(No Model.)

F. H. HOLMES.

HYDROCARBON APPARATUS FOR HEATING AND LIGHTING.

No. 306,015. Patented Sept. 30, 1884.

FIG. 1.

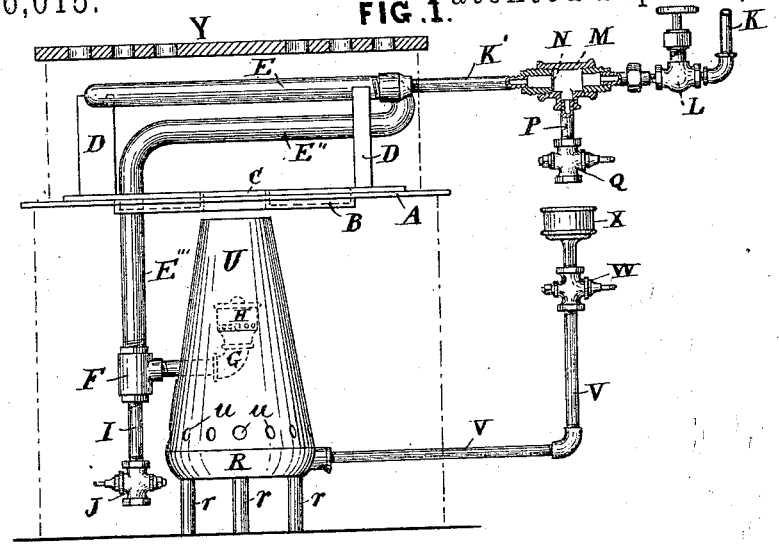


FIG. 2.

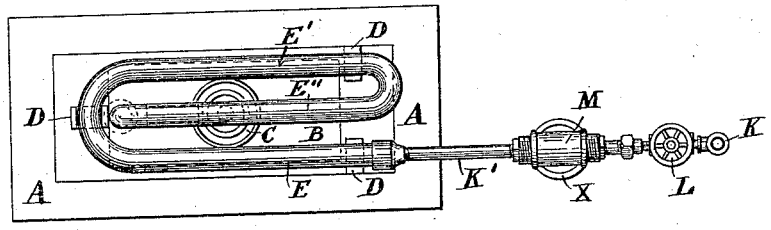


FIG. 3.

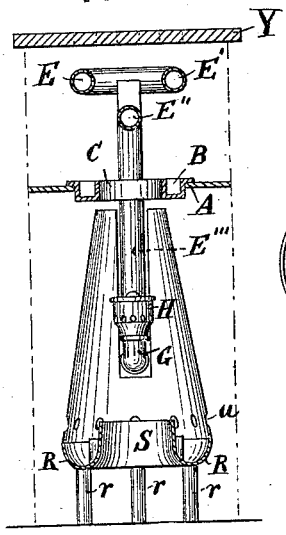
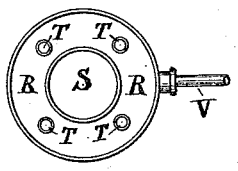


FIG. 4.



Witnesses.
E. Bearta.
C. M. Horton

Inventor
Fred H. Holmes
by J. H. Adams
Atty.

UNITED STATES PATENT OFFICE.

FRED H. HOLMES, OF HYDE PARK, MASSACHUSETTS.

HYDROCARBON APPARATUS FOR HEATING AND LIGHTING.

SPECIFICATION forming part of Letters Patent No. 306,015, dated September 30, 1884.

Application filed October 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRED H. HOLMES, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Hydrocarbon Apparatus for Heating and Lighting, of which the following is a specification.

On the 29th of June, 1883, a patent was granted to me for a hydrocarbon apparatus for heating and lighting, No. 279,760, the object of which was to convert petroleum or other similar oils into gas to be burned in the fuel-space of an ordinary stove or range, so that when the flame was once started the heat could be regulated as desired.

Experience has proved that in the above-named apparatus the oil was not converted into gas as freely as was desirable, and no provision was made for collecting and carrying off any sand or other impurities that might be in the oil.

The object of my present invention is to remedy these defects; and the invention consists of a pipe bent in serpentine form, so as to constitute, as it were, three retorts, the first of which I term the "vaporizer," the second the "heater," and the third the "superheater," which latter is bent downward and has its end connected to a reducing-T, to which is connected the pipe carrying the burner, and also a pipe having at its end a blow-off cock. These retorts are supported upon standards carried by a suitable bed-plate, which is provided with a trough having at its center a circular opening. Oil is supplied to the pipes from a tank by a pipe in which is placed a needle-valve for regulating the supply of oil, and between the needle-valve and the heater is arranged a T-piece, in which is fitted wire-gauze to filter the oil, and any sediment falling down is drawn off by a stop-cock. Above the retorts is placed a perforated plate for the purpose of checking the escape of the gases, so as to concentrate the heat and insure the perfect combustion of the gases.

The invention further consists in an improved method of starting the apparatus, hereinafter fully described.

Referring to the accompanying drawings, Figure 1 is a front view of an apparatus embodying my invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a vertical section of the same, and Fig. 4 is a plan view of the cup.

A is a bed-plate provided with a trough, B, and having a central opening, C. Upon the bed-plate A are standards D, which support the pipe E E′ E″, that constitute, respectively, the heater, the vaporizer, and the superheater. The downwardly-extending portion E‴ is secured to a T-piece, F, from which projects a pipe carrying an elbow, G, to which is connected a Bunsen burner, H. To the lower end of the T-piece F is connected a short pipe, I, provided at its end with a stop-cock, J.

K is a pipe leading from any suitable source of supply to a needle-valve, L, which is in communication by suitable connections with a T-piece, M, which is fitted with a wire-gauze, N, in front of the opening to the pipe K, connected by a reducing-coupling to the pipe E. The T-piece M is also fitted with a short piece of pipe, P, to the end of which is connected a stop-cock, Q.

R is a cup provided with a central opening, S, and also with openings T for the admission of air. The cup R rests upon feet *r*, so as to allow the air to pass under the same. On the top of the cup R is placed a conically-shaped chimney, U, which is provided with air-holes *u* near its base, and serves to direct the flame to the hole C in the bed-plate. The cup R is placed directly under the Bunsen burner H, and is supplied with oil from a pipe, V, provided with a cup, X, serving as a measure, and a stop-cock, W.

Y is a perforated plate, which is placed a short distance—say an inch—above the retorts for the purpose of checking the escape of the gases, so as to concentrate the heat and insure perfect combustion.

The operation is as follows: In starting the apparatus, the needle-valve L is partly opened, so as to allow sufficient oil to pass out of the stop-cock Q to fill the cup X, when the stop-cock Q and needle-valve L are turned off and the cock W opened, which allows the oil to flow down the pipe V into the cup R, where it is ignited and heats the burner H and also the

retorts E E′ E″. When the retorts are sufficiently heated, the needle-valve L is opened, and the oil from the reservoir is forced by its own pressure through the wire-gauze N in a fine spray, any sediment being arrested falling into the pipe P. The oil entering the vaporizer E is converted into a vapor, which passes into the heater E′, where it is further dried, and then passes into the superheater E″, where it is converted into a permanent gas and passes down the pipe E‴ to the burner H, and any carbon or other sediment that may have accumulated is deposited in the pipe I. The flame of the gas passing out of the burner H (which is first ignited by the flame from the oil in the cup R) is guided upward by the chimney U, and strikes against the superheater E″ and is deflected against the vaporizer E and heater E′. The perforated plate Y, which is solid at the central portion, checks the escape of the gases, thus concentrating the heat and insuring perfect combustion. Sufficient air to maintain combustion is conducted from the openings S, T, and *u* up and through the chimney U to and around the burner H. When any sediment is required to be blown off from the pipe I, the stop-cock J is opened and the gas in the retorts forces out all accumulations. The sediment collected in pipe P is carried off by the cock Q when the latter is opened to fill the cup X with oil for starting the apparatus. The cup X is of the required size to contain sufficient oil to fill the cup R for starting the apparatus. The cup X also catches any drip from the stop-cock Q. In some cases, if desired, the apparatus may be started by filling the trough B in the bed-plate A with oil and igniting the same.

In the drawings the bed-plate is shown in a position as if resting upon the rim which supports the grate in an ordinary stove, the plate Y as if resting upon the fire-brick, and cup R and burner H as being in the ash-pit.

What I claim as my invention is—

1. The bed-plate A, provided with the trough B and circular opening C, in combination with the pipe E E′ E″ E‴ and burner H, as and for the purpose specified.

2. The combination, with the serpentine pipe E E′ E″, constituting a series of retorts for vaporizing, heating, and superheating hydrocarbon material, said pipe having an extension, E‴, of the burner H, bed-plate A, having trough B and opening C, the cup R, chimney U, and perforated plate Y, substantially as described.

3. A hydrocarbon apparatus for heating or lighting, consisting of the continuous pipe or coil E E′ E″, forming retorts for vaporizing, heating, and superheating, the extension E‴, burner H, cup R, having chimney U, the pipe V, having cup X, and cock W, the pipes K K′, coupling M, pipe P, and valves or cocks L Q, all combined for joint operation, substantially as shown and described.

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

FRED H. HOLMES.

Witnesses:
J. H. ADAMS,
E. PLANTA.