D. L. MacNEILL.

Retort for the Manufacture of Illuminating Gas.

No. 160,740. Patented March 9, 1875.

FIG. 1.

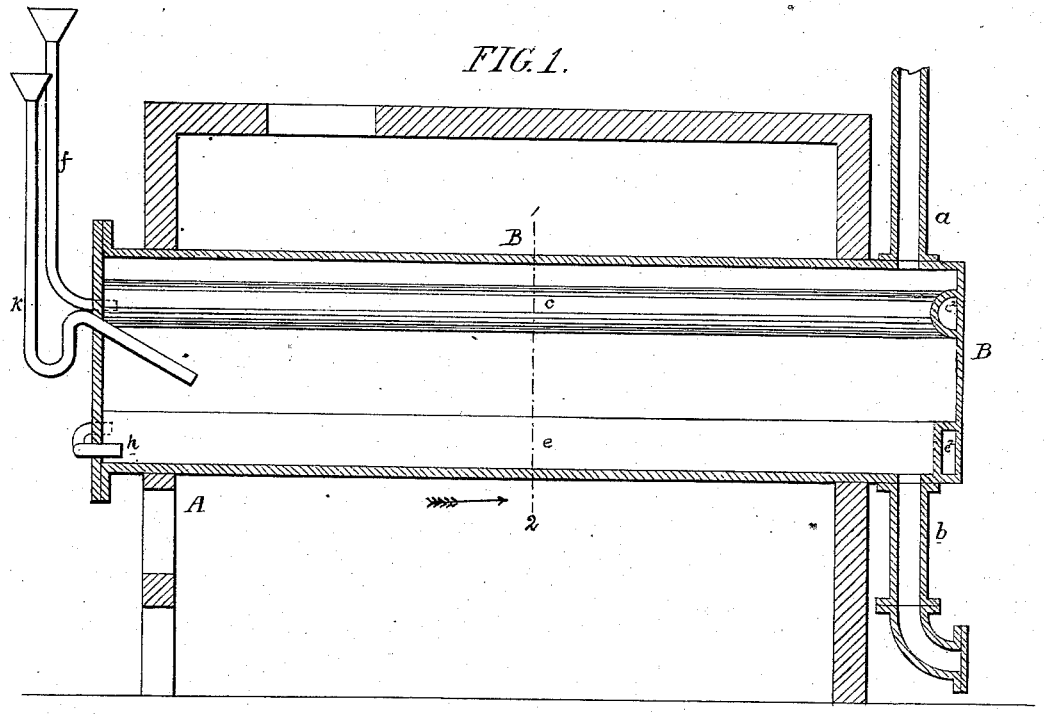


FIG. 3.

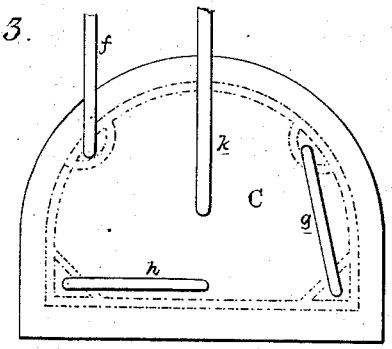
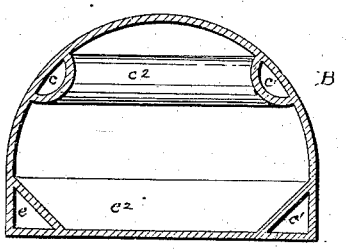


FIG. 2.



Witnesses:
Charles E. Foster
James R. Skidmore

D. L. MacNeill
By his attys.
Howson & Sons

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

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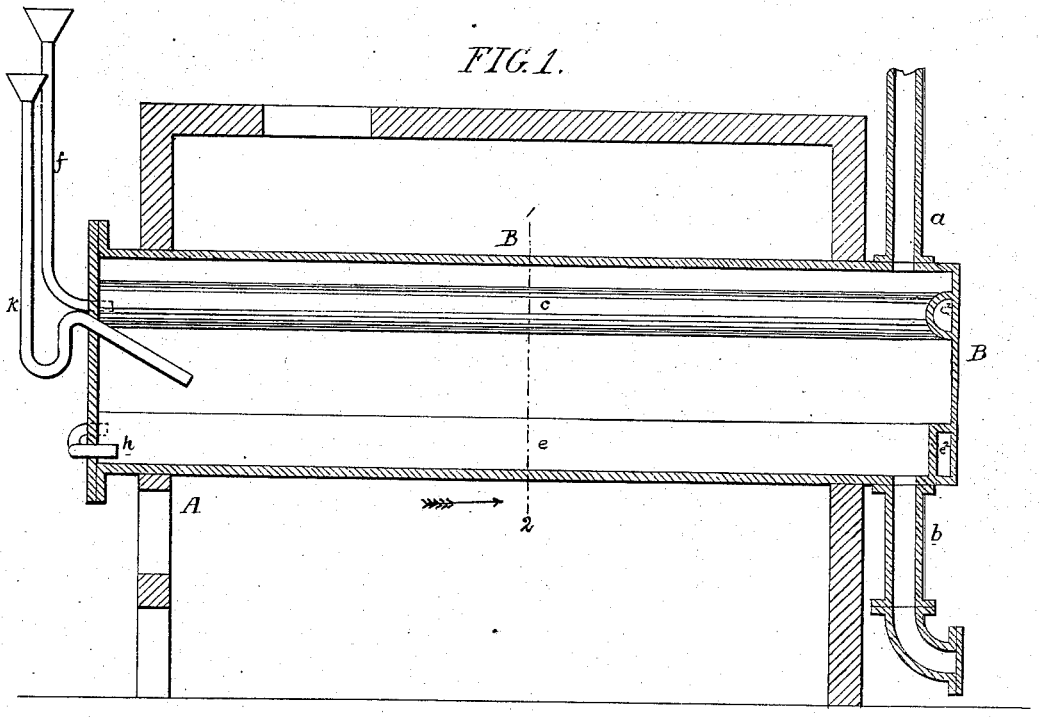


FIG. 3.

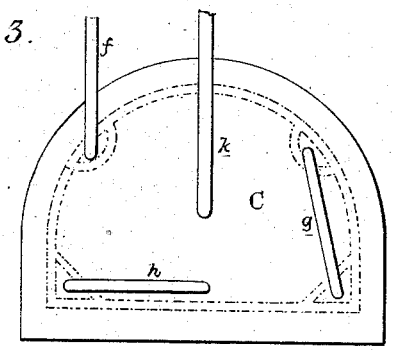
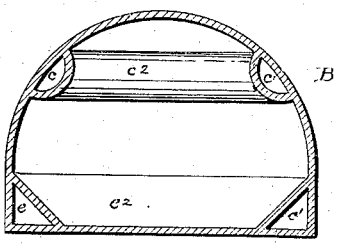


FIG. 2.



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UNITED STATES PATENT OFFICE

DONALD L. MACNEILL, OF NEW YORK, N. Y.

IMPROVEMENT IN RETORTS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **160,740**, dated March 9, 1875; application filed February 23, 1875.

To all whom it may concern:

Be it known that I, DONALD L. MACNEILL, of the city of New York, county of New York and State of New York, have invented Improvements in Retorts for the Manufacture of Illuminating-Gas, of which the following is a specification:

The object of my invention is a retort provided with channels or passages for the reception of the water and of deoxidizing material, (to produce both hydrogen and hydrocarbon gases simultaneously), and otherwise constructed as shown in the accompanying drawing, in which—

Figure 1 is a sectional elevation of the improved retort used in carrying out my process; Fig. 2, a section on the line 1 2, Fig. 1, looking in the direction of the arrow; and Fig. 3, an end view of the retort.

In a furnace, A, of any suitable construction, is set the retort B, the ends of which project slightly beyond the front and rear walls of the furnace; and with the rear end of the retort communicate the gas-exhaust pipe *a* and a discharge-pipe, *b*, through which any liquid matter remaining undecomposed may be withdrawn. At opposite sides of the retort are parallel channels or passages $c\ c^1\ e\ e^1$, which communicate with each other through transverse passages $c^2\ e^2$ at the rear end of the retort, the said passages being, in the present instance, formed in the body of the retort, although they may be made by means of metal pipes suitably arranged. A small tube, *f*, extends through the cap C of the retort into the channels *c*, a tube, *g*, the ends of which also extend through the cap, forms a communication between the channels $c^1\ e^1$, and a similar tube, *h*, communicating at one end with the channel *e*, projects through the cap and communicates with the interior of the retort at a point a short distance below the oil-feeding tube *k*. In the channels of the retort are placed a deoxidizing substance, which, with the retort, becomes highly heated. The oil is passed into the retort, and drops upon the coke from the pipe *k*, and water in a small stream is conducted through the pipe *f* to the channel *c*, through which, and successively through the channels $c\ c^2\ c^1\ e^1\ e^2\ e$, it passes over or through the deoxidizing material until decomposed, hydrogen gas flowing through the tube *h* into the retort. The hydrogen, and the gases generated from the oil, are subjected in the retort to a high temperature, under the influence of which they combine, forming a gas which is of that permanent character necessary to prevent the clogging of both the retort and conducting pipes by condensation.

It is essential that the water be introduced directly into the channels of the retort, as thereby the necessity of employing exterior steam-generating pipes is avoided, such pipes being objectionable from the fact that they burn away so rapidly as to render them practically unavailable for the purpose intended.

By arranging the pipes *h* and *k* as described, the hydrogen is combined with the hydrocarbon gas at the moment the latter is generated, thus preventing the condensation and deposit of carbon, while the arrangement of the steam-generating and deoxidizing chambers is such that the greater part of the retort is of a single thickness of metal, thereby insuring a high internal temperature necessary to fix the gases that cannot be attained where the bottom or sides of the retort are double throughout their entire extent.

I do not claim a retort provided with chambers for containing deoxidizing material; but

I claim—

1. A retort, provided with one or more chambers for receiving water and deoxidizing material, in combination with a pipe, *f*, communicating with a water-reservoir and with said chambers, as set forth.

2. A retort, provided with a chamber or chambers for receiving water and retaining deoxidizing material, combined with an oil-pipe to deliver the oil directly upon the bottom of the retort.

3. The retort, its steam-generating and deoxidizing chambers, combined with the oil-pipe *k* and gas-pipe *h* to inject the gas into the retort at the point where the oil falls upon the bottom thereof, as and for the purpose set forth.

4. A retort, in the body of which are formed channels arranged to leave intervening portions consisting of one thickness of metal, as and for the purpose set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

DONALD L. MACNEILL.

Witnesses:

C. W. NASSAU,

H. C. JOHNSTON.