

No. 864,398.

PATENTED AUG. 27, 1907.

J. A. WIGGS, JR.
INJECTOR BURNER.

APPLICATION FILED AUG. 25, 1906.

Fig. 1.

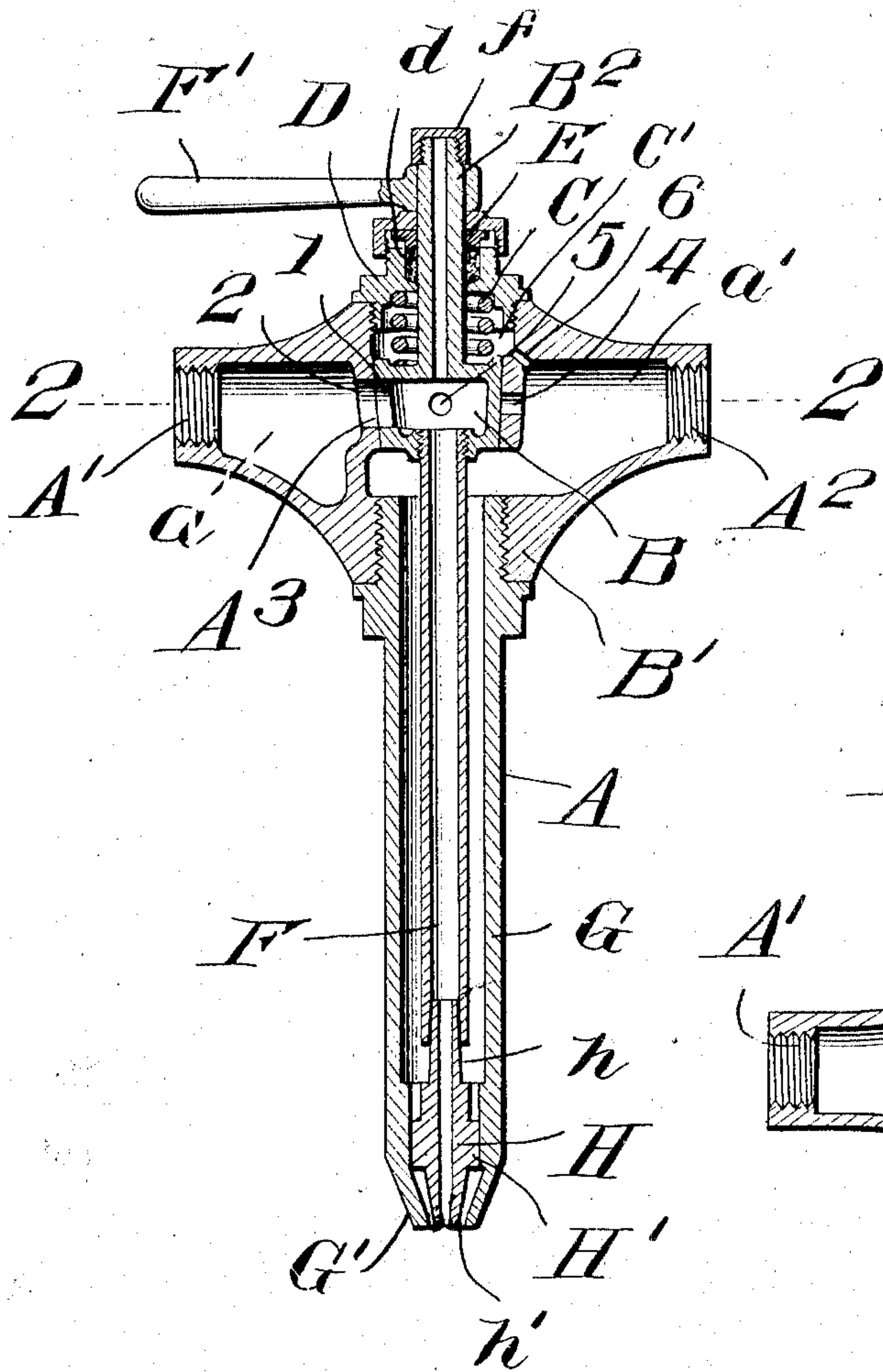


Fig. 3.

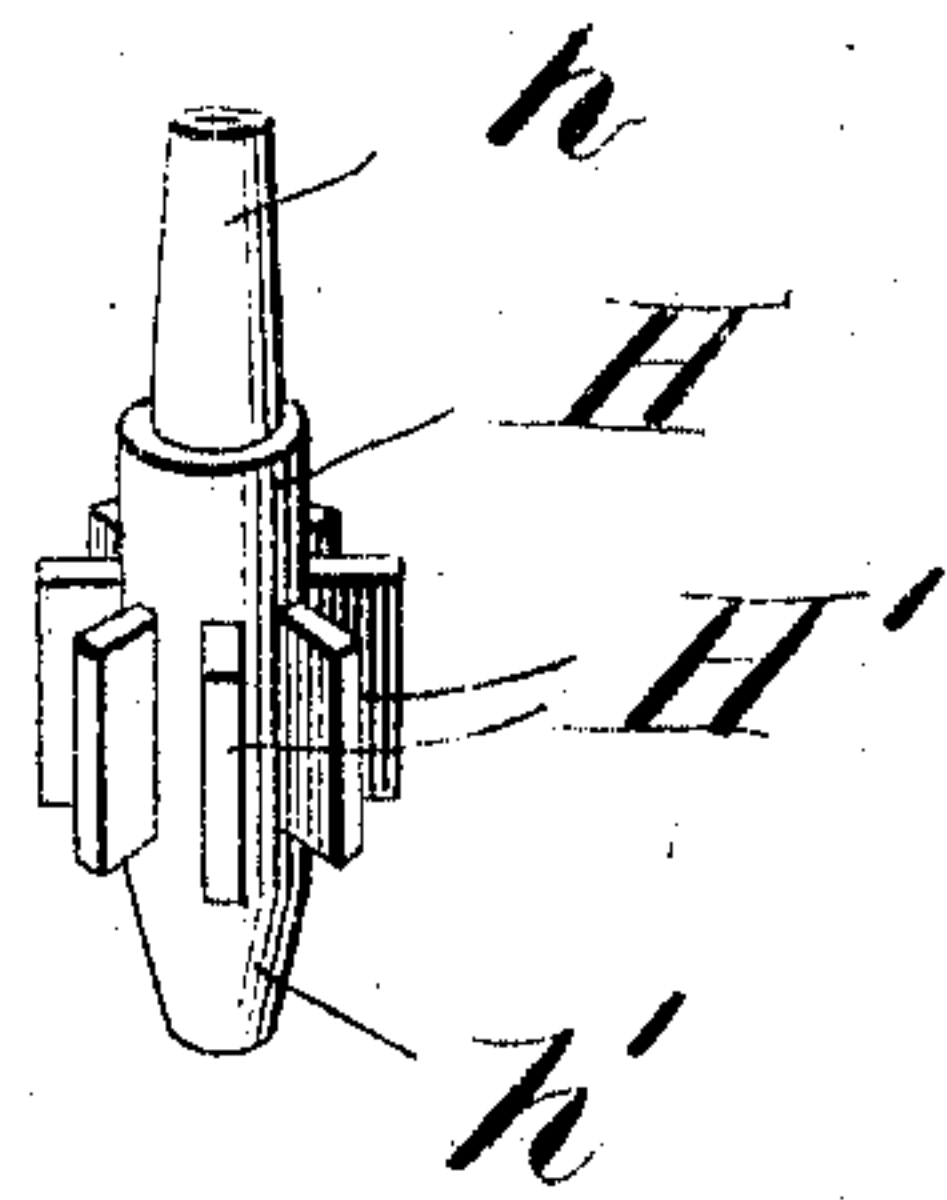
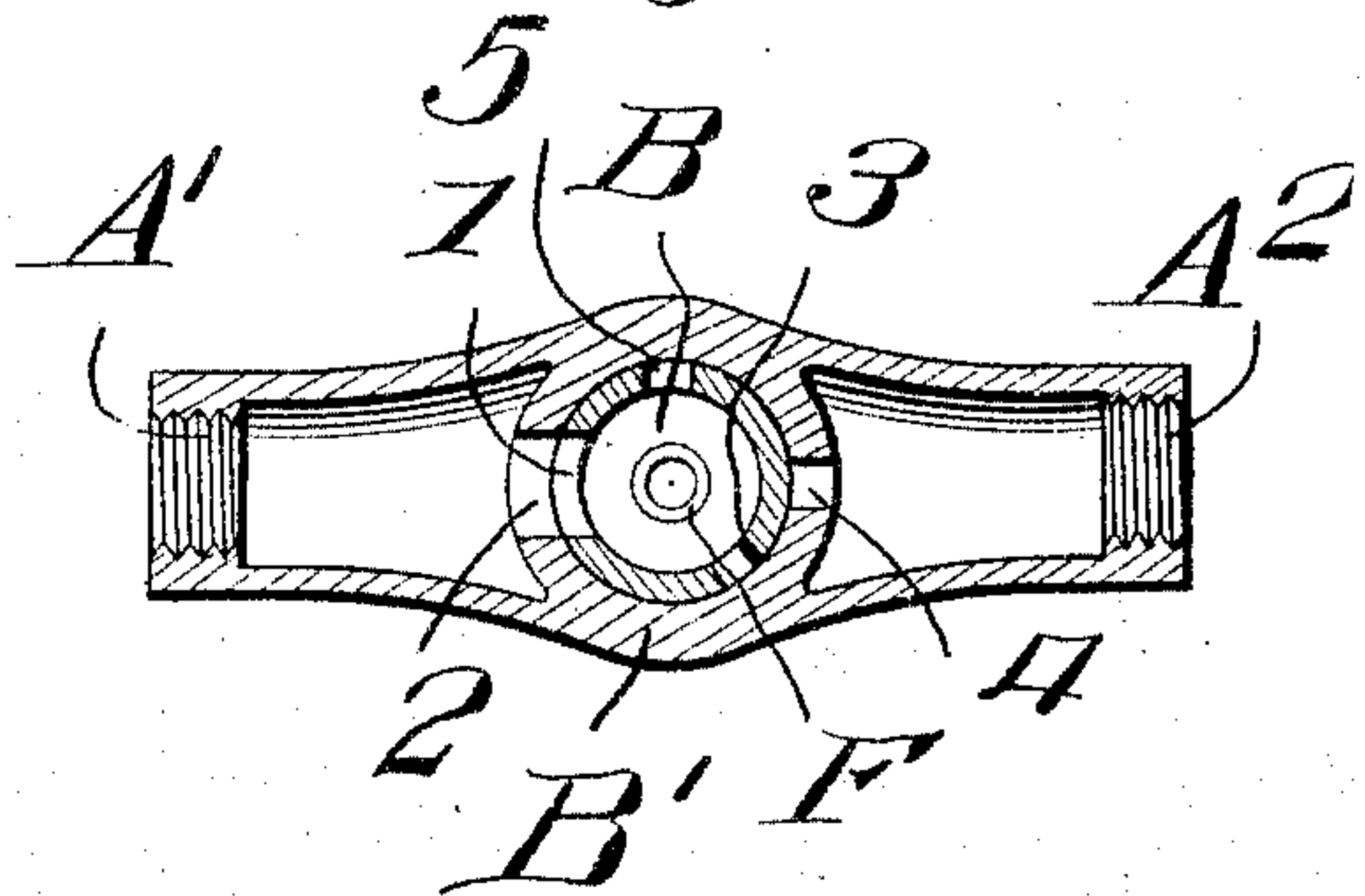


Fig. 2.



Witnesses

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JAMES A. WIGGS, JR., OF BEAUMONT, TEXAS.

INJECTOR-BURNER.

No. 864,398.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed August 25, 1906. Serial No.-331,992.

To all whom it may concern:

Be it known that JAMES A. WIGGS, Jr., a citizen of the United States, residing at Beaumont, in the county of Jefferson and State of Texas, has invented certain

5 new and useful Improvements in Injector-Burners; and he does hereby 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 apper-

10 This invention relates to injector burners which consume a mixture of oil and steam. For the latter, air or other suitable fluid may be substituted.

The said invention consists in the construction and combination of parts hereinafter more particularly set

15 forth and claimed.
In the accompanying drawings, Figure 1 represents a longitudinal section of a burner embodying my invention; Fig. 2 represents a cross-section through the same on the line 2—2 of Fig. 1; Fig. 3 represents a de-

20 tail perspective view of the oil nozzle.
A designates the body of the burner having on opposite sides two inlet openings A' A², the walls of which are screw-threaded for coupling them respectively to means for supplying oil and means for supplying steam.

25 The oil flows normally from inlet A' and a space *a* next to the same, through a port 2 of an annular tapering valve-seat A³, integral with body A and centrally arranged with respect thereto, and a corresponding port 1 of a hollow valve B, into the interior of the latter,

30 then down an oil discharge tube F which screws at the upper end into the center of the bottom of the valve. This tube is concentric with the steam discharge tube G surrounding it, which is similarly screwed into the body B. The lower or outer end of said steam tube is

35 tapered to form a nozzle G', at the mouth of which steam and oil are discharged together, mixing without injuriously obstructing each other, the steam passing from space *a'* next to steam inlet A² into the upper end of steam-tube G and down through the space between

40 the latter and the oil-tube F, discharging at the nozzle G' into the outer air. The oil tube F is shorter than the steam tube G and receives in its outer end telescopically the tubular stem *h* of an oil nozzle H, having longitudinal, parallel, external ribs H' and a tapering

45 end *h'*. This end comes quite down to the end of the nozzle G, so that the oil and steam are discharged in the same transverse plane simultaneously into the open air, the oil in a central jet, the steam in a surrounding annular jet. Their close proximity and the force of the

50 steam will completely vaporize the oil and mix the two vapors; but the steam has no access to the oil before the latter jets out and therefore cannot obstruct it. In nozzles made with the end of the oil-nozzle or its equivalent arranged to discharge even slightly within the

nozzle G', the rush of the steam will often interrupt 55 the flow of oil and drive it back, making the mixture very irregular and uncertain and the injector burner incompletely operative.

The oil-nozzle H will sometimes be clogged by oily residuum. To clean this away easily and instantly, 60 without displacing any part of the burner, I turn the valve B on its axis in either direction until the port 2 of the valve seat is covered by the body of said valve, and another port 4, in the opposite side of said valve-seat, communicates through one of two ports 3 and 5 in said 65 valve with the interior of the latter. Steam then blows from inlet A through space *a'*, port 4 and port 3 (or 5) and rushes down through the oil pipe and oil nozzle, quickly scouring the latter.

The oil ports 1 and 2 are very much wider than the 70 steam ports 3, 4 and 5, to allow for the somewhat viscid character of the fluid passing through them. The ribs H' of the oil nozzle hold it in proper position centrally within the discharge end of the main steam tube G and its terminal nozzle G', leaving always an unchangeable 75 fine annular space at the end of the latter for the out-spouting of the steam.

The valve B is turned by means of an arm or handle F on the outer end of its stem B², which passes up through a helical spring C bearing on said valve, a cap 80 D screw-threaded into said body to hold said cap in place, a packing box *d* formed in the outer face of said cap, and a gland E screwed on and into said packing box. The said arm is detachably held in place by a

nut *f* screwed on the outer end of stem B'. The office 85 of said stem is to hold said valve snugly in its seat; but in practice it is found that the steam pressure on the bottom of the valve, which is exposed because the annular valve seat has no bottom, will sometimes over-

come the spring and make the valve jump or rise in its 90 seat; especially as such pressure is reinforced by the back steam pressure on the exterior of the tapering lower part of the oil-nozzle. To remedy this, I make a

port 6 from the upper part of steam space *a'* to the space 95 C' surrounding spring C, in order that the steam may flow freely through the same and bear on the broader upper face of said valve, counterbalancing the steam pressure on the underside above-described and insuring the sufficiency of spring C and gravity to hold the valve in place. 100

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an injector burner, a three way valve, in combination with a steam discharge tube, an oil discharge tube, separate inlets for said fluids and a spring bearing on said 105 valve, the latter being open on both sides to the steam, making a balanced steam pressure and the said valve being adapted to admit either of said fluids at will to the oil discharge tube substantially as set forth.

2. In an injector-burner for oil and steam, a three way valve, a body having a seat for said valve, a spring holding said valve in its seat and an oil discharge tube and steam discharge tube arranged concentrically, the said
5 body having a port formed therein admitting steam from the steam inlet to the space about said spring for balancing backward steam pressure and said seats and valve being provided with ports for permitting at will the flow of oil or of steam through said oil tube, there being also a

permanent passage for steam from said steam inlet 10 through said steam tube substantially as set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES A. WIGGS, Jr.

Witnesses:

F. A. SINGER,

E. G. NEVILL.