E. D. McCracken,

Manf. Gas.

No. 105,351. Patented July 12. 1870.

Fig. 1.

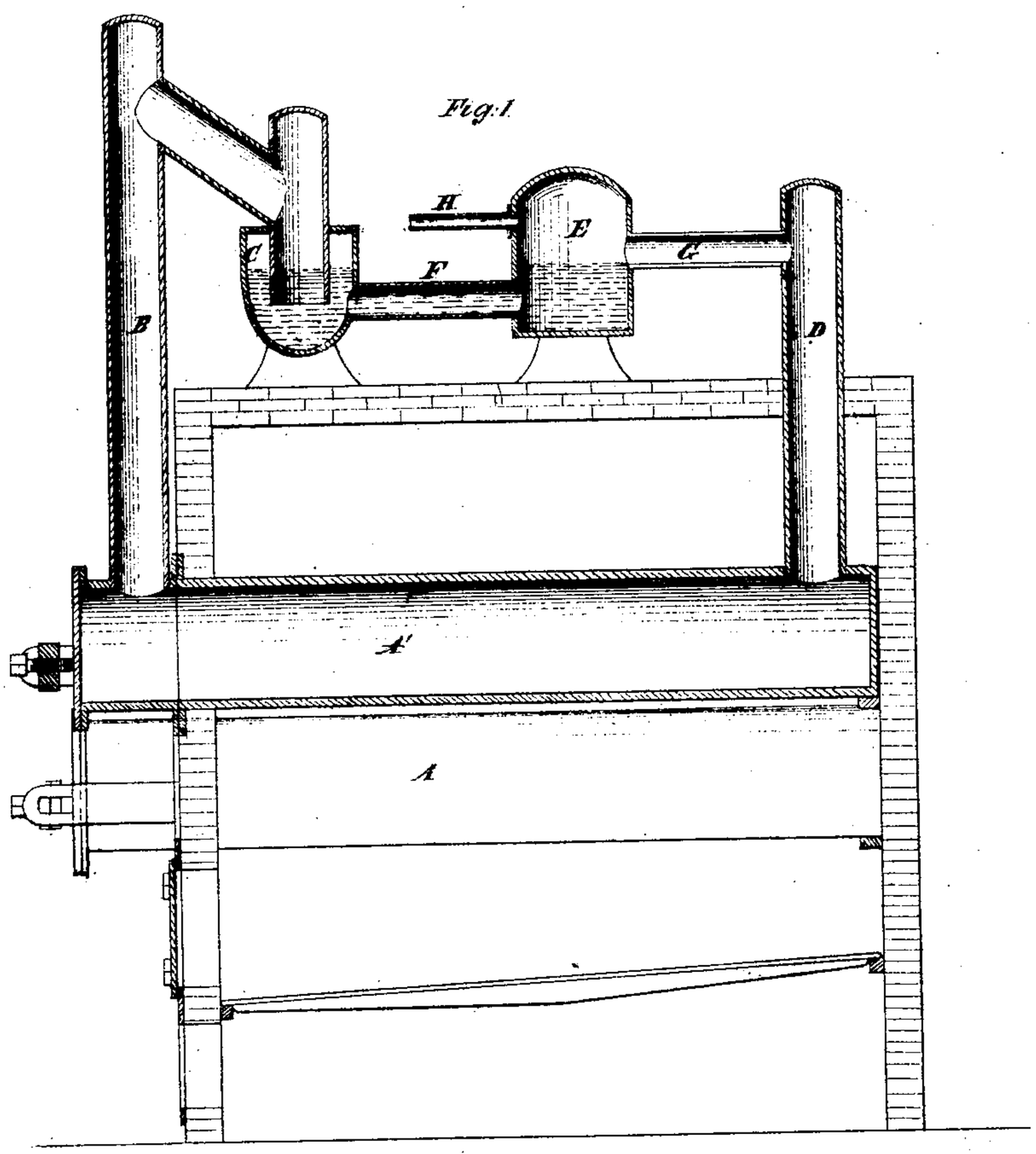
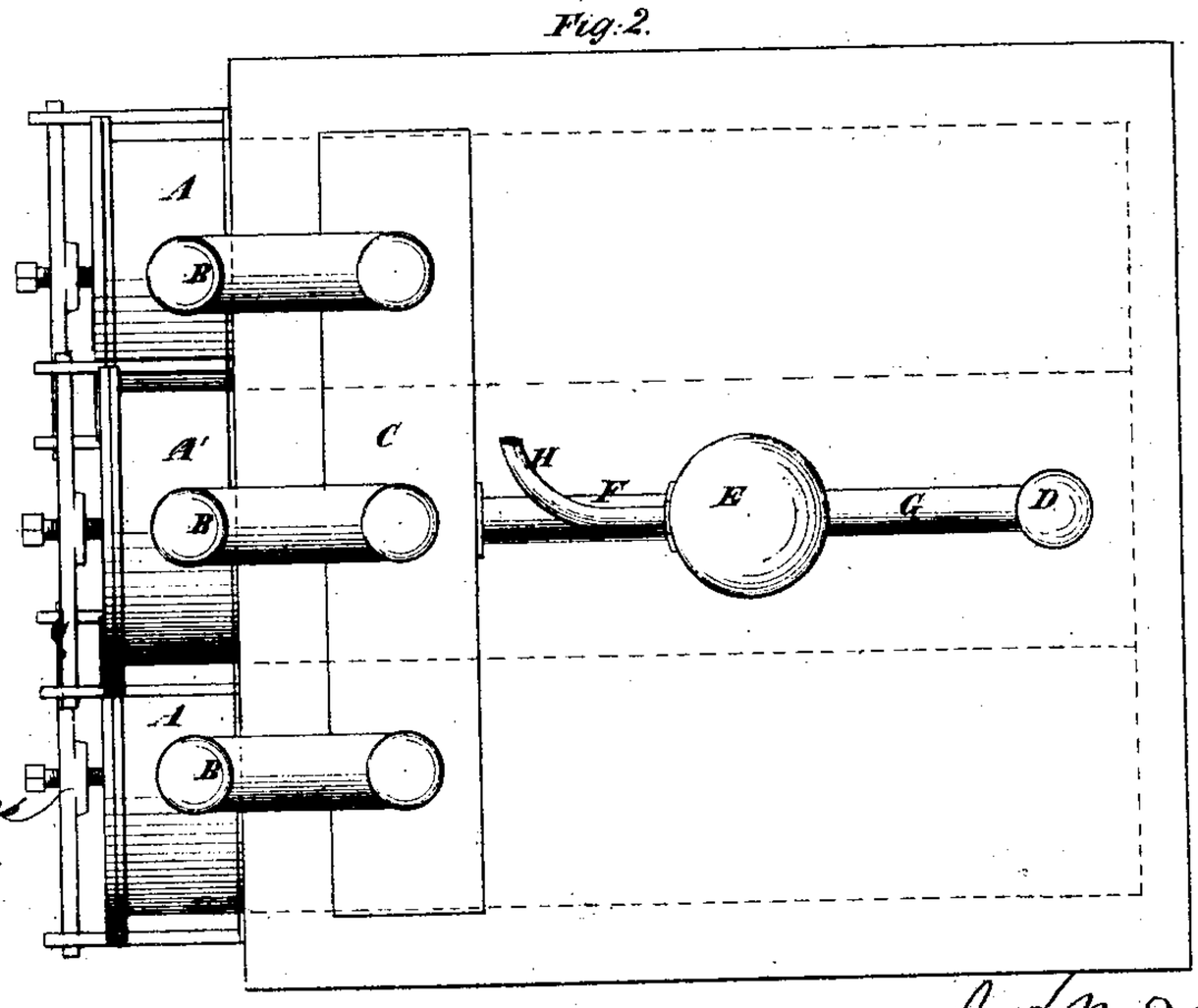


Fig. 2.



Witnesses:
Fred. Haynes
R. R. Rabeus

E. D. McCracken

United States Patent Office.

EDWIN D. McCRACKEN, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, HENRY NEWTON, HENRY B. KIRKLAND, AND JOSEPH R. HUSSON, OF SAME PLACE.

Letters Patent No. 105,351, *dated July* 12, 1870.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, EDWIN D. McCRACKEN, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for the Manufacture of Illuminating-Gas; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing.

The object of this invention is to provide for the conversion into incondensable illuminating or combustible gases, of the whole or greater portion of the tar and condensed products ordinarily resulting from the manufacture of illuminating-gas from coal and other substances, thereby not only effecting great economy of material, and a consequent reduction of the cost of gas, but preventing the choking of the passages and pipes leading from the retorts.

In carrying out my invention, I use superheated steam to effect or aid in the decomposition of the tar and condensable matters, but instead of introducing it into the retort, as has heretofore been done, I provide, between the hydraulic main and a pipe through which the tar or tarry vapors enter or re-enter the retort, at the rear end, or at a point distant from where the gas leaves it, a vessel or chamber in which the tar and condensed products are collected from the hydraulic main, but through which the gas is prevented, by a liquid seal formed by the tar itself, from escaping from the retort, and from which the tar and condensed products are allowed to overflow to the pipe above mentioned; and I introduce the superheated steam into this vessel or chamber, so that it passes along with the tar into the retort, vaporizing it as it does so, and preventing the carbonization of the tar in the said pipe, and the consequent accumulation of graphite or solid matter therein.

Figure 1, in the drawing, is a longitudinal vertical section of a bench of three retorts, with my invention applied to the upper retort.

Figure 2 is a plan of the same.

Similar letters of reference indicate corresponding parts in both figures.

The several retorts A A A′ are connected in the usual way, at their front ends or heads, by standpipes B B B, with the hydraulic main C.

At the rear end of the upper retort A′ is a pipe, D, through which the tar from the hydraulic main passes to the said retort.

Between this pipe D and the hydraulic main is the vessel or chamber E, the lower part of which is in constant and free communication with the lower part of the hydraulic main, by means of a pipe, F, and the upper part of which communicates with the pipe D by means of a pipe, G.

The orifices of this pipe G, at its communication with the vessel or chamber E and pipe D, are so arranged as to provide for the overflow of the tar from the said vessel or chamber to the pipe D, and thence to the retort, but to maintain a proper level of the tar in the hydraulic main and in the said vessel or chamber, such level being always sufficiently above the pipe F to form a liquid seal to the said pipe and the chamber E, and thereby prevent the gas from escaping from the retort, by the pipes D and G and chamber E, to the hydraulic main.

H is the pipe through which superheated steam, passing from a suitable generator through a proper heater, enters the vessel or chamber E above the tar therein.

The operation is as follows:

The tar from the hydraulic main C flows freely into the lower part of the chamber or vessel E, whence it overflows, in a thin stream or film, over the lower part of the pipe G, and down the inner surface of the pipe D toward the retort, and the superheated steam, entering the said chamber or vessel E, passes therefrom with the tar along the pipes G and H, to the retort, vaporizing the tar before its introduction into the retort.

The superheated steam and vaporized tar, entering the retort together, are easily decomposed in the retort, in which their elements recombine to produce incondensable gases, which pass from the retort, by the pipe B, to the hydraulic main, whence they pass off in the usual way to the gasometer, leaving no or very little solid deposit adhering to the pipes.

Pipes D and G, and a vessel or chamber, E, communicating with the hydraulic main, may be applied in connection with a single retort in which gas is made from coal or other substance, or to every such retort in a bench; or, when a bench of several retorts is used, one or more retorts may be furnished with such pipes and chamber, and be used only for using up and making gas from the tar passing over from the other retorts, the latter being worked in the usual way.

Retorts fitted up in this way may also be used for the manufacture of gas from tar obtained from other sources.

It is obvious that the pipes D and G are virtually portions of the same pipe, and there may be substituted for them one continuous pipe communicating between the vessel or chamber E and the retort.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The introduction or re-introduction of tar and condensed products into the retort, along and through the same pipe or channel with superheated steam employed to aid in its decomposition, substantially as herein described.

2. A chamber or vessel, E, arranged between and in communication with the hydraulic main and the rear part of the retort, substantially as herein described, whereby provision is made for the return or flow of the tar and condensed products from the hydraulic main to the retort.

3. The combination, with the chamber or vessel E above mentioned, of the superheated-steam pipe connecting with such vessel, substantially as herein described.

E. D. McCRACKEN.

Witnesses:

FRED. HAYNES,

R. E. RABEAU.