Dec. 18, 1923. 1,477,794

C. F. WHEELER

OIL BURNER

Filed May 15, 1922

Fig. 1

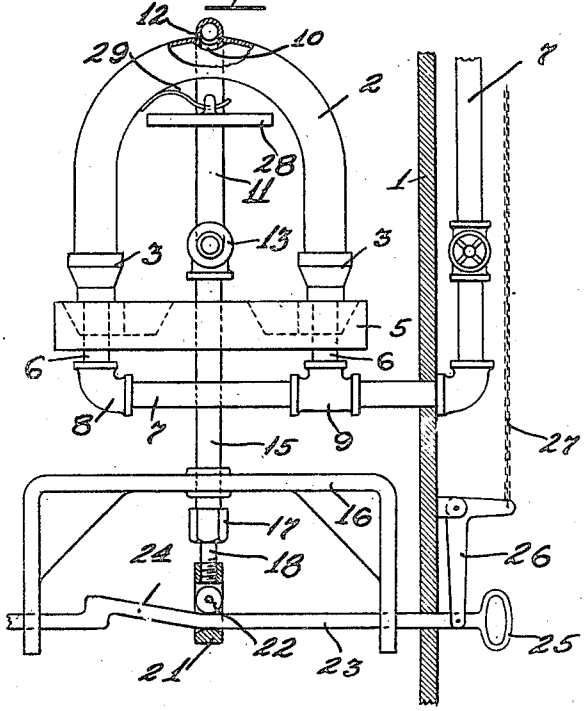



Fig. 2

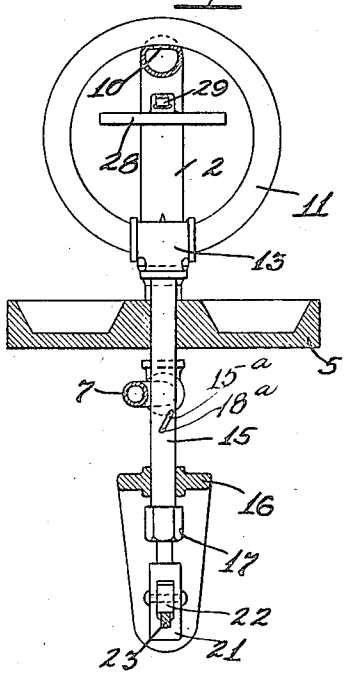



Fig. 3

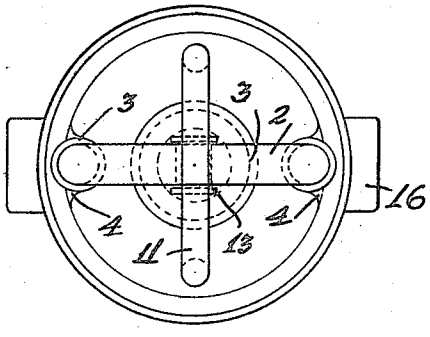



Fig. 4

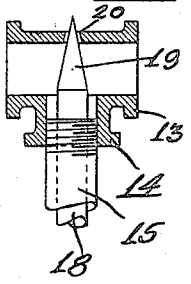
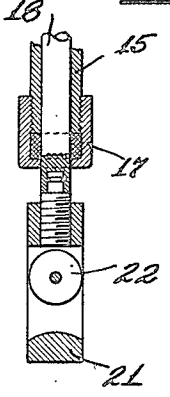



Fig. 5




Witnesses

Inventor

CHARLES F. WHEELER

by Charles F. Wheeler Atty.

Patented Dec. 18, 1923. 1,477,794

# UNITED STATES PATENT OFFICE.

CHARLES F. WHEELER, OF BLOOMINGTON, ILLINOIS, ASSIGNOR TO B. M. KUHN, OF BLOOMINGTON, ILLINOIS.

## OIL BURNER.

Application filed May 15, 1922. Serial No. 560,837.

*To all whom it may concern:*

Be it known that I, CHARLES F. WHEELER, a citizen of the United States, and a resident of the city of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in an Oil Burner; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to an oil burner adapted for use in furnaces and heating plants or the like in which the oil or liquid fuel is fed to a vaporizing chamber in which vaporization takes place and from which the vapor or gas passes into a vapor or gas chamber.

It is an object of this invention to provide a novel and simplified apparatus that can be readily installed and controlled and that is efficient and economical in service.

This invention comprises the novel mechanism and combinations hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawing, which illustrates a preferred embodiment of this invention, and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a section through the wall of a furnace showing the oil burning apparatus in elevation with parts in section.

Figure 2 is a vertical section showing parts in elevation taken at right angles to the plane of the drawing of Fig. 1.

Figure 3 is a top plan view of Figure 1.

Figure 4 is a fragmentary section of the needle valve upon an enlarged scale.

Figure 5 is a fragmentary sectional view of the valve rod and support.

As shown on the drawing:

In referring now to the drawing, which illustrates one embodiment of this invention, the reference numeral 1 represents a furnace wall or the like within which the oil burning apparatus may be mounted or secured. It is, however, immaterial where or for what purpose the burner is used.

The oil burning apparatus comprises an evaporating or gasifying chamber which is in the form of a U-shaped pipe 2 which is provided with an apertured concave depression in its crest, and has its ends provided with couplings 3 resting upon apertured bosses 4 rising from a grooved plate 5 which serves as an oil pan or vessel for initially heating the evaporating chamber. The couplings 3 are connected by means of the short pipes 6 which pass through the apertured bosses 4 to an oil or liquid fuel feeding pipe 7 by means of the couplings 8 and 9. The feeding pipe 7 passes through the wall of the furnace and extends upwardly to a liquid fuel supply (not illustrated).

The vapor or gas that is formed in the pipe 2 rises in the crest thereof and passes through the port 10 formed by the aperture in the concave depression and enters the gas or vapor chamber 11 through the port 12. The gas chamber is in the form of a circular tube or pipe which transversely encircles the said crest portion of the pipe 2 and is integrally united therewith as by being welded or brazed in the concave depression thereof with the ports 10 and 12 in registry. The ends of the circular tube or pipe 11 are connected to a coupling 13 having a depending internally threaded boss 14 in which a hollow guide tube 15 is secured. This guide tube extends downwardly through a yoke-shaped support 16. An axially apertured cap 17 fits over the lower end of the guide tube and confines a packing gland or washer against the end of said tube.

A valve rod 18 is guided in the hollow tube 15, the upper end of said rod being provided with a tapering needle point 19 which extends through a conical gas burning aperture 20 in the coupling 13, the lower end of said rod being provided with a stirrup 21 rigidly secured thereto, the bottom of the interior or hollow portion of the stirrup being convex, and a roller 22 is journalled above convex surface. A horizontal cam bar 23 is slidably supported in the yoke member 16 and in the wall of the furnace extends between the roller and convex surface, the portion of the bar directly to the left of the roller being upwardly inclined at 24 to provide a cam surface that acts against the roller for elevating the needle valve 20 when the cam bar is moved toward the right for regulating or extinguishing the burner. The right hand end of the cam bar is provided with a handle 25 for operating the same, or a bell crank lever 26 pivoted at its apex upon the furnace wall with one

arm pivoted to the projecting end of the bar and the other arm connected to an operating chain 27 may be used for slidably operating the cam bar.

In using the burner, the oil or other liquid fuel is fed by gravity or pumped through the feed pipe 7 into the vaporizer or pipe 2; the flow may be controlled in any well known way. The oil in the vaporizer 2 is initially heated from a flame produced by burning oil in the pan 5, which also heats the pipe 11. When the liquid fuel in the pipe 2 becomes gasified, it passes through the ports 10 and 12 into the gas chamber 11. The gas in the chamber or pipe 11 is ignited at the needle valve port 20, where it mixes with the air and belches forth in a flame which assumes the functions of the initial flame arising from the burning oil in the pan 5 for heating the vaporizer 2 and pipe 11, said flame in ascending striking the flame deflecting plate 28 supported by means of a hanger 29 secured to the pipe 2 and extending therefrom. The flame will be deflected from the plate 28 and spread so as to strike the vaporizer 2 and gas chamber 11. As the gas chamber 11 is also heated, any liquid fuel that may pass therein through the ports 10 and 12 will be quickly gasified. The burner may be regulated by adjusting the needle valve 19 by means of the slidable cam bar 23, and the burner may be extinguished by elevating the needle valve 19 so as to close the port 20, as is obvious. In Figure 2 I have shown an inclined slot $15^a$ in the tubular guide 15 and a pin $18^a$ projecting from the valve rod 18 into the slot, so that the needle valve rod 18 will be given a partial rotation during its operation for the purpose of cleaning the soot off the needle and from its aperture.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. In an oil burner, a feed pipe, a U-shaped vaporizing pipe coupled at its ends to said feed pipe, an oil pan attached to said vaporizing pipe, a circular gas receiving pipe transversely encircling said vaporizing pipe and integrally united therewith, said pipes having communicating ports, a conical port in said gas pipe, and a needle valve adjustable in said port.

2. In an oil burner, a vaporizer comprising a U-shaped member, a circular gas receiving tube transversely encircling said member and integrally united therewith, and a gas burning aperture at the lower interior circumference of said tube whereby said tube and member are simultaneously heated.

3. In an oil burner, a U-shaped vaporizing tube, an oil pan secured to the legs thereof, an oil feeding pipe connected to the ends of said tube below said pan, a circular and hollow ring depending transversely from the crest of said tube and integrally united therewith at said crest, said tube and ring having intercommunicating ports at said crest, a conical aperture in the lower inner circumference of said ring, a hollow guide tube depending from said ring in axial alinement with said aperture, and a needle valve extending into said aperture and having a stem slidably mounted in said guide tube, and means for adjusting said valve.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

CHARLES F. WHEELER.

Witnesses:

LILLIAN IRWIN,

J. N. WASHBURN.