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1,663,045

J. C. GIBSON

OIL BURNER

Filed Nov. 17, 1922

Fig. 1.

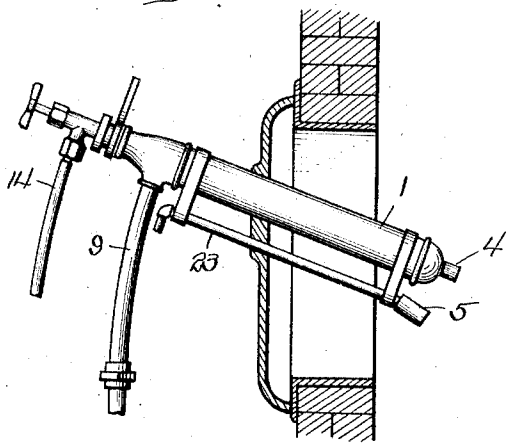
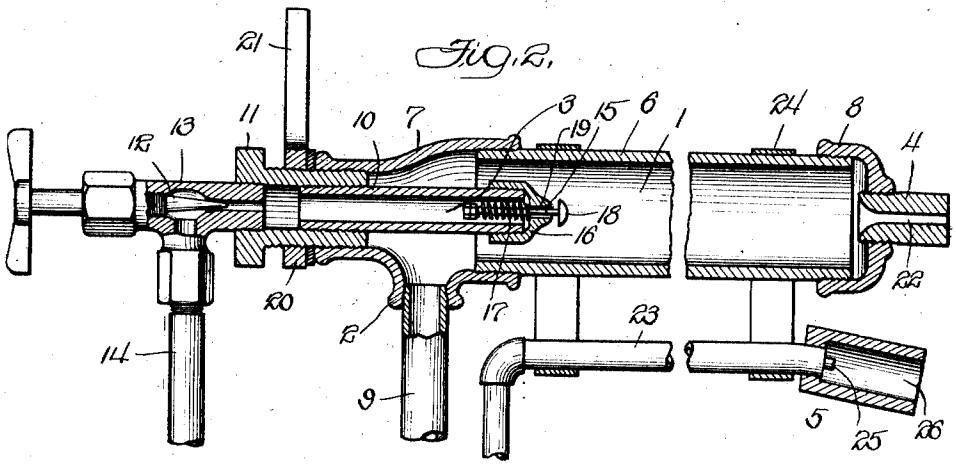


Fig. 2.



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UNITED STATES PATENT OFFICE.

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OIL BURNER.

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The main objects of this invention are to provide an improved form of oil burner, for use in fuel oil heating apparatus; to provide an improved form of mixing chamber for the oil and air; to provide an improved construction and arrangement of an oil spray and air inlet at one end of said chamber, and of a mixture-discharge nozzle at the other end; to provide an improved arrangement of a gas pilot on the burner for igniting the mixture; and to provide a burner of this type which is simple in construction, economical, positive and quiet in operation.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which:

Figure 1 is a side elevation of an oil burner constructed in accordance with this invention, and arranged in position in the front wall of a furnace.

Figure 2 is an enlarged longitudinal sectional detail of the same.

An oil burner embodying this invention involves the use of a cylinder providing a mixing chamber, at one end of which is arranged the separate oil and air inlets, the oil inlet being equipped with a valve mechanism, which, under the accumulated pressure of the incoming oil, is opened and sprays the oil into the incoming air current, and at the other end is arranged a contracted discharge nozzle through which the mixture is ejected and ignited by a gas pilot arranged adjacent to and below the discharge nozzle.

In the specific embodiment herein shown, the burner comprises a mixing chamber 1 into which air and oil are admitted through the inlets 2 and 3, respectively, and wherein said air and oil are thoroughly mixed and discharged through a nozzle 4 into the fire box of a suitable heating plant, where it is ignited by a flame issuing from a gas pilot 5 arranged on the burner.

The mixing chamber 1 is formed within a cylinder 6, upon the ends of which, are secured suitable fittings 7 and 8. The cylinder 6 preferably is a piece of iron pipe of suitable diameter and length, and the fittings 7 and 8 are special castings threaded to be screwed upon the ends of the pipe.

The fitting 7 is provided with a transversely disposed port, which constitutes the air inlet 2, and which is connected to a suitable source of air pressure by means of a pipe 9.

The oil inlet 3 comprises a short piece of pipe 10 secured to a bushing 11, screwed into the end of the fitting 7, so as to locate the pipe 10 in axial alignment with pipe 6 but with the inner end thereof located inwardly of the air inlet 2.

The admission of oil to the pipe 10 is controlled by a needle valve 12 arranged in a T-fitting 13 secured in the end of the bushing 11, and suitably connected to an oil supply pipe 14.

The discharge of oil from the inlet 3 is controlled by a valve 15, the stem of which is slidably mounted in a cap 16 screwed on to the end of the pipe 10 and normally urged by a spring 17, so that the head 18 of said valve closes the axially disposed port 19. The head 18, when retracted under the pressure of the incoming oil, functions as a baffle plate which causes the oil issuing from the port 19 to be sprayed radially outward into the incoming air current, so that the oil is atomized and more thoroughly mixed with the air.

The bushing 11 is screwed into the end of the fitting 7, and is locked by a nut 20 which has a handle 21 integrally formed thereon for the purpose of turning the same.

The nozzle 4 is in the form of a small nipple screwed axially into the end of the fitting 8, and the passage or orifice 22 leading therethrough, is of a cross sectional area, which is a fractional part of the cross sectional area of the mixing chamber 1, so that the discharge of the combustible mixture of air and oil is so retarded that the incoming oil and air have an opportunity to become thoroughly mixed in moving lengthwise of the mixing chamber.

The gas pilot 5 comprises a pipe 23, supported on the underside of the pipe 6 longitudinally thereof by means of bands or stirrups 24, and connected to a suitable source of gas supply. A jet 25 is secured to the end of the pipe 23, and a protecting hood 26 is likewise secured to the end of the pipe, and extending a considerable distance beyond the jet 25. The hood 26 is so arranged that the axis thereof is inclined to the axis of the mixing chamber 1. The hood projecting beyond the jet 25 protects the gas flame from being readily blown out by the stream of combustible mixture being discharged from the nozzle 4. The diverging arrangement of the hood eliminates the possibility of an irregular igniting of the

combustible mixture, and avoids the "fluttering" which sometimes occurs in burners of this kind.

It is believed that the operation of the device herein shown and described is so readily understood from the foregoing description, as to require no further detailed explanation.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

An oil burner comprising an elongated tubular mixing chamber having an axially alined restricted outlet at one end thereof and an air inlet adjacent the other end thereof, a concentrically disposed oil inlet nozzle extending into said mixing chamber and having its discharge end located between said air inlet and said restricted outlet, a cap having a port therethrough screwed on the end of said oil nozzle, a valve for said port having a transversely disposed head located on the outside of said cap for producing a spray of oil transversely to the direction of flow of air through said mixing chamber, a valve stem on said valve extending through said port, and a compression spring bearing between the inner wall of said cap and the inner end of said valve stem for urging said baffle member to close said oil nozzle port.

Signed at Chicago this 15 day of Nov., 1922.

JEFFERSON C. GIBSON.