

March 31, 1925.

1,531,877

M. H. REIMERS
OIL BURNER
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Fig. 1.

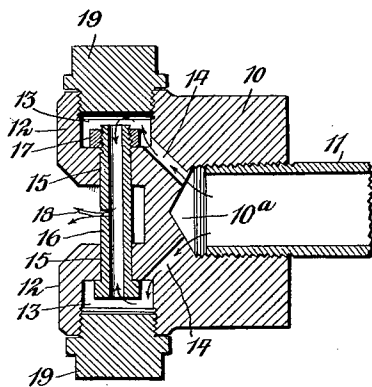


Fig. 2.

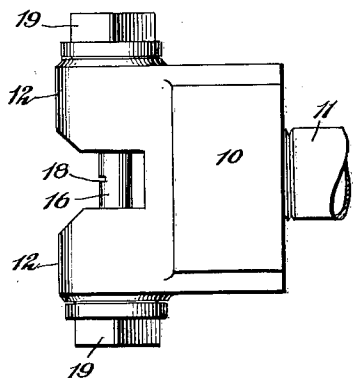
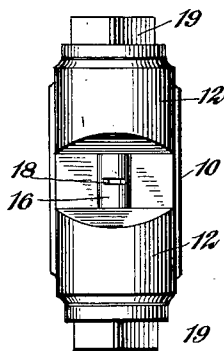


Fig. 3.



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UNITED STATES PATENT OFFICE.

MATTHIAS H. REIMERS, OF HOBOKEN, NEW JERSEY, ASSIGNOR TO W. N. BEST CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

OIL BURNER.

Application filed December 20, 1923. Serial No. 681,685.

To all whom it may concern:

Be it known that I, MATTHIAS H. REIMERS, a citizen of the United States and resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

This invention is an atomizing device for forming a substantially flat fan shaped mist or spray of liquid fuel without the use of steam, compressed air, or other atomizing fluid medium.

I accomplish this by causing two jets or streams of the same liquid fuel and under the same identical pressure to meet and emerge directly into the air through an orifice of the proper size and shape located at the point of meeting of said streams or jets.

One of the main objects of my invention is to facilitate cleaning of all of the passages of the burner without removing or disturbing the adjustment of any of the operating parts thereof. A further object is to so design the parts that the orifice presenting part may be easily and quickly removed or replaced, and leakage around the connections of said part effectively prevented.

A further object is to so design the parts that they may be manufactured in quantity and assembled at low cost and without the necessity of high priced or extremely accurate workmanship, except in the formation of the fuel outlet orifice itself.

In the accompanying drawing:

Fig. 1 is a central longitudinal section through a burner constructed in accordance with my invention,

Fig. 2 is a side elevation, and

Fig. 3 is a front or end view.

In the specific construction illustrated there is provided a body 10 having an inlet chamber 10^a to which may be attached in any suitable manner a liquid fuel supply pipe. The body is bifurcated, that is, there are spaced forwardly projecting arms or sections 12, each having a chamber 13 therein. The two chambers are connected to the main supply chamber and inlet pipe 11 by drilled passages 14. The chambers 13 open outwardly in opposite directions, and the two passages 14 are each set at an angle so that they are easily drilled from the lower inner corner of each chamber to the supply chamber. The inner or opposite walls of the two

arms 12 are provided with aligned holes 15 which are drilled by a single operation. These holes are spaced from and do not intersect the passages 14.

Extending through the two aligned holes 15 is a tube 16 open at both ends and rigidly secured in place. As a simple type of construction and simple securing means, the tube 16 may have a head at one end, and may be exteriorly threaded to receive a nut 17 on the other end. The tube 16 has a snug fit in the holes 15, and by tightening the nut 17 the tube is not only rigidly secured, but the head and nut engage with the inner ends of the two chambers 13 so as to prevent any possible leakage from these chambers along the exterior of the tube.

The tube intermediate if its ends is provided with a delivery orifice 18 in the form of a narrow transversely extending slot. This slot is between the two arms or sections 12, and therefore within the open space outside of the body, and the slot is in the side of the tube away from the supply pipe 11. The cross sectional area of this slot where the slot enters the tube is preferably substantially equal to the cross sectional area of the tube, and the slot is made comparatively narrow in width and transversely of the tube. Preferably the ends walls of the slot flares outwardly as seen best in Figure 3 so that the slot itself prevents a substantially fan shaped passage way initially directing the escaping fluid in a flat fan shaped path. Obviously the size and shape of this outlet orifice may be varied in accordance with the size and shape of the fan shaped flame which is to be produced. The opposite ends of the tube 16 open directly into the chambers 13, and the outer ends of these chambers are closed in any suitable manner as for instance by plugs or caps 19. These are spaced from the ends of the pipe so that the liquid fuel from the supply pipe 11 may flow through the passages 14 to the chambers 13, and thence into both ends of the tube 16. The liquid under pressure thus flows in two streams or jets from opposite ends of the tube 16, and these two meet at the center opposite to the slot 18. The two streams thus impact opposite to the slot, and the liquid is delivered at high speed and under high pressure through the slot in a substantially fan shaped mist or spray adapted to receive air or other supporter of

combustion therebeneath and form a large fan-shaped flame.

It will be noted that by removing the two plugs 19 the tube 16 and the passages 14 may be cleaned by running a rod or stiff brush therethrough. Thus thorough and effective cleaning may be accomplished without disturbing the adjustment of any of the operating parts. The plugs serve merely as closures for the chambers 13. In case the slot becomes worn or in case a different shaped flame is desired, the nut 17 may be removed and a new tube with the proper size slot inserted. There is no obstruction in the path of the spray beyond the nozzle, and the two jets meeting opposite to the slot cause perfect atomization. The pressure and velocity of the two streams which meet at the slot will be equal as the communication between the slot and the supply pipe 11 is equal in length and size in both directions. The direction of the spray is not varied by any variation in the pressure of the liquid fuel.

The parts may be manufactured in quantity at low cost, as there is no accurate machining operation necessary other than the cutting of the slot 18. The remainder of the work requires merely ordinary machine work accuracy. In assembling the nut 17 may be tightened to such an extent that expansion or contraction during temperature changes will not loosen the parts, but in any event the tube 16 fits the holes 15 sufficiently snugly to prevent any leakage along the pipe. It is important that the length of the tube 16 be many times the diameter. Thus the liquid in the end portion of the tube flows in opposite directions, and the two streams meet head on at the slot. If the tube be very short in respect to its diameter, the main flow to the slot will be diagonal or transversely of the tube, rather than lengthwise thereof, and the desired spraying or misting action is not as satisfactorily accomplished.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. An oil burner comprising a bifurcated head having a supply chamber, a separate chamber in each branch of the head, passages connecting said supply chamber with each of said second mentioned chambers, a

tube having its ends within and opening into said second mentioned chambers and extending across from one branch to the other and provided with an outlet orifice intermediate of its ends and between said branches, and removable closures for said second mentioned chambers opposite to but spaced from the ends of said tube.

2. A burner including a bifurcated head each branch thereof having a chamber therein, a tube having a head within one chamber and extending across to and terminating in the other chamber, means within the last mentioned chamber for securing said tube in place, and means for delivering liquid fuel to said chambers under the same pressure, said tube having an outlet orifice intermediate of its ends.

3. A burner including a head having diverging fluid passage ways therein and having chambers therein into which said passage ways deliver, a substantially straight tube connecting the chambers and including an orificed intermediate portion arranged exteriorly of the head, and removable closure members for said chambers permitting direct access to both the diverging passage ways and tube.

4. A burner including a head having diverging fluid passage ways therein and having chambers therein into which said passage ways deliver, a substantially straight tube connecting the chambers and including an orificed intermediate portion arranged exteriorly of the head and plug closures for said chambers of sufficient size to permit direct access to the diverging passageways and the tube when the closures are removed.

5. A burner having a pair of chambers spaced apart, a single liquid fuel inlet communicating with both of said chambers, a tube having its opposite ends disposed within said chambers and having an outlet orifice intermediate of its ends, one end of said tube having a head or flange portion seating against one wall of the adjacent chamber and the other end of said tube having a removable fastening member seating against one wall of the other chamber.

Signed at New York in the county of New York and State of New York this 14th day of December A. D. 1923.

MATTHIAS H. REIMERS.