

G. B. VON BODEN & E. F. INGLES.

OIL BURNER.

APPLICATION FILED APR. 18, 1916.

1,211,792.

Patented Jan. 9, 1917.

Fig. 1.

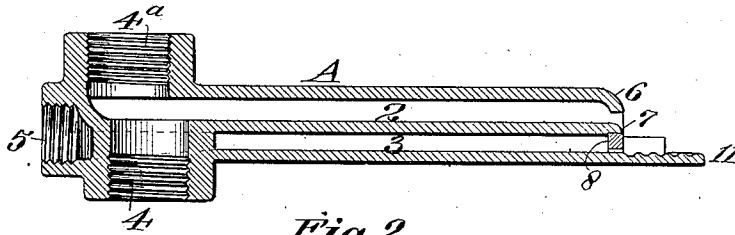


Fig. 2.

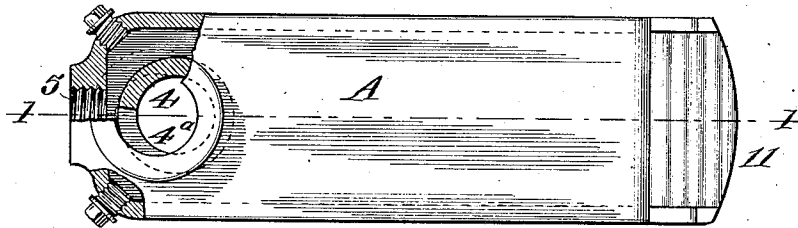


Fig. 3.

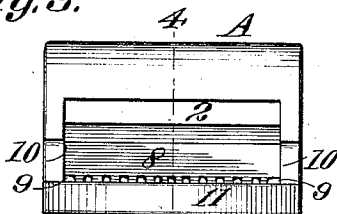


Fig. 5.

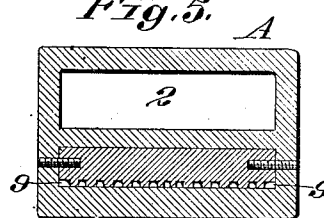


Fig. 4.

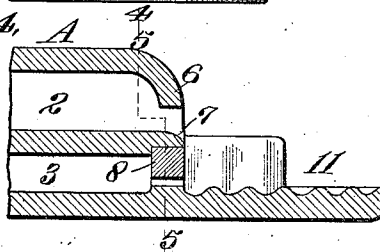
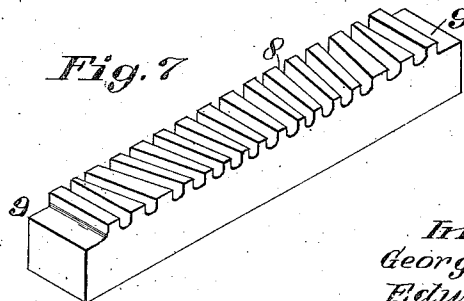


Fig. 6.



Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

1,211,792.

Specification of Letters Patent.

Patented Jan. 9, 1917.

Application filed April 18, 1916. Serial No. 91,910.

To all whom it may concern:

Be it known that we, GEORGE B. VON BODEN and EDWIN F. INGLES, citizens of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

Our invention relates to atomizers or burners to be used in connection with the combustion of petroleum or other liquid or pulverized fuel to produce steam or generate heat for any purpose. It is designed particularly to generate steam for locomotive, stationary, and marine boilers.

It consists of a metal conduit having superposed passages, one to convey the fuel and one to convey the steam, compressed air, gas, or other vapor, or combination of the same, to be used in spraying or spreading the fuel or supplying oxygen to the fire.

The particular feature of this device is in combining the fuel and vapor on or above a lip or plane having a surface projecting in front of the combined discharge and in forming the lower vapor openings in a series of small outwardly diverging perforations made through the front of the steam passage.

In the accompanying drawings which show the accepted form of our apparatus: Figure 1 is a vertical, longitudinal section on line 1—1 of Fig. 2. Fig. 2 is a plan view with parts removed. Fig. 3 is an end elevation. Fig. 4 is a detail, vertical, longitudinal section on line 4—4 of Fig. 3. Fig. 5 is a vertical cross section on line 5—5 of Fig. 4. Fig. 6 is a plan view of the nozzle block. Fig. 7 is a perspective view of the same.

It is the object of this invention to provide a means for more thoroughly forming a fine spray or fog of the liquid fuel, so as to increase its combustion and heating effects, and to prevent any dripping or escape of the fuel in drops which are not thus finely sub-divided.

As shown in the drawings, the conduit A has oil and steam passages 2 and 3, the oil passage located above the steam passage, and at the rear end of the conduit each of these passages is screw-threaded or otherwise constructed for the connection, respectively, of an oil and a steam supply pipe.

For convenience in connecting this apparatus, the oil passages may have connection

both at the top and bottom, as shown at 4 and 4^a, and the steam connection may be made, as shown at 5. The front or discharge end of the oil conduit has a rectangular opening in the form of a horizontal slit, the greatest length of which is horizontal and its transverse depth vertical. The upper part of this conduit is curved downwardly, as shown at 6, and the floor is similarly curved, as shown at 7.

The steam conduit, which extends beneath the oil conduit, terminates in a series of fine holes which are bored horizontally through the front or discharge end. These holes are in a horizontal plane and may be made parallel or divergent outwardly and of a fineness such that when the oil is delivered from the lip of the oil conduit, it is caught by these sprays of steam and immediately broken into a fine mist or fog which is discharged into the furnace in such a way as to rise and burn within the furnace and is deflected upwardly and forwardly to the flue or other continuation of the heating apparatus. We prefer to make this steam conduit with an open slot at the front end, and in this slot we fit a block 8 having holes formed in it; the block being secured so as to remain permanently in place when once set. This enables us to form the steam openings very conveniently before the block is set in place. These small passages may be made in any manner to secure uniformity and exactness, and when the block is in place they will be a permanent part of the device.

In order to prevent any drip of oil which may pass out along the sides, supplemental passages 9 may extend close to the sides of the corrugated table 11, which operates in unison with the discharge passages, said passages 9 being of larger cross sectional area. The action of the table and the side walls, which inclose the jets of steam and oil as they pass out, is to confine the combustible mass and prevent it from diverging, and also to give it a certain movement as it passes over the table to facilitate combustion.

The fine divergent passages, through which the steam passes, carry the oil which is delivered upon and into the passing steam and the supplemental openings at the sides prevent any drops or undivided oil from passing out. The result of this is that the whole mass of fuel is in the form of an ex-

tremely fine fog or spray which is far more rapidly and completely consumed than would otherwise be the case. No deposit is allowed and practical experience shows that there is less liability of carbonization taking place in the use of this burner.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. In an oil atomizer and burner, parallel oil and steam conduits, the oil conduit having its upper and lower walls curved downwardly at the discharge end and the subjacent steam conduit having a discharge formed of finely divided passages, certain of which passages are parallel and others divergent, a table with corrugated surface located below the discharge, and side walls inclosing the table.

2. An atomizer and burner including an oil conduit having a wall with a downwardly curved forward end, and a subjacent steam conduit having a block insertible and removable through the front of the mouth of the conduit, said block having finely divided independent outlets through which steam is discharged to receive the falling oil and deliver a fine fog or mist.

3. An oil burner comprising an oil conduit, a subjacent steam conduit, and an inserted block in the mouth of the steam conduit having a plurality of passages provided in the bottom wall of said block for forming a plurality of outlets with the opposing bottom wall of the steam conduit on which said block seats.

4. An oil burner comprising an oil conduit and a subjacent steam conduit having a series of finely divided divergent outlets, and end outlets parallelly related and including the divergent outlets therebetween.

5. An oil burner including a conduit having a transverse straight series of finely divided outlets of which the end ones are parallel and the intermediate outlets angularly related thereto.

6. An oil burner including a steam conduit having a transverse series of finely divided outlets of which the end ones are parallel and the intermediate outlets angularly related thereto, said end outlets being of larger cross sectional area.

7. An oil burner including an oil conduit, a subjacent steam conduit having a series of closely related and finely divided unobstructed outlets, said outlets extending in the same plane beneath the oil so as to effect an even uniform sheet-like discharge of the steam, and a table arranged with its upper surface in the plane of the bottoms of the outlets for arresting the oil flowing down the partitions between said outlets so as to cause all the oil to commingle with the issuing jets of steam.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

GEORGE B. VON BODEN.
EDWIN F. INGLES.

Witnesses:

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