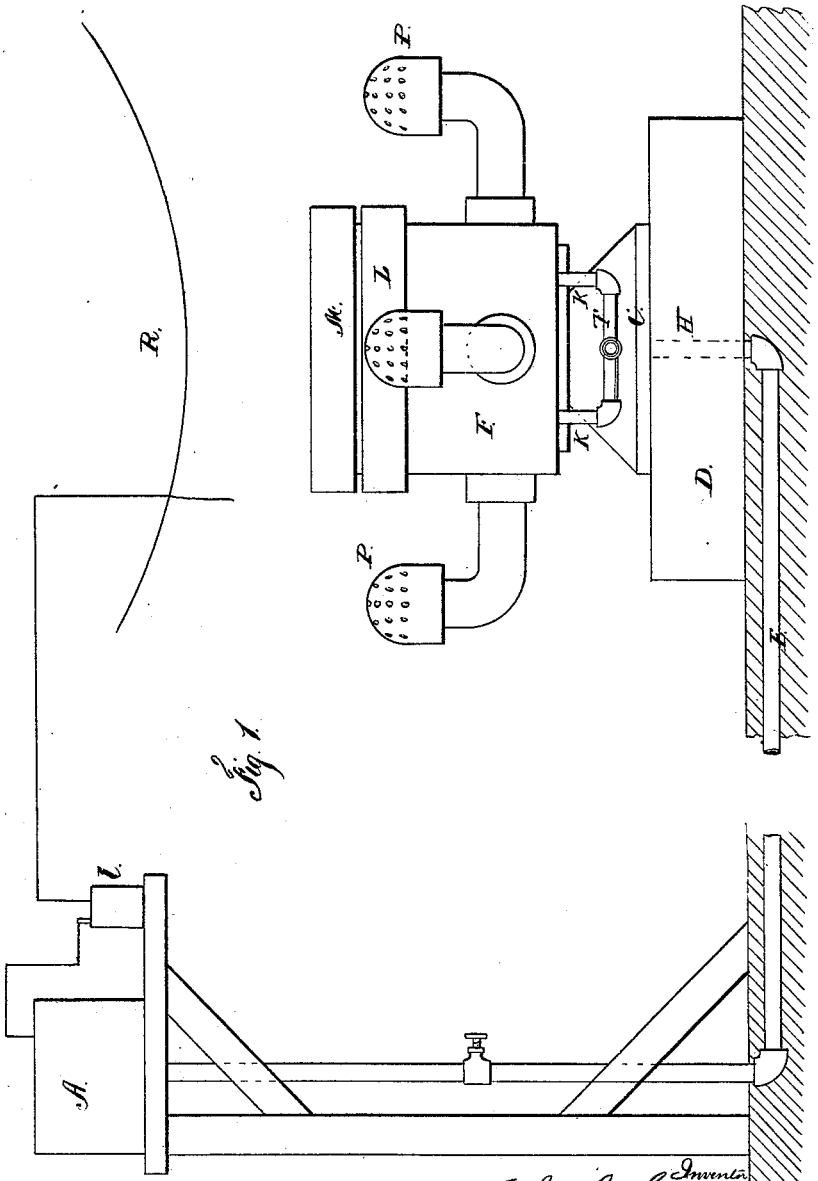
2 Sheets—Sheet 1.

J. G. HUNT.

APPARATUS FOR MANUFACTURING GAS.

No. 186,207. Patented Jan. 16, 1877.



Witnesses
Chas. H. Smith
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Inventor
John G. Hunt
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2 Sheets—Sheet 2.

J. G. HUNT.

APPARATUS FOR MANUFACTURING GAS.

No. 186,207. Patented Jan. 16, 1877.

Fig. 2.

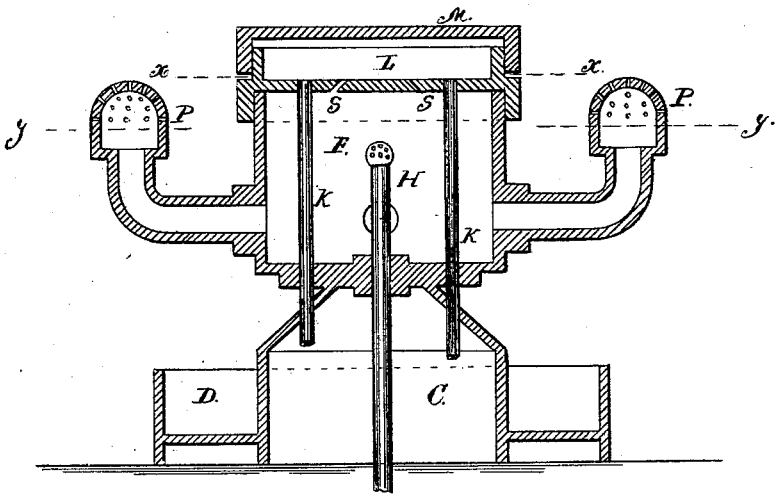


Fig 3.

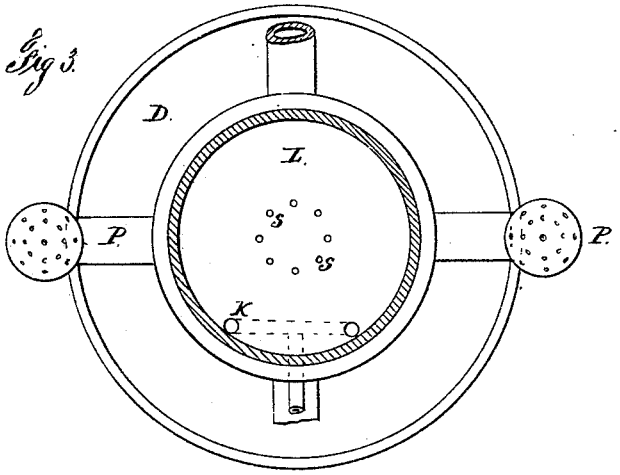
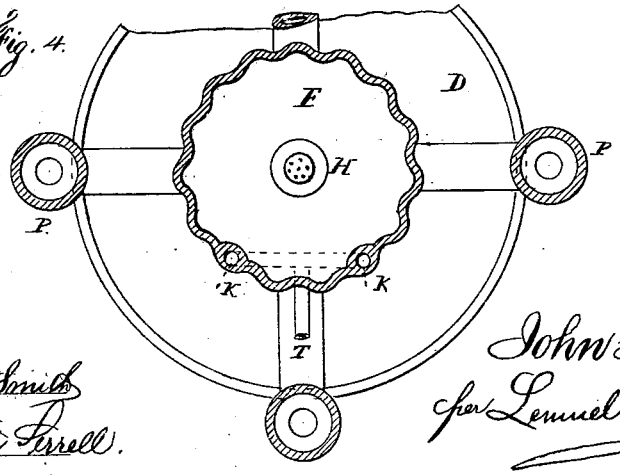


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN G. HUNT, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR MANUFACTURING GAS.

Specification forming part of Letters Patent No. **186,207**, dated January 16, 1877; application filed April 22, 1876.

To all whom it may concern:

Be it known that I, JOHN G. HUNT, of the city and State of New York, have invented an Improvement in Burning Petroleum and other Hydrocarbon Liquids and Making Gas, of which the following is a specification:

I make use of a peculiarly-constructed generator, in which steam and the vapors of petroleum combine to form a gas that is consumed for heating and other purposes, and I apply an electric current from a battery to aid in the proper decomposition and recomposition of the vapors of petroleum in the presence of heat and steam.

The object of my invention is to obtain the most perfect results in the economy of the fuel, by insuring a perfect decomposition of petroleum in the presence of as large a proportion of watery vapor as possible, according to whether the gas produced is to be used for illuminating or heating purposes.

In the drawing, Figure 1 is an elevation of the generator and burner. Fig. 2 is a section of the same. Fig. 3 is a sectional plan at the line *x x*, and Fig. 4 is a similar view at the line *y y*.

The base of the generator is made as an annular trough, D, into which petroleum or similar material may be introduced and ignited, to heat the apparatus in starting the same. The central portion *c* of the burner supports the mixing-chamber F, above which is a superheating-chamber, L, with a cap, M. The burners P are at the upper ends of the lateral branches that extend from the generating and mixing chamber F. These burners are perforated for the escape of the combustible vapors, and I have shown four of these burners.

The petroleum or other liquid hydrocarbon is supplied, through the tube E and jet-tube H, within the chamber F, and steam is supplied by the pipe T, and rises in the pipes K, which, preferably, are tubes in the metal case of the chamber F, as seen in Fig. 4, and these tubes K open at top into the superheating-chamber L. The chamber F is corrugated upon its exterior surface, so as to increase the heating capacity, and lessen the risk of the chamber splitting or cracking under the operation of the heat.

The steam, in a superheated condition, passes down through the perforations *s*, which are inclined, as shown, to direct the rush of vapor away from the petroleum-jet tube H, and hence the petroleum and vapors from that jet-tube will be drawn by the issuing jets of steam, and commingle with the steam, and the mixture will be intimate and thorough within the heated chamber F, and the heat of such chamber may be sufficient to decompose the petroleum; hence the issuing vapors are in a condition to burn with an intense heat, there being a decomposition of the steam by a union of the carbon of the petroleum with the oxygen of the water, and then a combustion of the hydrogen of the water with the hydrocarbon vapors of the petroleum in the atmosphere, producing an intense heat and consuming the carbon.

The hydrocarbon liquid is to be supplied from any suitable source, and regulated by a cock.

In starting the apparatus a small vessel may be used for supplying the steam until the main boiler is heated by the burners.

The combustion is promoted by an electrical current, and an improved result is obtained. I therefore employ a battery, *l*, of any suitable character. One pole of it is in contact with the tank A, and the other pole is applied at or near the generator, so that the apparatus is put into the electric circuit. The tank and burner should be insulated, so that the current passes through the liquid petroleum, and through the vapors as they combine and are consumed, in order that the decomposition and perfect combustion may be promoted by the electric action. The electric current may be obtained from any other source than a battery.

In cases where this apparatus is to be used for heating purposes, all the gases formed will issue through the burners, and be consumed beneath the boiler or other article to be heated, as at R.

If the gas-generating capacity of the apparatus is greater than required for heating the mixing-chamber, or for performing other heat-

ing work at the same time, then the surplus gas may be conveyed from the mixing-chamber by a pipe to any other location, where it may be used for illuminating or for heating purposes, or it may be stored for future use.

I claim as my invention—

1. The superheating-chamber L, provided with openings in the partition that separates it from the mixing-chamber, in combination with the mixing-chamber having a corrugated case, the lateral burners, the petroleum-supply pipe E, and the steam-pipe passing through the mixing-chamber, substantially as specified.

2. In combination with the hydrocarbon-burner, having superheating and mixing chambers, and lateral burners, the conducting-wires and generator of electricity, whereby an electric circuit is established, substantially as specified.

Signed by me this 13th day of April, A. D. 1876.

JOHN G. HUNT.

Witnesses:
HAROLD SERRELL,
GEO. T. PINCKNEY.