G. W. LINDSAY.

COMBINATION BURNER.

APPLICATION FILED APR. 21, 1919.

1,378,248.

Patented May 17, 1921.

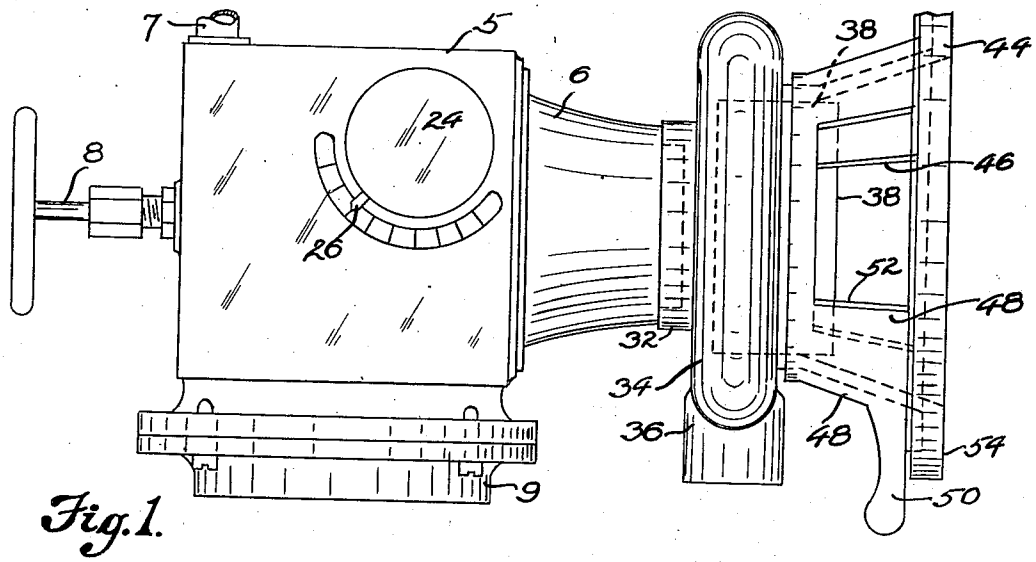


Fig. 1.

Fig. 2.

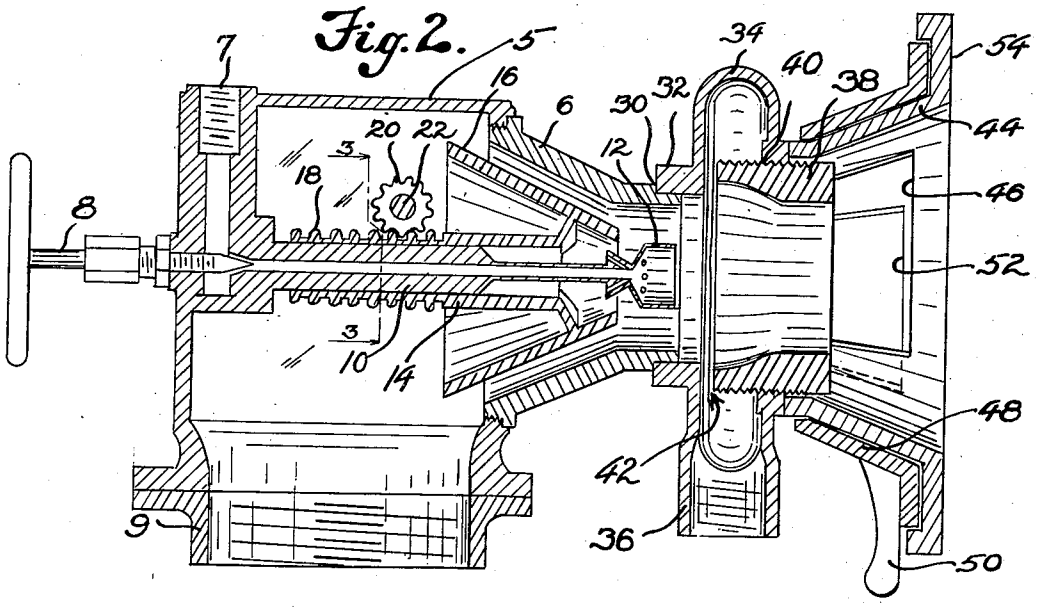
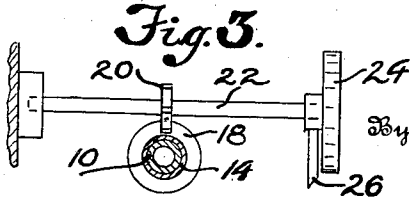


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE W. LINDSAY, OF DENVER, COLORADO, ASSIGNOR TO THE DENVER FIRE CLAY COMPANY, OF DENVER, COLORADO, A CORPORATION OF DELAWARE.

COMBINATION-BURNER.

1,378,248. Specification of Letters Patent. **Patented May 17, 1921.**

Application filed April 21, 1919. Serial No. 291,475.

To all whom it may concern:

Be it known that I, GEORGE W. LINDSAY, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Combination-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

The object of the invention is to provide a burner which may be used successfully for both oil and gas as fuels, or for either oil or gas alone.

Briefly, the invention comprises an oil burner of the general character described in my copending application, Serial No. 255,327, filed September 23, 1918, in combination with a gas head, mounted upon the nozzle of the oil burner and having an adjustable gas-regulating nozzle piece thereon, a twyer being mounted on the forward projecting end of said adjustable nozzle piece. In the drawings:

Figure 1 is a side elevation of the oil and gas burner parts.

Fig. 2 is a vertical section through the same.

Fig. 3 is a fragmentary detail on line 3—3 of Fig. 2.

The oil burner comprises a casing, 5, having a frusto-conical nozzle, 6, the casing being supplied with oil through a connection 7, controlled by a needle valve 8, and with air through a connection 9, at the bottom of the casing. Oil passes through a tubular member, 10, to a flared burner tip, 12, described in my copending application above mentioned. A sleeve, 14, is reciprocably mounted upon the tubular member 10, the forward end of the sleeve having mounted thereon a frusto-conical member, 16, coöperating with the nozzle member 6. The sleeve 14 is reciprocated by means of a rack composed of annular ribs, 18, on the member 14, and a pinion 20 in mesh therewith and mounted upon a spindle 22. The spindle 22 extends through the side of the casing 5, and has thereon a thumb nut, 24, and an indicator 26. The extremity of the nozzle portion 6 is shouldered at 30 to receive the annular flange 32 of the circular gas head, 34. Gas is fed into the lower portion of the head through connection 36. An adjustable gas-regulating nozzle piece, 38, is threaded into the forward wall of the gas head, as at 40, and by means of these threads is adjustable axially to vary the space 42 between the rear wall of the gas head and the rear end of said nozzle piece. A twyer, having an inner member 44 with openings 46, is mounted upon the forward end of the nozzle piece, 38. An outer member, 48, is rotatable upon said inner member 44 through the means of a handle piece, 50, and is provided with openings 52, to coöperate with openings 46 of inner member 44, whereby the amount of air admitted to the fuel mixture may be controlled in a well known manner. This arrangement also permits viewing the flame as it passes into the furnace, and also the interior of the furnace with which the annular flange 54 is in contact.

In operation, the flow of oil is regulated by needle valve 8, and the flow of air through reciprocation of the frustoconical member 16. This fuel is thereby passed through the gas head and nozzle piece, 38, where it mingles with gas being introduced into the gas head through connection 36 and opening 42, the flow of gas being controlled by nozzle piece 38, as above indicated. The fuel then passes through the twyer into the furnace. By this construction either fuel may be made to supplement the other, the device being particularly valuable in commercial plants where the gas supply runs low at certain times.

In addition to the fact that one of the burner parts is used to supplement the function of the other, either part may be used independently of the other, as occasion may demand.

I claim:

1. In a combination burner, an oil burner, having a nozzle member, a gas burner lying beyond and fitted to said nozzle member and having a gas head, and a nozzle piece mounted in said gas head and adjustable to vary the supply of gas in said head, and an air supply.

2. In a combination burner, an oil burner having a nozzle piece, a gas burner lying beyond and fitted thereto and comprising a gas head, means to supply gas to said head, and a nozzle piece threaded into the forward

wall of said gas head, said nozzle piece being rotatable by means of the threaded connection to control the flow of gas thereto, and an air supply.

3. In a combination burner, an oil burner having a nozzle member, a gas burner lying beyond said nozzle member and comprising a flange to receive the tip of said nozzle, a gas head, means to supply gas to said head, a nozzle piece mounted in the forward wall of said gas head, and adjustable axially to vary the distance between the rear end of said piece and the rear wall of said head to control the flow of gas, the forward end of said piece projecting from said head, and adapted to fit a twyer.

In testimony whereof I affix my signature.

GEO. W. LINDSAY.