No. 646,385. Patented Mar. 27, 1900

M. O. GODDING.

HYDROCARBON BURNER.

(Application filed Sept. 27, 1898.)

(No Model.)

Fig. 1.

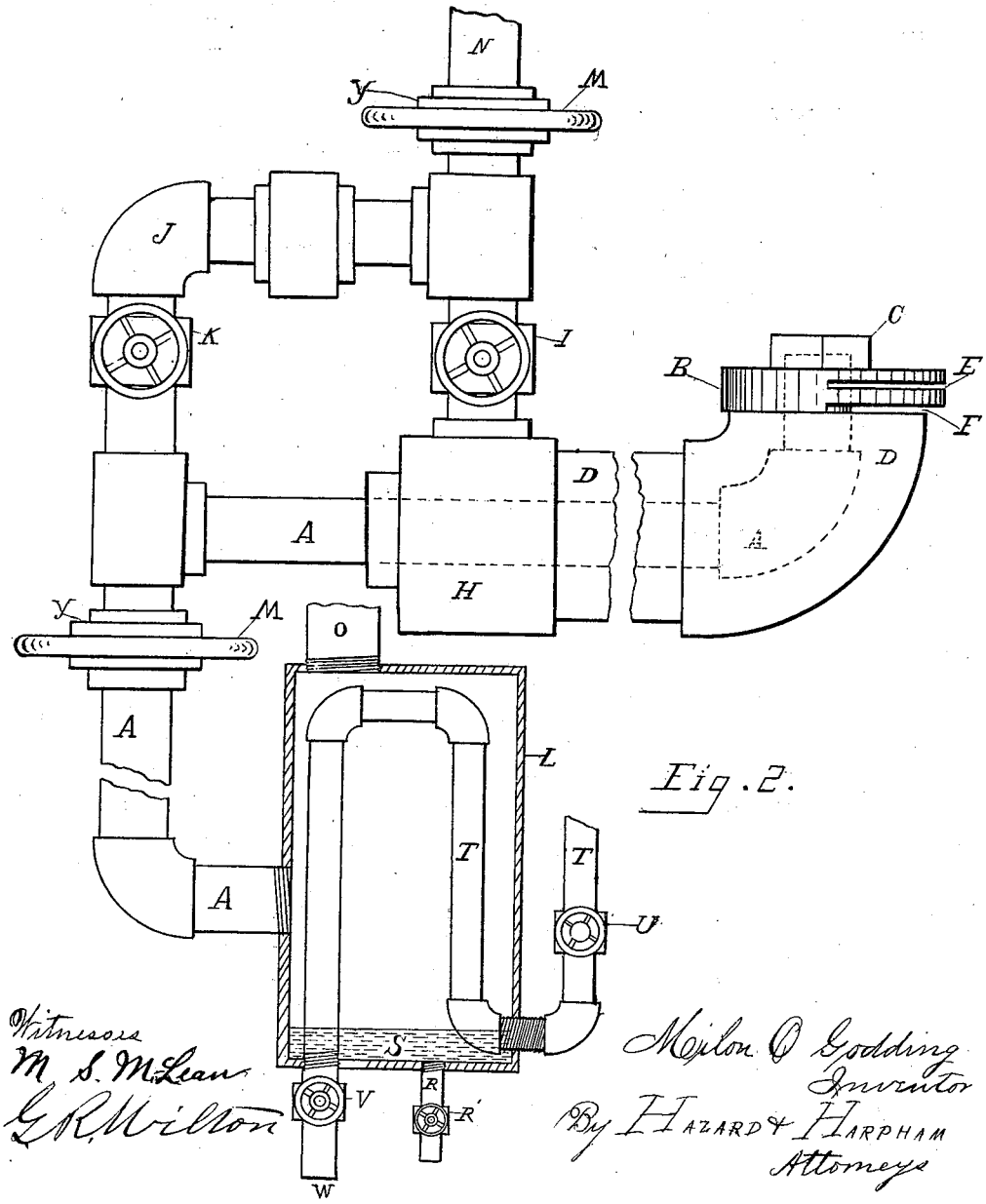

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

MILON O. GODDING, OF MONROVIA, CALIFORNIA.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 646,385, dated March 27, 1900.

Application filed September 27, 1898. Serial No. 692,004. (No model.)

To all whom it may concern:

Be it known that I, MILON O. GODDING, a citizen of the United States, residing at Monrovia, in the county of Los Angeles, State of California, have invented an Improved Hydrocarbon-Burner, of which the following is a specification, reference being made to the accompanying drawings, forming a part hereof.

My invention relates to improvements in hydrocarbon-burners in which crude petroleum is burned for fuel by means of steam and air commingled therewith; and the object thereof is to provide a burner of simple construction that will atomize the crude oil after it issues from the burner-head and that can be controlled to produce a large or a small flame, as desired. I accomplish this object by the mechanism hereinafter described, and illustrated in the accompanying drawings.

Figure 1 is a side view of the burner with its connections. Fig. 2 is a view, partly in vertical section, of the oil-heater and water-separator.

A is the oil-supply pipe, running from the oil-heater through the slotted cap B with a steam-tight joint and projects slightly beyond. On the extreme end of the pipe A is screwed a cap C, which may be taken off to clean the pipe when desired. Should it not be desired to use this cap, the pipe A may end in the slotted cap B. Screwed in the slotted cap B is a steam-pipe D, surrounding the oil-pipe A. In the front of the cap B and pipes A and D are cut two semicircular parallel horizontal ports to connect with the oil and steam supplies respectively. The port E is the oil-port and projects beyond the port F, which is the steam-port. The extent to which it projects is governed largely by the gravity of the oil to be burned. I have found in practice that for burning crude oil of 12° gravity, Baumé scale, the projection should be one-sixteenth of an inch to produce good results, while for oil of 14° gravity the projection should be three-sixteenths of an inch. The pipes A and D run into a common three-way fitting H, the pipe A continuing therefrom separately from the pipe D, while the steam-supply is fed into the fitting H through a much smaller pipe N. On the pipe N is a cut-off valve I.

J is a by-pass between the pipes A and N, on which is mounted the cut-off valve K, which enables the oil-discharge port to be cleaned out with steam when desired. This by-pass may be dispensed with, as its only purpose is one of convenience and does not affect the spirit of my invention. Connection is made to the oil and steam supply pipes by the improved union-coupling Y. This coupling is formed internally the same as ordinary union-couplings. On the periphery of the nut of the coupling I mount the wheel M. This construction enables me to connect up or disconnect my burner much more quickly and easily than if the coupling had to be operated with a wrench. I have found in practice that burners are required to be made of different sizes, depending on the work to be done.

For a fifty to one hundred horse power boiler I construct my burner as follows: the oil-supply pipe A of quarter-inch pipe and fittings; the steam-pipe D of three-quarter-inch pipe and fittings; the steam-pipe N of half-inch pipe and fittings, and the ports E and F in depth extend across one-third of the oil and steam pipes, respectively, and are one-sixteenth of an inch in width and are one-fourth of an inch apart. For every fifty additional horse-power the discharge-ports should be widened one sixty-fourth of an inch. When the full capacity of the respective pipes is reached, they should also be increased correspondingly in size.

I do not desire to limit myself to the exact dimensions above given, as they may be varied without departing from the spirit of my invention. The principal object in having the oil-port project beyond the steam-port is to enable the steam to exert some of its expansive force before coming in contact with the oil, as it thereby atomizes the oil better. I prefer that the oil should be admitted through the oil-port in a gentle flow and not under pressure, as I have found in practice that this gives the best results.

One of the essential features of my invention is contained in the portion of the burner consisting of the steam-pipe D, surrounding the oil-pipe A and having the semicircular discharge-port F, and the oil-pipe A, having the semicircular discharge-port E parallel to

and projecting beyond the steam-port. I find in practice that to produce the best results the oil should have a certain amount of heat and the water should be taken out of it before it is fed into the furnace. This greatly improves the efficiency of the burner and produces economy in the use of oil. I accomplish these results by the mechanism shown in Fig. 2, in which L represents a vertical section of an oil-heating and water-separating chamber. It is connected directly with the oil-supply by means of the pipe O. Projecting up into and then leading out of the chamber L is the steam-pipe T, the purpose of which is to heat the oil in the chamber by running steam through it, which causes the water held in suspension in the oil to separate from the oil and to settle in the bottom of the chamber, as at S, where it may be drawn off through the pipe R, having valve R′ mounted thereon. On the pipe T are mounted two steam-regulating valves V and U. The oil-feed pipe A should lead from the chamber L about twelve inches from the bottom thereof to leave room in the bottom of the chamber below the point where the pipe A takes oil therefrom to allow the water to settle and not be drawn off with the oil. Steam in proper quantity is permitted to pass into the pipe T, where it will condense in the pipe above the valve V, which is adjusted to let such portion of the condensation pass therethrough as may be necessary to keep the oil in the chamber L at a proper degree of heat. This degree of heat is easily manifested at any point on the oil-supply pipe A.

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

1. A hydrocarbon-burner composed of an oil-supply pipe having a semicircular discharge-port parallel to and extending beyond the steam-port, and a steam-supply pipe surrounding a portion of the oil-pipe and having a semicircular discharge-port below and parallel with and discharging in the rear of the oil-port.

2. A hydrocarbon-burner composed of the oil-supply pipe A having the semicircular horizontal oil-port E extending beyond the steam-port, the steam-supply pipe D surrounding a portion of the oil-pipe A and having the semicircular horizontal steam-port F below and in the rear of the oil-discharge port, and fitting H.

3. A hydrocarbon-burner composed of the union-coupling Y having wheel M, by-pass J having valve K, oil-supply pipe A having semicircular oil-discharge port E extending beyond the steam-port, steam-supply pipe D having semicircular port F, steam-pipe N having valve I and fitting H; the steam-pipe D surrounding a part of the oil-pipe A and having its discharge-port parallel to, below and in the rear of the oil-discharge port.

In witness that I claim the foregoing I have hereunto subscribed my name, this 19th day of September, 1898, at Los Angeles, California.

MILON O. GODDING.

Witnesses:

HENRY T. HAZARD,

HUBERT HARPHAM.