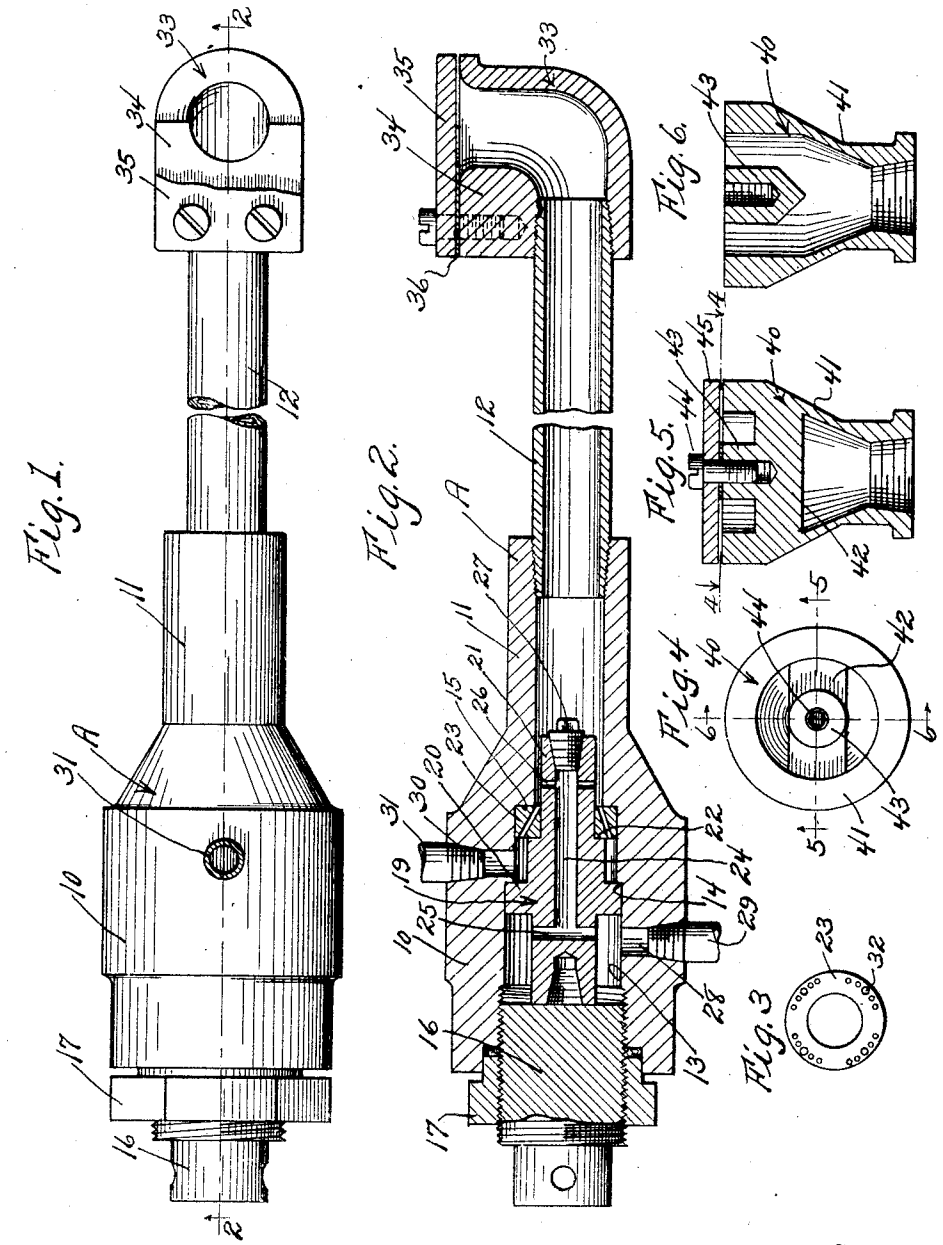
June 29, 1926. 1,590,872

R. N. ANGEVINE

OIL BURNER

Filed March 5, 1924



WITNESSES

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Patented June 29, 1926. 1,590,872

UNITED STATES PATENT OFFICE.

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OIL BURNER.

Application filed March 5, 1924. Serial No. 697,103.

This invention appertains to an improved oil burner for furnaces and the like and the primary object of the invention is the provision of an oil burner for furnaces in which novel means is insured for the proper feeding of the oil and the breaking up of the oil into small particles prior to the delivery thereof to the tip.

Another object of the invention is the provision of a novel steam diffuser for breaking up the fuel oil and for carrying the oil through the burner to the tip, the steam acting with the oil to form a highly combustible mixture and for preheating the oil prior to the entrance thereof into the burner tip.

A further object of the invention is to provide an improved oil burner of the above character which can be readily taken apart for cleaning purposes, the parts being held together in a novel manner.

A further object of the invention is the provision of an improved burner tip for the burner which embodies a body portion and a plate disposed in close proximity to the body portion for insuring the spraying of the mixture from the tip over a relatively large area.

A still further object of the invention is to provide an improved oil burner, which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market at a small cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawings, in which drawings:—

Figure 1 is a plan view of the improved oil burner, showing the same partly broken away.

Figure 2 is a longitudinal section taken through the burner on the line 2—2 of Figure 1.

Figure 3 is a detail elevation of the steam nozzle ring.

Figure 4 is a section taken on the line 4—4 of Figure 5 through a modified type of the burner tip.

Figure 5 is a section taken on the line 5—5 of Figure 4 through the said tip, and

Figure 6 is a section taken on the line 6—6 of Figure 4 through the nozzle or burner tip.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved oil burner, which comprises a body 10 provided at one end with a reduced extension 11, in which is threaded a feed pipe 12. The body 10 is provided with a bore 13 which communicates with the bore of the extension 11. The bore 13 at a point intermediate its ends is reduced in size to provide a stop shoulder 14 and it is to be seen that the reduced portion of the bore of the body 10 is of a larger size than the bore of the extension 11, whereby a second stop shoulder 15 is provided.

The outer end of the body 10 has a portion of the bore 13 internally threaded for the reception of a plug 16 and this plug 16 forms the dual function of holding certain parts in position and also for permitting the easy cleaning of the body. As shown, a packing nut 17 is threaded on the plug into engagement with the body 10 so as to prevent the leakage or escape of oil from around the plug. As shown a suitable packing such as asbestos and the like is placed between the packing nut and the body 10.

The inner end of the plug 16 engages and holds the oil diffuser 19 in place. This oil diffuser extends into the bore of the body 10 and is provided at a point intermediate its ends with a flange 20 which abuts against the shoulder 14. The forward end of the oil diffuser 19 is reduced and extended into the bore of the extension 11 of the body 10, as at 21 and the reduced portion of the oil diffuser 19 provides a shoulder 22.

A steam nozzle ring 23 is placed upon the reduced portion 21 of the oil diffuser or nozzle 19 in engagement with the shoulder 22 and in engagement with the shoulder 15 of the body. It thus can be seen that the steam nozzle ring is held in place against accidental movement. A fastening screw can be utilized for connecting the steam ring with the nozzle 19. If so desired, all of the interfitting parts between the body, ring and oil nozzle diffuser can be ground so as to make a tight joint. The oil nozzle or diffuser 19 is provided with a forwardly extending axial bore 24 which has communicating therewith at its inner end radially extending passageways 25. Reduced oil outlet passageways 26 are formed in the oil diffuser adjacent to its forward end. The extreme forward end of the passageway 24

or bore is closed by a plug 27 and this plug can be removed to permit the easy cleaning of the diffuser when necessary or desirable. The body is provided with an oil inlet 28 adjacent to one passage way 25 and the oil inlet can have communicating therewith an oil feed pipe 29. If so desired more than one oil inlet can be provided. At a point spaced from the oil inlet passageway 28 the body is provided with a steam inlet passageway 30 which has connected therewith a steam feed pipe 31. This passageway 30 is arranged between the flange 20 and the steam nozzle ring 23.

By referring to Figure 3 it can be seen that the steam nozzle ring 23 is provided with a plurality of different sets of steam outlet openings 32. As shown there are four sets of these openings and five openings to each set. These openings are arranged diagonally through the ring as clearly shown in Figure 2 of the drawings.

The pipe 12 supports at its forward end the burner tip 33 which includes a body 34 having its upper end open. The open end of the burner tip body 34 has placed thereon a plate 35 which is held in close proximity to the body 34 by a spacing plate 36. It is to be seen that the combustible mixture is adapted to flow between the plate and body over a relatively large area.

In use of the improved oil burner, steam is permitted to enter into the pipe 31 and the same will flow through the openings 32 and pass the radial openings 26 causing a suction therein and the steam will carry the oil therewith through the pipe 12 to the burner 33. The spraying of the steam into the extenison 11 breaks up the oil into small particles and commingles therewith and the steam insures the carrying of the oil to the burner tip. The oil of course enters through the pipe 29 into the radial passageways 25 and then into the bore 26 and out of the bore through the passageways 26.

The burner tip 33 can be substituted for a burner tip indicated by the reference character 40 as clearly shown in Figures 4 to 6 inclusive. This burner tip 40 is adapted to be used in a circular type of furnace and embodies a body 41 having its upper end open but provided with a transversely extending rib 42. This rib 42 supports axially disposed stud 43 in which is adapted to be threaded a holding screw 44 for the plate 45. This plate 45 overlies the open end of the body and is spaced therefrom but in relative close proximity thereto.

Changes in details may be made without departing from the spirit or the scope of this invention.

What I claim as new is:—

1. An oil burner comprising a hollow body having a chamber therein and open at its rear end, a burner tip supported by the forward end of the body, an oil diffuser fitted in the chamber of the body having a longitudinally extending axial bore therethrough and oil outlet openings communicating with the bore adjacent to the forward end thereof, an annular flange formed on the oil diffuser engaging the inner surface of the body, a steam nozzle ring fitted upon the forward end of the oil diffuser in advance of the flange, an oil feed pipe communicating with the body in rear of said flange, a steam feed pipe communicating with the body intermediate the flange and the steam nozzle ring, and a plug detachably fitted in the rear end of the body for removably holding the oil diffuser and steam nozzle ring in place within said body.

2. In an oil feed burner, a body having an internal chamber therein and open at its rear end, a burner tip supported by the forward end of the body, an oil diffuser disposed within the chamber having an axial bore therethrough and radially extending oil outlet openings communicating with the bore adjacent to the forward end thereof, a cleaning plug closing the forward end of the bore, a removable steam nozzle ring fitted upon the oil receiver in engagement with the inner surface of the body, an annular flange formed on the oil receiver engaging the body in spaced relation to the steam nozzle ring, means for feeding steam into the chamber intermediate the flange and the steam nozzle ring, and a removable plug fitted within the rear end of the body engaging said oil diffuser for holding the oil diffuser and steam nozzle ring in assembled position within said body.

In testimony whereof I affix my signature.

ROBERT N. ANGEVINE.