

(No Model.)

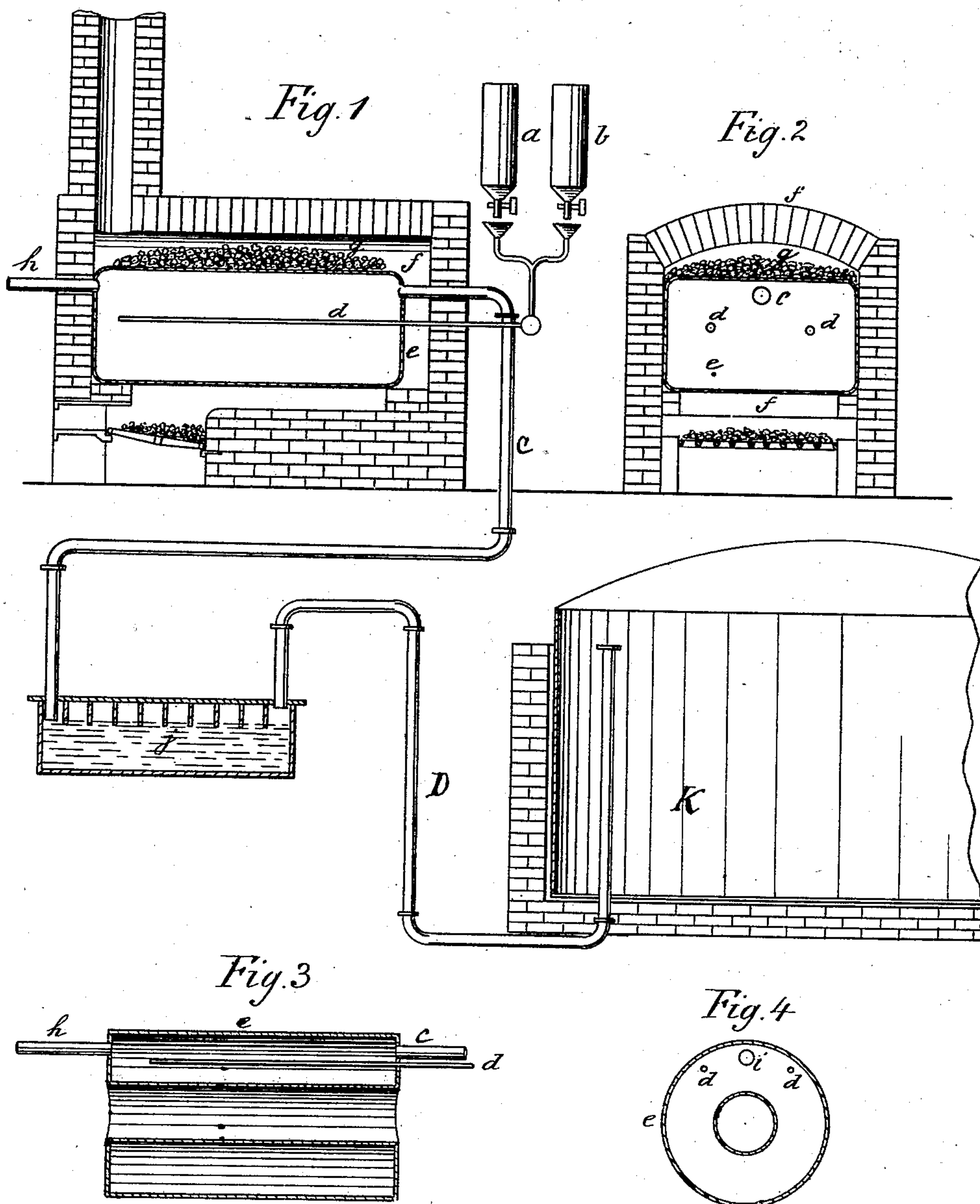
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A. P. CHAMBERLAIN.

APPARATUS FOR THE MANUFACTURE OF GAS FOR ILLUMINATING AND
HEATING PURPOSES.

No. 278,093.

Patented May 22, 1883.



WITNESSES:

Wm. A. Lowe
Amos Woodruff

INVENTOR

A. P. Chamberlain

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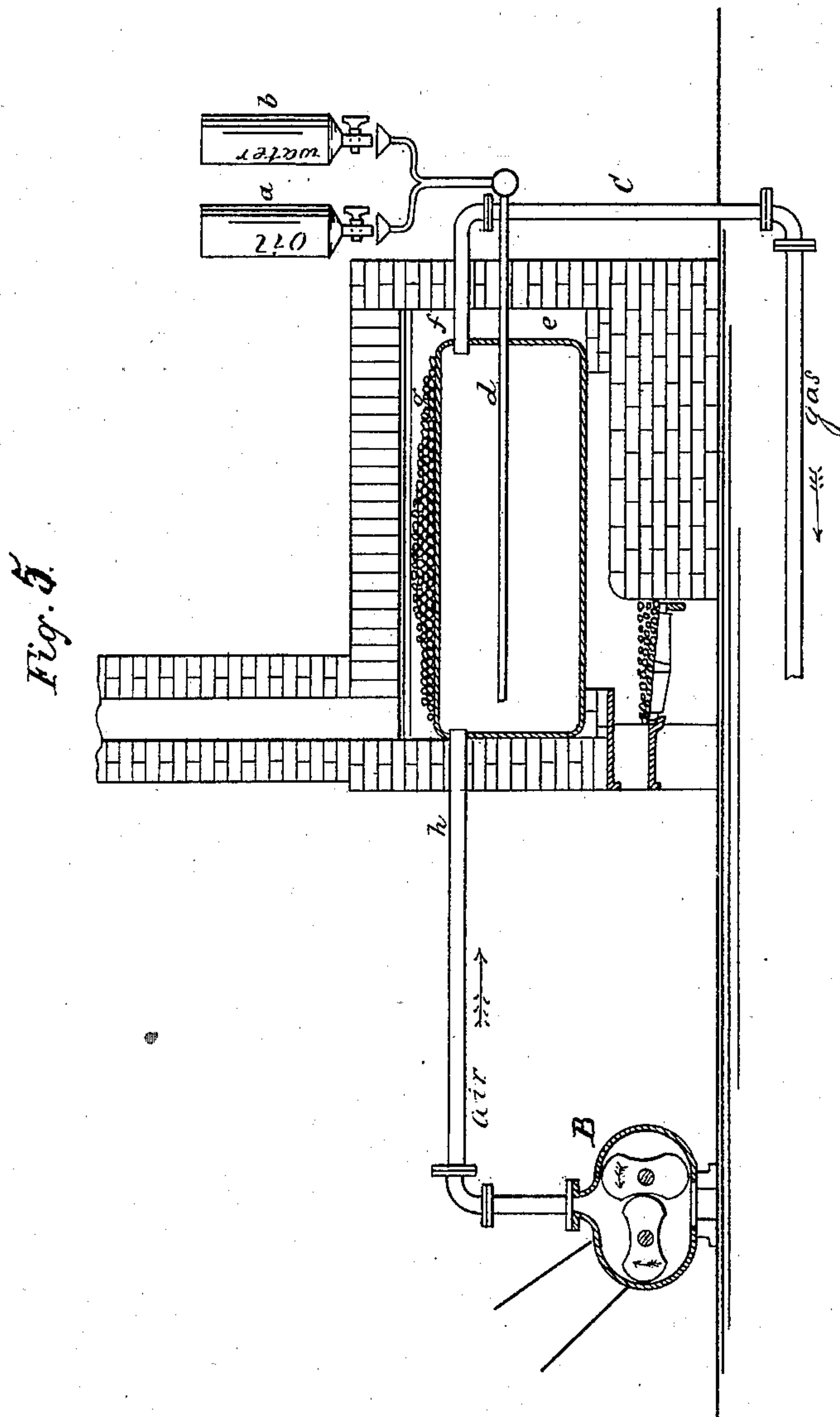
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Wm. A. Broadhead
Jno. H. Judge

Inventor.

Amos Chamberlain
By his Atty
Amos Broadhead

UNITED STATES PATENT OFFICE.

AMOS P. CHAMBERLAIN, OF LONDON, ENGLAND.

APPARATUS FOR THE MANUFACTURE OF GAS FOR ILLUMINATING AND HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 278,093, dated May 22, 1883.

Application filed October 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, AMOS PIERCE CHAMBERLAIN, a citizen of the United States, and residing temporarily at London, England, have
5 invented new and useful Improvements in Apparatus for the Manufacture of Gas for Illuminating, Heating, and other Purposes, of which the following is a specification.

My invention consists of an improved apparatus for the economical manufacture of a rich
10 fixed gas for illuminating, heating, and other purposes, by converting hydrocarbon oil and water into gas, and combining therewith a given proportion of atmospheric air.

15 The construction and operation of my improved apparatus will be understood from the following description, the points of novelty being pointed out in the claim concluding this specification, reference being had to the drawings.
20

Figure 1 is a longitudinal sectional elevation of one form of retort, together with the washing apparatus and the receiver. Fig. 2 is a transverse section of the furnace and retort shown in Fig. 1. Fig. 3 is a longitudinal
25 section of a retort of circular form, with a return-flue for the heat to return through it instead of over the top, as in the arrangement shown in Fig. 1. Fig. 4 is a transverse section of a retort shown in Fig. 3. Fig. 5 is a
30 vertical longitudinal section through the retort and an air-forcing apparatus, B, by which a stream of air is supplied to the retort with the oil and water.

35 My improved apparatus consists of one or more retorts, *c*, inclosed in a brick chamber, and having a flue under, behind, and above it, as shown in Fig. 1 of the drawings, the furnace being made under the retort, as indicated, and the top flue being charged with
40 coal or coke, as shown. The fire, being kindled in the furnace under the retort, passes back around its rear end and returns through the top flue upon the coal or coke placed upon the top of the retort, igniting it and forming
45 a hot live fire upon the top, as well as under the bottom of the retort. In combination with said retort are arranged two reservoirs, *a* and *b*, one to contain oil and the other to contain
50 water, and each of them to be fitted with suitable cocks or valves to regulate the flow of oil and water. In combination with each of these

reservoirs is a branch pipe, each of which is fitted with a funnel-shaped top, into which the oil and water are delivered from the reservoirs. These branch pipes unite into a pipe
55 common to them both, into which the oil and water intermix on their way to the retort through the pipe *d*. In the front end of the retort an air-pipe, *h*, is led, which pipe is connected to any suitable air-forcing apparatus,
60 B. In the rear end of the retort a gas-delivering pipe, C, is introduced, by which the gas as it is generated escapes from the retort to the washing-reservoir *j*. From thence the gas
65 passes through pipe D into the gas-holder K.

By Figs. 3 and 4 are shown a modified form of the retort. In this case the retort is made cylindrical, having the return-flue through its center instead of over its top, as in Figs. 1
70 and 2.

The operation of my apparatus is as follows: I lead the oil and water from the separate reservoirs in certain fixed proportions through the branch pipes to the pipe *d*, common to
75 both reservoirs, the oil mixing with the water as it unites from the branch pipes into the pipe *d*. From this pipe the water and oil together are delivered into the retort in the form of a spray, and at the same time a stream of air is
80 delivered into the retort through the pipe *h*, which last-mentioned pipe connects the retort to an ordinary "Root Blower," B, or any suitable air-forcing apparatus, by which air is supplied to the retort as required. The gas formed
85 by the decomposition of the water, oil, and air under the influence of the heated retort is led away into the washing-reservoir, and thence into the gas-holder, as before described. The product thus obtained is a very rich fixed
90 gas of equal condition and unvarying quality throughout, and which can be stored for any length of time without deterioration.

In the practice of my invention I use about the following proportions of oil, air, and water, assuming the ordinary standard white petroleum to be used in the operation—that is to
95 say, eighty per cent. of oil and twenty per cent. of water, and air, in the proportions of about three (3) feet of air to one of the gas made from
100 the above proportions of oil and water; but these proportions vary greatly, depending upon what the gas is to be used for, the richness of the oil and various other conditions entering

into the manufacturing and use of the gas; but the best proportions for the varying conditions will be quickly ascertained by a little experience of the person in charge of its manufacture.

By a modification of the above process I cause a separate conversion into gas of the combined oil and water and of the intermixed atmospheric air with the gases thus formed, preferably before, but it may be after, the combined gases have passed through the water.

I can use the above-described improved gas in combination with ordinary coal-gas, which is greatly enriched and improved thereby.

In the foregoing specification I have referred to the ordinary Root blower as the air-supplying apparatus connected to the retort; but I do not claim that or any other particular form of air-forcing apparatus. I have merely suggested the Root blower as one well adapted for the purpose I have mentioned.

Having thus described my invention, what I

claim, and desire to secure by Letters Patent, is—

The means substantially herein described for manufacturing illuminating-gas from hydrocarbon oil, water, and air, which means consist of separate reservoirs, (*a* and *b*,) to contain the oil and water, respectively, each of said reservoirs having cocks or valves to regulate the flow of the oil and water, and each of them having a delivery-pipe uniting into a pipe (*d*) common to them both, in which the oil and water are intermixed, said pipes and reservoirs being combined with a heated retort, an air-forcing apparatus and pipe, (*B* and *h*,) and a gas-delivering pipe, substantially as described.

In witness whereof I have hereunto signed my name in presence of two subscribing witnesses.

A. P. CHAMBERLAIN.

Witnesses:

JNO. H. JUDGE,
AMOS BROADNAX.