3 Sheets—Sheet 1.

G. OLNEY.

MANUFACTURE OF ILLUMINATING GAS.

No. 176,041. Patented April 11, 1876.

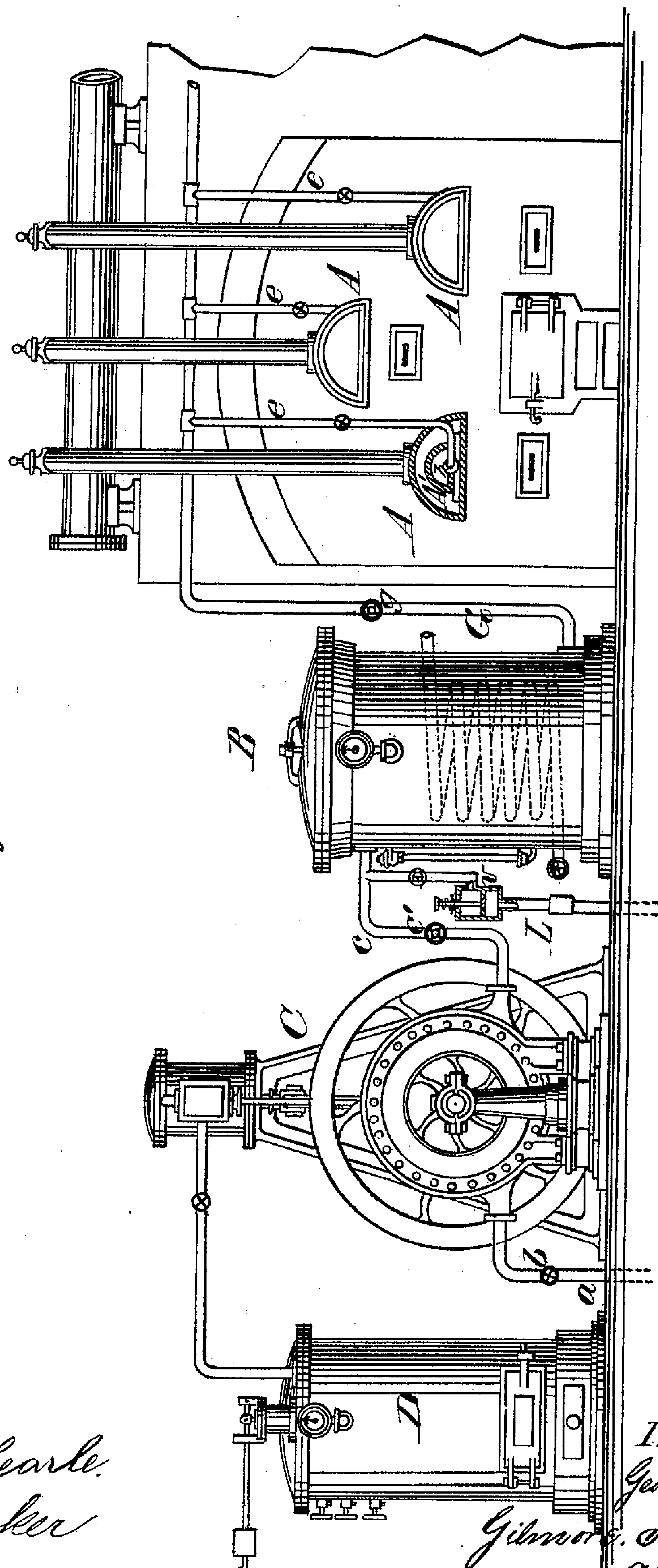

Fig. 1.

Witnesses.
Charles R. Searle.
John F. Acker

Inventor.
George Olney.
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Attorneys.

3 Sheets—Sheet 2.

G. OLNEY.

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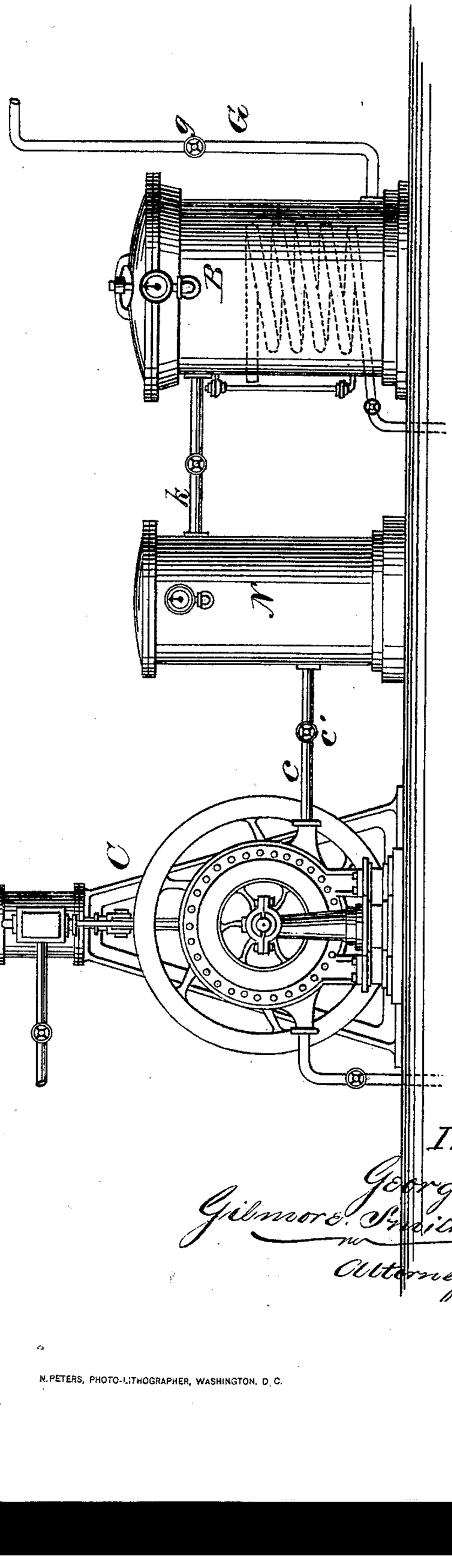

Fig. 2

Witnesses.
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3 Sheets—Sheet 3.

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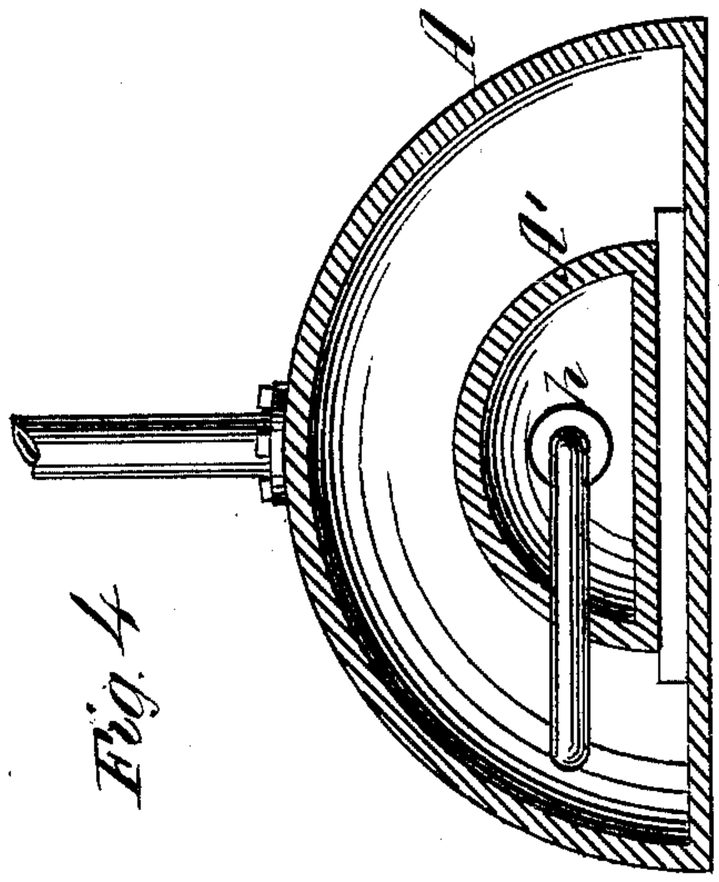

Fig. 4

Fig. 6

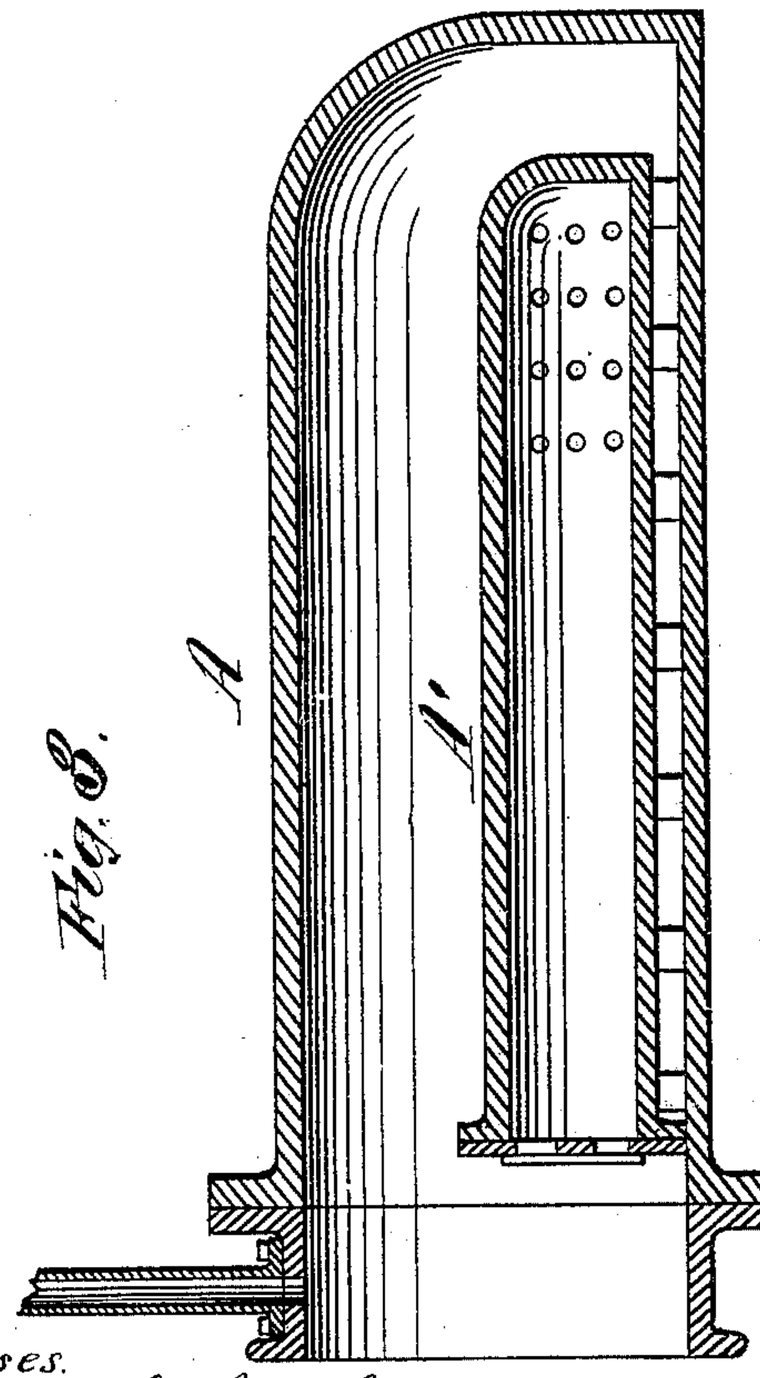

Fig. 3.

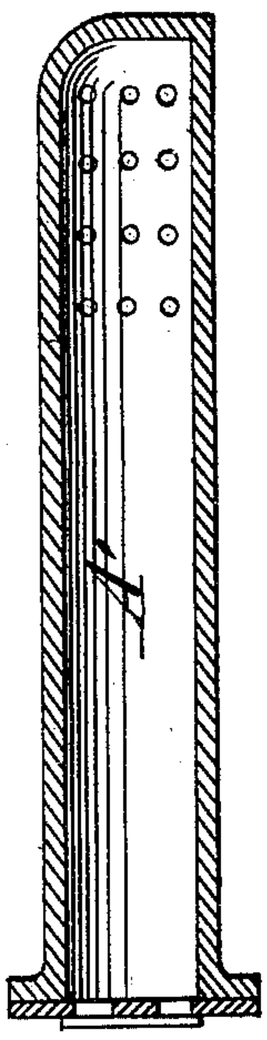

Fig. 5.

Witnesses.
Charles R. Searle.
John F. Acker

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UNITED STATES PATENT OFFICE.

GEORGE OLNEY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **176,041**, dated April 11, 1876; application filed March 4, 1876.

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 Illuminating-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 drawings is a representation of a front elevation of my gas-machine; and Fig. 2 is a side elevation of the same. Figs. 3, 4, 5, and 6 are sectional detail views thereof.

This invention has relation to the manufacture of illuminating-gas from hydrocarbon substances; and the nature of my invention consists in a process of injecting the hydrocarbon in a fine spray into heated retorts by the employment of a forcing-engine, which communicates, by means of a pipe having a check-valve in it, with a receiver for containing the hydrocarbon substance.

In the annexed drawings, Fig. 1, I have represented, in connection with a bank of retorts, A, a reservoir, B, an engine, C, and a steam-boiler, D. The engine C may be constructed in any suitable manner, and when it is used for pumping gas the pipe *a* communicates with a main, and is provided with a cock, *b*. From the engine the gas is forced through a pipe, *c*, provided with a cock, *c'*, into the reservoir B on the surface of the hydrocarbon substance contained therein. This reservoir is sufficiently strong to resist several atmospheres, and it is provided with gages and indicators of pressure. Inside of this reservoir B is a pipe-coil, which receives steam through it for the purpose of liquefying the hydrocarbon substance, should the same be viscid. When the hydrocarbon is fluid the heating-coil may be omitted. A pipe, G, provided with a cock, *g*, leads from the reservoir B over the bank of retorts A, and communicates with the latter by means of branch pipes *e*, which terminate in rose-nozzles *h* inside of the inner retorts A', which latter are thickly perforated at and near their rear ends for the purpose of allowing the escape of gas into the outer retort.

It is intended to maintain a uniform pressure on the surface of the hydrocarbon in the reservoir B—say, for instance, a pressure of twenty-five atmospheres. This will forcibly inject the hydrocarbon into the inner heated retort in a fine spray, which will instantly flash into a fixed gas without leaving any undue amount of soot in the retorts.

In the event of an overplus of pressure in the reservoir B, a branch pipe, L, leading from the pipe *c*, will conduct the gas back into the main. This escape of gas is automatically regulated by means of a valve, *v*, which is applied to the pipe L, and provided with an adjusting-screw or its equivalent, by means of which the pressure in the reservoir can be regulated. Should the pressure exceed a given amount the valve *v* will open.

When air is used instead of gas I may exhaust into the air. Fig. 2 shows, in addition to the reservoir B, a receiver, N, into which any desired quantity of air or gas may be forced. From this receiver the air or gas is admitted into the reservoir B through a pipe, *k*, provided with a regulating-cock. By this arrangement the receiver can be charged with any desired atmospheric pressure, and the engine stopped or used for other purposes.

It will be seen from the above description that I forcibly inject the hydrocarbon fluid into the heated retorts by a pressure of air or gas acting upon the surface of such material in the reservoir B, and that the pressure is made uniform automatically, so that the amount of the material injected into the retorts is just equal to the capacity of the retorts to convert it into a fixed gas without loss.

In carrying my invention into practical effect it is essential that the hydrocarbon be introduced into the retorts in a highly attenuated state under pressure—that is to say, the nearer it can be brought to a vapor or mist on entering the heated retorts the better will be the result, and the greater will be the economy of material. This I effectually accomplish by my improved process.

By using the heating-coil in the reservoir I am able to use any of the thick hydrocarbons which are soluble by heat.

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

1. The process of manufacturing illuminating-gas, which consists in injecting hydrocarbon in fine spray into a heated retort by pressure of air or gas automatically regulated upon the hydrocarbon in the reservoir, substantially as described, and for the purpose set forth.

2. The combination, with a heated retort, of a forcing-engine, a pipe with an automatic check-valve, and a hydrocarbon-reservoir, substantially as and for the purposes set forth.

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

GEORGE OLNEY.

Witnesses:

EUGENE W. JOHNSON,

JOS. B. LOOMIS.