

No. 68,705.

PATENTED SEPT. 10, 1867.

E. COOK.

METHOD USING LIQUID HYDROCARBON AS FUEL.

Fig. 1.

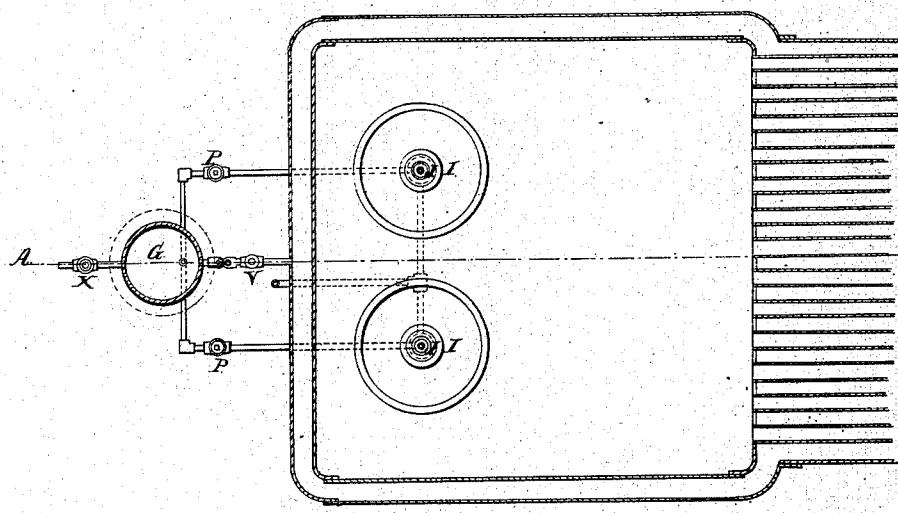
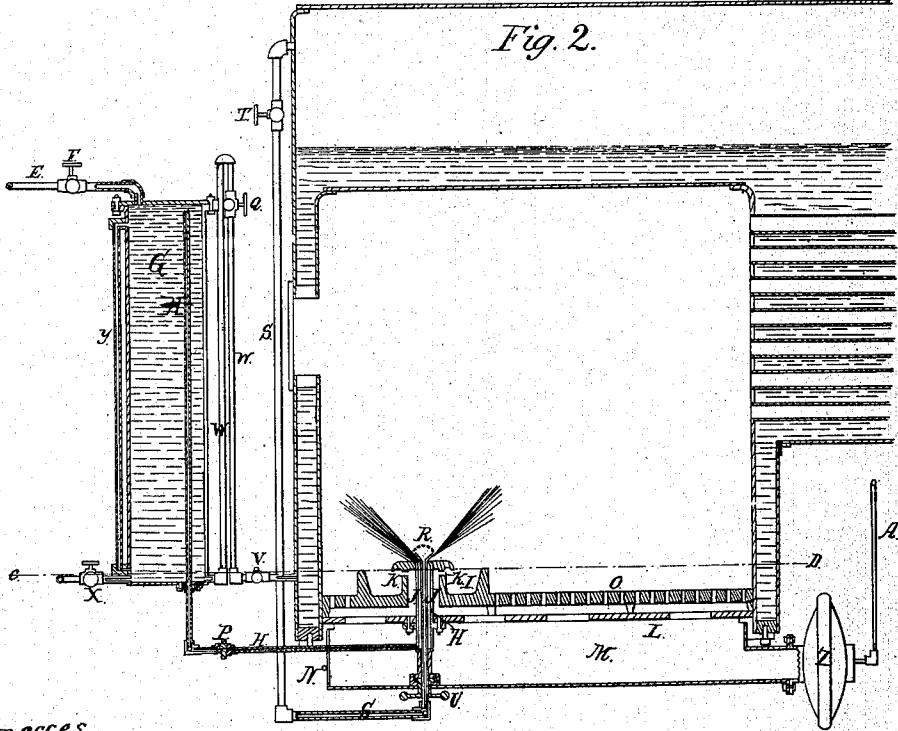


Fig. 2.



Witnesses,
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IMPROVED METHOD OF USING LIQUID HYDROCARBONS AS FUEL.

Specification forming part of Letters Patent No. 68,705, dated September 10, 1867.

To all whom it may concern:

Be it known that I, FREDERIC COOK, of the city, county, and State of New York, have invented a new and useful Improvement in Method of Using Liquid Hydrocarbons as Fuel; and I do hereby declare the following to be a full description of the same, reference being had to the drawing annexed, which represents the apparatus used—

Figure 1 being a horizontal section through CD, Fig. 2, and Fig. 2 a vertical section through A B, Fig. 1.

The object of this invention is to supply the oil used as fuel to the furnace under pressure sufficient to inject the oil forcibly through the feed-jet, thus distributing the oil evenly through the fire-box. I am thus enabled to place the oil-tank in any desired position, even under ground in the case of stationary furnaces.

The hydrocarbon is admitted from any suitable receptacle, through the pipe E, (which has a stop-valve, F,) to the tight tank G, which is filled full on starting the apparatus. On lighting the fire the valve F is left open, and the oil flows down the pipe H to the fire-box of the furnace, where it flows over the top of pipe H and burns in the cup or pan I, formed of fire-tile or cast-iron, or any suitable material. It is supplied with air from the air-pipe J, its perforations K, and through the air-holes in the hearth O. L is a cast-iron hearth, extending all over the bottom of the fire-box, and supports the fire-tile hearth O, standing on short legs, thus having an air-space between. Both the upper and lower hearths have air-spaces to admit air to the fire from the air-box M. The air-box M has a damper at N, to admit a natural draft when raising steam.

Instead of raising steam with oil, as above described, the steam can be raised with wood in the usual way on the hearth O.

When steam is up, and a pressure obtained in the boiler, the valves F and P are closed and the valve Q is opened. This admits the pressure of the boiler under the hydrocarbon. The valve P may now be opened in the oil-supply pipe H. The oil now issues, under a pressure from the boiler, from the top of pipe H in the fire-box, where it is burned. R is a rose-head, perforated with small holes at the top of the steam-pipe S. Steam is admitted from the boiler to aid com-

bustion by opening valve T. U is a nut, working on a screw cut on the steam-pipe, by turning which the rose-head R may be elevated or depressed to regulate the amount of oil passing between it and the top of oil-supply pipe H, and to spread the oil to a greater or less degree, as may be required. V is a check-valve in pipe W, to prevent any petroleum passing back into the steam-boiler. The pipe W has a return-bend in it, as shown, rising higher than the oil-tank G, as an additional safeguard for this purpose. X is a waste-pipe and valve to discharge the water from the tank when the oil has all been used and requires recharging. Y is a glass gage to indicate the height of water and oil in the tank. Z is a steam-blower, to blow air and steam into the fire and aid in combustion. A' is the steam-pipe for the blower.

I propose to use in the water-pipe W a pressure-governor, to secure an even and regular pressure on the petroleum-tank.

One advantage of this manner of feeding the hydrocarbon is that the supply-tank may be below the level of the fire-box of the boiler, and even buried in the ground, to insure safety against fire, whereas, as ordinarily used, it must be above the level of the fire-box to allow the oil to run to the furnace by its own gravity.

It is obvious that there are various other methods by which the pressure in the petroleum-tank may be obtained, as by pumping in the oil necessary to keep up the supply, or pumping or otherwise forcing in water, air, or any other foreign substance which will not mix with the oil. I therefore do not limit myself to the device shown and described; but

What I do claim, and desire to secure by Letters Patent, is—

1. Producing the requisite pressure in the oil-tank by means of the steam-pressure in the boiler, substantially as described.

2. In an apparatus for burning petroleum or other inflammable oils, forcing the oil into the furnace by means of artificial pressure in a supply-tank, substantially such as is herein described, said pressure being created in any of the modes herein mentioned.

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