J. L. LANDRY.

BURNER.

APPLICATION FILED APR. 9, 1912.

1,047,250.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

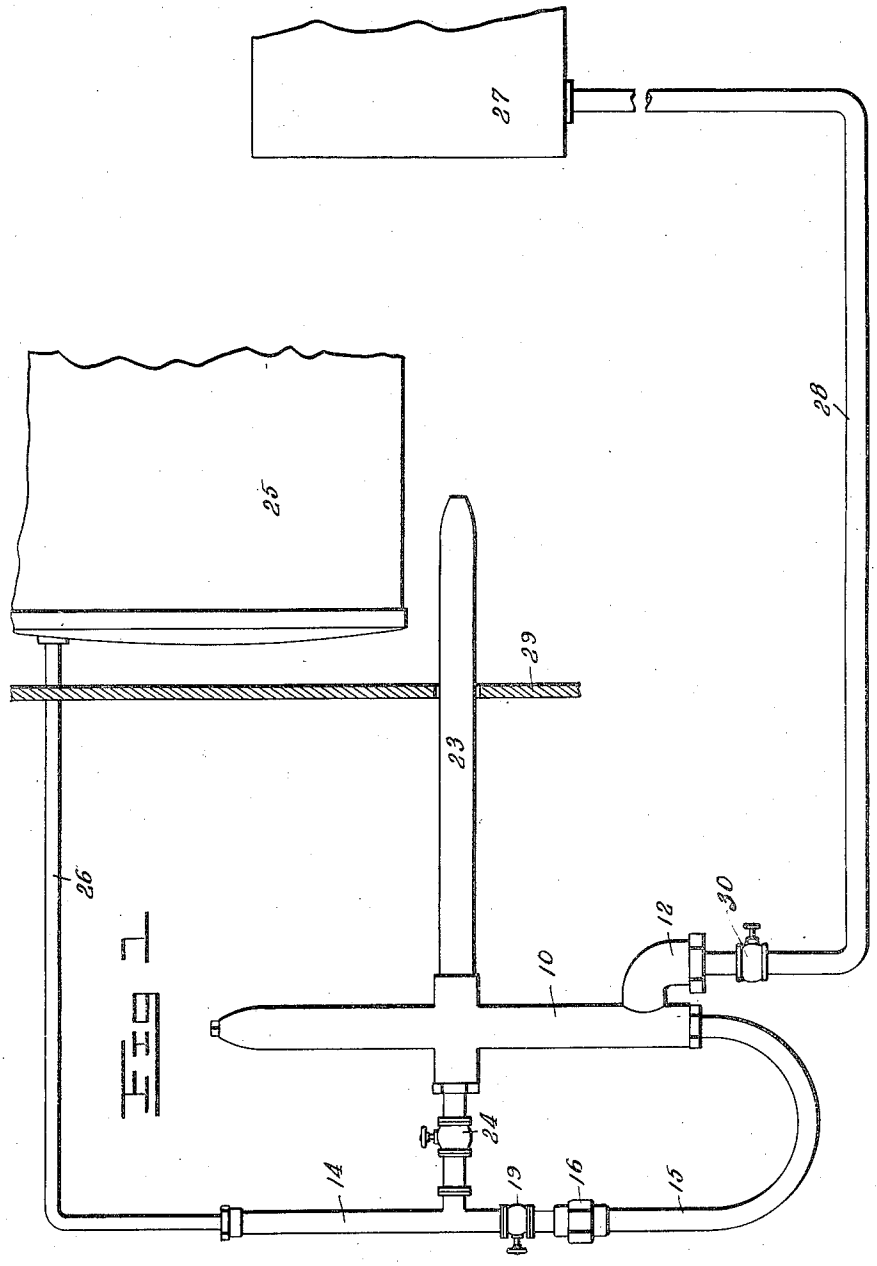


Fig. 1.

Witnesses

H. C. Poliette

T. T. Mawhinney

Inventor

J. L. Landry

By Thayer, Lindsley & Pea

Attorney

J. L. LANDRY.

BURNER.

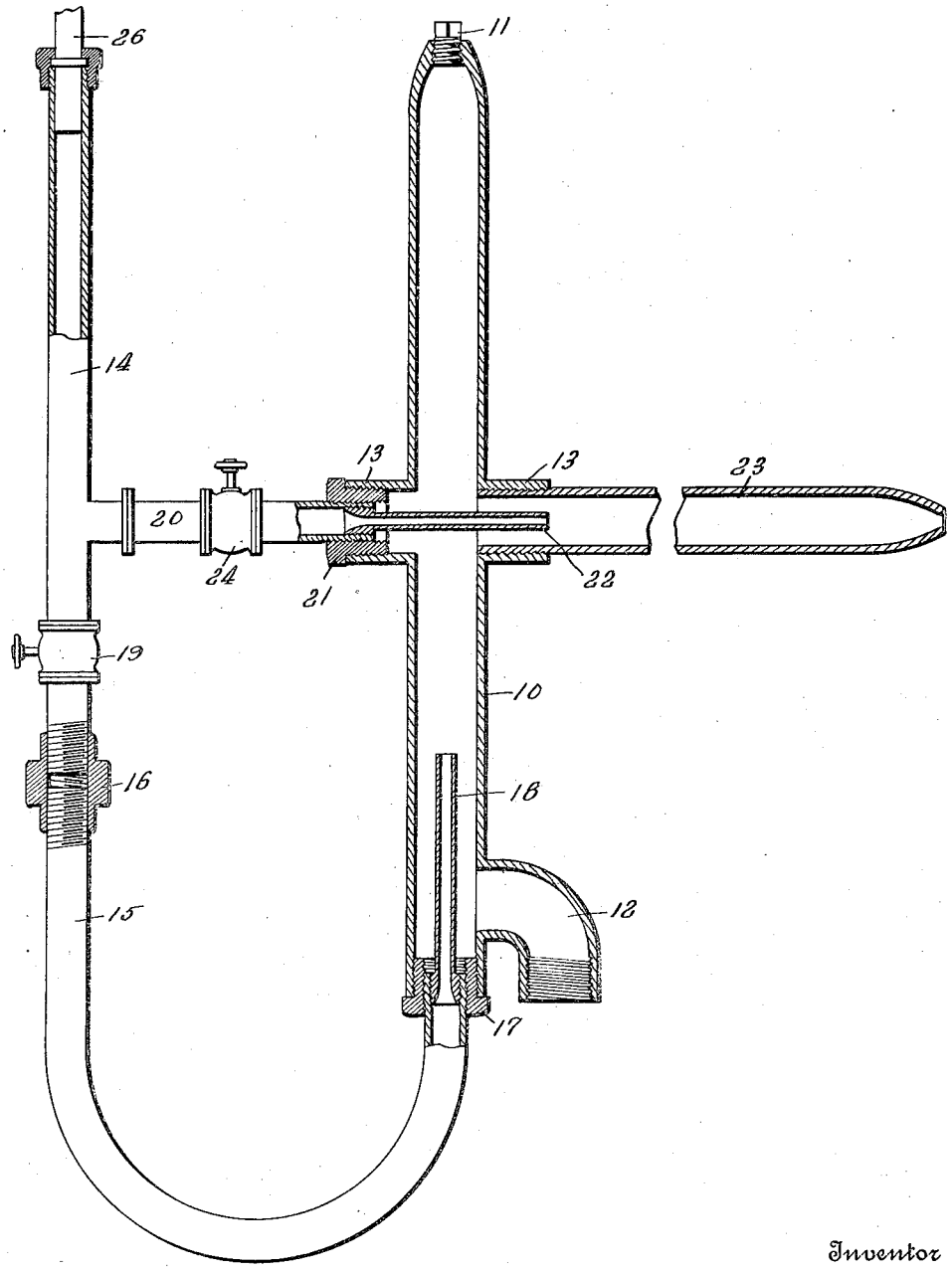
APPLICATION FILED APR. 9, 1912.

1,047,250.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 2.

Fig 2



Witnesses

H. C. Holmes

T. J. Mawhinney

Inventor

J. L. Landry

By Thomas, Landman & Reg

Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH LEO LANDRY, OF NAPOLEONVILLE, LOUISIANA.

BURNER.

1,047,250. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed April 9, 1912. Serial No. 689,493.

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, and whose post-office address is Napoleonville, Louisiana, have invented new and useful Improvements in 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 has for an object to provide a burner for use, particularly, in connection with furnaces and steam boilers wherein the burner serves as an injector or feeder to discharge the liquid fuel and steam or air admixed therewith into the furnace with considerable force and wherein the burner has connection with the boiler from which the burner receives its steam supply.

Another object of this invention is to provide a burner wherein one jet of steam or air under pressure is utilized for feeding the fuel to the main portion of the burner by suction and for partially breaking up the fuel, such as a heavy hydrocarbon, and admixing the steam or air therewith, and wherein a second jet of steam or air is directed in a straight path through the main portion of the burner to provide a blast discharging directly into the main nozzle of the burner, thus producing a true injector action for the burner and admixing a further quantity of steam or air with the oil which is emitted with considerable force from the nozzle into the furnace and is thoroughly atomized prior to combustion.

For the attainment of these objects the burner comprises, broadly, a hollow body portion having an oil inlet at one side and adjacent one end thereof, a pipe for steam or air under pressure opening into the said end through a feed-nozzle which is relatively small and extends centrally into the body past the oil inlet to draw the oil into the body. This pipe is provided with a valve controlling the flow of the steam or air into the body to regulate the feeding of the oil to the body of the burner. The body constitutes an initial mixing chamber wherein the steam or air is partially commingled with the liquid fuel as the latter is drawn from its source of supply. The body is provided intermediate its ends with an outlet or injector nozzle extending from one side thereof, and the pipe is provided with a by-pass or branch entering the opposite side of the body and opening into a diametrically located blast-nozzle which extends entirely across the central portion of the body and projects partly into the outlet or injector nozzle. The space in the outer end of the outlet nozzle beyond the blast-nozzle constitutes a second mixing chamber wherein the additional steam or air from the blast further and more thoroughly breaks up the liquid fuel, and the additional steam or air is admixed with the mixture contained in the body.

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

Figure 1 is a side elevation of the burner in position, showing the burner plate in section, and showing a suitable connection between the burner and the sources of fluid and fuel supply, and Fig. 2 is a sectional elevation of the burner in detail.

Referring to the drawing in which like parts are designated by similar numerals of reference in the several views, 10 designates the body or main portion of the burner. Preferably, this body or main portion comprises a hollow elongated cylindrical member slightly reduced and internally threaded at its upper end and closed by a screw plug 11. The lower end of the body 10 is open and is internally threaded, and a fuel inlet branch 12 extends from one side of the body 10 at a point slightly above its lower end for the purpose of introducing oil into the body at one side thereof and adjacent to its lower end. The intermediate portion of the body 10 is provided with a pair of oppositely disposed internally threaded projections 13 forming a passage through the body at right angles to the longitudinal axis of the same.

A fluid supply pipe 14 extends into proximity with the body 10, preferably lying in parallel relation therewith, and has connection with a suitable source of steam or air supply. The lower end of the pipe 14 is connected to a U-shape feeding branch 15 by a suitable coupling 16. The feeding branch 15 extends toward the body 10 and has its free end engaging up within the lower end of

the body 10. A suitable coupling nut or gland 17 engages, preferably, in threaded relation with the end of the feeding branch 15 and with the body 10 to hold the branch in position. A feed-nozzle 18 is carried upon the free end of the branch 15 and is considerably reduced in size therefrom for the purpose of forming a jet of the fluid passing through the pipe 14 and branch 15. The feed-nozzle 18 extends up into the body 10 to a point considerably spaced above the fuel inlet 12 for the purpose of creating a suction of the fuel into the lower end of the body 10 from the inlet 12. A feed-control valve is located in the lower end of the pipe 14 for controlling the fuel feeding jet in the lower end of the body of the burner.

The pipe 14 is further provided, at a point spaced above the feed control valve 19, with a by-pass 20 extending directly toward the body 10 and entering the adjacent projection 13 where it is secured by a suitable backing nut or gland 21. A blast-nozzle 22 is carried in the end of the by-pass 20 and extends diametrically through the body 10 into the inner end of an injector or outlet nozzle 23 threaded into the opposite projection 13. From this construction it will be observed that the jet from the feed-nozzle 18 blows at right angles to the jet or blast from the blast-nozzle 22, and that the latter nozzle does not empty into the body 10, but extends entirely through and beyond the same, so as to effect the suction of the admixed fuel and fluid in the body 10 into the outlet nozzle. It will be further noted that the blast-nozzle 22 is located directly opposite to and in line with the outlet nozzle so that a true injector action is had for the delivery of the hydrocarbon mixture. The pipe 20 is provided with a blast-control valve 24 for regulating the flow of the fluid to the blast-nozzle 22.

In Fig. 1 of the drawing one system is disclosed in which the improved burner may be used, the system comprising the boiler 25 from which is led a steam supply pipe 26 connected in a suitable manner to the upper end of the pipe 14. The fuel, usually a hydrocarbon, is contained within the tank 27 from which leads a fuel supply pipe 28 extending to and having connection with the inlet 12. The burner is so located that the nozzle 23 thereof extends through the furnace plate 29 and into the furnace beneath the boiler 25. The present showing is only conventional, and any desired and practical arrangement may be had with respect to the relation of these parts. A valve 30 is preferably disposed in the fuel supply pipe 28 for controlling the flow of fuel to the body of the burner.

In the operation of the burner the feed control-valve 19 is first opened to form a jet in the body 10 from the feed-nozzle 18. This jet creates a suction in the lower end of the body 10 and draws in a quantity of the oil proportionate to the size of the jet which is controlled by the valve 19. The fluid issuing from the feed-nozzle 18 breaks up and commingles with the oil which is drawn into the body 10 producing a rather heavy hydrocarbon mixture. As soon as a sufficient quantity of this mixture is contained within the body 10, the blast-control valve 24 is opened to admit the fluid under pressure to the blast-nozzle 22. The jet or blast from the nozzle 22 creates a suction in the intermediate portion of the body 10 and draws out the heavy hydrocarbon mixture and admixes the additional fluid from the blast-nozzle therewith. The blast from the nozzle 22 at the same time discharges the thoroughly mixed oil and fluid directly from the injector or outlet nozzle into the furnace, or the like. The outer end of the injector nozzle constitutes a second mixing chamber wherein the additional steam or air is thoroughly admixed with the more or less heavy hydrocarbon mixture contained in the body 10. It will thus be seen that the branch 15 conducts a quantity of steam or air into the lower end of the body 10 for the main purpose of feeding the oil in the proportion desired, while the by-pass 20 conducts the steam or air directly to the blast nozzle for discharging the mixture and for regulating the quantity of steam or air which is added thereto.

As just described and shown the burner is applied to a system wherein steam is utilized for the operation of the burner, and it will be understood that the pipe 14 may have connection with a suitable source of air supply, so that the oil may be admixed with air in place of steam.

What I claim is,—

1. In an oil burner, a vertical body adapted to receive oil at the lower side and adjacent one end thereof, a fluid nozzle extending into said end of the body to feed the oil by suction into the body, an outlet nozzle extending from one side of the body above the fluid nozzle, and a second fluid nozzle extending diametrically through the body from the opposite side thereof and projecting straight into said outlet nozzle for drawing the oil by suction from the body into the outlet nozzle and discharging the same.

2. An oil burner comprising a hollow upright body having an oil inlet in one side at its lower end, a fluid feed-nozzle projecting into the body at said end and extending past said oil inlet whereby the fluid from the feed-nozzle feeds oil to the body by suction, an outlet nozzle located intermediate the ends of the body, and a fluid blast nozzle projecting into the opposite side of the body in register with the outlet nozzle and extending through the body and slightly into

the outlet nozzle whereby to draw the oil and admixed fluid into the outlet nozzle, and discharge the admixed oil and fluid.

3. A burner comprising an integral body portion of elongated shape adapted to be placed in upright position and having a laterally extending fuel inlet branch at its lower end and a pair of oppositely disposed and outwardly extending projections above the fuel inlet branch, a fluid supply pipe connected to said end of the body adjacent the fuel inlet branch, a by-pass extending from said supply pipe to one of said projections, an outlet nozzle carried upon the opposite projection, and nozzles extending into said body at right angles to one another, and communicating with the fluid supply pipe and by-pass respectively, said nozzle communicating with the by-pass extending through the body and into the outlet nozzle.

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

JOSEPH LEO LANDRY.

Witnesses:
E. N. LARLAND,
GEORGE SETH GUION.