J. SCHURS.

OIL BURNER.

APPLICATION FILED FEB. 25, 1913.

1,150,461. Patented Aug. 17, 1915.

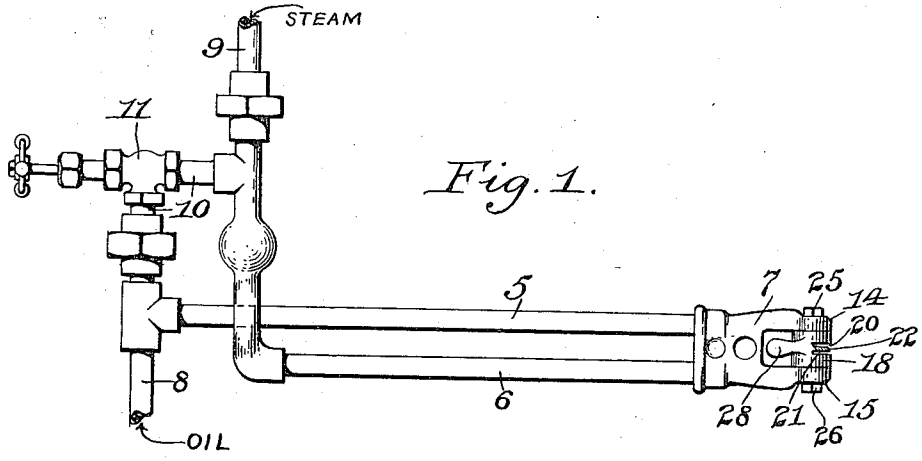


Fig. 1.

Fig. 2.

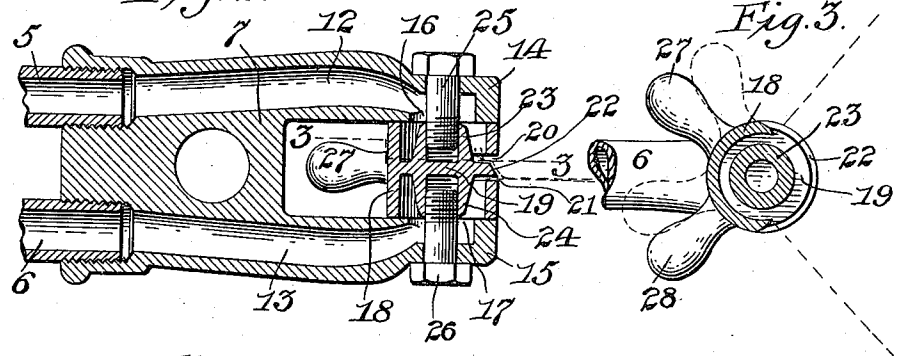


Fig. 3.

Fig. 4.

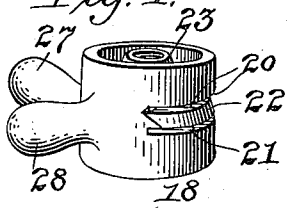
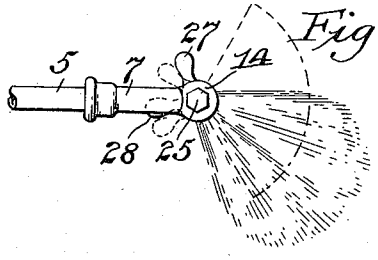


Fig. 5.



Witnesses

Gertha C. Niemeyer

Frank N. Mitchel

Inventor

John Schurs,

By Cassell Severance

Attorney

UNITED STATES PATENT OFFICE.

JOHN SCHURS, OF LOS ANGELES, CALIFORNIA.

OIL-BURNER.

1,150,461. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed February 25, 1913. Serial No. 750,511.

To all whom it may concern:

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

This invention relates to improvements in oil burners, and particularly to such as are adapted for use in boiler or other furnaces.

It is an object of the invention to provide a burner which may be used with merely a gravity feed of oil sufficient to cause the same to flow through the pipes to the burner.

It is a further object of the invention to provide a burner having a nozzle capable of delivering steam in sheet form and also delivering oil thereto so as to be effectively atomized exteriorly of the nozzle.

It is a still further object of the invention to provide an oil burner with an atomizing nozzle which is capable of being swung to one side or to the other for centering the flame or directing it to any part of a fire box.

In the accompanying drawing, Figure 1 is a side elevation of the improved burner, the oil and steam feed pipes therefor also being shown. Fig. 2 is a central vertical longitudinal sectional view through the burner proper. Fig. 3 is a detail sectional view upon the line 3—3 of Fig. 2. Fig. 4 is a perspective view of the adjustable nozzle member of the burner. Fig. 5 is a detail view showing the burner in top plan view, and showing that the direction of the flame may be altered.

The details and features of the invention will now be more particularly described, reference being had to the drawing, in which 5 indicates an oil pipe and 6 a steam pipe connected with a burner 7. The pipes 5 and 6 are properly connected in any desired manner with oil and steam supply pipes 8 and 9 respectively, and a by-pass 10 is usually interposed in the piping and controlled by a valve 11 so that steam may be passed through the oil pipe 5 when desired for cleaning the oil delivering portion of the burner.

The burner 7 is formed with an oil passage 12 and a steam passage 13 which passages are adapted to be connected to the oil and steam pipes 5 and 6 respectively. The delivery end of the burner is formed with enlarged head portions 14 and 15, having outlet openings 16 and 17 for delivering the materials to a movable nozzle 18. The nozzle 18 is formed with a hollow body portion having a central partition 19 which divides the oil receiving chamber of the nozzle from the steam receiving chamber. An oil delivering slot 20 is formed in the walls of the burner 18 just above the partition 19, and a steam delivering slot 21 is provided in said burner immediately below the said partition 19. The latter slot 21 may be made very narrow so as to spread the steam into a thin broad sheet. The slot 20 is preferably made wider than the slot 21 so as to permit of a free delivery of the oil under the action of gravity as it flows upon the sheet of steam. The slots 20 and 21 preferably extend about half way around the nozzle 18 as clearly indicated in Fig. 3 of the drawing. An important feature of the nozzle structure is the beveling of the delivery edge of said partition 19 as shown at 22. The use of this beveled edge 22 is found to cause the oil to flow at once into the flat sheet of steam, and to be immediately taken up by said steam, which would not be the case if the partition were not beveled as shown. The partition 19 is also provided with oppositely extending bosses 23 and 24 which are centrally bored to receive the inner ends of pivot bolts 25 and 26. The said pivot bolts usually cap screws extend through the central portions of the enlarged heads 14 and 15. The outlets 16 and 17 are of larger diameter than the said pivot bolts so that the oil and steam may flow around the same to the nozzle without obstruction. It is important for keeping the nozzle clean that the bosses have inclined walls as shown in Fig. 2, and that the spaces between them and the outer walls of the nozzle at their bases be of less size than the spaces at their outer ends. The nozzle 18 is provided with one or more arms 27 and 28 by which it may be moved upon the pivot bolts. The flame may thus be directed to one point or another in the fire box of a furnace as indicated in dotted lines in Fig. 5.

In use the burner is allowed to extend well into the fire box of a furnace, the pipes 5 and 6 being of sufficient length to reach the desired distance into the combustion chamber. The steam is fed through the pipes 6 and 9 at the desired pressure. Oil is then permitted to flow through the pipe 5 and fall upon the broad sheet of dry steam es-

caping from the nozzle 18. The converging shape of the spaces around the bosses 23 and 24 is found in use to prevent the collection of foreign substances, dirt or oil, and cause the burner to be kept absolutely clean. The solid partition 19 prevents any escape of steam into the oil side of the burner as would happen if a pivot bolt passed through it, which is also an important feature of the structure. The beveled edge of the partition 19 leads the oil into the fan shaped sheet of steam so as to be evenly and thoroughly atomized thereby and to produce perfect combustion in the furnace. The nozzle 18 may be turned by tapping either one of the projections 27 or 28 with a poker or other instrument after the burner has been lighted, so as to either center the flame perfectly within the combustion chamber or to direct it to one side or other of the fire box as required.

The use of cap bolts for pivotally holding the nozzle, obviates the difficulties arising from the use of a pivot bolt that would have to pass through the partition or floor 19, since such a pivot bolt will become loose with usage and allow steam to pass around it into the oil side of the burner. This interferes with a proper flow of the oil and the presence of moisture causes an accumulation of dirt in the oil side of said burner.

What is claimed is:

1. A furnace burner having a fuel and spraying agent supply means, comprising a nozzle mechanism adapted to be supported by said means in a combustion chamber, and a delivery member pivotally mounted in said nozzle mechanism and having outlet ports for fuel and a spraying agent, an inclined surface being arranged between said ports to properly spread fuel on the spraying agent, the said delivery member being also provided with means by which it may be turned while the fire is burning, whereby the direction of the flame may be observed during the adjustment.

2. A hydro-carbon burner comprising a body portion having oil and steam ducts therein with their outlets one above the other, a nozzle pivoted between said outlets and having annular channels for receiving the oil and steam, the walls of said channels being provided with outlet slots extending partially around the nozzle, and a beveled partition between said outlets.

3. An oil burner having a body portion provided with oil and steam ducts therein, said body portion being adapted to be mounted within a combustion chamber, a nozzle pivotally mounted between the outlets of the ducts in said body portion and having discharge openings for spraying materials, and radially projecting arms on said nozzle adapted to be struck or engaged by a poker whereby the nozzle may be turned or adjusted to throw the flame in the right direction without putting out the fire.

4. An oil burner comprising a body portion having oil and steam ducts therein, a nozzle pivoted between the outlets of said ducts, pivot pins centrally engaging said nozzle, said nozzle having channels extending around said pivots and formed with discharge openings, and a partition having a curved beveled edge arranged between said discharge openings for properly commingling the said steam and oil in a radiating flame.

5. An oil burner having passages for delivering steam and oil to a flame, a hollow nozzle mounted between the outlet openings of said passages, said nozzle having a central partition, bosses projecting from said partition, and having apertured recesses, and pivot pins carried by the burner and engaging said apertured bosses for pivotally holding the nozzle in place.

6. An oil burner comprising a casing having oil and steam passages therein, a nozzle pivotally mounted between the delivery outlets of said burner, said nozzle having oppositely extending bosses and a partition forming steam and oil chambers within the nozzle, the walls of said bosses being tapered outwardly toward the bases and the burner being provided with outlet slots opposite the bases of said bosses, whereby materials passing through the chambers in the nozzle will be kept cleaned of all deposits.

In testimony whereof, I have hereunto set my hand, in presence of two witnesses.

JOHN SCHURS.

Witnesses:
BERTHA C. NIEMEYER,
C. SEVERANCE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."