No. 748,269. PATENTED DEC. 29, 1903.

L. A. EGGERT.

HYDROCARBON BURNER.

APPLICATION FILED NOV. 22, 1902.

NO MODEL.

Fig. 2.

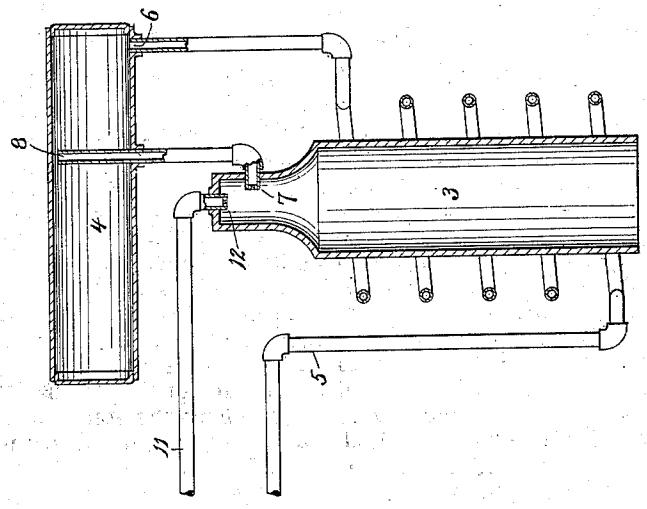
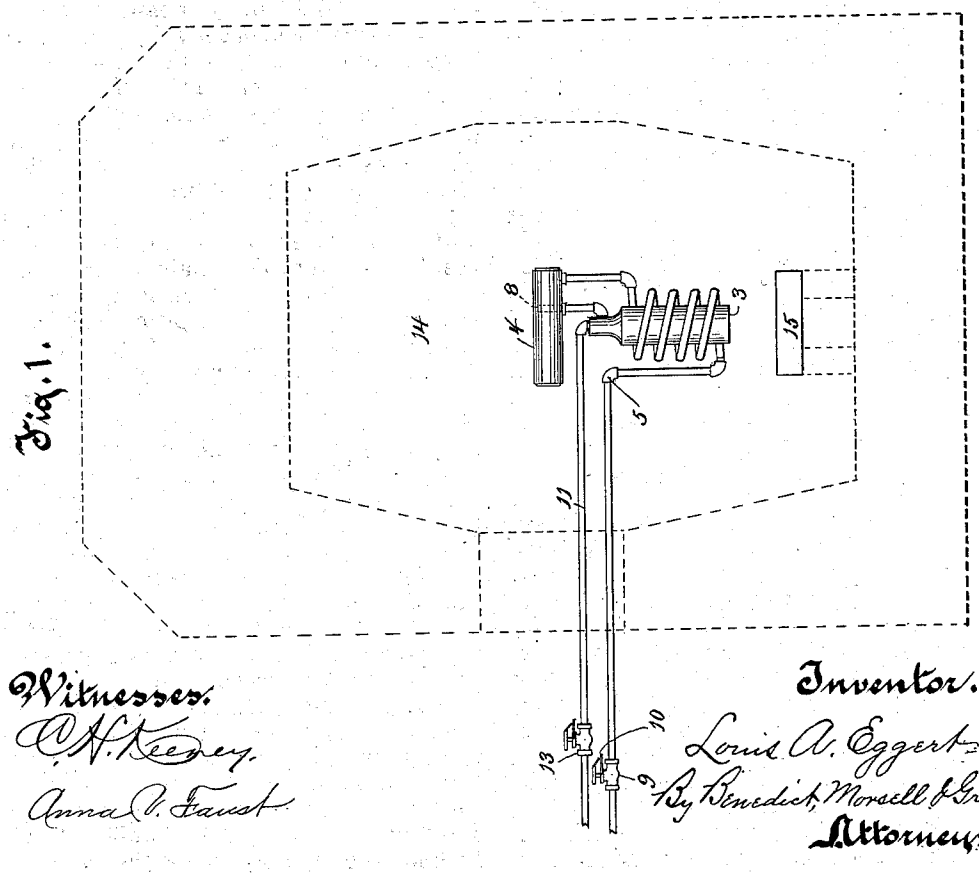


Fig. 1.



Witnesses.

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No. 748,269. Patented December 29, 1903.

UNITED STATES PATENT OFFICE.

LOUIS A. EGGERT, OF MILWAUKEE, WISCONSIN.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 748,269, dated December 29, 1903.

Application filed November 22, 1902. Serial No. 132,380. (No model.)

To all whom it may concern:

Be it known that I, LOUIS A. EGGERT, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Hydrocarbon-Burners, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in hydrocarbon-burners, and has for its object the production of a simple, comparatively cheap, and effective device by means of which a suitable combustible gaseous fluid may be formed from the proper combination of a hydrocarbon gas and steam.

A further object of this invention is to produce a simple combustible gas-forming device adapted to be inserted and supported within the fire pot or box of a furnace or stove or which by slight modification may be utilized for illuminating purposes.

These and other objects I attain by means of a device constructed as described in the specification and illustrated in the drawings presented herewith, in which—

Figure 1 is a diagrammatic view, in dotted line and in section, of a furnace fire-pot within which a device embodying this invention is shown in side elevation. Fig. 2 is a side sectional elevation of the device embodying this invention.

Throughout both views like elements are denoted by like characters.

In the production of a device embodying this invention in the form illustrated in the drawings a gas-mixing chamber 3 is utilized, and this mixing-chamber may be formed of any suitable metal, such as iron, or from other fireproof material, such as clay, and the chamber may be of any desired form or shape, but will preferably have the shape of an open-bottomed cylinder tapered and narrowed into an upper neck, as shown in the drawings. The open bottom or mouth of this chamber will form the burner, and the flames formed from the ignited gas issuing from the mouth will pass up around the mixing-chamber.

Located above the gas-mixing chamber is a steam-dome or steam-collecting chamber 4, and leading from a suitable source of water-supply and coiled about the gas-chamber is a pipe 5, which connects with the steam-collecting chamber near its bottom, as at 6. The coil of pipe surrounding the gas-chamber forms a steam-generator, the steam from which will rise into the steam-collecting chamber and from there will feed into the upper neck portion of the gas-chamber through a suitable nozzle 7. The steam from the collecting-chamber, which passes through nozzle 7 into the gas-chamber, is preferably taken from the upper portion of the collecting-chamber, where the steam will be driest and hottest, by means of running the feed-pipe nearly to the top of the steam-chamber, as at 8. The water-pipe 5 is provided with a regulating-valve 9, which is provided with an indicating device 10, by means of which the proper adjustment of the valve may be quickly accomplished for supplying the water-pipe with the desired amount of water.

Leading from a suitable source of oil-supply, which oil will preferably be a hydrocarbon oil, is a pipe 11, which enters the gas-chamber, preferably at its top, through a nozzle 12. The oil-pipe at 11 is provided with a valve 13, similar to valve 9, by means of which the flow of oil to the chamber may be regulated. The steam and oil nozzles will preferably be formed with a plurality of perforations, through which the steam and oil will flow in the nature of a spray.

The device may be supported within a fire box or pot 14 by any suitable means, and below the open end of the gas-chamber a collector 15, formed of asbestos or other suitable material or formed in the nature of a pan, will be supported for collecting any of the oil which may drop from the mixing-chamber, and this may happen while the device is being started or while out of operation.

In operation water will be fed through the water-pipe and into the steam-generator in proper quantity, so that there will always be a supply in the generator sufficient to create a suitable steam-pressure in the steam-collecting chamber, and steam from the collecting-chamber in suitable quantity will feed to the upper portion of the gas-chamber. In starting the device, if desirable, a torch may be held or supported below the same, so that steam will be generated before the valve in the oil-supply pipe is opened. This, however,

is not necessary. The valve in the oil-supply pipe will be regulated so that the proper amount of oil will be fed from the oil-nozzle into the gas-chamber, and said oil will be commingled with the entering steam and carried down to the mouth of the gas-chamber, where it will be ignited, and the flames from the burning fluid will pass up around the steam-generator. In operation the walls of the gas-chamber will become heated, and as the oil enters the chamber it will be vaporized, and, together with the steam, will be forced out of the lower open end of the chamber.

It will be seen that the device is in a nature self governing or regulating after once put in operation—that is, the heat from the combustion heats the walls of the gas-chamber, and thereby tends to vaporize the incoming oil, and heats the steam-generator whereby the steam is generated and forced into the collecting-chamber, from which it issues in an even flow. The steam-collecting chamber being located above the generator and fire, where it will become intensely hot, tends to superheat the steam.

It will be understood that the forms of the several elements in the make-up of this device may be varied without departing from the spirit of this invention.

What I claim as my invention is—

1. In a device of the character described, a mixing-chamber closed on all sides but its bottom and having its bottom open to form a burner-mouth, a steam-generator surrounding said mixing-chamber and in the line of heat travel from said burner-mouth, a steam-collecting chamber, a steam-passage from said collecting-chamber and said mixing-chamber, and a pipe leading from a suitable source of oil-supply to said mixing-chamber.

2. In a device of the character described, a mixing-chamber closed on all sides but its bottom, a pipe leading into said mixing-chamber at its upper end from a suitable source of oil-supply, a steam-coil surrounding said mixing-chamber and lying directly in the path of heat, a steam-collecting chamber in the line of said heat travel, and a steam-passage from said collecting-chamber to the upper end of said mixing-chamber.

3. In a device of the character described, a mixing-chamber closed on all sides but its bottom which forms a burner-mouth, a steam-generator surrounding said mixing-chamber, a steam-collecting chamber located in the direct line of heat travel from said burner-mouth, and connecting with said generator, a steam-pipe leading from the upper portion of said collecting-chamber to said mixing-chamber, an oil-supply pipe leading into said mixing-chamber adjacent to said steam-pipe and devices for regulating the supply of water to said generator and the supply of oil to said oil-pipe.

4. In a device of the character described, a mixing-chamber having an open bottom forming a burner-mouth and having its other sides closed, a steam-collecting chamber located above said mixing-chamber in the path of travel of the heat from said burner, a steam-pipe leading from the upper portion of said collecting-chamber to the upper closed portion of said mixing-chamber, a steam-coil surrounding said mixing-chamber and connecting with said collecting-chamber and an oil-supply pipe leading into the upper portion of said mixing-chamber adjacent to said steam-pipe.

5. In a device of the character described, a vertically-disposed elongated gas-mixing chamber having an open bottom forming a burner-mouth, a steam-collecting chamber located directly above said mixing-chamber in line with the heat travel from said burner-mouth whereby the steam in said chamber is superheated, a steam-pipe leading from said collecting-chamber into said mixing-chamber adjacent to its upper end, a steam-coil surrounding said mixing-chamber and located in the line of heat travel from said burner-mouth and connected with said steam-collecting chamber, an oil-supply pipe leading into the upper portion of said mixing-chamber, spray-nozzles for the oil and steam pipes, a water-pipe leading to said generator and means for regulating the amounts of water and oil flowing to said device.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS A. EGGERT.

Witnesses:
A. L. MORSELL,
JOHN C. KLEIST.