(No Model.)

W. F. C. M. McCARTY.

PROCESS OF MANUFACTURING GAS.

No. 330,142. Patented Nov. 10, 1885.

FIG. 1.

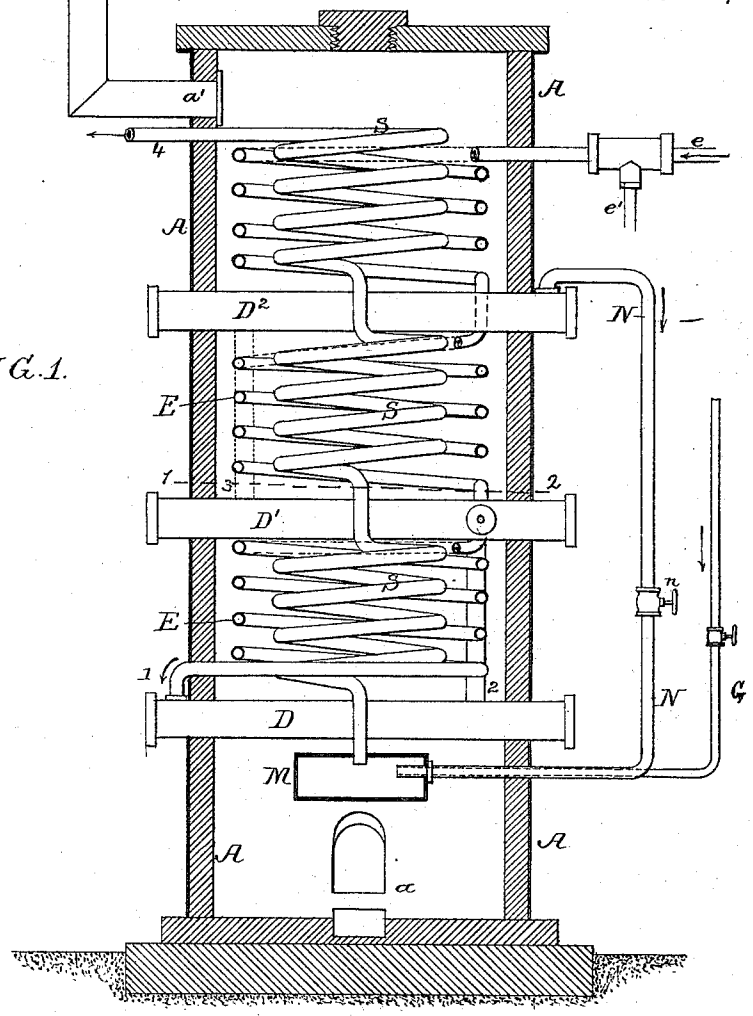
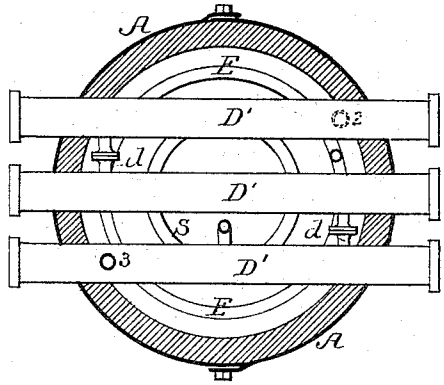


FIG. 2.



Witnesses;
John E. Parker
Henry Bossert.

Inventor;
W. F. C. M. McCarty
by his Attorneys
Howson and Sons

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UNITED STATES PATENT OFFICE.

WILLIAM F. C. M. McCARTY, OF PHILADELPHIA, PA., ASSIGNOR TO ADOLPH OHL, JAMES McC. CREIGHTON, AND BERNARD C. LAUTH, ALL OF PHILADELPHIA, PA., AND JANE LOGAN, OF HAGERSTOWN, MD.

PROCESS OF MANUFACTURING GAS.

SPECIFICATION forming part of Letters Patent No. 330,142, dated November 10, 1885.

Application filed June 5, 1885. Serial No. 167,779. (No model.)

To all whom it may concern:

Be it known that I, W. F. C. M. McCARTY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Processes of Manufacturing Gas, of which the following is a specification.

My present invention consists of an improvement in the process of utilizing natural gas for the production of an illuminating-gas of high candle-power, for which I have obtained Letters Patent of the United States, June 30, 1885, No. 321,125.

In carrying out my process I may make use of any convenient construction of retorts; but I prefer to employ a furnace similar to that illustrated and described in aforesaid patent, with a slight modification, as illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the furnace, and Fig. 2 is a sectional plan on the line 1 2, Fig. 1.

A is the body of the furnace, having at the bottom a fire-place, *a*, and at the upper end an outlet, *a'*, for the escape of the products of combustion. Across the body of the furnace I build retorts D D' D², there being three rows in the present instance with three retorts in each row. The retorts of each row are connected with each other alternately at opposite ends by necks *d*, while the last retort of the first row, D, is connected through a pipe, 2, with the first retort of the second row, D'. The last retort of the second row, D', is connected through a tube, 3, with the first retort of the third row, D², and the last retort of this third row has an outlet-pipe, N, provided with a valve or cock, *n*. The first retort of the first row has an inlet at 1, leading from a heating-coil, E, which passes down through the furnace between the retorts. At the point where it enters the furnace at the upper end it has two inlets or supply-pipes, *e e'*, one for the introduction of steam and the other for the natural gas to be treated. The pipe N from the upper retorts passes down outside the furnace and opens into a chamber, M, immediately over the fire. From this chamber leads the superheating-coil S, passing up through the furnace within the outer coil, and having its outlet at 4. Into the chamber M opens a second pipe, G, which also may be provided with a valve for the regulated introduction of oil in liquid form.

I place in each of the retorts iron or similar deoxidizing material in a finely-divided state, and I introduce into the coil E steam and natural gas, which, in passing through the coil are subjected to great heat, so that on coming into contact with the iron or similar material in the retorts the hydrogen will be freed to combine with the gas through the taking up of the oxygen by the metal. To carburet the gas thus formed, I inject into the chamber M small quantities of hydrocarbon in the form of oil in a finely-divided condition, where it meets and unites with the gas from the retorts.

The oil used may be of any character found convenient, from the lighter to the heavier oils of the series. I prefer, however, to use benzine in the proportion of about one gallon to the thousand feet of gas.

The oil introduced into the chamber becomes thoroughly vaporized by the excessive heat in the presence of the natural gas and hydrogen, and is thoroughly mixed therewith, just sufficient hydrocarbon being introduced in the form of oil to produce a perfect distillation without leaving or forming condensible products.

The gas in passing up through the superheater S becomes thoroughly fixed, resulting in the production of an illuminating-gas of about twenty-candle power.

I am aware that it has heretofore been proposed to produce illuminating-gas by subjecting air or gas, decomposed steam, and liquid hydrocarbon to heat in a mixing-chamber; but in my invention the natural gas is first subjected to excessive heat in the presence of hydrogen, and the liquid hydrocarbon is introduced in a finely-divided state subsequently.

I claim as my invention—

1. The process herein described of utilizing the natural gas of the earth for the production of illuminating-gas, said process consisting in subjecting the said gas to excessive heat in the presence of free hydrogen, and subsequently introducing a liquid hydrocarbon in a finely-divided condition.

2. The process herein described of utilizing the natural gas of the earth for the production of an illuminating-gas, said process consisting in first subjecting the gas to excessive heat in the presence of steam; second, freeing the hydrogen under excessive heat to combine with the gas, and subsequently introducing liquid hydrocarbon in a finely-divided state.

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

W. F. C. M. McCARTY.

Witnesses:
J. J. McCORMICK,
J. V. McCORMICK.