J. GREENE.

OIL BURNER.

APPLICATION FILED FEB. 12, 1917.

1,257,341.

Patented Feb. 26, 1918.

Fig. 2

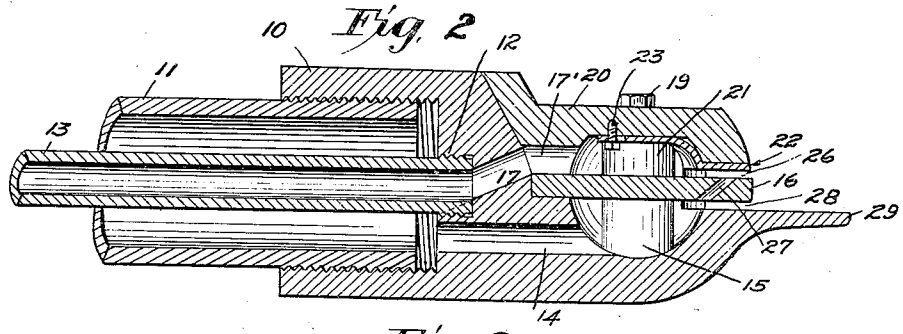


Fig. 3.

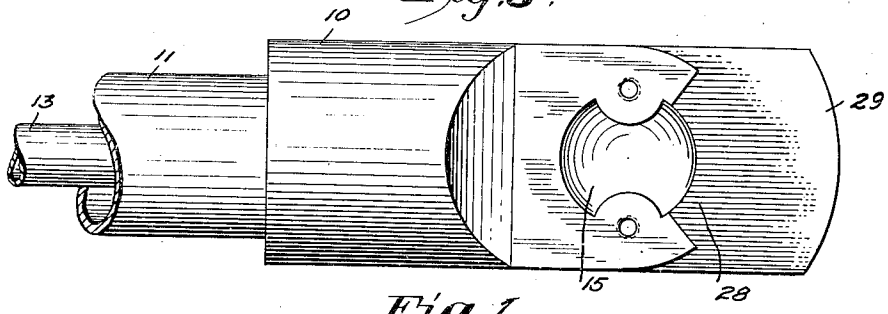


Fig. 1.

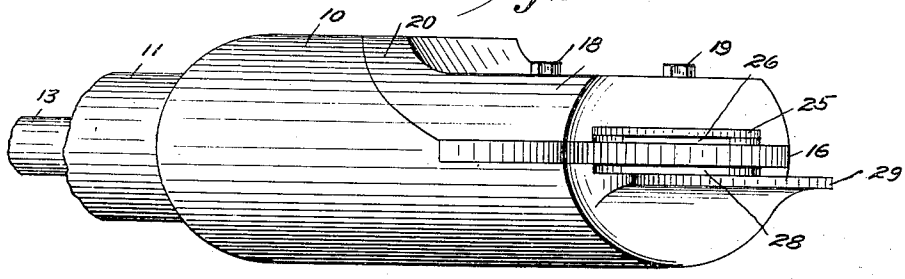


Fig. 5.

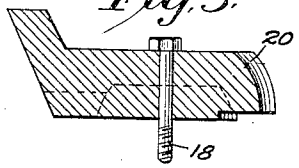


Fig. 6.

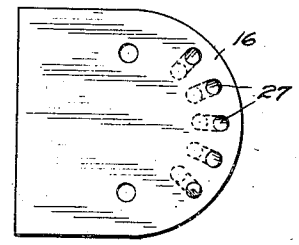
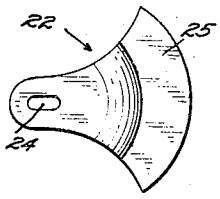


Fig. 7.



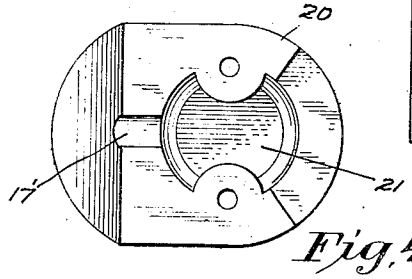


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN GREENE, OF BURBANK, CALIFORNIA.

OIL-BURNER.

1,257,341. Specification of Letters Patent. Patented Feb. 26, 1918.

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To all whom it may concern:

Be it known that I, JOHN GREENE, a citizen of the United States, residing at Burbank, in the county of Los Angeles and State of California, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to a fuel burner and particularly pertains to a burner adapted to be used with liquid fuel.

When liquid fuels, such as heavy hydrocarbon oils, are burned, it is often difficult to produce an efficient combustion due to the fact that the liquid does not atomize readily and also for the reason that the fuel nozzles become clogged with an accumulation of the solid material within the oil. It is the principal object of this invention to provide a fuel burner which will produce an effective atomizing of the liquid fuel and will act automatically to maintain the fuel passageways in an unobstructed condition.

Another object of this invention is to provide a fuel burner which is composed of few parts so designed as to subject the liquid fuel to the heating action of steam after which it is united therewith to assist in the atomizing thereof.

It is a further object of this invention to provide a fuel nozzle of the above class which may be easily assembled, will operate effectively, and may be readily cleaned when desired.

Other objects will appear hereinafter.

The invention is illustrated, by way of example, in the accompanying drawings in which:

Figure 1 is a view in perspective illustrating the burner in its assembled condition.

Fig. 2 is a view in longitudinal section illustrating the vital elements of the burner and their relation to each other.

Fig. 3 is a view in plan illustrating the body of the burner with its top plate removed.

Fig. 4 is a view in elevation illustrating the formation of the top plate, which is removed from Fig. 3.

Fig. 5 is a view in longitudinal section further illustrating the top plate.

Fig. 6 is a view in plan illustrating the partition wall and particularly disclosing the steam nozzles formed therethrough.

Fig. 7 is a view in bottom plan illustrating the renewable wear plate.

Referring more particularly to the drawings, 10 indicates the body portion of the burner, which is here shown as internally threaded at one end to receive a steam supply pipe 11. The internally threaded bore is formed with a threaded counterbore 12 within which is positioned a liquid fuel supply pipe 13. This pipe preferably is arranged within and in concentric relation to the pipe 11. Formed longitudinally of the burner body and in communication with the steam pipe 11 is a steam duct 14. This duct is preferably disposed beneath the fuel pipe counterbore and in vertical alinement therewith. The forward opened end of the duct 14 is in communication with a hemispherical steam chamber 15. This chamber is formed with its equator extending horizontally and along the longitudinal center of the burner. The equatorial section of this chamber is covered by a partition wall 16, particularly illustrated in Fig. 6 of the drawings. The top face of this partition wall converges with the lower edge of an angularly formed oil duct 17 which leads upwardly from the oil pipe 13 and the counterbore 12. Positioned upon the wall and secured by cap screws 18 and 19 is a removable top plate 20. This plate is formed with an oil duct 17′ which establishes communication between the duct 17 and oil chamber 21. It will be noted that the chamber 21 is substantially hemispherical and that the radius by which it is described swings from the same center point as the steam chamber 15.

The top of the chamber 21 is flat and is adapted to receive a renewable wear plate 22. This plate is secured in place by means of a single cap screw 23. This plate is preferably formed of hard steel so that it may resist the wear when steam and oil pass forcefully beneath it. The exact formation of the plate is particularly disclosed in Fig. 7 where it will be seen that the plate is fan-shaped and is fitted with a slot 24 through which the cap screw 23 extends. The plate further conforms to the top wall of the chamber 21 and has an outwardly extending lip 25 which is adapted to pass through an atomizing passageway 26 formed by the partition plate 16 and the cover 20. This passageway 26 is in communication with the fuel chamber 21 and also in communication with steam nozzle openings 27. The openings 27 are arranged in concentric relation to the vertical center of the chamber 15 and are inclined as they pass through the parti-

tion plate 16, as particularly illustrated in Figs. 2 and 6. The nozzle openings 27 establish communication between the passageway 26 and a steam spray opening 28, below the partition. It will also be noted that direct communication is established between the openings and the steam chamber 15. This allows a volume of steam to pass out through the opening 28 and also through the nozzle openings 27 to the passageway 26. The lower wall of the opening 28 extends forwardly to form a lip 29 adapted to cause the steam to be diverted upwardly and spread in a manner to aid in the vaporization of the fuel, and to catch any oil that may drizzle from the opening 26.

In operation, the steam is supplied to the burner through the pipe 11 while liquid fuel is supplied through the central pipe 13. Thus it will be seen that the fuel will be heated as it passes to the burner. The fuel may be delivered to the burner under a pressure ranging from twenty-five to fifty pounds and the steam may be delivered through the pipe 11 under a pressure ranging from seventy-five to one hundred and fifty pounds. The liquid fuel will be forced into the fuel chamber 21 and the steam will be forced through the duct 14 into the chamber 15, after which the fuel and steam will unite as they pass outwardly from the burner through the atomizing passage-way 26. It will be understood that the steam will be distributed uniformly along the passageway 26 by means of the nozzle openings 27 which, as previously described, communicate with the steam chamber 15. At the same time that the steam is passing upwardly through the nozzle openings, a certain amount of steam will pass outwardly through the passageway 28 and will be thrown upwardly by the lip 29 to unite with the oil and steam which has united within the atomizing passage-way 26. The lip 25 of the plate 22 will be acted upon by the oil and steam passing through the atomizing passage-way 26. This movement will cause the fuel particles to be broken up and agitated in a manner to more effectively complete the atomizing of the fuel as it unites with the steam passing through the nozzle openings 27. It will be understood that when desired air under pressure may be substituted for the steam and that the action of the various members will be substantially the same, although the beneficial results produced by the heat will be absent.

It will thus be seen that the burner here disclosed is simple in its construction, formed of few inexpensive parts, and will act efficiently to insure thorough atomizing of heavy hydrocarbon fuels and the subsequent effective combustion thereof.

While I have shown the preferred construction of my oil burner as now known to me, it will be understood that various changes in the combination, construction and arrangement of parts may be made by those skilled in the art without departing from the spirit of my invention.

I claim:

1. An oil burner comprising a body having a screw-threaded bore extending from one end and a screw-threaded counterbore concentric with the first bore and having a chamber connecting with the first bore and a second chamber connecting with the counterbore, and a partition wall between the chambers and leaving horizontal outlet slots above and below the partition wall; there being a series of inclined nozzles leading through the partition wall from the first chamber to the upper slot.

2. An oil burner comprising a body having a screw-threaded bore leading from one end and a screw-threaded counterbore concentric with the first bore and having a lower chamber communicating with the first bore and an upper chamber communicating with the counterbore, a partition wall mounted between the chambers and leaving horizontal outlet slots above and below the partition wall; there being inclined nozzle openings leading through the partition wall from the lower chamber to the upper slot; and a renewable wear plate mounted in the upper chamber and forming the upper face of the upper slot, said wear plate being in position in front of the nozzles.

3. An oil burner comprising a body having a screw-threaded bore extending from one end and a screw-threaded counterbore concentric with the first bore and having a chamber connecting with the first bore and a second chamber connecting with the counterbore, a partition wall between the chambers and leaving horizontal outlet slots above and below the partition wall; there being a series of inclined nozzles leading through the partition wall from the first chamber to the upper slot; and a lip extending horizontally from the body below the lower slot.

4. An oil burner comprising a body having a main bore extending from one end and a counterbore concentric with the main bore and having a chamber communicating with the main bore, a partition wall mounted horizontally to cover the chamber and leaving a horizontal outlet slot below the partition wall; there being inclined nozzle openings leading upwardly and outwardly from the chamber; and a top plate fitting the body and forming an upper chamber above the partition wall and communicating with the counterbore and leaving an upper horizontal outlet slot; said nozzles discharging into said slot.

5. An oil burner comprising a body having a main bore extending from one end

and a counterbore concentric with the main bore and having a chamber communicating with the main bore, a partition wall mounted horizontally to cover the chamber and leaving a horizontal outlet slot below the partition wall; there being inclined nozzle openings leading upwardly and outwardly from the chamber; a top plate fitting the body and forming an upper chamber above the partition wall and communicating with the counterbore and leaving an upper horizontal outlet slot; said nozzles discharging into said slot; and a wear plate inserted upwardly into the chamber of the top plate and extending outwardly and forming the upper face of the upper slot.

JOHN GREENE.