

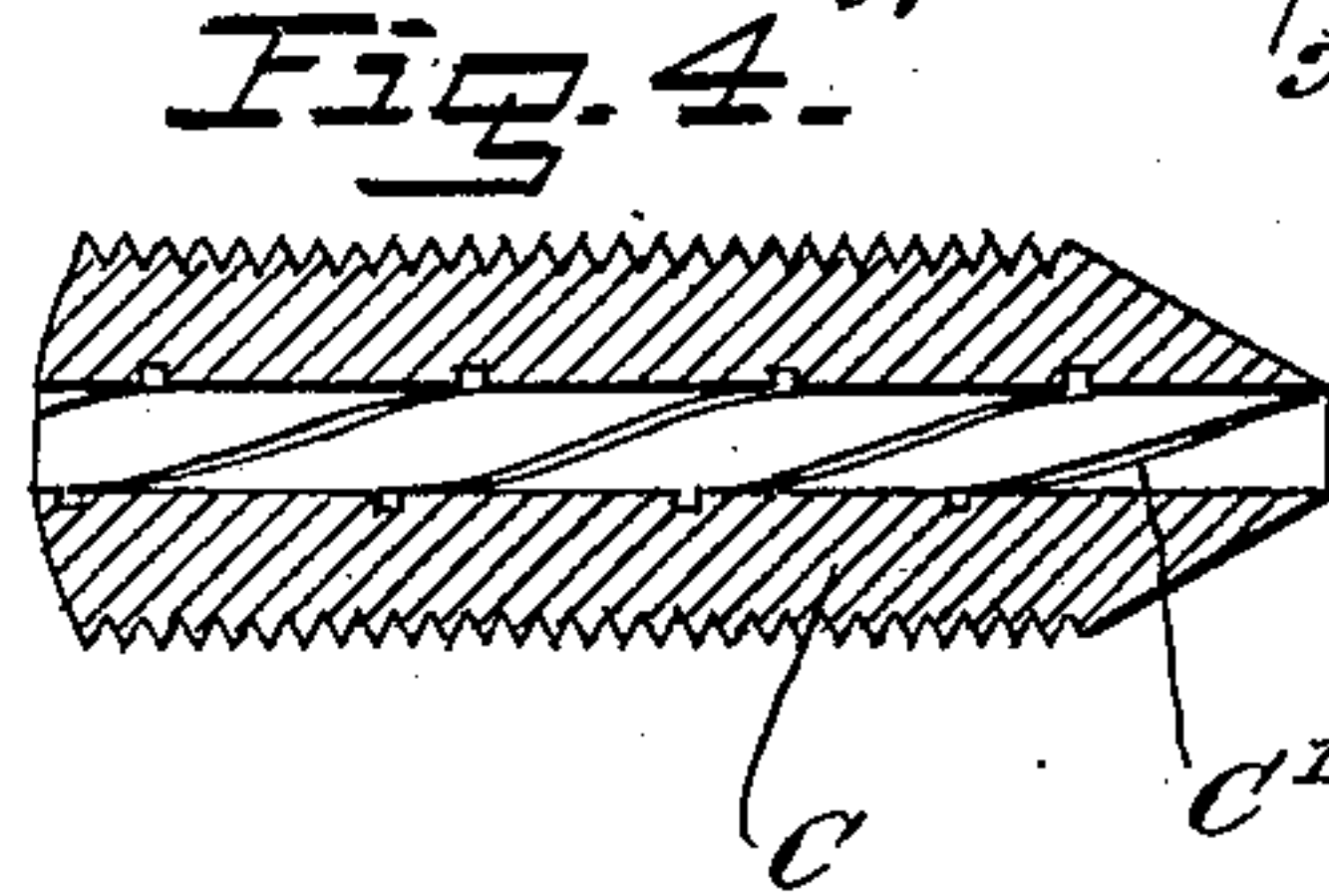
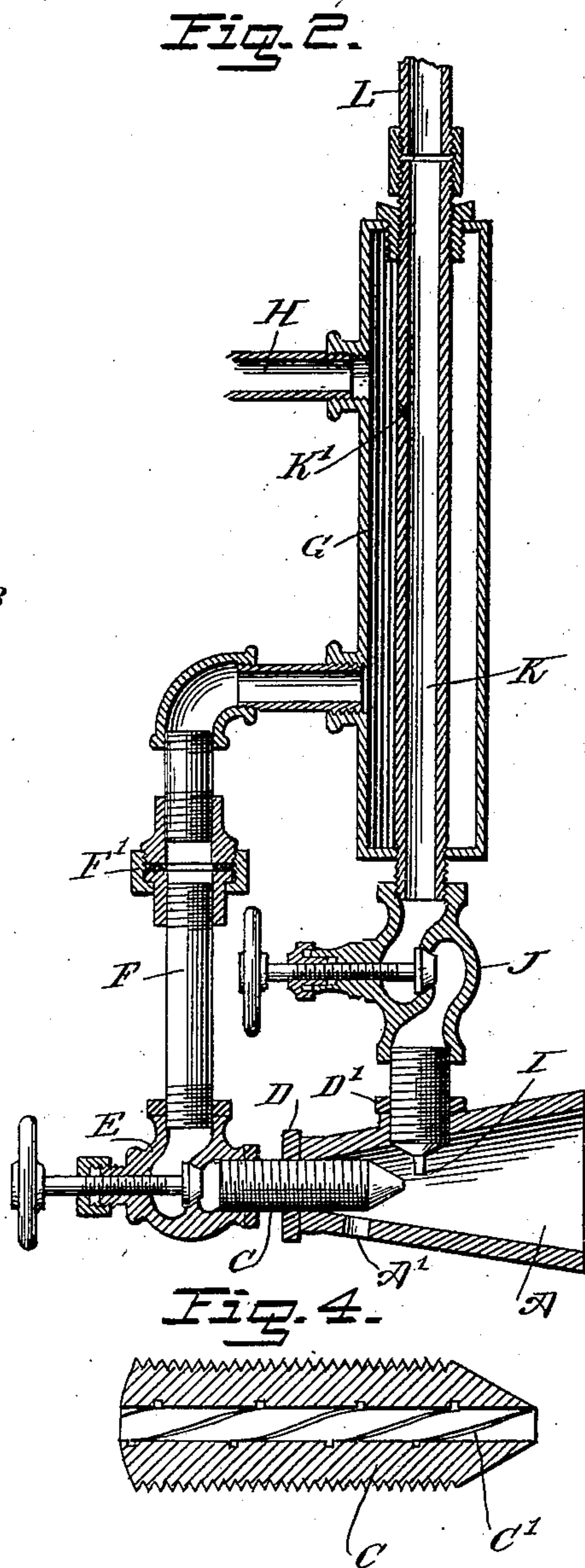
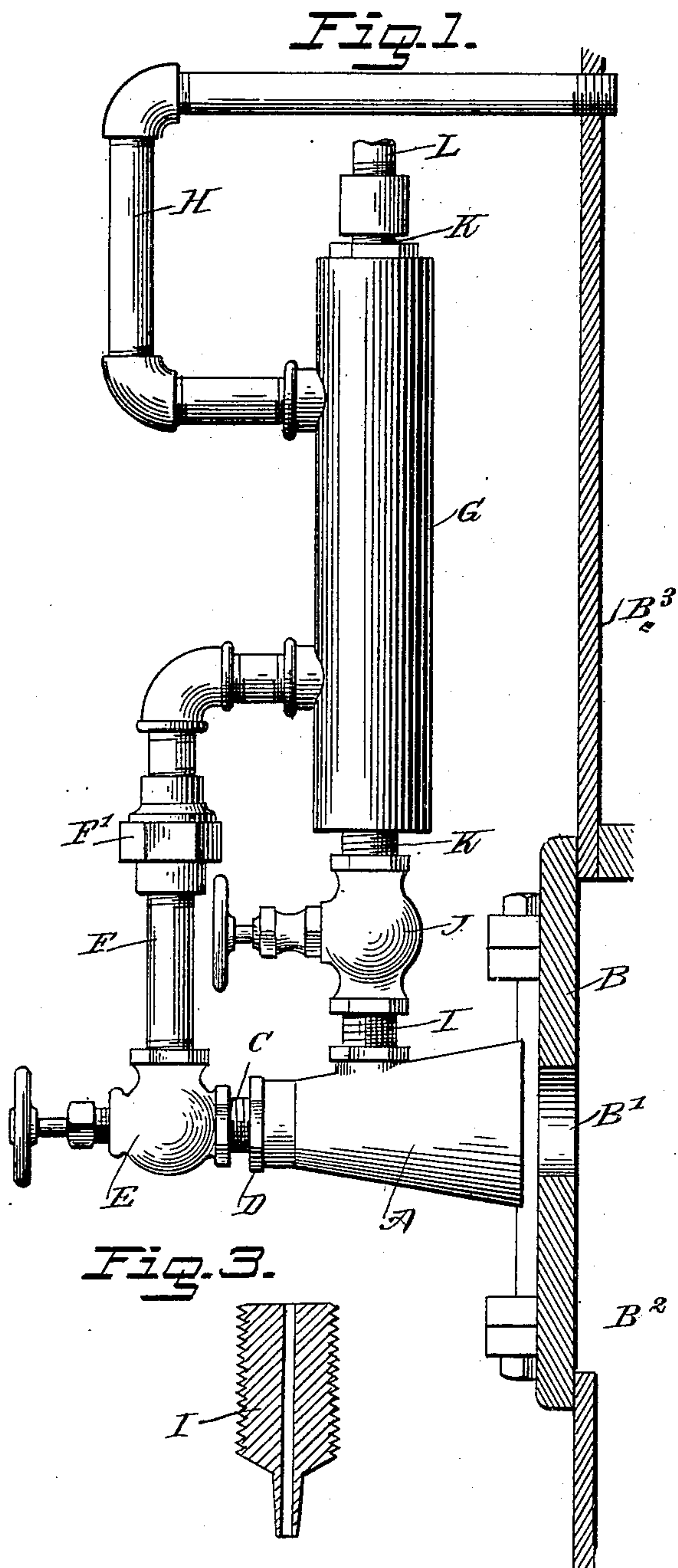
No. 710,276.

Patented Sept. 30, 1902.

**J. L. JONES, JR.
BURNER.**

(Application filed Mar. 14, 1902.)

(No Model.)



WITNESSES :

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UNITED STATES PATENT OFFICE.

JOHN LEMIEL JONES, JR., OF DALLAS, TEXAS.

BURNER.

SPECIFICATION forming part of Letters Patent No. 710,276, dated September 30, 1902.

Application filed March 14, 1902. Serial No. 98,181. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEMIEL JONES, Jr., a citizen of the United States, and a resident of Dallas, in the county of Dallas and State of Texas, have invented a new and Improved Burner, of which the following is a full, clear, and exact description.

The invention relates to hydrocarbon-burners; and its object is to provide a new and improved burner for use in fire-boxes of boilers and other apparatus more especially designed to burn crude oil and arranged to develop a constant flame for producing a high heat in the fire-box or other combustion-chamber, at the same time insuring complete combustion without the production of smoke and obnoxious unburned gases.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to a boiler. Fig. 2 is a sectional side elevation of the improvement. Fig. 3 is an enlarged sectional side elevation of the oil-nozzle in the atomizer, and Fig. 4 is a like view of the steam-nozzle for the atomizer.

The improved burner is provided with an atomizer having a conical shell A, open at the base end, which is located a short distance in front of an opening B', arranged in the door B, leading to the fire-box or combustion-chamber B² of a boiler or other apparatus, as plainly indicated in Fig. 1. Into the apex end of the shell A screws a steam-nozzle C, fastened in place after the desired adjustment is made by a jam-nut D, and the outer end of the said steam-nozzle screws into a regulating angle-valve E, connected by a pipe F, having a coupling F', with the drum G of a heater for heating the oil previous to its passage to the atomizer-shell A, as hereinafter more fully described. The drum G is connected by a pipe H with the steam-compartment B³ of the boiler, so that steam from the said compartment can pass through the pipe H into the drum G and from the latter

to the pipe F into the angle-valve E, to finally pass in regulated quantities to the steam-nozzle C, opening centrally into the atomizer-shell A.

In the side wall of the atomizer-shell A, somewhat in front of the inner end of the steam-nozzle C, is arranged an oil-nozzle I, screwing into the wall of the shell A and secured therein by a jam-nut D' after the desired adjustment of the nozzle I has been made, so as to bring the discharge or inner ends of the nozzles C and I in proper relation to each other. The outer end of the oil-nozzle I is connected with a regulating globe-valve J to regulate the quantity of oil passing to the nozzle I, and the said globe-valve is connected with one end of a tube K, extending centrally through the heater-drum G and connected at its other end by a pipe L with a suitable oil-supply, so that oil flows either by gravity or by the action of a pump through the said tube K to the globe-valve J and nozzle I. In the tube K within the drum G is arranged an opening K', preferably located directly opposite the entrance end of the steam-supply pipe H, the said opening leading inwardly and downwardly, so that steam can pass through the opening K' into the oil-tube K to exert a pressure on the oil in a downward direction—that is, in the direction in which the oil is flowing toward the nozzle I. When the burner is in use, then the steam passing through the drum G heats the oil-tube K, so that oil flowing through the steam is heated—that is, is brought to a condition to vaporize very quickly at the time it issues through the nozzle I in the shell A of the atomizer. The bore of the nozzle C is provided with spiral grooves or flutes C', so that the steam passing through the bore receives a whirling motion and takes up the oil as the latter issues out of the nozzle I to insure complete atomizing of the oil and to form thereby a mixture of steam, oil, and air, the latter entering the shell A through an opening A' in the wall of the shell somewhat in the rear of the discharge end of the steam-nozzle C. This mixture of steam, oil, and air passes through the opening B' into the fire-box or combustion-chamber B², in which the mixture is burned.

From the foregoing it will be seen that as

the atomizer is located outside of the fire-box or combustion-chamber it is not subjected to a high heat, and consequently a long life is insured to the burner, and the several parts thereof are not liable to easily get out of order. Furthermore, the amount of oil and steam to be atomized in the shell A can be regulated to a nicety by the operator adjusting the corresponding angle-valve E and globe-valve J. As the oil receives a preliminary heating in its passage through the heater, it is evident that it readily vaporizes in the atomizer, insuring a very intimate mixture of the oil with the steam and air. By this arrangement a highly-inflammable mixture is produced, which burns in a combustion-box without producing any undesirable smoke or obnoxious gases—that is, complete combustion is obtained. Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A hydrocarbon-burner, comprising a conical shell having its large end open and provided with an air-inlet near its small end, said shell being arranged in front of and adjacent to an opening in the combustion-chamber of a boiler, a drum arranged above the shell, a pipe leading from the drum to the steam-compartment of the boiler, an oil-pipe extending through the drum and having a downwardly-inclined opening therein, a valve connected with the lower end of the oil-pipe, an adjustable oil-nozzle secured to the valve-casing and projecting into the conical shell through one side thereof, an adjustable steam-nozzle projecting into the shell through the small end of said shell and beyond the air-inlet of the same, a valve, to the casing of which the steam-nozzle is secured, and a pipe leading from the valve-casing to the lower portion of the drum, substantially as herein shown and described.

2. A hydrocarbon-burner, comprising a conical shell having its large end open and provided with an air-opening in one side near its small end, a steam-drum, an oil-pipe extending through the drum and provided with

an opening within the drum for the entrance of steam, a valve secured to the lower end of the oil-pipe, an oil-nozzle secured to the valve-casing and projecting into the shell through one side thereof, a steam-nozzle projecting through the small end of the shell and extending into the same beyond the air-opening thereof and to within a short distance of oil-nozzle, a valve, to the casing of which the outer end of the steam-nozzle is secured, and a pipe leading from the valve-casing to the lower part of the steam-drum, as set forth.

3. A hydrocarbon-burner, comprising a shell having an air-inlet, a steam-nozzle projecting into the shell beyond the air-inlet, an oil-nozzle also projecting into the shell and standing at an angle to the steam-nozzle, a heater having a drum connected with a steam-supply and with the said steam-nozzle, and an oil-tube extending through the said drum and connected at one end with an oil-supply and at the other end with the said oil-nozzle, the said oil-tube having a steam-inlet within the said drum and opposite the steam-entrance thereto, to allow steam to pass from the latter into the oil-tube, as set forth.

4. A hydrocarbon-burner, comprising a shell having an air-inlet, a steam-nozzle projecting into the shell beyond the air-inlet, an oil-nozzle also projecting into the shell and standing at an angle to the steam-nozzle, a heater having a drum connected with a steam-supply and with the said steam-nozzle, and an oil-tube extending through the said drum, connected at one end with an oil-supply and at the other end with the said oil-nozzle, the said oil-tube having a steam-inlet within the said drum, to allow steam to pass from the latter into the oil-tube, the said inlet being inclined in an inward and downward direction, as set forth.

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

JOHN LEMIEL JONES, JR.

Witnesses:

WM. SCHULZ,

J. CHAS. MCNAUGHT.