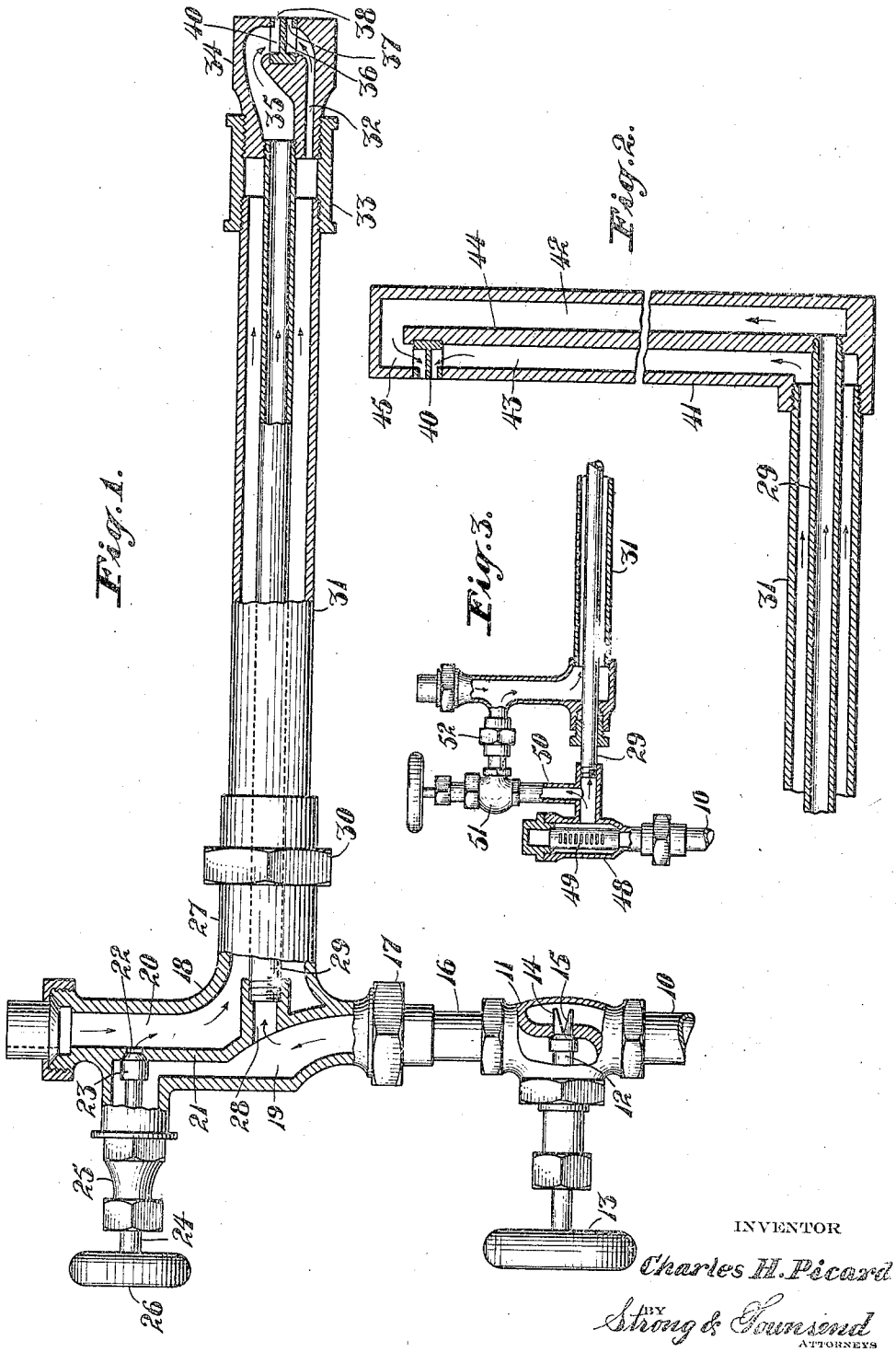
Jan. 9, 1923.

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C. H. PICARD.

OIL BURNER.

FILED SEPT. 24, 1919.



INVENTOR

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UNITED STATES PATENT OFFICE.

CHARLES H. PICARD, OF SAN FRANCISCO, CALIFORNIA.

OIL BURNER.

Application filed September 24, 1919. Serial No. 325,888.

To all whom it may concern:

Be it known that I, CHARLES H. PICARD, citizen 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.

This invention relates to an oil burner construction.

It is the principal object of the present invention to provide improvements in oil burners, whereby a more efficiently operating burner may be produced of a construction which is decidedly simple and inexpensive and will insure that oil and steam may be suitably mixed to produce proper vaporization and a resultant thorough combustion.

The present invention contemplates the use of a main casting within which are cast oil and steam passageways, said passageways being in communication with longitudinal conduits which deliver the oil and the steam to a vaporizing chamber and to a burner jet.

The invention is illustrated by way of example in the accompanying drawings in which: Fig. 1 is a view in side elevation showing one form of the burner with parts broken away to more clearly disclose the passageways providing the steam and oil.

Fig. 2 is an enlarged fragmentary vertical section showing another form of the invention especially adapted for furnaces.

Fig. 3 is a view in central vertical section showing another form of the valve.

In the drawings 10 indicates an oil-supply pipe here shown as fitted with a valve member 11. This valve is provided with a conventional valve stem 12 adapted to be rotated and adjusted by means of a hand-wheel 13. The end of the valve stem is formed with a bifurcated valve member 14. The valve member is cylindrical when its outer contour is fitted and has a V-shape groove 15 through which the oil may pass from the pipe 10 and into a pipe 16, the pipe 16 stands vertical and is connected by a union 17 with a burner 18. This casting is formed with a vertically extending oil passageway 19 which is separated from a steam passageway 20 by means of an intermediate partition wall 21. An oil opening 22 is formed through the partition wall near its upper end and is adapted to be closed or partially closed by means of a tapered valve member 23. This valve member is carried on the end of an adjustable stem 24 which extends through a stuffing gland 25. The outer end of the stem 24 is fitted with a hand-wheel 26, the casing 18 is formed with a cylindrical portion 27 which is in communication with the portion 20. The partition wall 21 is formed with a forwardly extending boss 28 which is concentric with the cylindrical portion 27 and is threaded to receive an oil tube 29 which is bent forwardly through the cylindrical portion 27 and concentric therewith. This oil tube is of a dimension considerably less than the inside dimensions of the cylinder 27 and thus provides a circumscribing passageway for the steam, mounted upon the forward end of the cylinder 27 is a union 30 which secures a steam tube or casing 31 in position. This casing agrees in outside and inside dimensions with the cylindrical portion 27 of the main case and circumscribes a pipe running into the oil pipe 29 which extends entirely through the tube 31 and projects out the forward end thereof. The outer end of the tube 31 is fitted with a collar 33. This collar is threaded at both of its ends, one end being in position over the end of the tube 31 and the opposite end being positioned over the end of the burner jet 34. The jet is formed with an internally threaded portion adapted to register with the end of the oil pipe 29 and to provide a suitable space and connection therewith, the jet is thus detachably secured to both the sleeve 33 and the tube 31. As shown in Fig. 1 of the drawings this jet is preferably formed with an enlarged oil cavity 35 which extends upwardly and has a downwardly extending portion leading on to a deflecting plate 36. The lower portion of the jet is formed with a gland 32 in communication with the steam pipe 31, this portion leads upwardly and will deliver the steam against the under face of the deflecting plate 36. The deflecting plate forms the division in an opening in the end of the jet and thus provides a spray opening 38

for the oil and a spray opening 37 for the steam as these openings are slotted and are disposed one above the other in horizontal alignment. It will be readily understood that the oil and steam will be thoroughly mixed and the oil vaporized as the two fluids pass outwardly into the atmosphere. Attention is further directed to the fact that the baffle plate 36 is formed integral with a tip 40 which also forms the openings 37 and 38, this provides that the tip may be readily removed when desired and the life of the burner prolonged.

It is often desirable to provide a burner for use in connection with boilers and with furnaces of the type known as Peabody furnaces, these furnaces are so designed that the flame passes forwardly and upwardly to the tubular boilers and then rearwardly and downwardly to the stack. When equipment for such furnaces is desired the casing 18 is used and the pipes 29 and 31 prolonged to any desired lengths; the outer ends of these pipes are fitted with the members shown in Fig. 2 of the drawings. This casing indicated at 41 extends upwardly and is a substitute for the collar 33 previously mentioned. Vertical steam passageways are formed in the casing, an oil passageway 42 and the steam passageway 43. These passageways are separated by a partition wall 44, through which the end of the pipe 29 is threaded. The partition wall does not extend entirely to the top of the casing 41 but terminates a distance short of the head so that a passageway 45 is provided. The passageway 45 leads the oil downwardly and upon a tip member 40, similar to one used in the preceding form of the device.

In the form of the device shown in Fig. 3 of the drawings casing 48 is connected to the oil pipe 10. This casing is cylindrical and accommodates an oil strainer 49 through which oil may pass to the pipe 29. Cast integral with the casing is a vertical extension 50 connecting with a regulating valve 51. The valve has a connection 52 with a steam casing through which the pipe 29 extends and to which the tube 31 is connected.

In operation of the present invention the steam and oil are allowed to pass into the casing 18, one passing downwardly to the portion 20 and the other one passing upwardly to the portion 19. The major portion of the oil will flow through the boss 28 and then travel along the pipe 29. The travel of this oil will be increased and it will be placed under pressure by a by-passage of steam through the opening 22 in the partition wall as regulated by the valve member 23. As the oil passes forwardly along the pipe 29 it will be partially heated by the steam surrounding the pipe 29 and contained within the tubular casing member 31. The oil will then flow forwardly and into the cavity 35 from which it will flow onto the baffle plate 36. At the same time the steam will pass forwardly and through the gland 37 to strike a baffle plate 36 from the bottom.

It will thus be seen that the oil, of course, will be forced out through the opening 38 and the steam through the opening 37, and will thereafter vaporize as it is projecting forwardly. The action will be identical in the form of the device shown in Fig. 2 except that the oil will be thrown in the reverse direction from its original horizontal path of travel and may thereafter pass upwardly among the flue pipes of a boiler and then rearwardly through a flue.

It will thus be seen that the construction here disclosed insures that an integrally formed casing will be provided within which the oil and steam may be delivered to suitable vaporizing tips and by which the oil may be given pressure from the steam as it is thus delivered. The burner being constructed in such a manner as to be decidedly simple in its construction and operation and inexpensive as to manufacturing costs.

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

Having thus described my invention, what I claim and desire by Letters Patent is:

An oil burner comprising a T-shaped casing having its vertical arms provided with connections for receiving an oil and a steam inlet pipe, the horizontal arm being provided with a connection for receiving a steam conducting pipe, a vertically disposed partition wall formed within the casing and dividing the interior thereof into two chambers, one for each inlet pipe, an oil conducting pipe positioned within and concentric to the steam conducting pipe and having one of its ends threaded into said partition whereby it will be in communication with the oil inlet chamber, a valve controlling a valve passage in the partition wall adjacent the steam inlet whereby a portion of the steam admitted may be by-passed into said oil inlet compartment to impel the oil through the oil conducting pipe, a burner jet threadedly connected to the outer ends of the steam and oil conducting pipes and having a discharge orifice formed in its outer end, a deflecting plate supported in the jet and centrally dividing said orifice, said jet being formed with an enlarged oil delivery passage connecting the oil conducting pipe with one portion of the orifice and a comparatively small steam delivery pas-

sage connecting the steam conducting pipe with the other portion of the orifice, said passages having their outer ends downwardly and upwardly directed respectively, whereby the oil and steam will be directed against the upper and lower faces of the deflecting plate respectively.

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

CHARLES H. PICARD.

Witnesses:
HOWARD VERNON,
EMILE HEARN.