

W. SCRIMGEOUR.
LIQUID FUEL BURNER.
APPLICATION FILED JULY 8, 1908.

976,221.

Patented Nov. 22, 1910.

Fig. 1.

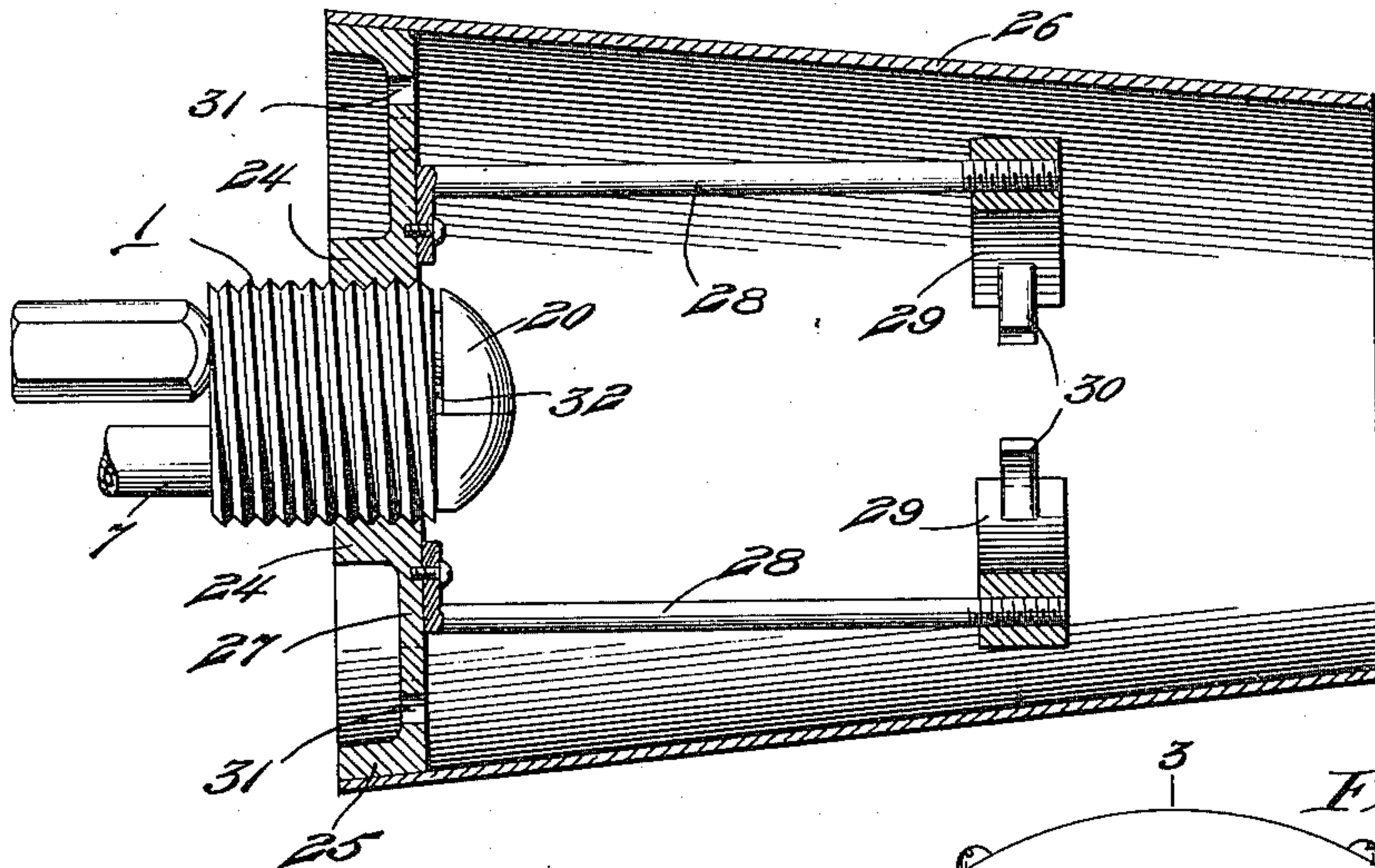


Fig. 2.

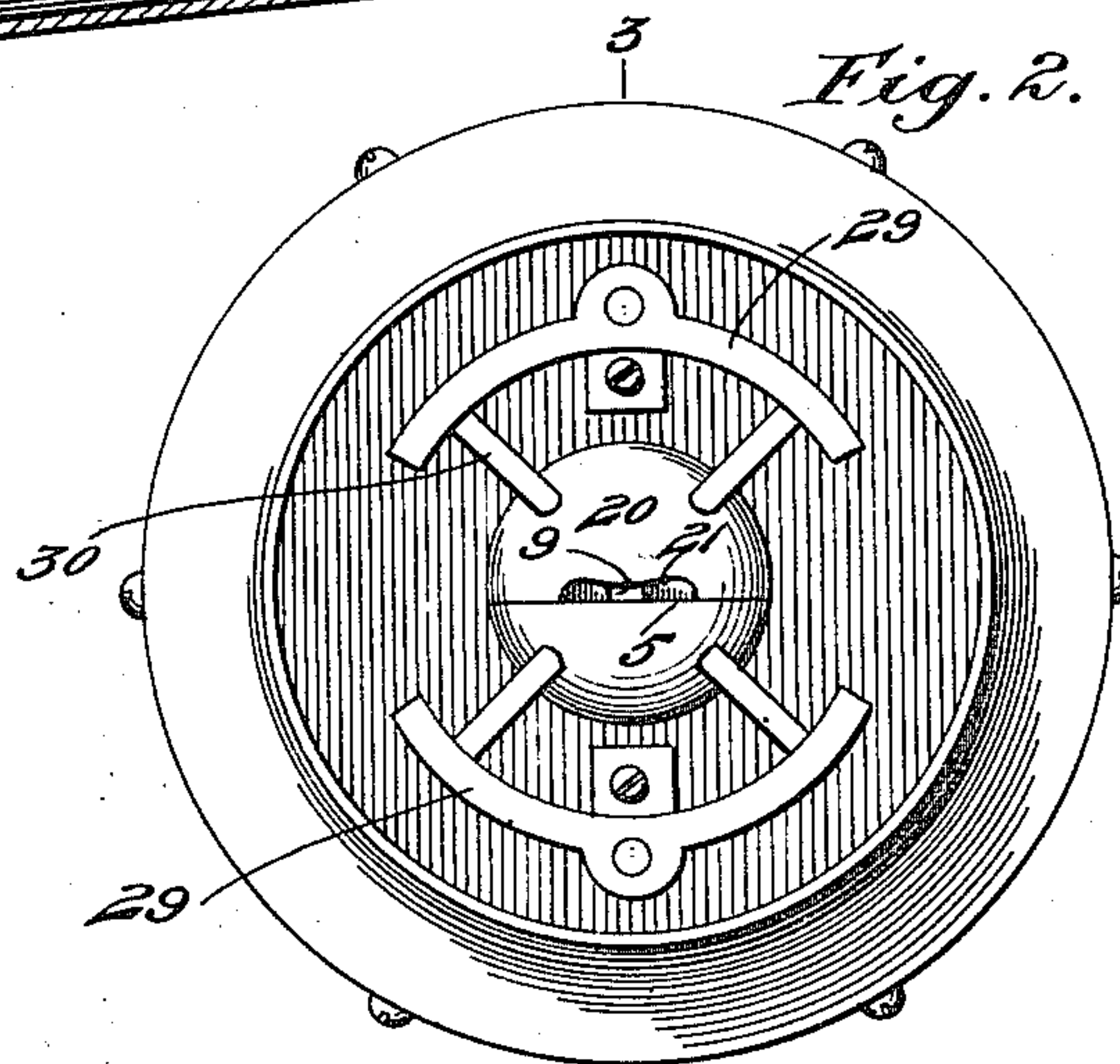


Fig. 5.

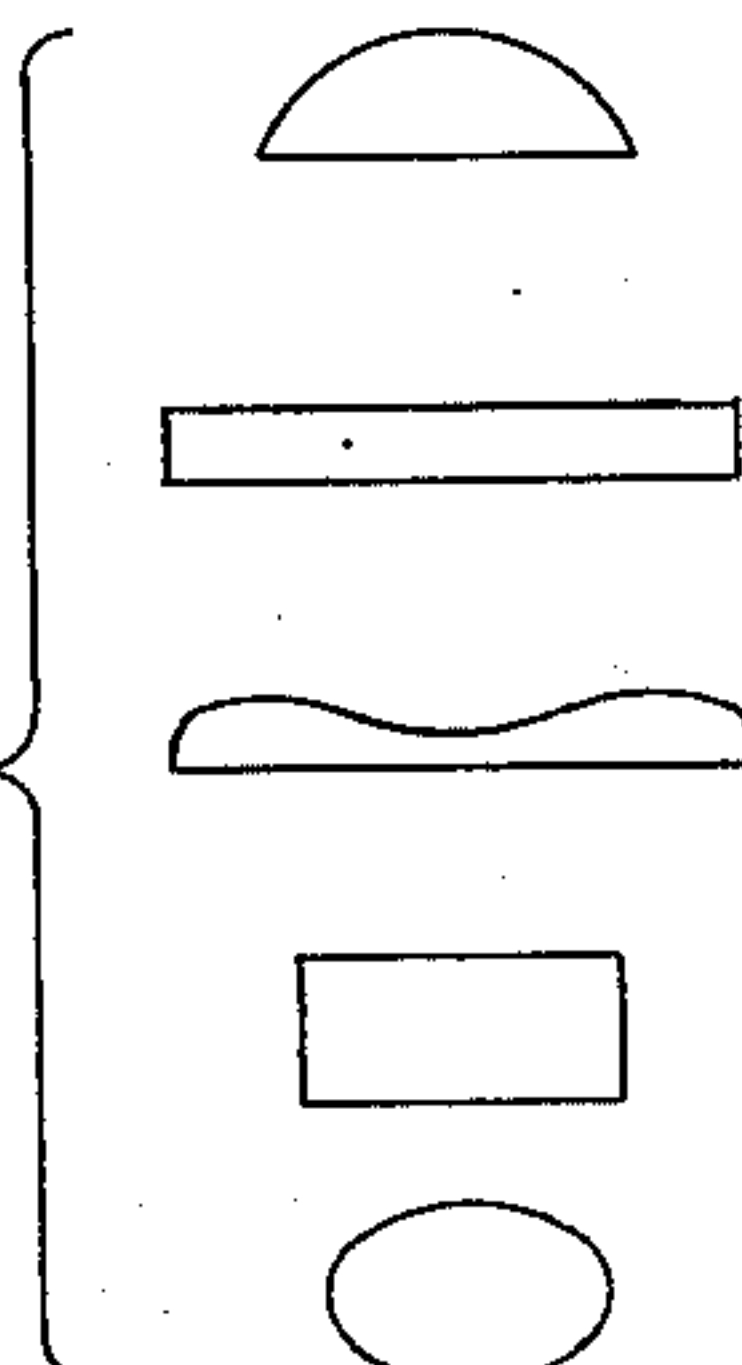


Fig. 3.

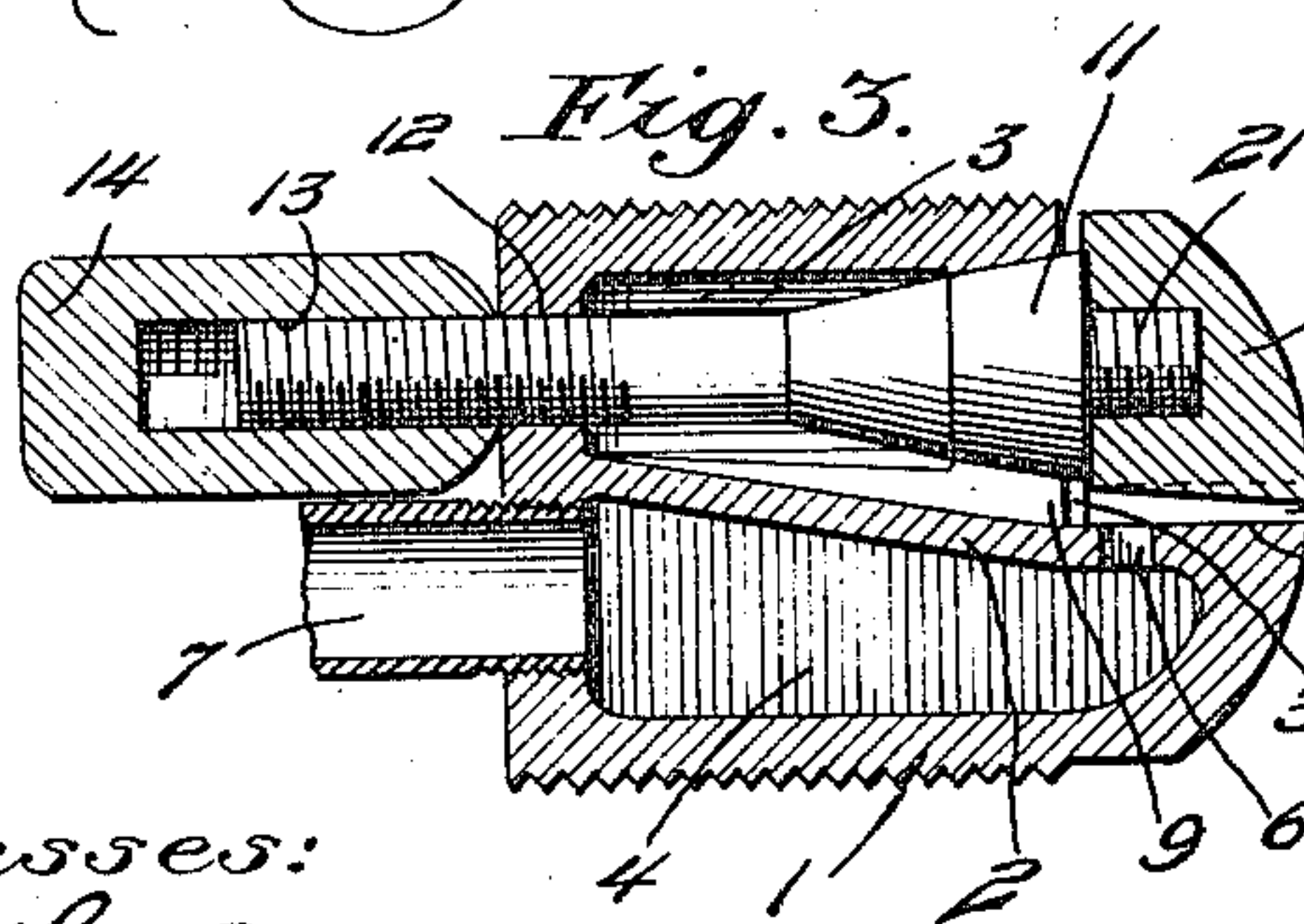
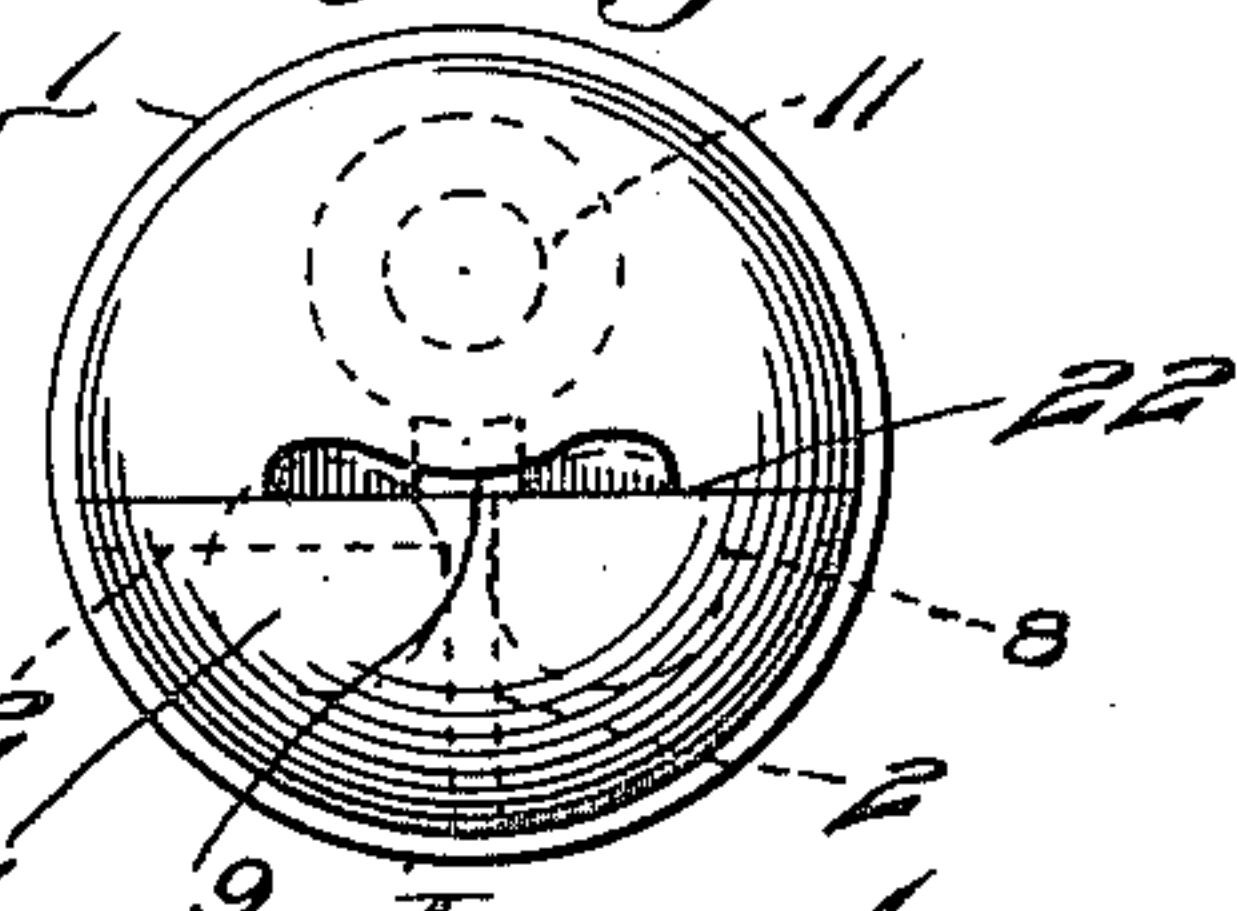


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM SCRIMGEOUR, OF PORTSMOUTH, VIRGINIA, ASSIGNOR TO MIRCS FUEL-OIL EQUIPMENT COMPANY, OF NORFOLK, VIRGINIA.

LIQUID-FUEL BURNER.

976,221.

Specification of Letters Patent.

Patented Nov. 22, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM SCRIMGEOUR, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

This invention relates to a liquid fuel burning device and particularly to that type which is portable and adapted for use in the open air.

It comprises a burner proper, provided with a hood or casing adapted to control and direct the flame; and has for its object not only the production of a flame exactly adapted to the particular purpose for which the device is to be used, but is also directed to means for preventing the extinguishment of the flame.

In the accompanying drawings Figure 1 is a sectional elevation of the burner; Fig. 2 is an end view of the device; Fig. 3 is a longitudinal section on the plane 3—3 of Fig. 2; Fig. 4 is an end view of the burner proper; and Fig. 5 is a diagrammatic view of the various shapes of burner openings which may be used.

The burner proper has, except as herein- after indicated, the same general construction as the burner illustrated in my application, Ser. No. 406,091, filed December 26, 1907, and comprises an exteriorly screw threaded casing 1, divided by a partition 2, into two compartments, one for steam or air under pressure, the other for oil or other liquid fuel.

Oil is delivered to the oil chamber by a pipe 7, air or steam being delivered into the chamber 3 by means of a pipe 8 (shown in dotted lines, Fig. 4). The steam or air chamber 3 extends transversely across the casing 1 above the partition 2, and the steam or air is delivered through a port located above and to the rear of the lip 5 and in close proximity to the fuel-port 6 in said lip. The arrangement of the fuel and air or steam ports is such that the fuel flowing upwardly through the port 6 is sprayed or atomized by the jet of air or steam from the port 9, the said jet being directed across and impinging upon the fuel at its point of discharge.

Centrally disposed above the lip 5, in an aperture in the front wall of the casing 1,

is a tapered plug 11 which when fully retracted accurately closes the aperture with the exception of the port 9. The plug 11 extends rearwardly through the air or steam chamber 3 and through a circular orifice in the rear wall of the casing 1, the protruding or rear end of the plug being screw threaded as indicated at 13. An elongated cap-nut 14 extends over the end of the plug 11, this nut forming a steam tight joint with the wall of the casing. The port 9 may be cleared of any obstructing matter merely by advancing the plug 11 and utilizing the pressure of the air or steam for clearing the orifice; or in case of necessity the removal of the plug affords free access to the interior of the steam or air chamber.

The plug 11 has a projecting screw threaded tenon 21 to which is screwed a cap-piece 20, preferably of the shape shown. The lower face of this cap-piece 20 fits closely to the lip 5, except at its central portion, where a groove or chamber is hollowed out so as to form an outwardly tapering discharge nozzle 22 for the mixed air or steam and liquid fuel. As shown in Figs. 1 and 3, the cap-piece 20, does not at its rear end fit closely against the body of the burner, thereby leaving an opening through which an additional supply of air can be sucked in by the inducing action of the jet from the port or opening 9. The exit opening of the nozzle 22 may take any of the forms shown in Fig. 5, the desired shape of the flame being obtained by using a cap-piece having a suitably shaped groove. The burner may thus readily be changed to produce a flame of any desired shape. As shown in Fig. 1, the burner is screwed into a plate 27, having inner and outer flanges 24, 25, extending rearwardly therefrom. To the outer flange is secured a tapering shell or hood 26. This plate 27 also supports two rods 28, each carrying at its outer end a segmental shaped piece of metal 29, having inwardly projecting spurs or points 30. These spurs or points are so arranged that they are, when the device is in operation, heated to a temperature sufficient to reignite the mixed gases should the flame be temporarily extinguished as by a too small supply of oil. The plate 27 has in it a number of perforations 31, for the admission of air to the interior of the hood.

In operation, the oil or other liquid fuel is atomized by the jet of air or steam issuing

from the opening 9, an additional quantity of air being sucked in from the sides through the opening 32. The mixture of air or steam and atomized fuel is projected from the opening 22, the shape of the flame depending, in the main, upon the shape of this opening. The hood serves to give direction to the flame while also directing the current of air, drawn through the orifices 31, to the point of most intense combustion outside the end of the hood, this current of air also serving to keep the hood cool. If, at any time, as during the regulation of the fuel supply, the fuel should be cut off or diminished to too great an extent, the mixed gases would be reignited by coming into contact with the highly heated spurs or points 30.

I claim:

1. In combination, a burner, having fuel and air or steam ports, a plate to which such burner is secured, a hood carried by such plate, and igniting devices comprising separated spurs extending within the hood in such position as to be heated by the flame without materially obstructing the passage of the mixed gases.

2. In combination, a burner, having fuel and air or steam ports, a plate to which such burner is secured, a hood carried by such plate, and igniting devices comprising separated spurs mounted on rods secured to said plate and extending in the hood in such position as to be heated by the flame without materially obstructing the passage of the mixed gases.

3. In a hydrocarbon burner, a casing having a projecting lip, and a casing wall extending upwardly therefrom, fuel and air or steam chambers in said casing, a port in said lip communicating with said fuel chamber, an aperture in the casing wall at the rear of said fuel port, a plug partially closing said opening and projecting beyond the wall of the casing, and a cap-piece having a groove or chamber in its bottom face carried by said plug and resting upon said lip.

4. In a hydrocarbon burner, a casing having a projecting lip, and a casing wall extending upwardly therefrom, fuel and air or

steam chambers in said casing, a port in said lip communicating with said fuel chamber, an aperture in the casing wall at the rear of said fuel port, a plug partially closing said opening and projecting beyond the wall of the casing, and a cap-piece having an outwardly diverging groove or chamber in its bottom face carried by said plug and resting upon said lip.

5. In a hydrocarbon burner, a casing having a projecting lip, and a casing wall extending upwardly therefrom, fuel and air or steam chambers in said casing, a port in said lip communicating with said fuel chamber, an aperture in the casing wall at the rear of said fuel port, a removable plug partially closing said opening and projecting beyond the wall of the casing, and a cap-piece having a groove or chamber in its bottom face carried by said plug and resting upon said lip.

6. In a hydrocarbon burner, a casing having a projecting lip, and a casing wall extending upwardly therefrom, fuel and air or steam chambers in said casing, a port in said lip communicating with said fuel chamber, an aperture in the casing wall at the rear of said fuel port, a removable plug partially closing said opening and projecting beyond the wall of the casing, and a removable cap-piece having a groove or chamber in its bottom face carried by said plug and resting upon said lip.

7. In a hydrocarbon burner, a casing having chambers therein for fuel and air or steam, ports opening from such chambers, the fuel port being arranged to open upwardly and beneath the air port, a chamber within the burner body and open at each end, into which chamber the atomized oil and air or steam is discharged, and a passage connecting the inner end of such chamber with the outer air.

In testimony whereof, I affix my signature in presence of two witnesses.

WILLIAM SCRIMGEOUR.

Witnesses:

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