the adjacent projection 13, diametrically through the body 10, and into the opposite projection 13. The inner end of the blast nozzle 22 near the valve 24 is provided with external threads engaging with a packing nut or gland 21, which latter member engages the inner projection 13 to hold the nozzle 22 centrally in the transverse passage through the body 10. From Fig. 2 of the drawings it will be noted that this blast nozzle 22 is of relatively large diameter, and that it provides but a relatively small annular passage about the end thereof. This peculiar formation of the blast nozzle is for the purpose of providing an increased suction in the body so that the exhausting steam or air from the nozzle 22 entrails a very heavy hydro-carbon, which very heavy hydro-carbon has not been heretofore satisfactorily used. In the outer projection 13 is secured one end of an outlet pipe 23 which extends forwardly from the burner and is adapted to project through the furnace plate 29, as shown in Fig. 1. This outlet pipe 23 is provided upon its outer end with an external screw-threaded portion upon which is mounted an induction tube 31. This tube 31 comprises a length of pipe of relatively large diameter which is reduced at its rear end and provided with internal screw threads thereat. This reduced end of the induction tube constitutes a supporting sleeve 32 therefor, and engages upon the external threaded portion of the outlet pipe 23. The rear end of the tube 31 is provided with a plurality of openings 33 establishing a communication between the interior of the induction tube 31 and the surrounding atmosphere of the furnace. It will be noted from Fig. 2 that the sleeve 32 is turned on to the outlet pipe 23 a distance considerably beyond the extremity of the same. Upon this extremity thus exposed within the tube 31 is threaded a reducer 34 comprising the final blast nozzle.

It will be noted that the suction nozzle 22 and the reducer or final nozzle 34 are located in direct line with the outlet pipe 23 and the induction tube 31 so that a true injector action is had for the feeding of the oil and steam to the induction tube and for the delivery of the same.

In Fig. 1 of the drawing the burner with the improvement attached thereto is shown in position upon a steam boiler furnace. 25 is the boiler and 26 a steam supply pipe leading from the boiler to the supply pipe 14. The fuel tank 27 is connected by a pipe 28 to the burner inlet 12, a valve 30 being located in the pipe 28 to control the flow of fuel to the body 10. It will be observed that the outlet pipe 23 extends through the furnace plate 29 to a position beneath the boiler 25, that the induction tube 31 is wholly disposed within the furnace, and the openings 33 of the induction tube admit of the suction of the heated gases in the furnace into the tube to commingle with the oil and steam issuing from the reducer 34. The present showing of Fig. 1 is of course conventional, and any desired and practical arrangement may be had with respect to the relation of these parts. When the burner is in operation a jet of steam or air is admitted into the outlet pipe 23, creating a suction in the burner and a consequent feeding of the liquid fuel into the outlet pipe and effecting the admixing of the fuel and steam or air. Since the outlet pipe 23 is of a substantial length the steam is thoroughly admixed with the oil and this mixture is forced through the outlet pipe 23 into the reducer 34. The mixture issues from the reducer 34 with considerable force and immediately spreads and fills the interior of the induction tube 31, creating a suction in the rear end of the tube 31, and drawing a quantity of the surrounding heated gases of the furnace into the induction tube. These gases are admixed with the mixture of oil and steam in the tube and all of these ingredients finally pass from the end of the induction tube in a thoroughly mixed condition.

It will be observed from Fig. 2 that the reducer 34 is screwed upon the outlet pipe 23 until it abuts against the sleeve 32 of the burner tube. The reducer 34 when tightened against the sleeve serves in the capacity of a jam nut to interlock the burner tube 31 upon the outlet pipe 23.

What is claimed is—

In combination with a burner tube, a relatively large induction tube having an integral reduced inner end constituting a sleeve portion engaging in threaded relation upon the end of said burner tube whereby to support the induction tube, the induction tube being further provided with a plurality of lateral openings forwardly of said sleeve portion, and a reduced nozzle in the induction tube having an integral enlarged inner end adapted for threaded engagement upon the burner tube and to be jammed against said sleeve portion whereby to lock said sleeve portion upon the end of the burner tube, said nozzle being adapted to inject a relatively fine jet of fuel from the burner tube into said induction tube.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH LEO LANDRY.

Witnesses:
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G. A. ALLENSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."