2 Sheets--Sheet 1.

W. H. St. JOHN.

Process and Apparatus for the Manufacture of Illuminating-Gas.

No. 161,073. Patented March 23, 1875.

Fig. 1.

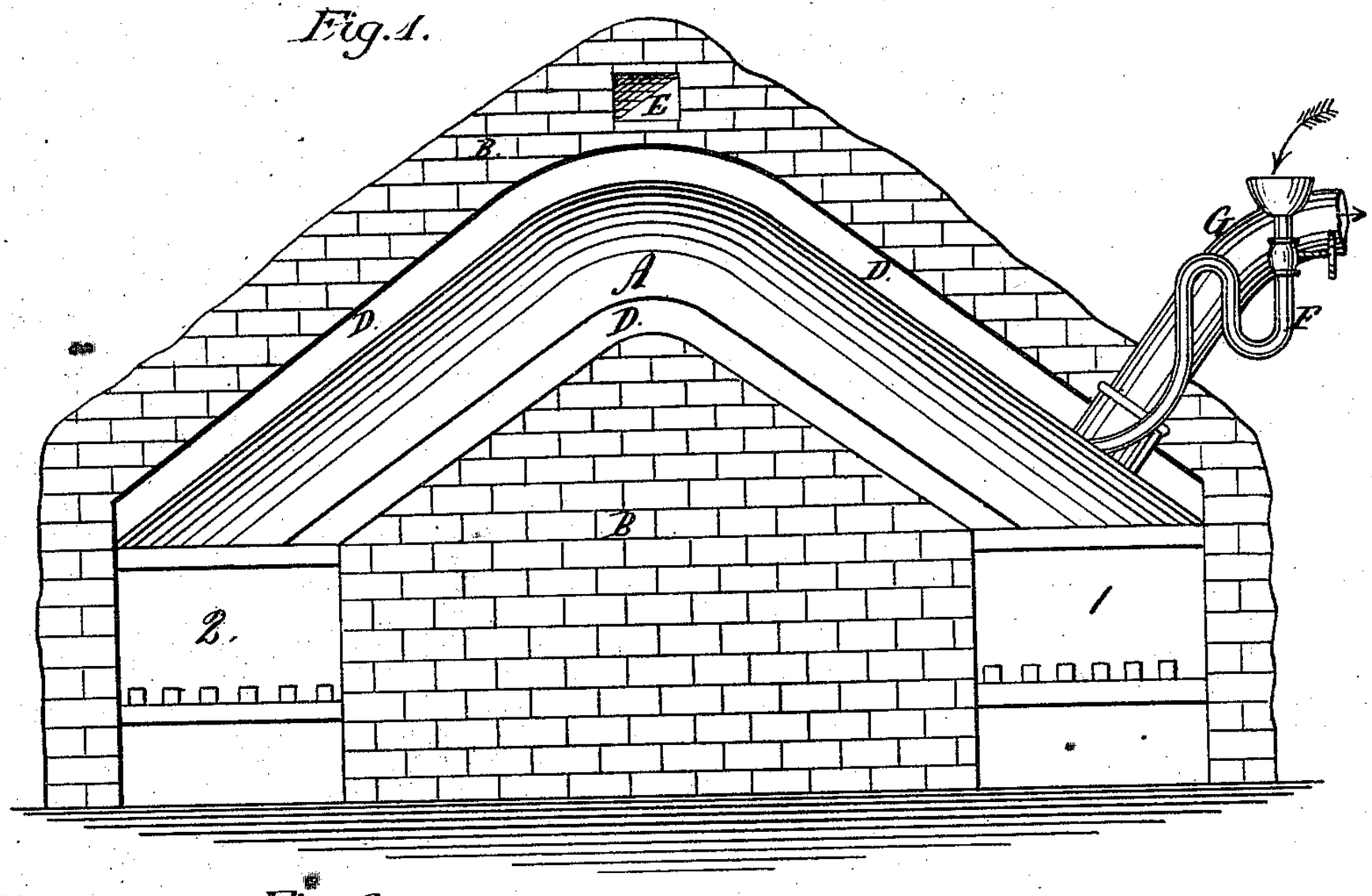
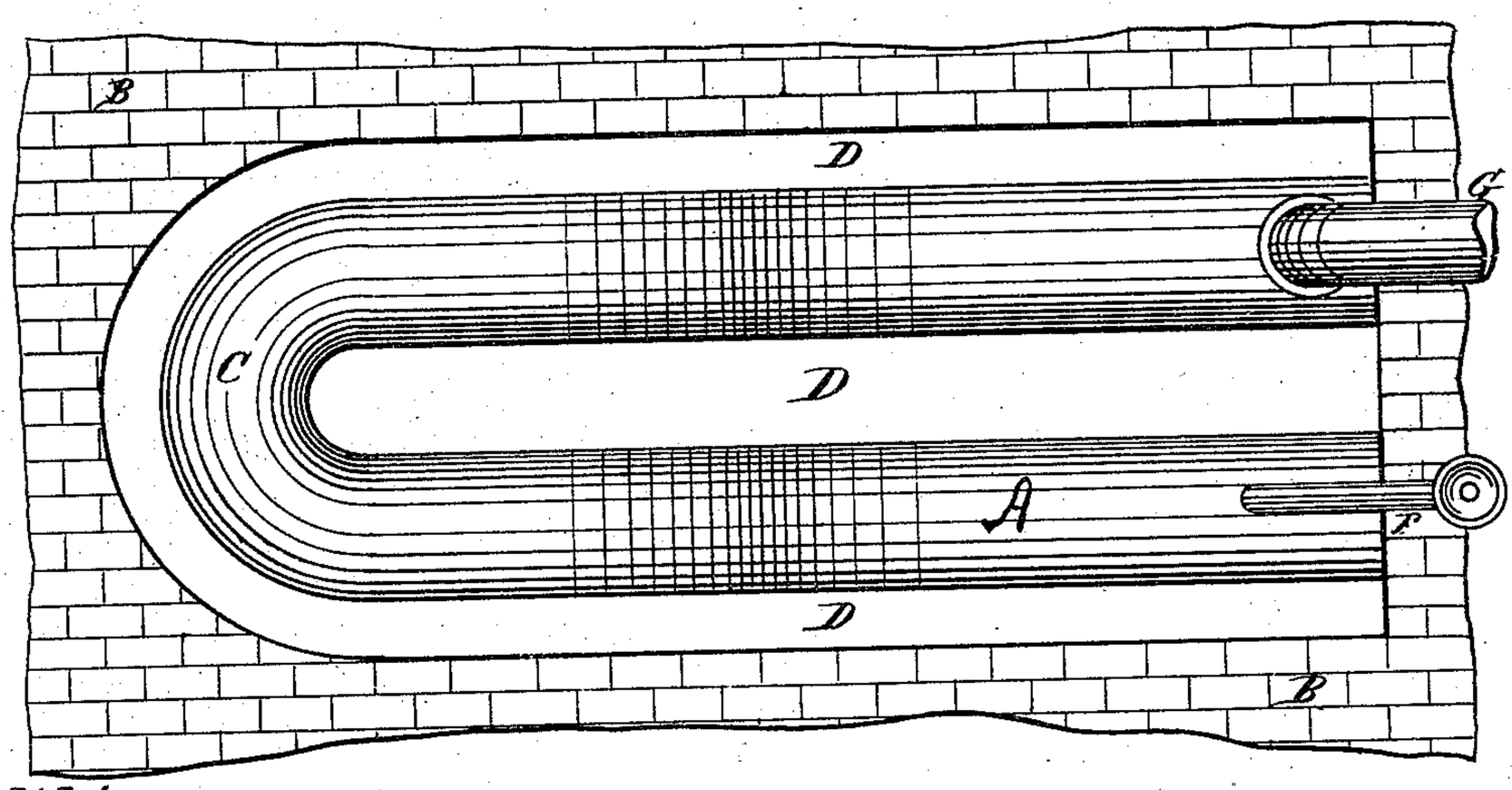


Fig. 2.



Witnesses.

C. W. Smith, Jr.

Frank C. White

Inventor.

Wm. H. St. John

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

W. H. St. JOHN.

Process and Apparatus for the Manufacture of Illuminating-Gas.

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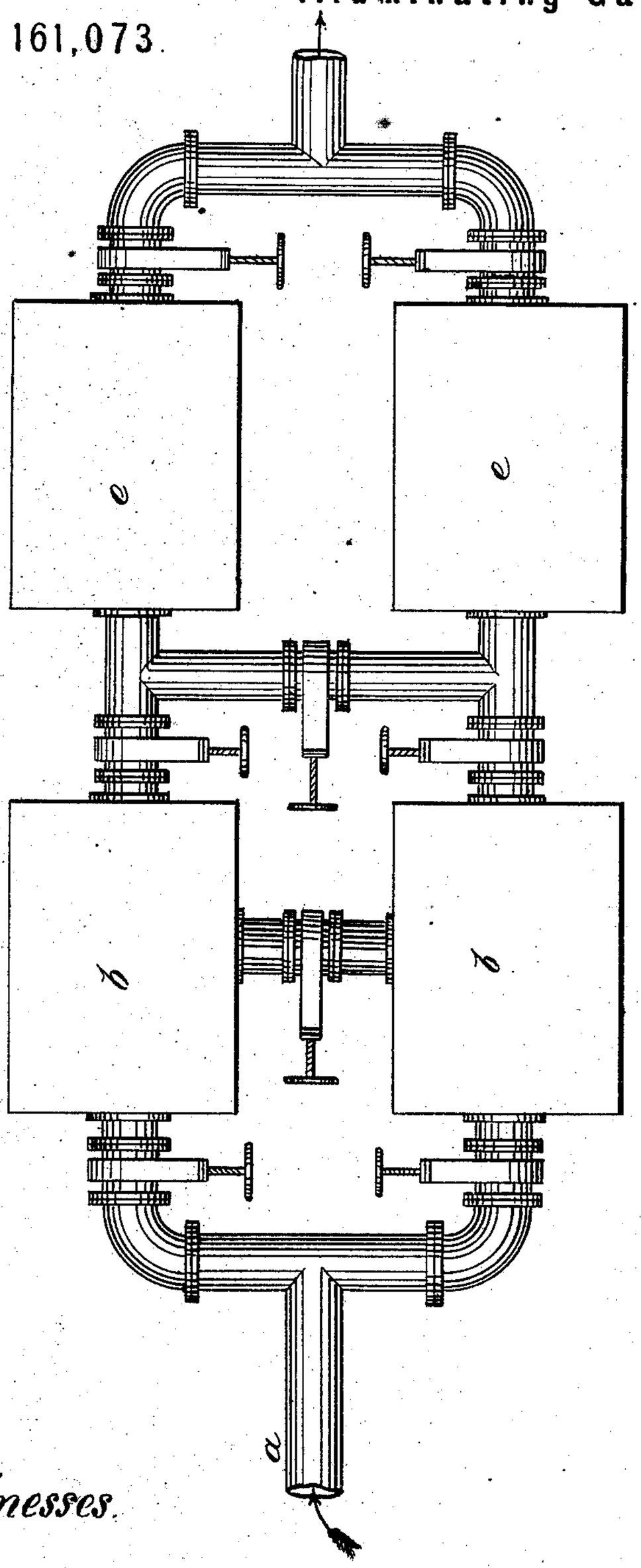

Fig. 3.

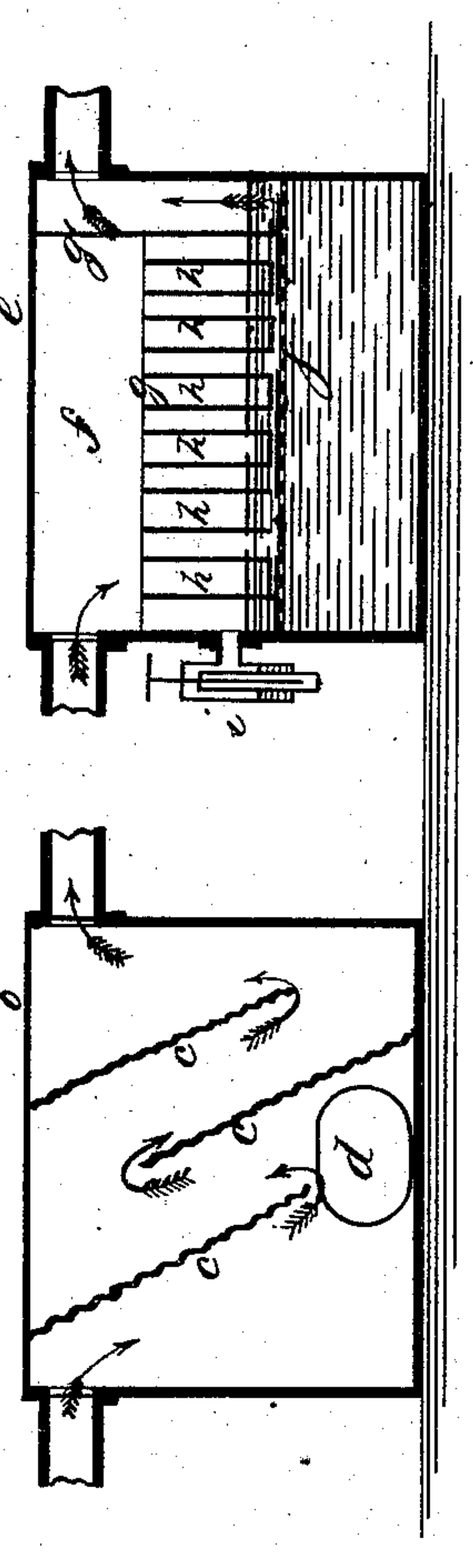

Fig. 4.

Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM H. ST. JOHN, OF NEW YORK, N. Y.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **161,073**, dated March 23, 1875; application filed September 14, 1874.

To all whom it may concern:

Be it known that I, WILLIAM H. ST. JOHN, of the city, county, and State of New York, have invented certain Improvements in Process and Apparatus to be used in the Manufacture of Illuminating-Gas made from petroleum or other oils, of which the following is a specification:

The object of my invention is to construct a retort, A, of any desired shape and size, set upon an angle, as shown in Figure 1, or any other desired angle, arising from the top of the furnace 1 to the center of the brick-work B, thence from that point descending to the top of the furnace 2 on the other side. It is then continued round by the bend C, as shown in Fig. 2, and then rising to the center line of the brick-work B, thence descending to the furnace 1 at the starting-point; said retort being for the purpose of manufacturing illuminating-gas from petroleum or other oils.

This retort is made in sections, and is so constructed that when joined together the surfaces are even, both internally and externally. This retort A is supported by tiles or bearers to hold it firmly in its place, and is also surrounded by flues D, which conduct the heat from the furnaces 1 and 2, in order to secure the requisite temperature to thoroughly vaporize the petroleum, oils, &c.

The necessary draft is regulated by the damper E, shown at the top of the brick-work B, where the excess of heat is allowed to escape, thus giving draft to the furnaces below.

F is an ordinary siphon or pipe, by which the liquids are introduced into the retort A, where they are immediately converted into a vapor or gas; this gas then rises, or is conducted up the retort to the center line of the brick-work B. It then descends to the furnace 2 on the opposite side, thence around the bend C, to the continuation of the retort A, on the opposite side, as shown in Fig. 2. It then rises to the center line, as before, and thence descends to the furnace 1, where it makes its exit through the pipe G. The inlet-pipe or siphon F is surrounded by tile to protect it from the intense action of the heat. The outlet-pipe G is connected with the apparatus shown in Sheet 2, Fig. 3, at *a*, which comprises a series of boxes, *b* and *e*, through which the gas is passed. The pipes and valves are so arranged that the boxes *b* and *e* can be worked separately or collectively, as occasion may require.

Fig. 4 shows the internal arrangement of the two first boxes or chambers *b*, which are furnished with a series of corrugated, plain, or angle plates, *c*, which are so arranged as to give the gas a serpentine course, which furnishes friction to the gas for depositing any excess of carbon; they are also furnished with man-hole plates *d*, in order that thy may be cleaned as occasion may require. After the gas leaves this series of boxes *b* it is then conducted to another series of boxes, *e*, of different construction, as shown in Fig. 5. The gas here enters a compartment, *f*, which is formed by perpendicular and horizontal plates *g g*. The horizontal plate *g* supports any desired number of dip-tubes *h*, which are hermetically sealed in the liquid, which is composed of any material which has an affinity for carbon. This seal produces a reaction upon the retort A, Fig. 1, thereby securing a more perfect decarbonizing or decomposition of the petroleum, oils, &c. The gas, being forced through the seals, rises to the surface of the liquid, and then passes on and mingles with the coal-gas when used in conjunction with this process. The seals in the series of boxes *e* are regulated to any desired depth by the valves *i*. At the bottom of these tubes *h* is placed a screen or gauze-work, *j*, for the purpose of still further dividing the gas, and also securing a still further deposit of excess of carbon. It is by the action of these series of boxes *b* and *e*, as shown in Figs. 3 and 4, that the specific gravity of the gas is reduced, thereby producing it in a more perfect and permanent condition, rendering it less liable to smoke at the burner; it is then mingled with the ordinary coal-gas, when coal-gas is used in connection herewith, and the gases are then conducted to the scrubbers, purifiers, &c., together for their more perfect mixing. The gas is then ready for use.

I do not confine myself to a retort, as shown in Figs. 1 and 2, but consider my invention as covering a series of retorts of any desired shape and size, placed at any desired angle,

so that the vapor or gas ascends and descends alternately, which may take place any number of times to produce the desired results.

I claim as my invention—

1. In the manufacture of illuminating-gas, the process herein described for converting hydrocarbon into gas, consisting of the introduction of the hydrocarbon into a retort or a series of retorts, vaporizing it, and passing it through the retort or retorts, alternately ascending and descending, substantially as set forth.

2. The process herein described for producing an improved illuminating-gas, consisting in first producing oil-gas and coal-gas in separate retorts, then mixing them, and afterward passing them together through the scrubbing and purifying apparatus, as described.

3. A retort for converting hydrocarbon into gas, composed of a portion ascending on one side of the furnace and descending on the other side, and a corresponding portion ascending and again descending, as set forth.

4. The friction-chambers *b*, provided with plates *c*, so as to give the gas a serpentine course, and take out any excess of carbon, as set forth.

5. The combination of the boxes *b* with the boxes *c*, connected by suitable pipes provided with valves, as and for the purposes set forth.

WM. H. ST. JOHN.

Witnesses:
C. W. SMITH, Jr.,
FRANK C. WHITE.