J. S. McKAIG.

OIL BURNER.

APPLICATION FILED JAN. 21, 1915.

1,149,932. Patented Aug. 10, 1915.

Fig. 1.

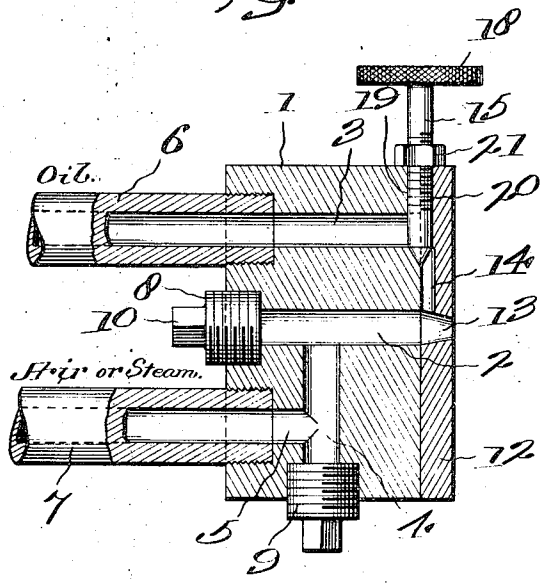


Fig. 2.

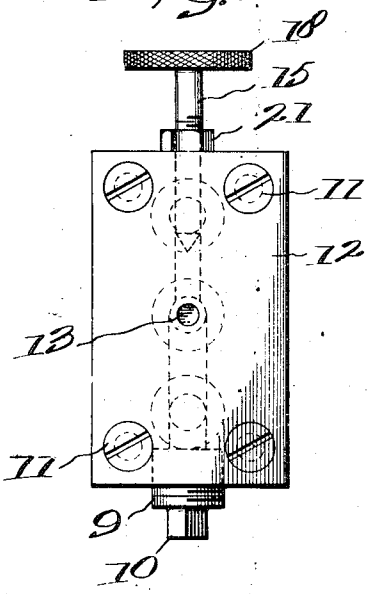


Fig. 3.

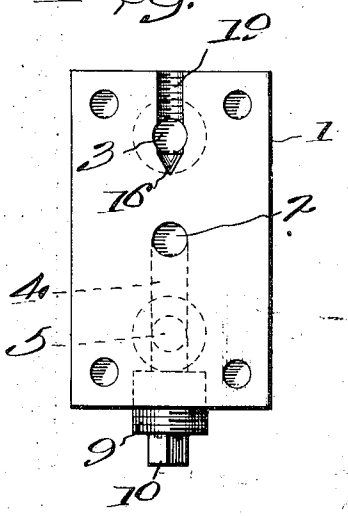
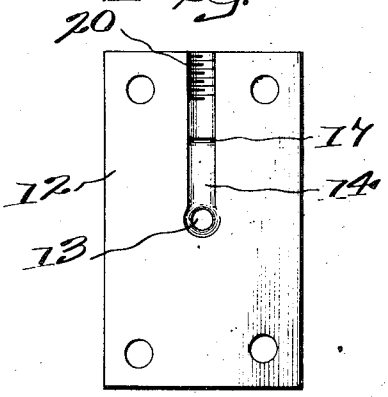


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

1,149,932. Specification of Letters Patent. Patented Aug. 10, 1915.

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To all whom it may concern:

Be it known that I, JAMES S. McKAIG, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in oil burners, and has for an object to provide an improved oil burner which will be of simple construction and arranged to more perfectly atomize the fuel, thereby securing a more thorough combustion and preventing the burner from becoming clogged.

It is another object of the present invention to provide an oil burner having a separately constructed front plate of refractory material adapted to withstand the wear to which the burner is subjected, and which, when worn out, may be removed and substituted by a fresh plate without the necessity of replacing the entire burner.

A further object of the present invention resides in providing an improved burner adapted to the use of oil and air, steam or gas; and constructed to give good results with crude, refuse, tar or other oils.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

In the accompanying drawings forming a part of this application, and in which similar reference symbols indicate corresponding parts in the several views: Figure 1 is a vertical sectional view of an oil burner constructed in accordance with the present invention. Fig. 2 is a front elevational view of the same. Fig. 3 is a front view of the burner with the face plate removed; and Fig. 4 is a plan view of the face plate.

Referring more particularly to the drawings, 1 designates a block of metal or other suitable material, preferably of hardened steel, and produced with a transverse central duct 2, and a transverse duct 3 extending parallel above the duct 2; said ducts 2 and 3 traversing the entire depth of the block 1 and opening on the front and rear faces thereof, as will appear on an inspection of Fig. 1. The block 1 is further provided with a vertically-disposed duct 4 connected substantially centrally and at right angles to the duct 2, and a duct 5 directed at right angles to the duct 4.

The duct 3 is in communication with a source of oil supply through a connection 6, and the duct 5 is connected by a pipe 7 with an air reservoir or the steam space of a boiler; while the open ends of the ducts 2 and 4 are closed by plugs 8 and 9, formed with stems 10 for engagement by a wrench or other tool whereby the plugs may be removed, and access had to the ducts for purposes of cleaning.

To the block 1 is secured, by screws 11 or otherwise, a face plate 12, similarly constructed of hardened steel or other refractory material, and provided with a central discharge orifice 13, tapered as shown, and registering with the duct 2. As disclosed to advantage in Figs. 1 and 4, there is produced above the orifice 13, in the face plate 12, a passage 14, arranged, when the parts are assembled, to establish communication between the oil duct 3 and the central duct 2; and this passage 14 is under the control of a valve 15 adapted to close against a semiconical seat 16, formed on the block 1 and a shoulder 17 located above the passage 14 on the plate 12.

The valve 15 may be manipulated by a milled head 18, and has its stem threaded, as shown, to engage corresponding threads provided in a pair of complemental semicylindrical depressions 19 and 20, produced respectively in the block 1 and face plate 12, and constituting a threaded opening for the reception of the valve when the plate 12 is mounted in position. After the valve 15 has been adjusted to secure the proper flow of oil the same may be held against accidental movement by a lock nut 21.

In operation, the air or steam, as the case may be, enters through the pipe 7 and impinges against the wall of the vertical duct 4, where it is freed of any foreign particles, impurities or water of condensation, the same being precipitated to the bottom of the duct whence they may be, from time to time, drawn off by removing the plug 9. The duct 4 directs the incoming air or steam upwardly and against the horizontal wall of the central duct 2, where a subsequent separation of particles takes place, and thence the same passes to the discharge

orifice 13, where the oil is encountered flowing down the passage 14 and taken up, thoroughly atomized and discharged through the orifice 13 to be ignited. By virtue of the taper of the orifice 13 a strong blast is produced and the oil prevented from flowing outwardly therethrough over the face of the plate 12; but tends to flow rearwardly into the duct 2 to expose the same to the action of the air or steam, thus becoming thoroughly atomized and improving the combustion.

The valve 15, through the milled head 18, may be moved to regulate the quantity of oil desired, and adjustment of the valve secured by the lock nut 21. It is to be understood that the valve may be located in the pipe 6 and control the supply of oil at any point therein, but the same is preferably arranged to control the passage 14 as the same is more effective at this point.

When it is desired to use gas in place of the air or steam, the pipe 7 and plug 8 are each removed and interchanged, so that the gas introduced through the pipe 7 from the source of supply, will not enter through the ducts 5 and 4, but will be directed into the central duct 2 and in a straight path to the orifice 13.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

I claim:

1. An oil burner comprising a block formed with an oil duct and a plurality of angularly-arranged connecting ducts in communication with a source of atomizing fluid supply, traps located in said angularly-arranged ducts, removable plugs for closing said traps, and a face plate secured to said block and provided with a discharge orifice and a passage connecting said oil and atomizing fluid ducts, substantially as described.

2. An oil burner comprising a block traversed by oil and atomizing fluid ducts, a face plate secured to said block and provided with a tapered discharge orifice registering with said atomizing fluid duct and a passage connecting said oil and fluid ducts, a valve seat formed at the upper end of said passage, and a valve mounted between said block and face plate for coöperating with said seat, to control the flow of oil, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

JAMES S. McKAIG.

Witnesses:
CHARLES KANE,
DAVID DAVIDSON.