May 7, 1929. J. BROCK 1,712,326

BURNER

Filed July 13, 1926

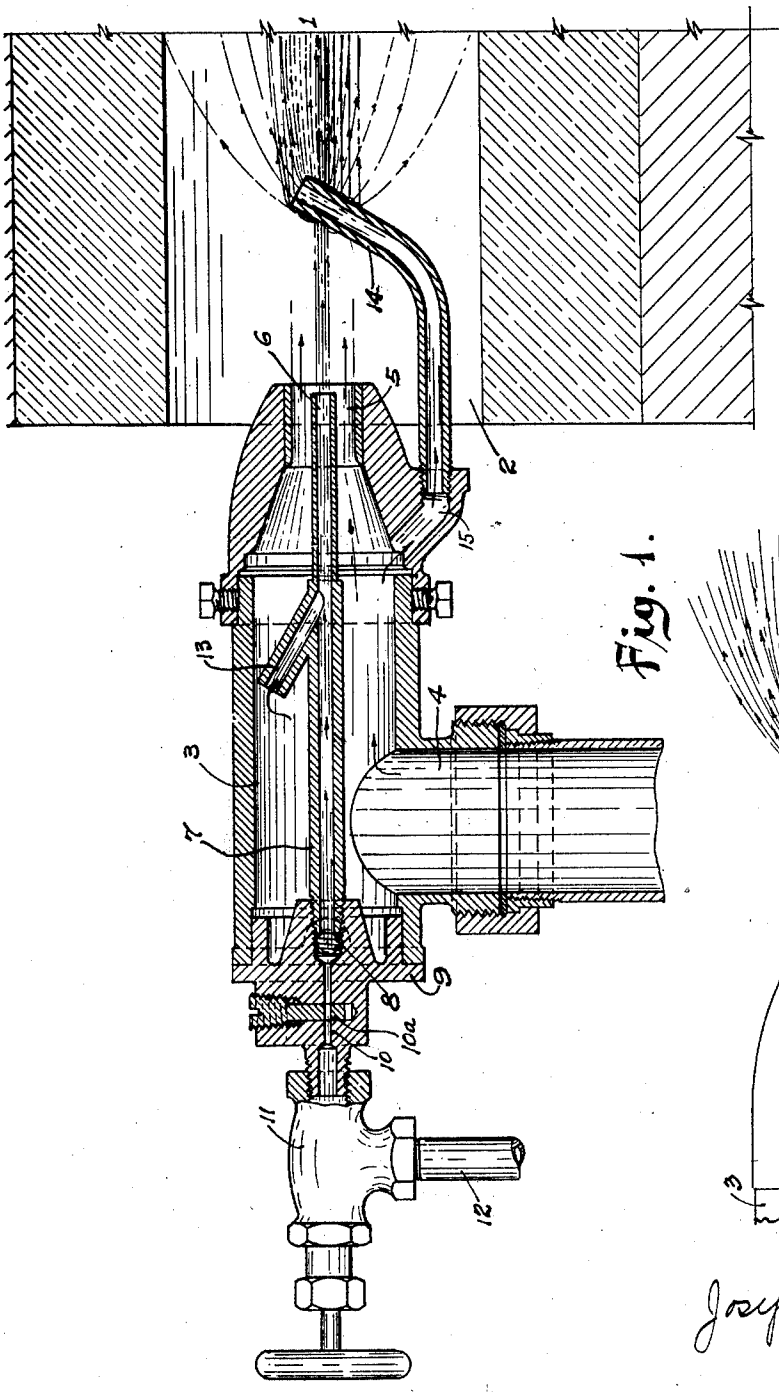


Fig. 1.

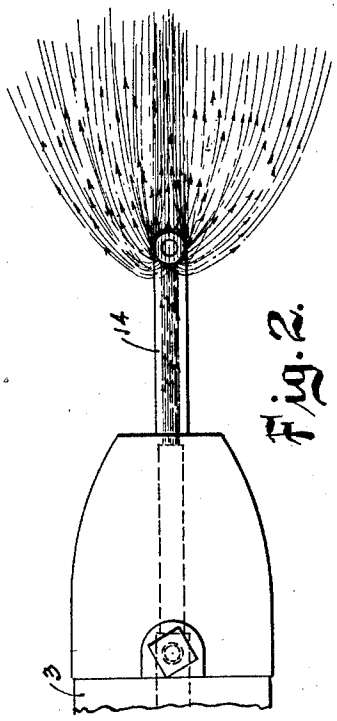


Fig. 2.

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UNITED STATES PATENT OFFICE.

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BURNER.

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The present invention is designed to improve the performance of fuel burners and broadly consists in arranging a spreader in front of a nozzle and in front of the fuel discharged through the nozzle so that the fuel is obstructed by the spreader and drawn off through the action of the air delivered through the nozzle. Preferably the spreader is tubular and air is passed through the same to preserve the spreader and to add a slight amount of air for combustion. Features and details of the invention will appear from the specification and claim.

The invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a central section through the burner.

Fig. 2 a plan view of the nozzle and spreader.

1 marks the furnace, and 2 an opening leading to the furnace. The burner comprises a chamber 3 to which air is supplied through a pipe 4. The chamber 3 terminates in a nozzle 5, the opening through the nozzle being preferably bushed so that the area of the opening may be varied.

Fuel is delivered through a fuel nozzle 6 which preferably extends into the nozzle 5 and is carried by a fuel pipe 7 which is screwed into a socket 8 in a head 9 on the end of the chamber. Fuel is delivered to the pipe 7 through a passage 10 which is controlled by an adjustable controlling valve 10^a. The passage 10 is communicated through a shut-off valve 11 with a fuel supply pipe 12.

Air is delivered to the fuel pipe through a Y-opening 13, this opening being in addition to the opening 4 to the chamber.

A spreader 14 is in the form of a finger of less cross sectional diameter than the opening through the nozzle 5 and extends across the axis of the fuel nozzle 6 and is directly in the path of the fuel discharge so that as the fuel is discharged it is first deposited upon, or projected against the surface of the spreader and the fuel is whipped off of this by the air and with a very complete atomization assuring a very complete and efficient combustion. Preferably the spreader is in the form of a pipe or tube and is connected by a passage 15 with the chamber 3 so that air is communicated through the spreader both to reduce its temperature and to deliver a slight amount of air for combustion.

The nozzle may be varied in diameter by the tube and may vary in diameter with relation to the chamber 3. While I have shown it as of a diameter reduced from that of the chamber 3 I do not wish to be limited to such a construction. The spreading finger may be varied in shape but I prefer the round finger as it seems to give a small amount of obstruction to the flow and at the same time the deposit of the fuel on the finger is whipped off in an atomized condition by the air force.

It will be noted that the nozzle is cylindrically shaped, thus delivering a cylindrically shaped jet. Where air is delivered to the fuel nozzle from the chamber the fuel is ejected with its air at approximately the same velocity as the air from the chamber. The fuel adhering to the walls of the nozzle forms, in effect, a cylindrical pencil with air at the center and air surrounding this sleeve-shaped jet of fuel. The fuel advances to the spreader and is thoroughly atomized by the spreader before combustion takes place, the combustion being in advance of the spreader. The air passing through the spreader not only cools this spreader but also assists in atomizing the fuel.

What I claim as new is:—

In a burner, the combination of an air chamber terminating in a nozzle; means for supplying air under pressure to the chamber; a fuel nozzle discharging in a jet into the air stream from the chamber; a hollow curved finger extending across the axis of the fuel jet spreading the fuel, the finger acting on the fuel to atomize the same in advance of combustion of the fuel; and means supplying air to the curved finger.

In testimony whereof I have hereunto set my hand.

JOSEPH BROCK.