June 10, 1924. 1,497,072

J. DINGIROGLOU

OIL BURNER

Filed Aug. 6, 1923

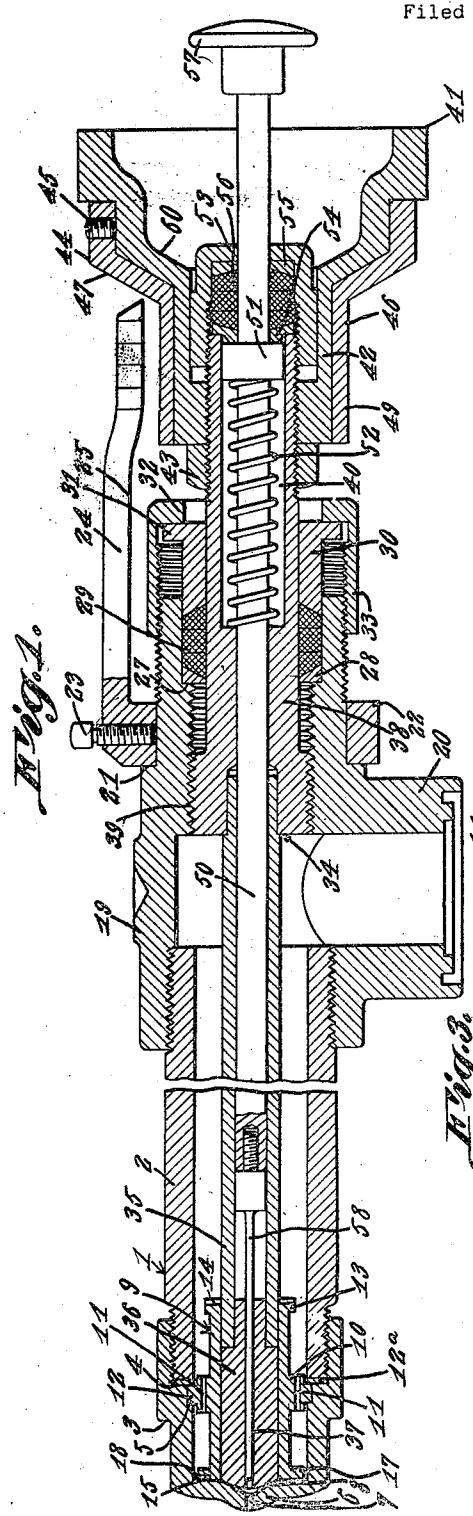


Fig. 1.

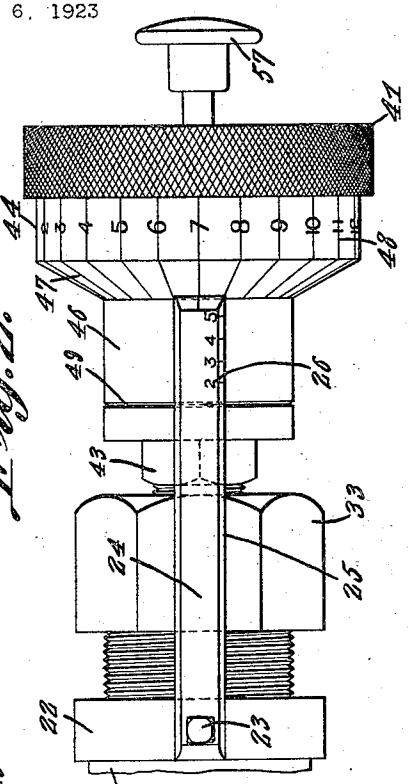


Fig. 2.

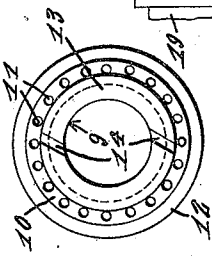


Fig. 4.

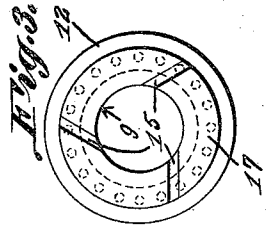


Fig. 3.

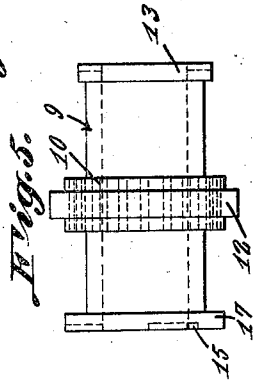


Fig. 5.

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Patented June 10, 1924. 1,497,072

UNITED STATES PATENT OFFICE.

JOHN DINGIROGLOU, OF PORTLAND, OREGON.

OIL BURNER.

Application filed August 6, 1923. Serial No. 656,023.

To all whom it may concern:

Be it known that I, JOHN DINGIROGLOU, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Oil Burner, of which the following is a specification.

The device forming the subject matter of this application is a burner, adapted to deliver fuel, and the invention aims to provide novel means for controlling and directing the movement of the fuel, and to provide novel means for cleaning the nozzle of the burner.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:

Figure 1 shows in longitudinal section, a device constructed in accordance with the invention, parts being in elevation; Figure 2 is a fragmental top plan showing the rear portion of the burner; Figure 3 is an elevation showing one end of the tubular guide; Figure 4 is an elevation showing the opposite end of the guide; Figure 5 is a side elevation of the guide.

In carrying out the invention there is provided a body which is denoted generally by the numeral 1, the body being a composite structure and including a tube 2. A cap or nozzle 3 is provided and is threaded on the forward end of the tube 2 and the cap having internal shoulders 4 and 5. In its forward wall, the cap 3 has a projection 6 having an opening 7, the projection defining a concaved recess 8 in the rear surface of the forward wall of the nozzle 3.

The numeral 9 marks a tubular guide or atomizer, provided intermediate its ends with an outstanding annular rib 10 having longitudinal passages 11, the rib carrying a thinned outstanding flange 12. At one end, the guide 9 has a flange 13, and at the opposite end of the guide there is a flange 17. In the outer surface of the flange 13 there are any desired number of circumferentially inclined grooves 14, and in the outer surface of the flange 17 there are any desired number of circumferentially inclined grooves 15. The flange 17 is of greater diameter than the flange 13, and the grooves 15, therefore, are longer than the grooves 14. The flange 12 of the guide 9 is bound between the forward shoulder 5 of the cap 3 and a washer 12^a (of copper or other suitable material) which abuts against the end of the tube 2 and is bound thereagainst by the rear shoulder 4 of the cap. In Figure 1, the flange 17 is shown in engagement with the end wall of the cap 3.

The body 1 of the burner includes a coupling 19, threaded on the rear end of the tube 2 and supplied with a lateral inlet 20. The coupling 19 has an external shoulder 21, against which abuts a carrier or ring 22, the carrier being circumferentially adjustable on the rear end portion of the coupling and being held in place by a set screw 23 threaded into the ring and adapted to engage said portion of the coupling. The ring or carrier 22 is supplied with a rearwardly extended arm 24, one edge of which is denoted by the numeral 25, there being a longitudinal scale 26 on the arm 24 at the rear end thereof and adjacent to the edge 25. The rear end portion of the coupling 19 has an internal shoulder 27, against which abuts a retaining ring 28, packing washers 29 coacting with the ring. The packing washers are engaged by the inner end of a sleeve 30 slidable in the rear end portion of the coupling 19 and having an outstanding flange 31 engaged by an inwardly projecting flange 32 on a compression nut 33, the compression nut being threaded on the rear end of the coupling 19. The device comprises a valve stem 34 slidable in the body 1 longitudinally thereof. The valve stem includes a tubular member 35, carrying at its outer end, a valve 36 slidable in the tubular guide 9 and adapted to cooperate with the forward end wall of the cap 3, to constitute a closure for the opening 7. The valve 36 has a longitudinal bore 37, alined with the opening 7 in the cap or nozzle 3. The valve stem 34 comprises a main member 38 threaded at 39 into the coupling 19 and provided in its rear end with a recess 40. An operating member, preferably in the form of a hollow hand wheel 41, is provided, and includes a neck

42 threaded on the main member 38 of the valve stem 34 and held in place, adjustably, by a lock nut 43 threaded on the part 38 of the valve stem. An index ring 44 is circumferentially adjustable on the hand wheel 41 and includes an inclined flange 47 coacting with a correspondingly shaped part 60 on the hand wheel, the flange 47 of the ring carrying a neck 46 within which the neck 42 of the hand wheel is received. A set screw 45, threaded into the ring 44, cooperates with the hand wheel 41 to hold the ring in adjusted positions, circumferentially of the hand wheel. On the external surfaces of the ring 44 and the flange 47, a scale 48 is inscribed. The neck 46 of the ring 44 has a circumferential index 49, preferably in the form of a shallow groove, and adapted to cooperate with the scale 26 on the arm 24.

A compression nut 53 is threaded on the rear end of the part 38 of the valve stem and is located within the neck 42 of the hand wheel. A retaining washer 54 is located within the compression nut 53 and abuts against the rear end of the part 38 of the valve stem 34. A retaining washer 55 abuts against the rear end wall of the nut 53. Between the washers 54 and 55 are disposed compressible gaskets or washers 56. The nut 53 and associated parts constitute a gland, and the parts 30 and 33, together with the washers 29, likewise form a gland.

A plunger 50 is mounted for longitudinal reciprocation in the tubular member 35 of the valve stem, in the part 38 of the valve stem, in the nut 53 and in the washers 54, 55 and 56. The stem 50 has an enlarged head or abutment 51 which is received slidably in the recess 40 of the valve stem 38. A compression spring 52 is located in the recess 40, one end of the spring engaging the abutment 51 on the plunger 50, and the other end of the spring engaging the member 38 of the valve stem. The plunger 50 is supplied at its rear end with a head 57 whereby the plunger may be slid longitudinally. A reduced tip 58 is detachably secured to the forward end of the plunger 50 and constitutes part thereof, the tip being mounted for reciprocation in the bore 37 of the valve 36. Rotation may be imparted to the valve stem 34 through the instrumentality of the hand wheel 41 and because the valve stem is threaded at 39 into the coupling portion 19 of the body 1, the valve stem will be advanced and retracted when it is rotated. In this way, the valve 36 may be moved into and out of engagement with the forward end wall of the nozzle 3, thereby to control the passage of the fuel through the nozzle. The fuel enters the lateral inlet 20 of the coupling 19, and traversing the tube 2, passes through the longitudinal passages 11 in the part 10 of the guide 9. The fuel, moving through the circumferentially inclined passages 15 of the flange 17 of the guide 9, is given a whirling movement within the forward end portion of the tubular guide 9, the valve 36 having been retracted. The fuel, having acquired a whirling motion, proceeds outwardly through the opening 7 in the nozzle 3. By advancing or retracting the valve stem 34 and the valve 36, the flow of the fuel through the burner orifice 7 may be controlled or stopped entirely. When the hand wheel 41 is rotated, the index 49 cooperating with the scale 26 indicates, approximately, the amount that the valve 36 has been advanced or retracted, and a fine adjustment may be read off, since the edge 25 of the arm 24 is adapted to cooperate with the scale 48—47 on the hand wheel 41, a vernier effect resulting.

At any time, longitudinal reciprocation may be imparted to the plunger 35, through the instrumentality of the head 57, the tip 58 being caused to move into and out of the burner orifice 7, to clean the same. When the plunger 50 is advanced, the spring 52 is compressed, the spring constituting means for returning the plunger to the position shown in Figure 1, with the abutment 51 in engagement with the washer 54, the said washer, together with the washers 55 and 56 and the nut 53 constituting not only a packing gland, but, as well, a stop limiting the rearward movement of the cleaning plunger 50 under the action of the spring 52.

The carrier or ring 22 may be adjusted circumferentially on the coupling 19, and the ring 44 may be adjusted circumferentially on the hand wheel 41. This enables the arm 24 and the ring 44 to be placed in such a position that a reading of the scales 26 and 48 may be accomplished readily.

In Figure 1, the flange 17 of the guide and atomizer 9 is disposed in abutment with the end wall of the cap 3. The parts are thus arranged when a heavy oil is used, the longer grooves 15 of the flange 17 serving to give the necessary whirling movement to the heavy oil. It is possible, however, to turn the guide 9 end for end, and then the flange 13 abuts against the end wall of the cap 3, the shorter grooves 14 of the flange 13 being sufficient to give a whirling motion to a lighter oil, and to break it up, before the oil passes through the burner orifice 7.

What is claimed is:

1. In a device of the class described, a body, a nozzle on the body, a tubular guide provided in its ends with circumferentially inclined passages which are differently constructed to give a whirling motion to heavy fuel or light fuel, means for holding the guide reversibly in the body whereby the passages at either end of the guide may be disposed adjacent to the nozzle, and a valve controlling the nozzle, the valve being slidable in the guide.

2. In a device of the class described, a body, a nozzle carried thereby, a stem threaded into the body, a valve carried by the stem and controlling the nozzle, a nut threaded on the stem, a hand wheel threaded on the stem and engaging the nut, a gland within the hand wheel and threaded on the stem, a plunger slidable in the stem and embodying means for cleaning the nozzle, an abutment on the plunger and slidable in the stem, and a compression spring within the stem, and cooperating with the stem and with the abutment to retract the plunger, the gland constituting a stop coacting with the abutment, under the action of the spring, to limit the rearward movement of the plunger.

3. A device of the class described comprising a body, a nozzle on the body, a stem threaded into the body and controlling the nozzle, a hand wheel carried by the stem, an index ring circumferentially adjustable on the hand wheel, means for holding the ring in adjusted positions circumferentially of the hand wheel, an index arm carried by the body, the ring having a circumferential scale coacting with the arm, and having a transverse index, the arm being provided with a longitudinal scale coacting with said index.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN DINGIROGLOU.

Witnesses:
JAMES R. BAIN,
CONRAD P. OLSON.