2 Sheets--Sheet 1.

G. OLNEY.

Apparatus and Processes for the Manufacture of Hydro-Carbon Gas.

No. 151,906. Patented June 9, 1874.

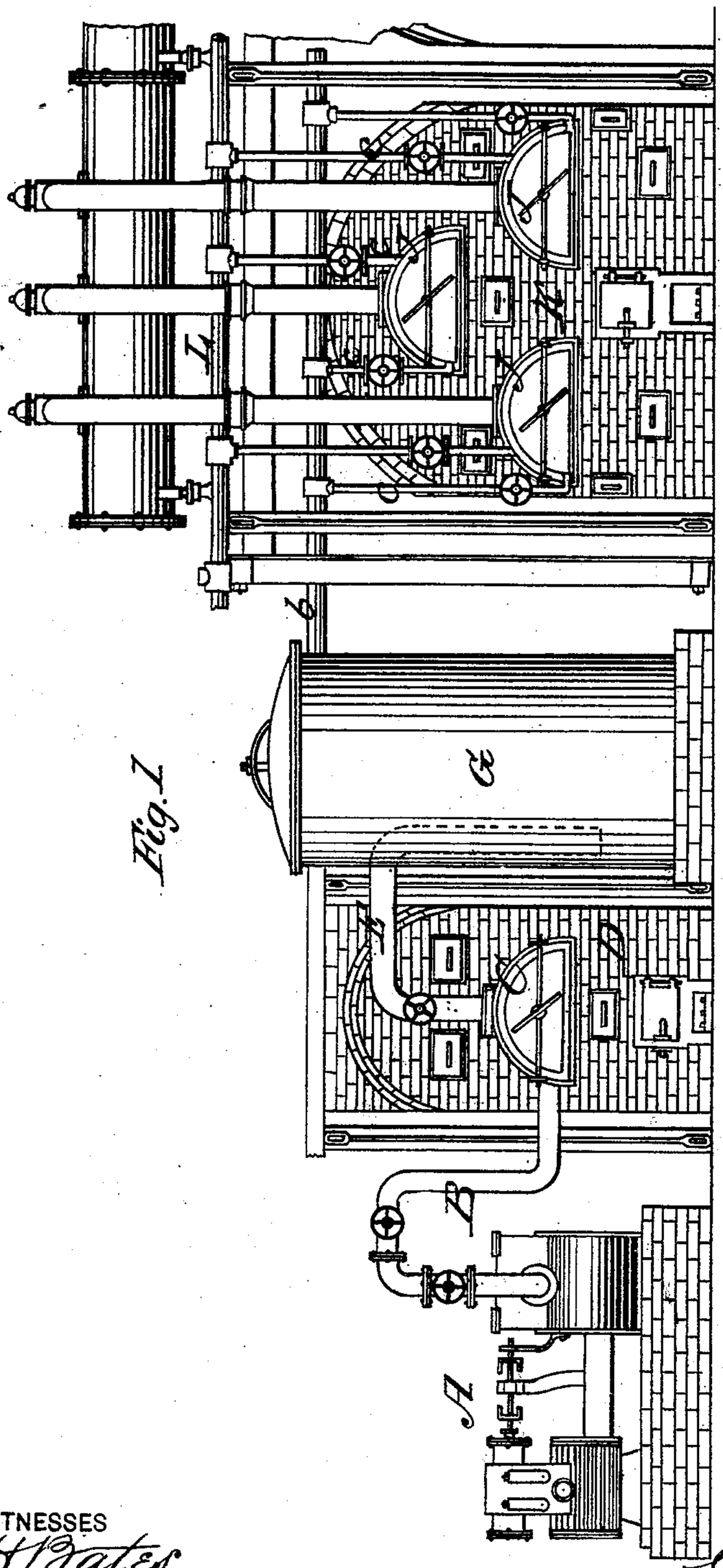

Fig. 1

WITNESSES
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Fig. 2

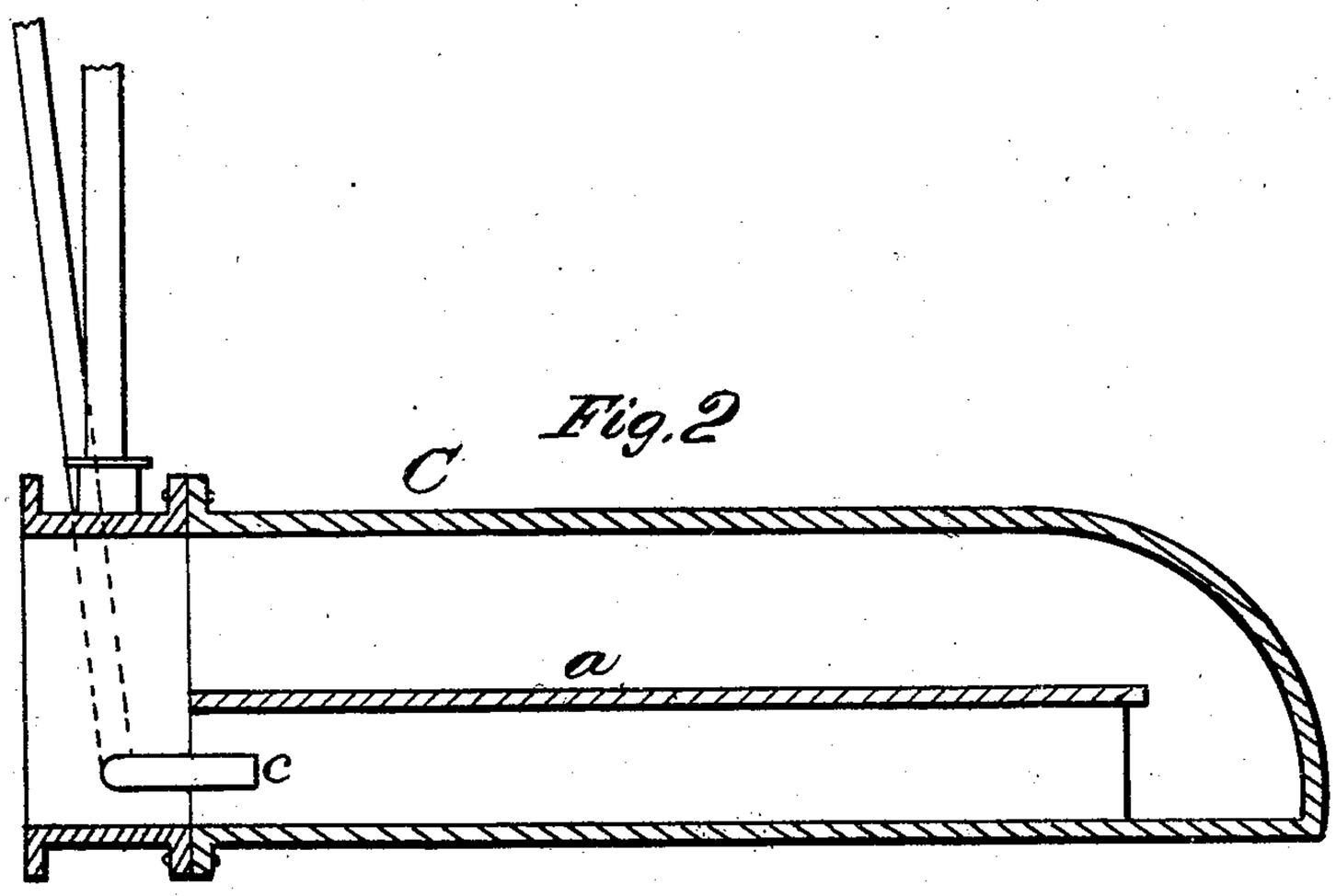
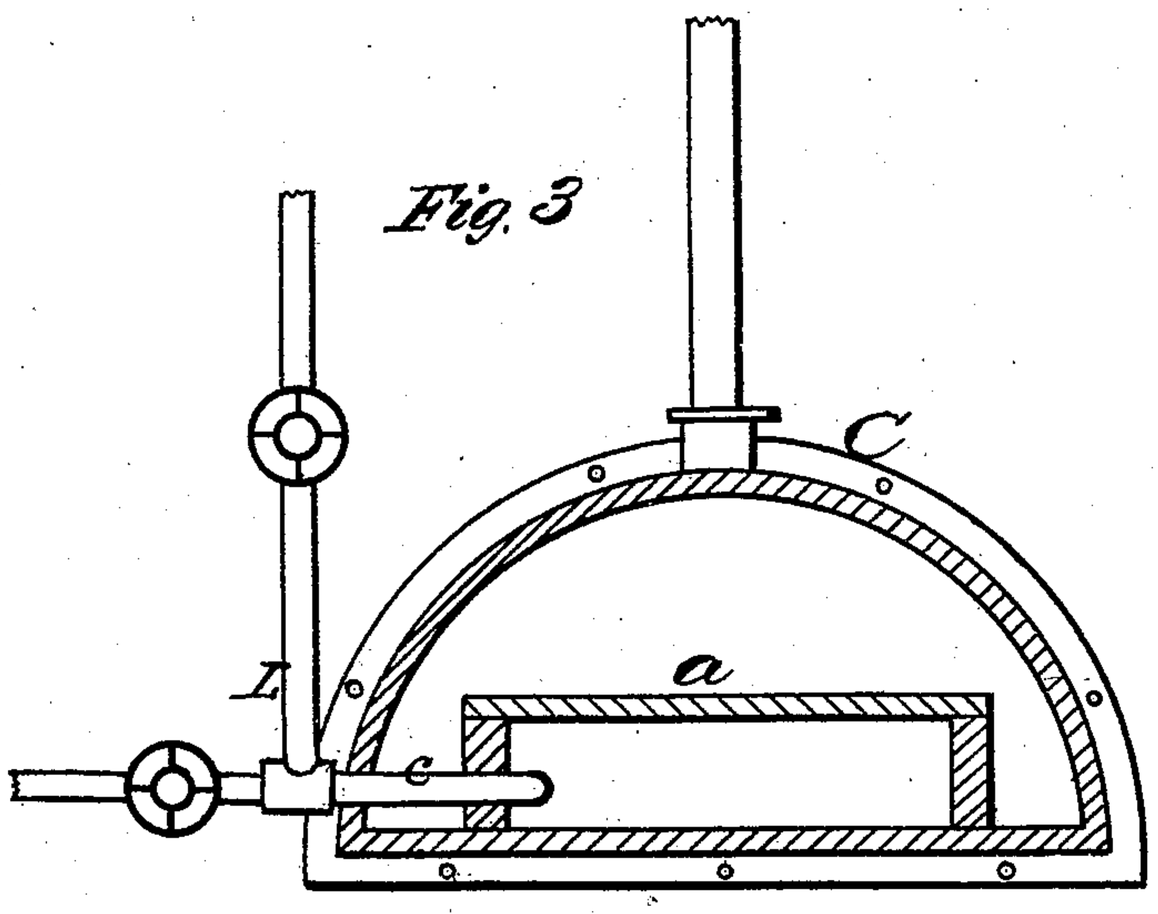


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE OLNEY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN APPARATUS AND PROCESSES FOR THE MANUFACTURE OF HYDROCARBON GAS.

Specification forming part of Letters Patent No. **151,906**, dated June 9, 1874; application filed April 29, 1874.

To all whom it may concern:

Be it known that I, GEORGE OLNEY, of Brooklyn, in the county of Kings and State of New York, have invented a new and valuable Improvement in the Manufacture of Gas; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a front elevation thereof. Fig. 2 is a longitudinal vertical section of the retort. Fig. 3 is a transverse vertical section of the retort.

This invention has relation to the manufacture of illuminating-gas of high candle-power from gas of a low candle-power, derived from the distillation of inferior qualities of coal; and it consists mainly in the introduction of heated carbureted gas, under pressure, into a retort with steam, whereby a highly expanded and enriched compound, which is mechanically mixed, is converted into a chemically-fixed gas of high illuminating power, and at the same time charged with hydrogen derived from the aqueous vapor. It also consists in the introduction of a gas of low candle-power into a carbureter while in a heated state, and in such manner that the liquid hydrocarbon will be subjected to a violent agitation, thereby effecting a perfect combination, and preventing what is termed "stratification and condensation."

I am aware that steam has been mixed with gas, after enriching the same, by passing it through a carbureter, and I do not desire to be understood as making a claim, broadly, to the use of steam in gas-making.

In the annexed drawing, A designates an engine of suitable construction for pumping a gas of low candle-power, and forcing it through the apparatus under any desired pressure. A pipe, B, furnished with suitable cocks conducts the gas from said engine into the front end of a retort, C, which is mounted in a furnace, D. The retort C is constructed with a horizontal partition, *a*, as shown in Figs. 2 and 3, which causes the gas to pass from the front to the rear end of the retort, and then back again to the front end, thus subjecting the gas to a reheating process. E designates a pipe, which leads out of the retort C, and is carried into a carbureter, G, near the upper end thereof, and turned down to a point near the bottom of this vessel G. By this means highly heated and rarefied gas is forced into a liquid hydrocarbon in the vessel G, and caused to violently agitate this liquid. The gas becomes highly charged and enriched by this agitation, and a complete mechanical mixture is obtained, which, owing to the heat, will not condense or form stratums. The heated and enriched gas is conducted from the carbureter into one or more retorts, J, which are arranged in a suitable furnace, K, and constructed with a horizontal partition like to retort C. The drawing represents a bench of retorts, J, with a pipe, *b*, leading from the carbureter, and communicating with them by means of branch pipes C. L designates a pipe leading from a suitable steam-generator, and terminating in the retort in a fine ejecting-nozzle, which is located at or near the point where the gas from the carbureter enters the retort J. The steam thus introduced with the gas into the retort J will flash into its elements oxygen and hydrocarbon, and the latter will be taken up by the carbon, thus increasing the volume of the gas.

The mechanical mixture of gases is reheated or re-treated in the retort J, and converted into a chemically fixed and pure gas of a high illuminating power.

It will be seen that the gas is subjected to pressure and heat from the moment it enters the forcing-engine until it leaves the reheating-retorts J, and that the gas is compelled to move through the apparatus in a regular manner, and to leave the reheating-retorts, thereby preventing the formation of solid carbon in these retorts.

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

The process of manufacturing a permanent fixed gas of high illuminating power, by forcing gas of low candle-power into a heated retort, then carbureting it, and finally reheating the enriched gas with steam, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE OLNEY.

Witnesses:

D. D. KANE,

JNO. D. PATTEN.