

C. DEAVS.

Gas Retort.

No. 66,004.

Patented June 25, 1867

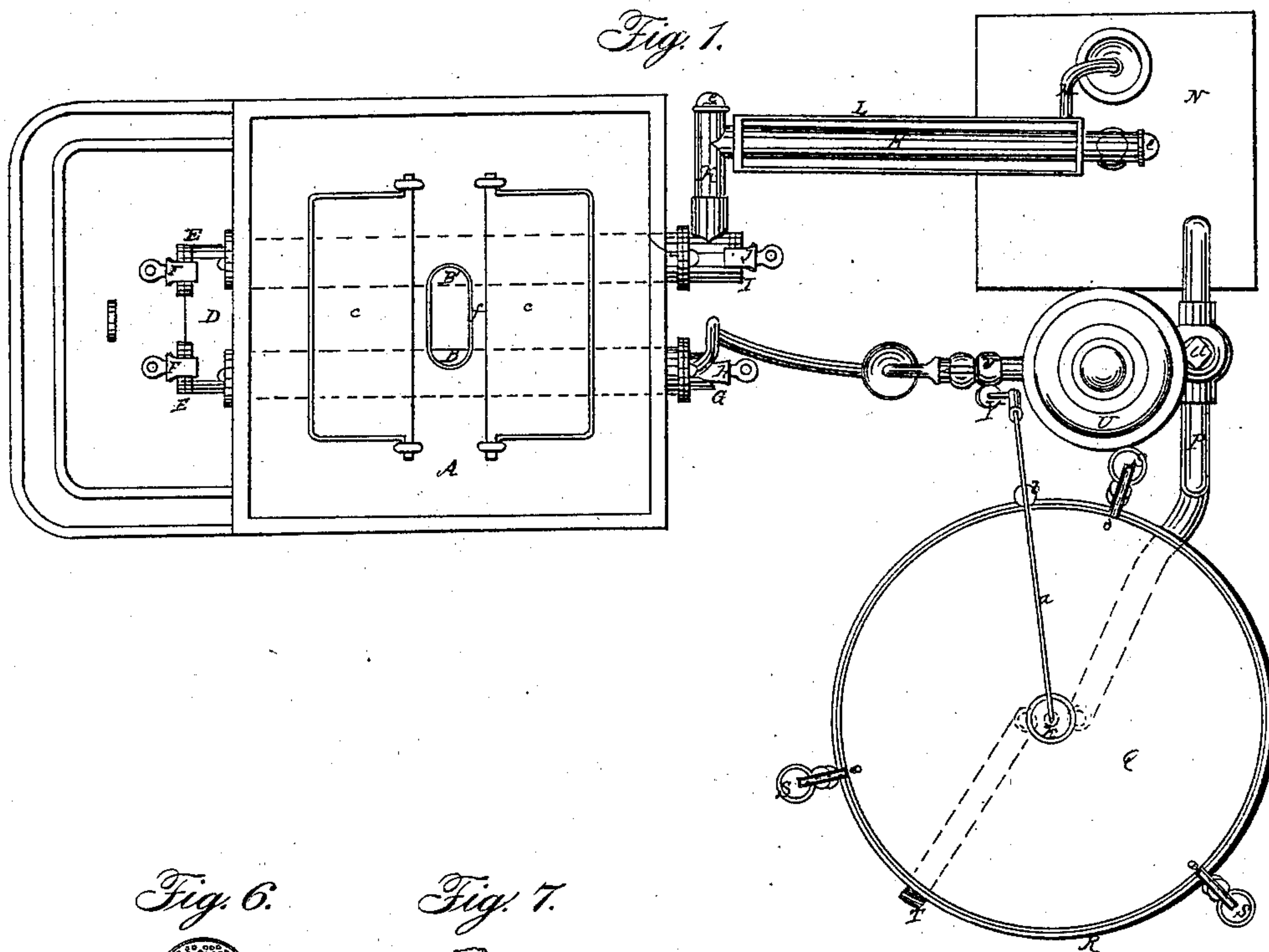


Fig. 6.

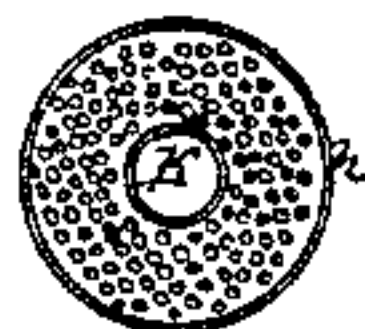


Fig. 7.

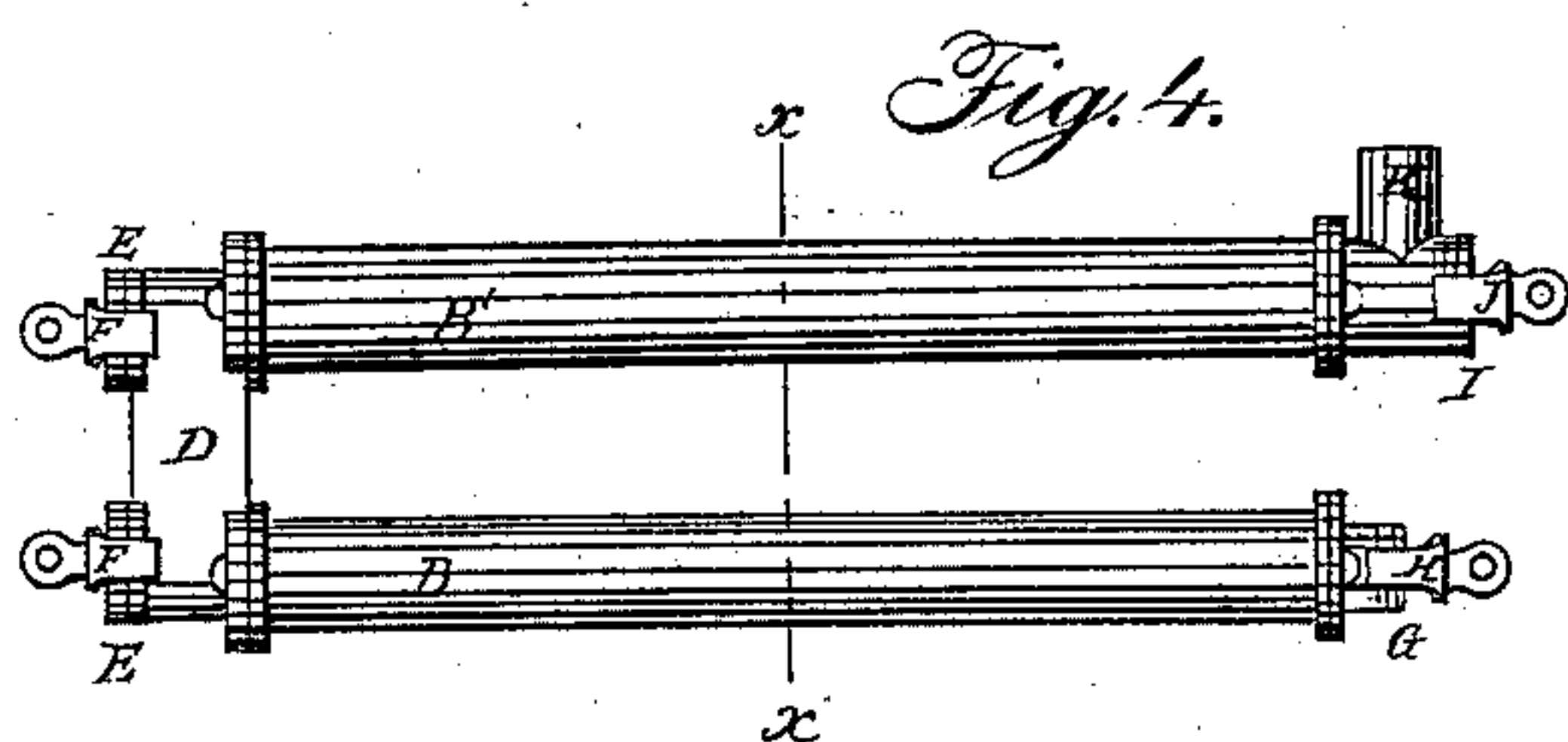
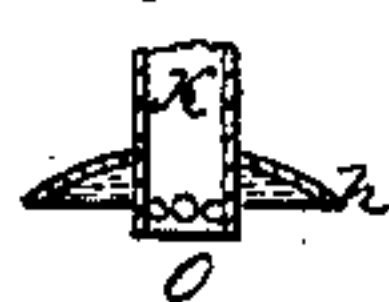
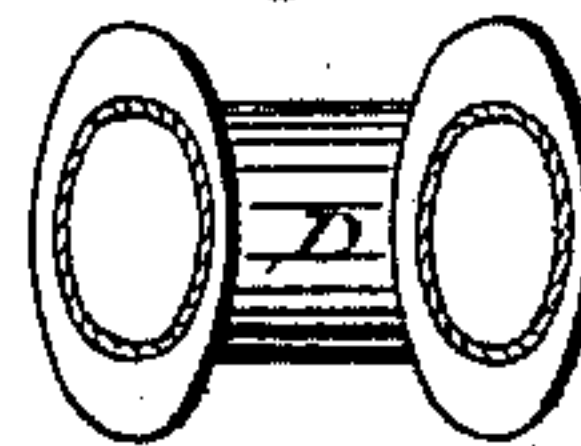


Fig. 5.



Witnesses:

W. W. Humphreys

Inventor:

Charles Deavs
By *Howe & Weston*
Attys

C. DEAVS.

2 Sheets—Sheet 2.

Gas Retort.

No. 66,004.

Patented June 25, 1867.

Fig. 2.

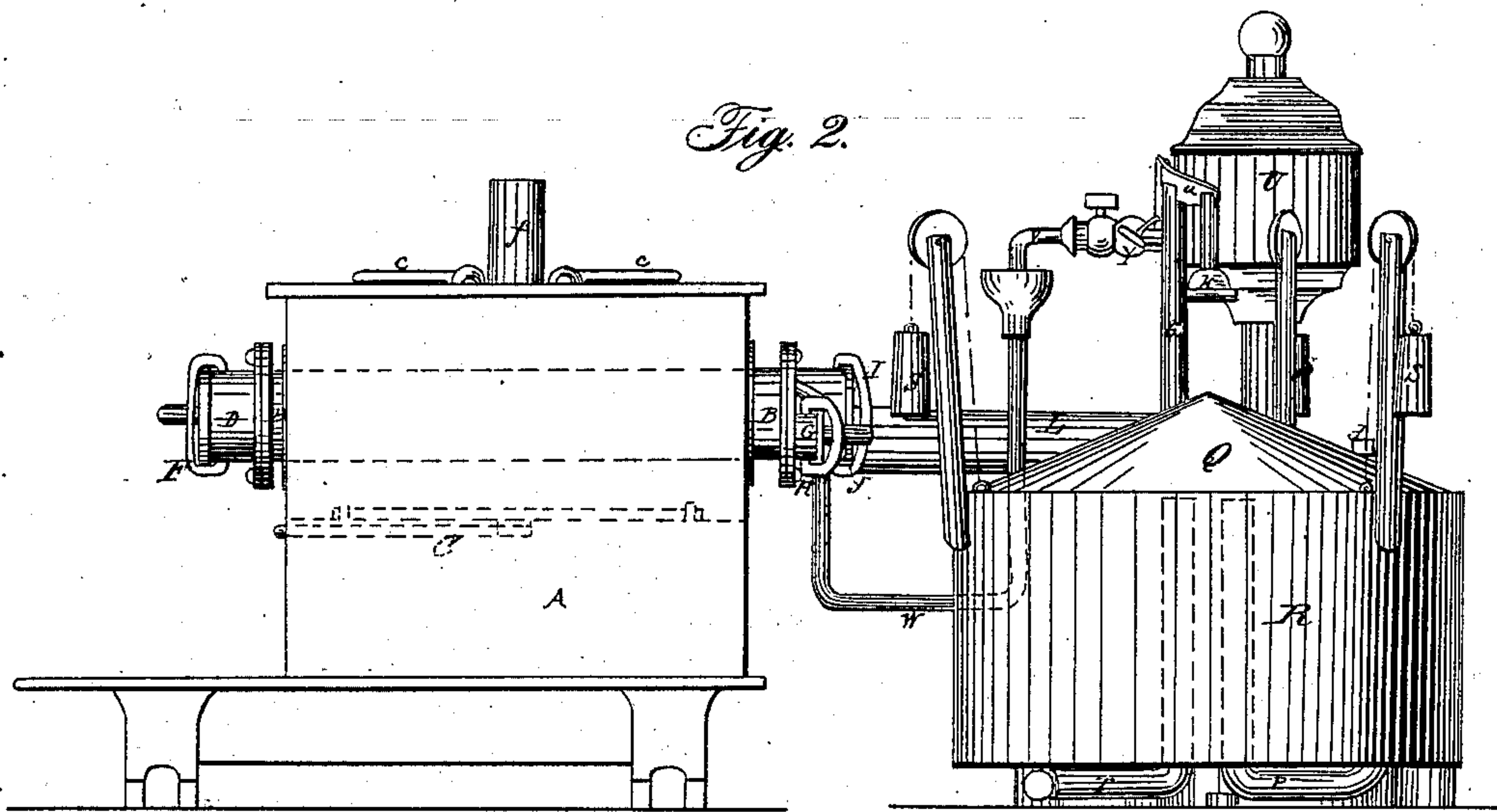
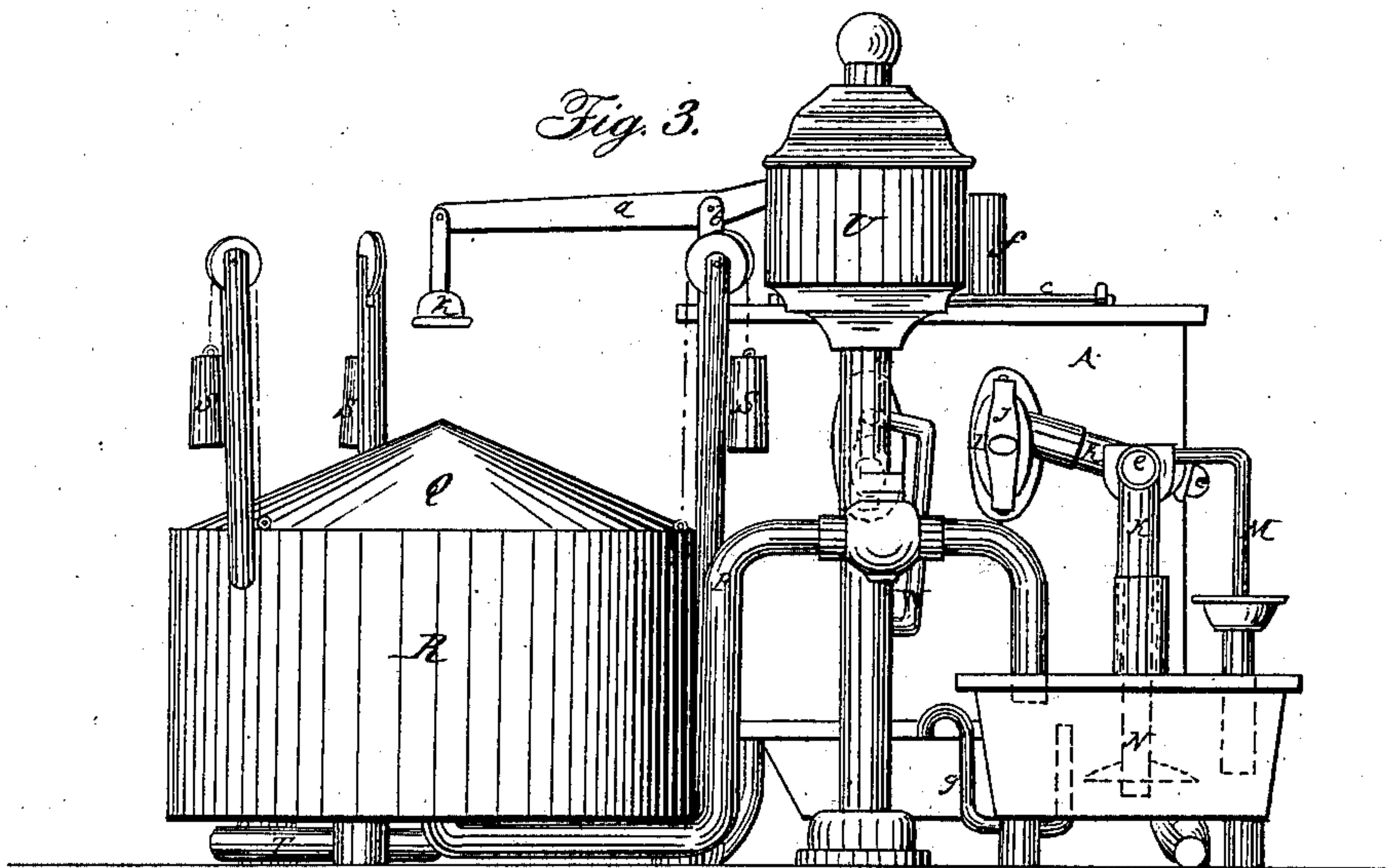


Fig. 3.



Witnesses:

A. Wickham Shore

Inventor:

Charles Deavs
By How & Weston
Atty.

United States Patent Office.

CHARLES DEAVS, OF NEW YORK, N. Y.

Letters Patent No. 66,004, dated June 25, 1867.

IMPROVED GAS APPARATUS.

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, CHARLES DEAVS, of the city, county, and State of New York, have invented certain new and useful improvements in Gas Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of a pair or pairs of retorts, for making gas from oil, made of the same form above and below the centre, so that they may be reversed when the lower side has become burned out, in order to present a fresh surface to the fire, and set in a furnace of suitable construction, the grate of said furnace being from one to three inches below the bottom of said retorts, so that when in operation the retorts shall be wholly or in part buried in the fuel with which the fire-box of said furnace is filled; and being connected together in pairs at one end by a suitable connection or coupling, said connection or coupling being furnished with lids or covers which are removable, whereby I am enabled to clean the said retorts when necessary. It also consists of the combination, with said retorts, of a trough or cooler, through which the conductor which is attached to the second retort passes, and the water from which supplies the wash-box. Also, of the combination, with the discharge end of said conductor, which is immersed in said wash-box, of a sieve or perforated concavo-convex disk, through the perforations or interstices of which the gas must pass before rising through the water in the wash-box, whereby the gas is divided into very small globules, and thus becomes more thoroughly washed than it would be if this disk were not used. The lower end of the said conductor pipe may also be perforated in the manner which has been heretofore practised in some instances. Also, of the combination, with the gas-holder and the supply pipe from the oil-reservoir, of a cut-off, operated by the said gas-holder as it rises, when sufficient gas has been manufactured, to cut off the supply of oil.

By using two or more retorts, and connecting them together in pairs as described, the gas is made more rapidly, and consequently cheaper, than it would be if retorts of the same size were used, and the material were passed through but one retort. In that case the oil, as it entered the retort, would cool it so much that either a greater quantity of fuel must be used to produce the desired quality of gas, or the gas would not be so good, while by introducing the oil into one retort, where it becomes volatilized, (which may be done at a lower temperature than that required for producing a first-rate quality of gas,) and then returning it through another retort, which is kept at a higher temperature in the same fire, because the oil does not enter it in sufficient quantity to cool it to the extent it does the first one, a greater quantity of gas, and a better quality, is made with a given quantity of fuel. By forming these retorts in such a manner that they may be easily reversed when one side burns out they are made to last much longer, and consequently the gas is made still cheaper. A greater amount of exterior fire surface is also obtained by this construction than has hitherto been secured with a furnace of the size used by me, as it would require too long a furnace to be practicable for the purpose for which this is intended were the retorts sufficiently long to accomplish the desired result; besides, it would take more fuel in proportion to the amount of heating surface kept at a given temperature, unless the furnace were made too large to be practicable.

It has for its object the production of a cheap illuminating gas, which requires but little skill in the manufacture, the apparatus being so simple as to be readily adaptable to the use of private houses, hotels, boarding-houses, manufactories, &c. In the accompanying drawings—

Figure 1 is a plan of my apparatus complete.

Figure 2 is a side elevation of the same.

Figure 3 is a rear elevation of the same.

Figure 4 is a plan view, in detail, of the retorts and immediate connections.

Figure 5 is a section, in detail, of the retorts.

Figure 6 is an under side view of the discharge end of the conductor pipe.

Figure 7 is a section, in detail, of the same.

A is the furnace, in which the retorts B B' are set. The retorts are connected to each other at one end by the short pipe or connection D, which has lids or covers E E secured by yokes F F. The opposite end of the retort B is also furnished with a lid, G, and yoke H, for an aid in cleaning the retort B. The corresponding

end of the retort B' is also furnished with a cover or lid, I, secured by a yoke, J. To this end of the retort B' is attached one end of the conductor pipe K. The conductor pipe K is immersed in a trough, L, which is supplied with cold water from any suitable source, the excess or waste being drawn off, by the small pipe M, into the wash-box N, and supplying said wash-box with the necessary water. Thus the water in the trough L is kept cool, and that in the wash-box kept sufficiently pure, by a constant fresh supply. The conductor K terminates beneath the surface of the water in the wash-box in the form shown in figs. 6 and 7. The lower end of said conductor pipe K is perforated, as seen at O in fig. 7; and immediately above these perforations a concavo-convex disk, h, of perforated metal or wire cloth is secured around the conductor with the concave side downward, so that the gas, as it rises to the surface after passing out of the conductor, must pass through this disk, and become minutely divided up, and thus be thoroughly washed. P is the pipe which conveys the gas, after it is washed, from the wash-box to the holder Q. This gas-holder is made in the ordinary manner. It is set in the cistern R, and counterbalanced by weights S. T is the main pipe, by which the gas is fed from the holder Q to the supply pipes. U is the oil-reservoir, which contains the supply of oil for the retorts. The oil is fed through the pipe V into the siphon W, which feeds it to the retort B. The pipe V is supplied with a cut-off, Y, which is worked by the rising of the holder Q. The said holder as it rises strikes the weight attached to the lever a, which works in the rod or support b as a fulcrum; and the opposite end operates the cut-off, and cuts off the supply of oil so soon as the holder Q is filled with gas. c c are damper-lids, which are for the purpose of regulating the draught. The grate on which the fire rests is shown in dotted lines at C. The pipe P is supplied with a stop-cock, d, by which the gas may be prevented from flowing back when the retorts are cooled, or when it is necessary to open any of the other connections. The conductor K has caps e at each bend, by the removal of which the said conductor may be cleaned. f is the flue for carrying off the products of combustion from the furnace A. g is a siphon for carrying off the surplus water from the wash-box, and the products of condensation which float on its surface. For this purpose the inner end of said siphon is put at the height at which it is intended to keep the water. There are usually two of these siphons, both discharging at the same side of the wash-box. They may be enclosed in glass to prevent the air becoming unpleasantly affected by the odor of the matters condensed in the wash-box and discharged through said siphons.

In operating my machine or apparatus the reservoir U is first filled with oil; and, a fire having been kindled, the furnace A is filled with coal to a sufficient height to cover the retorts, and the coal brought to a cherry red, and the covers c shut down. So soon as the retorts are sufficiently heated, the stop-cock in the pipe V is opened, thus feeding the oil to the retort B. Here it is volatilized, after which it passes, by means of the connection D, to the retort B', where it is still further heated, and the gas entirely disengaged. It then passes through the conductor K to the wash-box, being sufficiently cooled on its way by passing through that part of the conductor which is immersed in the trough L. As it issues from the conductor it rises against the disk or sieve h, which breaks it into very fine globules, and thus brings it thoroughly in contact with the water, by which it is perfectly washed. From the wash-box the gas passes through the pipe P into the holder Q, which rises as it becomes filled, until it has received nearly as much as is desired, when it comes in contact with the weight k and lifts it, and thus, by means of the lever a and cut-off Y, cuts off the supply of oil, and checks the manufacture of the gas. When the gas is used out of the holder it gradually sinks, until it allows the stop-cock Y to be opened by the weight k, when the manufacture of the gas is resumed.

Having thus fully described my invention, I claim—

1. The use of two or more retorts connected together in pairs, so that the first shall volatilize the oil or oily substance, and the second shall complete the conversion thereof into a fixed gas, suitable for illuminating purposes, the said retorts being constructed and arranged substantially as and for the purpose hereinabove set forth.

2. The combination, with the conductor pipe K, of a cooling-trough, L, the water from which supplies the wash-box, substantially as and for the purpose set forth.

3. The combination, with the discharge end of the conductor pipe K, of a perforated or reticulated disk, h, substantially as and for the purpose set forth.

4. The combination, with the oil-reservoir U and retorts B B', of a cut-off, Y, constructed and operated substantially as herein described.

CHARLES DEAVS.

Witnesses:

ELLIS S. ARCHER,
THOS. B. HOW.