(No Model.)

W. F. C. M. McCARTY.

PROCESS OF MAKING GAS.

No. 321,125. Patented June 30, 1885.

FIG. 1.

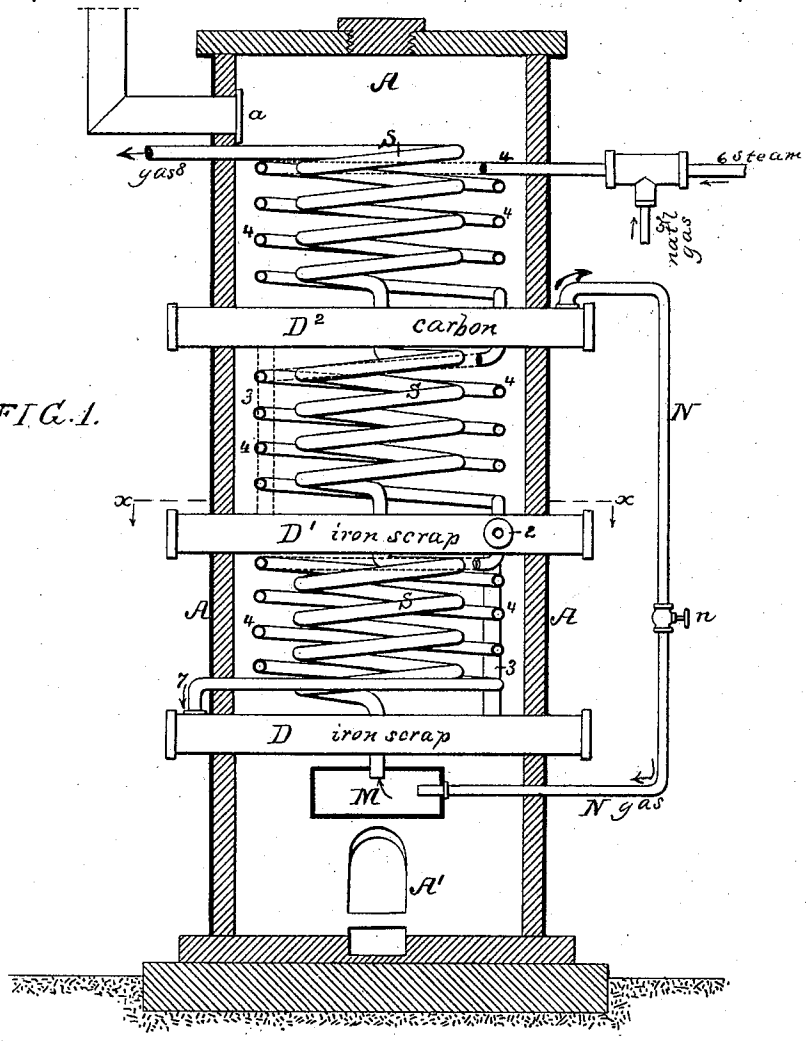
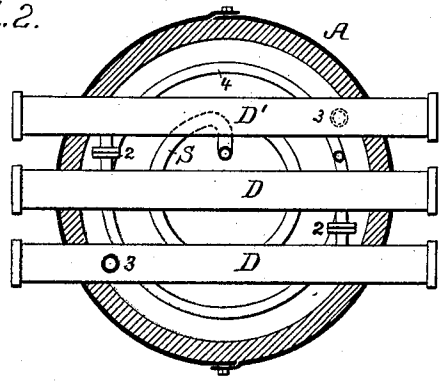


FIG. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM F. C. M. McCARTY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ADOLPH OHL, JAMES McC. CREIGHTON AND BERNARD C. LAUTH, ALL OF SAME PLACE, AND JANE LOGAN, OF HAGERSTOWN, MARYLAND.

PROCESS OF MAKING GAS.

SPECIFICATION forming part of Letters Patent No. 321,125, dated June 30, 1885.

Application filed May 20, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. C. M. McCARTY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented a certain Improved Process of Making Gas, of which the following is a specification.

The object of my invention is to utilize the natural gas of the earth for the production of an illuminating-gas of a high candle power, and this object I attain as hereinafter fully set forth.

By the term "natural gas" I refer to the natural gas of the earth as it is found in various parts of the United States and Canada, and notably at or near Pittsburg, Pennsylvania, and which gas may be collected by sinking tubes into the ground.

Various constructions of apparatus may be employed for carrying my invention into effect; but I prefer one similar to that for which I have filed an application for a patent of even date herewith, Serial No. 166,123.

To facilitate a comprehension of my present invention, I will first briefly describe the construction of this apparatus in which my improved process may be carried out.

In the accompanying drawings, Figure 1 is a vertical section of the apparatus, and Fig. 2 is a sectional plan view of the same.

The furnace A is provided at the bottom with a fire-place, A′, and near the top with an outlet, *a*, for the products of combustion, and at different heights across the body of the furnace are built in rows or banks D D′ D² of retorts—three in the present instance—with three retorts in each row. The retorts of each row communicate with each other through short necks 2 at opposite ends, alternately, as shown in Fig. 2, while a pipe, 3, forms a connection between the last retort of one series with the first retort of the series next above. The last retort of the top row is provided with an outlet-pipe, N, leading outside the furnace, where it is provided with a cock or valve, *n*. This pipe N leads down into the furnace again and opens into a closed chamber, M, immediately over the fire-place and below the bottom row of retorts. This chamber or retort M communicates with a superheater, S, which in the present instance consists of a coil extending up through the interior of the furnace between the retorts. Outside this coil S is another heating-coil, 4, which at its lower end, 7, opens into the first retort of the first or lowermost row, D, while at its upper end it has two inlets, 5 and 6, one for steam and the other for the natural gas.

In carrying out my invention I place in the two lower banks of retorts iron or similar material to take up oxygen, this material preferably being in a finely-divided state—such as borings, turnings, scraps, &c.—while in the top row of retorts I place carbon, preferably in the form of gas-coke, either alone or mixed with finely-divided iron. The natural gas before referred to is introduced into the heating-coil 4 through the inlet 5, while steam is at the same time introduced through the pipe 6. This mixture of steam and natural gas in passing through this coil is subjected to heat, with the result of tending to break up the molecules of the natural gas, and at the same time tending to free the hydrogen from the steam, so that when the mixture enters the retorts containing the iron or equivalent material the oxygen of the steam will be free to combine with the iron in the retorts, while the freed hydrogen under the intense heat will combine with the natural gas. The gas thus formed will, in coming into contact with the carbon in the upper retorts, become fixed into a gas having the proper proportions of hydrogen and carbon to make an illuminating-gas of high candle power. The resultant gas passes from the upper row of retorts down through the pipe N and into the expansion-chamber M immediately over the fire-place, and thence up through the superheating and fixing coil S, and out at 8 to a suitable washer or receiver.

I claim as my invention—

1. The herein-described process of converting natural gas into illuminating-gas, said process consisting in subjecting the said gas in the presence of steam to the action of heat, then passing the mixture in contact with iron under heat, and then in contact with a carbon, substantially as set forth.

2. The process herein described of making illuminating-gas, said process consisting in

first subjecting the natural gas of the earth in the presence of steam to the action of heat, then subjecting the mixture to the action of finely-divided iron or other material to take up the oxygen, and a carbon under heat, and then superheating the resultant gas, substantially as described.

3. The herein-described process of converting natural gas into illuminating-gas, said process consisting in subjecting the said gas in the presence of steam to the action of heat, and of a material to take up the oxygen of the steam, and then passing the resultant gas in contact with a carbon, substantially as set forth.

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

W. F. C. M. McCARTY.

Witnesses:

JOHN SPARHAWK, Jr.,

HUBERT HOWSON.