

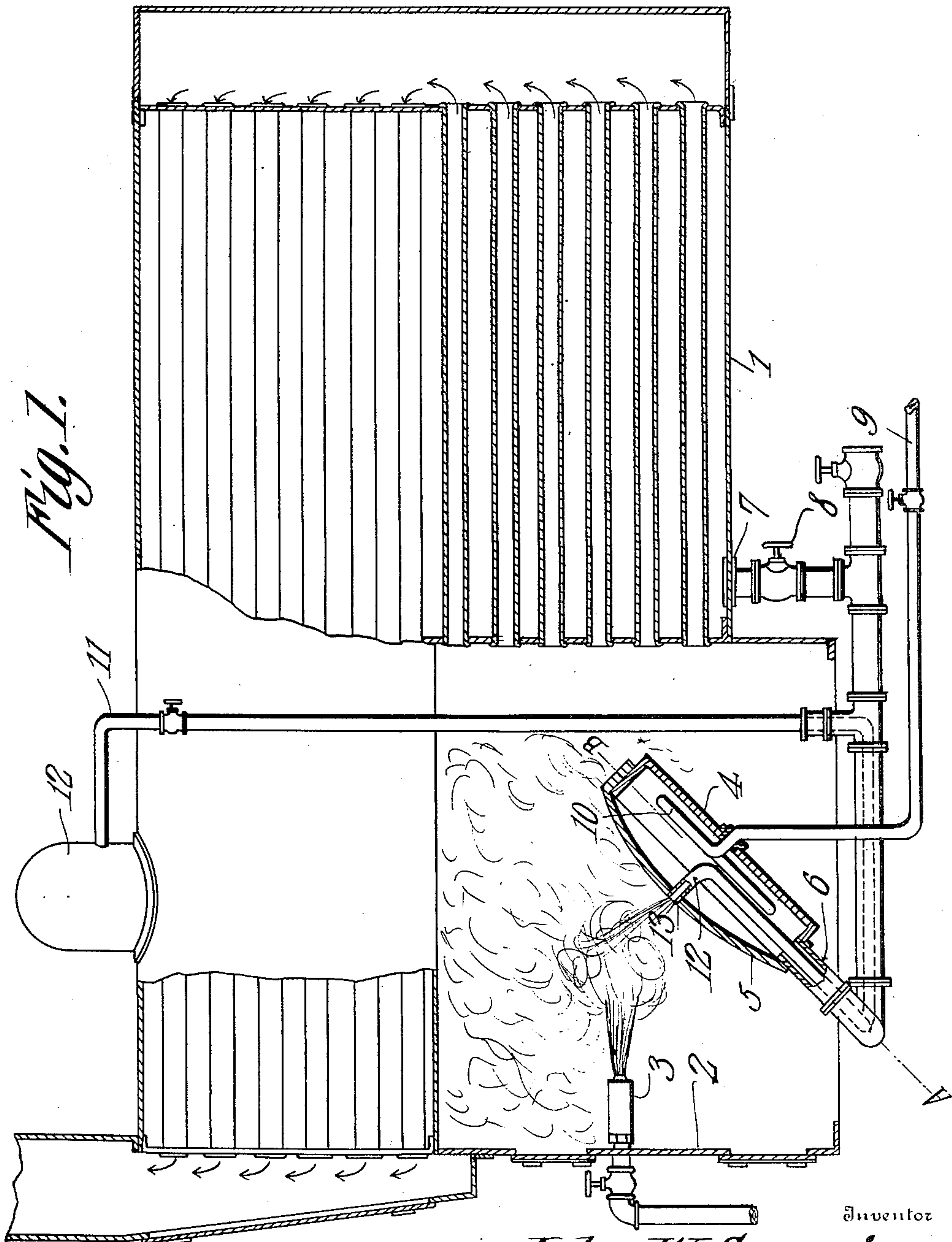
J. W. SPURRIER.
OIL BURNING AND STEAM GENERATING APPARATUS.

APPLICATION FILED NOV. 27, 1908.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.

943,481.



Witnesses

E. J. Stewart
Herbert D. Lawson

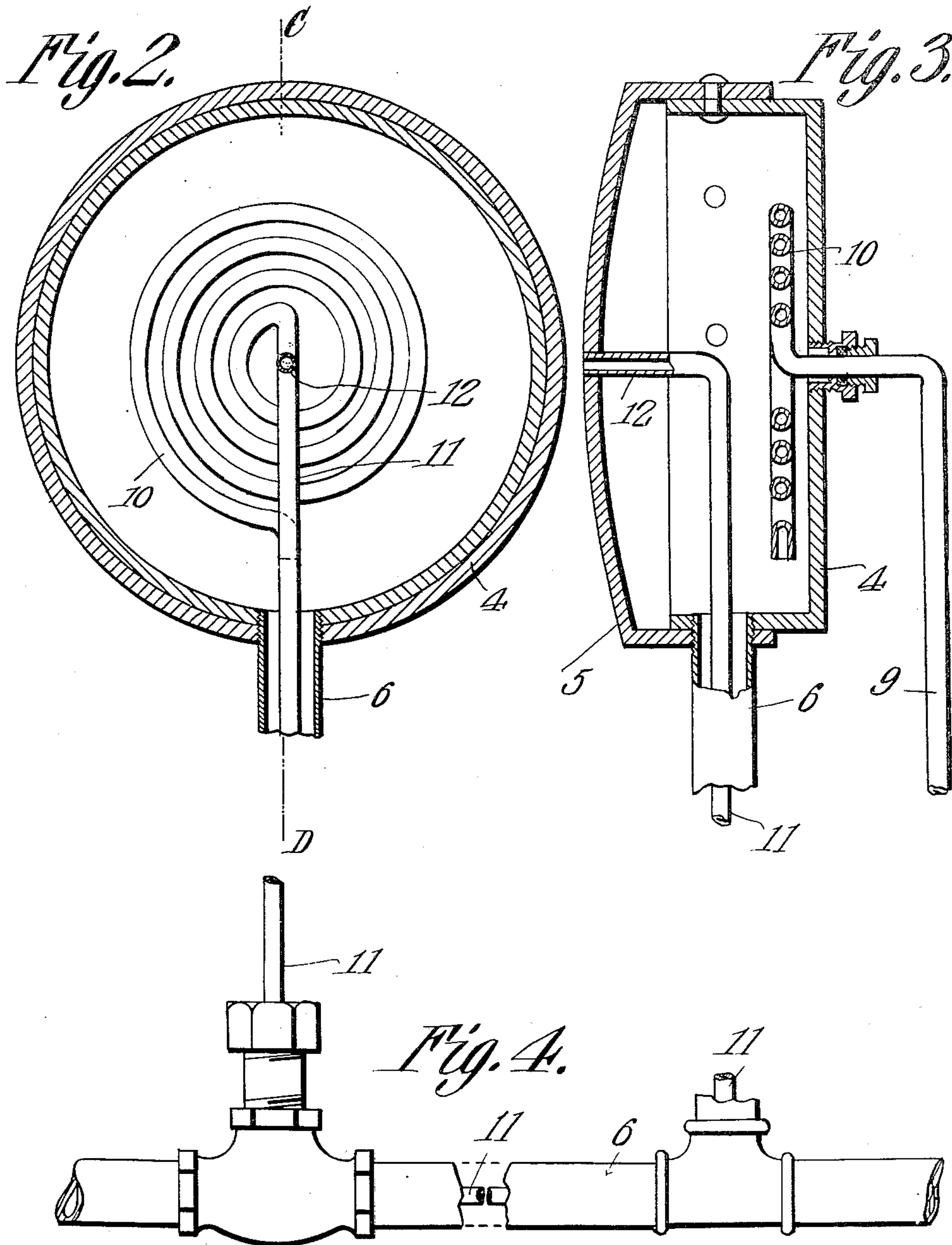
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UNITED STATES PATENT OFFICE.

JOHN WALLACE SPURRIER, OF BEAUMONT, TEXAS.

OIL-BURNING AND STEAM-GENERATING APPARATUS.

943,481.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed November 27, 1908. Serial No. 464,627.

To all whom it may concern:

Be it known that I, JOHN WALLACE SPURRIER, a citizen of the United States, residing at Beaumont, in the county of Jefferson and State of Texas, have invented a new and useful Oil-Burning and Steam-Generating Apparatus, of which the following is a specification.

This invention relates to a combined hydro-carbon burner and feed water heater for use in connection with boiler furnaces and its object is to provide a device of this character designed to be placed within the fire box of a furnace and at an angle to and in the path of the jet of hydro-carbon oil discharged into the fire box from a suitably disposed nozzle.

Another object is to provide a hollow member designed to receive feed water prior to its admission to the boiler said member also having means for directing steam from the boiler and through the member, said steam being discharged in the form of a jet at an angle to but in the direction of the oil jet heretofore referred to, the two jets of oil and steam meeting at a point within the fire box where they thoroughly commingle to form a highly combustible mixture.

With these and other objects in view the invention consists in certain novel details of construction and combination of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a vertical longitudinal section through a boiler having the present improvements applied thereto. Fig. 2 is an enlarged section on the line A—B Fig. 1. Fig. 3 is a section on line C—D Fig. 2. Fig. 4 is a detail view of a portion of the pipe connections between the boiler and the combined feed water heater and burner member.

Referring to the figures by characters of reference 1 designates a steam boiler provided with a fire box 2 of any preferred construction, there being a nozzle 3 in the front portion of the fire box designed to direct a jet of hydro-carbon oil into the fire box at a desired angle. Arranged within the fire box with its upper portion disposed in the path of the jet discharged from nozzle 3 is a hollow member or target 4 inclined upwardly and rearwardly and having its upper face convex as indicated at 5. This target is sup-

ported within the fire box by means of an outlet pipe 6 connected to the bottom portion of the boiler as shown at 7 and provided with a suitable valve 8 for controlling the passage of the water to the boiler. A pipe 9 extends from a suitable source into the middle portion of the back of the target 4 and terminates in a coil 10 arranged within the target, said coil terminating close to the outlet pipe 6 as clearly indicated in Fig. 2. A steam conducting pipe 11 extends from the dome 12 of the boiler and downwardly into the pipe 6. Said steam conducting pipe then extends longitudinally within said pipe 6 and concentrically therewith, the end portion of the pipe 11 projecting into the target 4 and having a right angle extension or nozzle 12 which opens through an orifice 13 formed in the center of the convex face 5 of the target. This nozzle 12 is arranged at such an angle that when steam is expelled therefrom it will pass in the form of a jet upwardly and forwardly along lines intersecting the jet of oil discharged from the nozzle 3 and the two jets will thus thoroughly commingle at points between the nozzle 3 and the target and form a highly combustible mixture which, when ignited, will thoroughly heat the boiler and generate steam therein. The heat generated within the fire box will also raise the temperature of the feed water supplied to the target through the pipe 9 and the coil 10 and this water will be discharged into the target from the coil and after being heated will pass outwardly through pipe 6 to the boiler 1.

The target 4 has been shown formed of two oppositely disposed cup-like members arranged telescopically and riveted together but it is to be understood that if desired the same may be constructed in any preferred manner. This construction, however, is preferably because of the ease with which the target can be made.

It is to be understood that various changes may be made in the arrangement of the parts without sacrificing any of the advantages or departing from the spirit of the invention.

What is claimed is:

1. A device of the class described comprising an oil discharge nozzle, a feed water heater disposed in the path of the jet discharged from the oil nozzle, and means for directing steam through said heater in the direction of said oil jet.

2. A device of the class described comprising an oil discharge nozzle, a hollow feed water receiving member disposed in the path of the jet discharged from the nozzle, and means for directing steam through said target along lines intersecting the jet discharged from the nozzle.

3. A device of the class described comprising an oil nozzle, a hollow target inclined relative thereto and disposed in the path of the jet discharged from the nozzle, said target having a rounded face presented to the jet, means for directing feed water into the target, said target having an outlet for the water, and means for directing steam through the target and along a line intersecting the jet discharged from the nozzle.

4. A device of the class described comprising a hollow member, means for directing water into said member and for conducting it therefrom, means for conveying steam through said member and discharging it in a jet beyond one face of said member, and means for directing a jet of fuel along lines intersecting the steam jet and in the direction of the hollow member.

5. A device of the class described comprising a hollow target having a convex face, said target being provided with a feed water outlet, means for directing said water into the target and along a circuitous path therein, means for conveying steam through said target and discharging it in a jet beyond the convex face, and means for directing a jet of fuel toward the target and along lines intersecting the steam jet.

6. A combined feed water heater and steam spraying device comprising a hollow target having a convex face, a coil within said target and opening in one face thereof, means for conveying feed water to the coil,

means for conveying feed water from the target, a nozzle within the target and opening through the convex face thereof, means for directing steam into the nozzle and means for directing a jet of fuel toward the target.

7. The combination with a steam boiler; of an oil nozzle disposed within the fire box thereof, an inclined hollow target within said fire box and projecting into the path of the jet discharged from the nozzle, a coil within the target, means for directing feed water into the coil said coil opening into the target, means for conveying feed water from the target into the boiler, a nozzle opening into the target through one face thereof, means for directing steam from the boiler to said nozzle within the target, the oil and steam nozzles being disposed along intersecting lines.

8. The combination with a steam boiler; of an oil nozzle within the fire box thereof, an inclined hollow target within the fire box and projecting into the path of the jet discharged from the oil nozzle, a pipe for conveying feed water from the target to the boiler, a nozzle within the target and opening through one face thereof, means for conveying steam from the boiler and through said pipe to the nozzle, and means for supplying feed water to the interior of the target the steam and oil nozzles being disposed along lines intersecting the points between the target and oil nozzle.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN WALLACE SPURRIER.

Witnesses:

R. C. HINZIE,
V. A. MAPES.