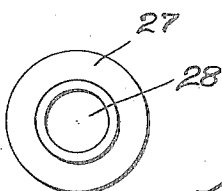
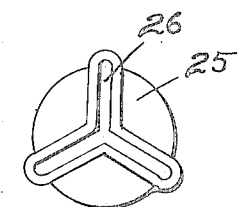
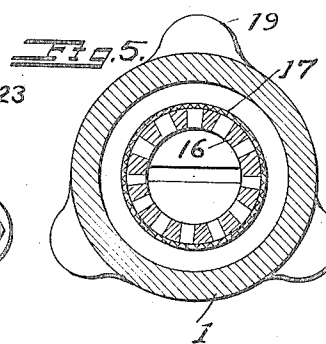
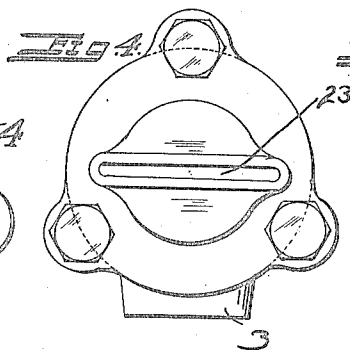
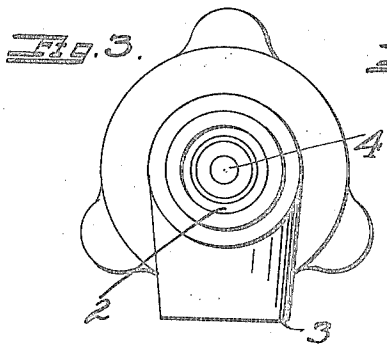
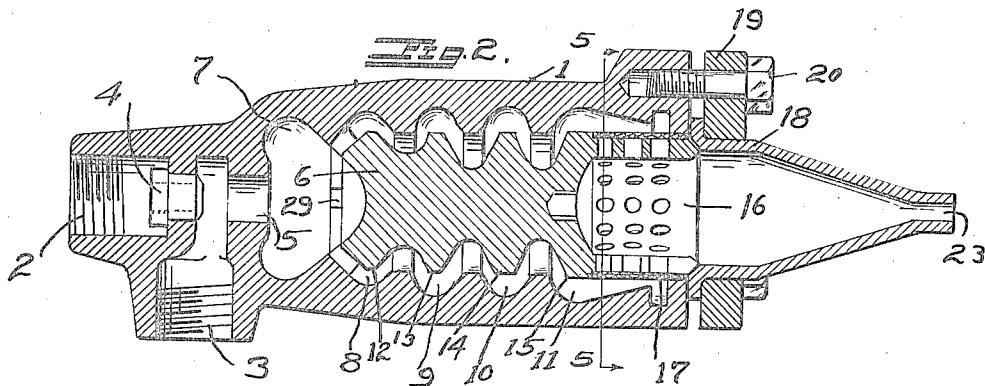
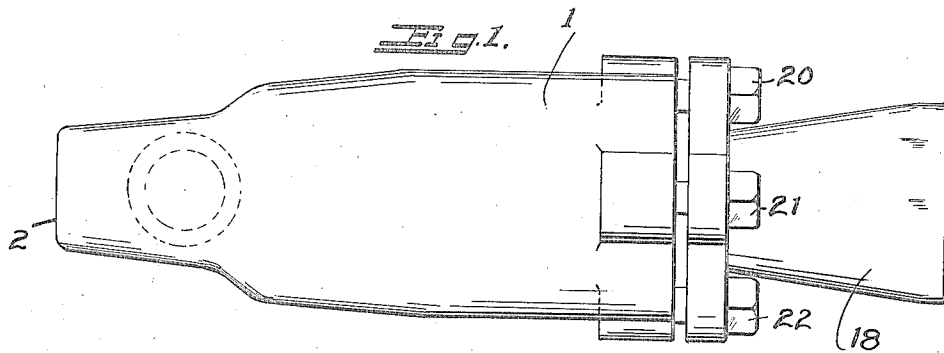


Jan. 9, 1923.

F. C. HEYLMAN ET AL.
OIL BURNER.
FILED FEB. 4, 1920.

1,441,982.



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1,441,982

UNITED STATES PATENT OFFICE.

FREDERICK C. HEYLMAN AND ALEXANDER H. J. TJEENK WILLINK, OF MARTINEZ, CALIFORNIA.

OIL BURNER.

Application filed February 4, 1920. Serial No. 356,228.

To all whom it may concern:

Be it known that we, FREDERICK C. HEYLMAN and ALEXANDER H. J. TJEENK WILLINK, citizens of Holland (the former declaring intention to become citizen of the United States), residing at Martinez, in the county of Contra Costa, State of California, have invented a new and useful Oil Burner, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to an oil burner, and the object of the invention is to provide means whereby the oil will be fully and completely atomized prior to its escape from the burner nozzle.

A further object of the invention is to provide means whereby the oil will be strained before passing from the burner nozzle thereby preventing the nozzle itself from being choked up with small particles of carbon or dirt.

A further object of the invention is to provide means whereby the strainer may be easily removed from the burner head to be cleaned whenever that becomes necessary.

A further object of the invention is to provide means whereby the burner nozzle proper may be changed or renewed whenever that becomes necessary.

Another object of the invention is to provide a burner nozzle in which the mixed oil and steam will be alternately expanded and contracted during the passage thereof through the burner; this object being attained by an increase and diminution in the area of the passageway through which the mixed oil and steam must pass.

Other objects of the invention will appear as the description proceeds.

In the drawings in which the same numerals are used to designate the same portions throughout Fig. 1 is a plan view of the complete burner.

Figure 2 is a vertical sectional view of the burner.

Figure 3 is a rear end elevation of the burner.

Figure 4 is a front elevation of the burner.

Figure 5 is a vertical sectional view of the burner on the line 5—5 Figure 2.

Figure 6 and Figure 7 are front elevations of different shaped burner nozzles to suit different conditions.

The numeral 1 represents the burner body which is threaded at 2 to receive a steam pipe and threaded at 3 to receive the oil pipe. The burner body is hollow and is provided with a detachable steam nozzle 4, which is so positioned as to drive the steam through an opening 5 against the base of the spreader plug 6. The burner body is provided with a good sized opening 7 at the back of the spreader plug 6 to cause the steam and oil being atomized to eddy around and more completely break up the oil.

In front of the chamber 7 the burner body has a plurality of annular grooves 8 to 11 inclusive. The plug 6 has a plurality of leaves 12 to 15 inclusive, which are individually positioned in the plane of the grooves 8 to 11 inclusive with deep grooves between them. The head of the burner plug is hollowed out as indicated at 16 and is provided with a plurality of holes through which the oil and steam pass. This end of the plug is covered with a fine screen 17. The plug is held in place in the burner body by means of the base of the nozzle 18, said base fitting snugly against the front end of the plug 6 and being held thereon by means of the collar 19 secured in place by the bolts 20 to 22 inclusive. The burner nozzle 18 is flattened as indicated in Figure 1 and Figure 2, to produce an elongated mouth as illustrated in Figure 4 at 23.

Depending upon the kind of a flame desired the nozzle 18 may be changed to produce an opening such as is shown on the nozzle 25 at 26, or if a larger flame is desired the nozzle 27 with a circular opening 28 may be used to take the place of the nozzle 18. In operation the steam jet passing through the nozzle 4 blows the oil against the base of the plug 6, and as it is held separated from the burner body by means of four lugs 29 the oil will pass outwardly through the sinuous annular passage way thus produced the steam alternately expanding and contracting until it is finally discharged through the screen 17 and passes out from the burner tip.

It will be noted that the area of the passageways opposite the ribs 12, 13 and 14 is greater than the area of the same passageways opposite the inwardly projecting ribs of the burner body. The result of this is that there is first a tendency to expand and then contract when the steam and oil leaves

the opening 5. This process is repeated several times before the mixed fuel is delivered to the nozzle 23, and the action results in a very fine atomization of the oil.

5 What we claim is as follows, but various modifications may be made in the construction shown in the drawings and above particularly described form, within the purview of our invention:

10 1. An oil burner comprising a burner body having steam and oil inlets, a detachable steam nozzle within the steam inlet, annular ribs in the burner body, a mixer plug extending into the burner body and having a cup shaped base, and a plurality of grooves
15 positioned adjacent the burner ribs whereby a sinuous annular passage way is formed, a screen carried by the plug at one end thereof, and a burner nozzle through which the
20 mixed oil and steam is delivered.

2. An oil burner comprising a burner body having steam and oil inlets, inwardly projecting annular ribs carried by the burner body, a plug extending into the burner body
25 and having annular grooves to correspond with the ribs of the burner body, a screen supported on the front end of the plug, a burner nozzle through which the mixed steam and oil is delivered, and a collar adapted
30 ed to secure the burner nozzle against the burner body to hold the plug in place.

3. An oil burner comprising a burner body having steam and oil inlets, annular ribs in the burner body, a mixer plug having lugs
35 to hold it centrally positioned within the burner body, ribs on the plug positioned adjacent the several grooves formed by the

ribs of the burner body whereby a sinuous annular passage way through the burner body is formed, a screen supported by the
40 end of the plug, a nozzle having a flange seated on the end of the burner body and on the plug to hold it in place, and a collar for securing the burner nozzle to the burner
45 body.

4. An oil burner comprising a burner body having steam and oil inlets, a plurality of annular ribs within the burner body, a mixer plug with annular grooves positioned in the
50 burner body so that the several ribs are adjacent the plug grooves, openings at one end of the plug, a nozzle seated upon the end of the plug, a flange for securing the nozzle and plug in place on the burner body and bolts
55 for securing said flange to the burner body.

5. An oil burner comprising a burner body having steam and oil inlets, a plurality of annular ribs projecting within the burner body, a mixer plug having means to hold
60 it centrally within the burner body and provided with a plurality of ribs adjacent the several grooves of the burner body, said plug having a plurality of openings at its outer end, a nozzle through which the mixed
65 oil and steam is delivered, and means to detachably hold the nozzle against the plug to hold the plug in place within the burner body.

In testimony whereof we have hereunto set our hands this 28th day of January A. D. 70 1920.

FREDERICK C. HEYLMAN.
ALEXANDER H. J. TJEENK WILLINK.