T. G. MACY & E. F. REED.

Process of Manufacturing Illuminating-Gas.

No. 202,279. Patented April 9, 1878.

Fig. 1.

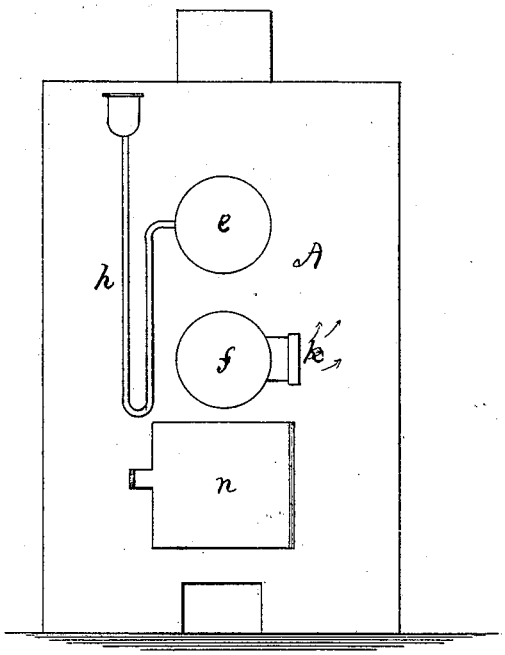
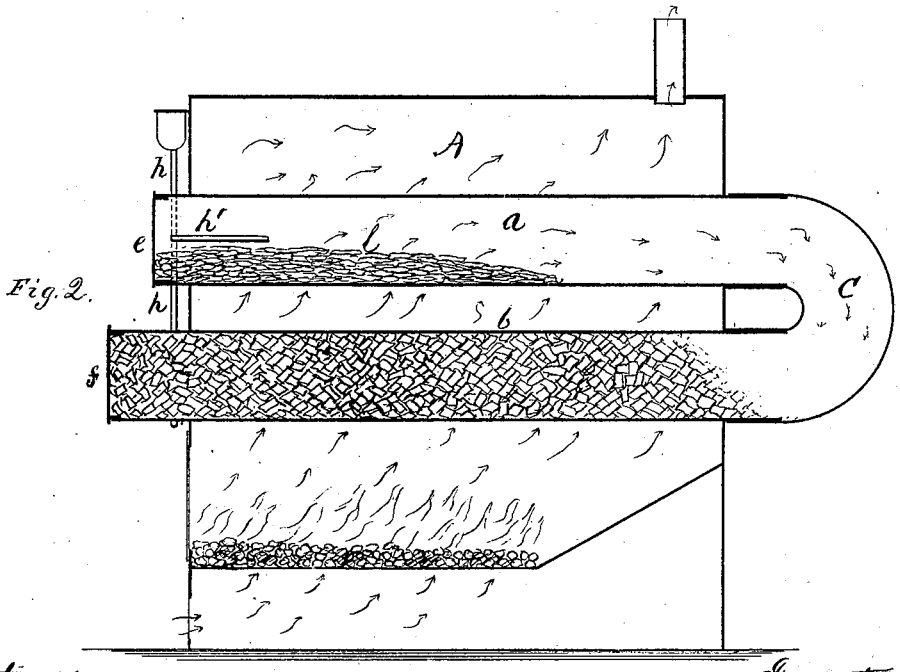


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS G. MACY AND EDWARD F. REED, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PROCESSES OF MANUFACTURING ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **202,279**, dated April 9, 1878; application filed December 10, 1877.

To all whom it may concern:

Be it known that we, THOMAS G. MACY and EDWARD F. REED, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in the Manufacture of Illuminating-Gas, of which the following is a specification:

Our invention relates to an improved process in the art of manufacturing illuminating-gas from crude petroleum or other fluid hydrocarbons; and the object in view is to effect the desired results in a much shorter space of time than is done by the methods now in ordinary use, and also to simplify the process of generation, as well as to reduce the cost thereof.

It is well known that in order to produce a fixed gas from crude petroleum it is subjected to a continuous heat of sufficient intensity to thoroughly decompose it or to effect a destructive distillation in a retort. The liquid, after passing into the retort, becomes vaporized, and this vapor is then decomposed and made into a fixed gas, which is conducted into a hydraulic main or condenser in the same way as coal-gas.

Referring to the drawings, which illustrate an apparatus wherein our improved process may be carried out, Figure 1 is a front elevation, and Fig. 2 is a longitudinal vertical section of the same.

The retort is constructed of two portions, *a* and *b*, arranged one above the other within a furnace, and connected at their rear ends by a return-bend, *c*, on the outside of the furnace.

By this arrangement and construction the entire surface of each portion of the retort is subjected to the full action of the heat from the furnace.

The oil or liquid passes in a continuous flow into the upper portion *a* of the retort through a siphon, *h*, which enters the side of the retort *a* that projects through the front of the furnace or casing A. The end *h'* of the siphon extends a short distance within the retort *a*, where it is more highly heated than at the opening.

The portion of the retort upon which the fluid drops is liable to become cool, and thus retard the decomposition of the fluid, and also to become carbonized. In order to obviate this objection, and to prevent the carbonization of the fluid, we place in the upper portion *a* of the retort a quantity of oyster or clam shells, which have the desired effect, and serve to aid in the vaporization of the oil. The vapor passes from the upper portion *a* of the retort through the return-bend *c* to the more highly-heated lower portion *b*, and thence out through the exit-passage *k* to the condenser.

In order to more thoroughly decompose the vapor and convert it into a fixed gas, the lower portion *b* of the retort is provided with a quantity of broken clay-brick, by means of which the vapor is retarded in its passage through the retort, and thus more effectually exposed and subjected to the action of the heat from the furnace, resulting in the production of a fixed gas of high illuminating power. The front ends of the portions *a* and *b* are provided with covers *e f*, properly secured.

The oyster or clam shells contained in the upper section of the retort gradually form a lime under the action of the intense heat, and the gases evolved during their change act in a peculiarly effective way to prevent the carbonization hereinbefore alluded to, as well as to increase the illuminating power of the resulting gas. When turned into lime the shells are removed, and a fresh charge supplied. Their use dispenses with the necessity of supplying any previously-made lime, and thereby diminishes the cost of generation, inasmuch as the heat from the gas-furnace performs the work of conversion at the same time that vaporization of the fluid is taking place.

We are aware that lime has heretofore been used in the production of various gases from coal, as well as from oils. It has been found liable to become clogged up or caked in the retort from deposition of carbon thereon, rendering it extremely difficult to be removed, and detracting materially from its efficacy in producing the desired results.

We do not therefore desire to be understood as laying any claim to a process involving the use of prepared lime; but

Having now fully described our invention, what we do claim as new, and desire to secure by Letters Patent, is—

In the manufacture of illuminating-gas from oil, in which the oil is fed into a heated retort, the process of preventing the deposition of carbon within such retort by causing the oil, as it is fed, to drip upon a mass of oyster or clam shells within the retort, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS G. MACY.
EDWARD F. REED.

Witnesses:
JOS. H. ADAMS.
L. H. LATIMER.