

H. H. EAMES & C. J. EAMES.

Improvement in Manufacture of Illuminating Gas from Hydrocarbons.

No. 132,265.

Patented Oct. 15, 1872.

Fig. 1.

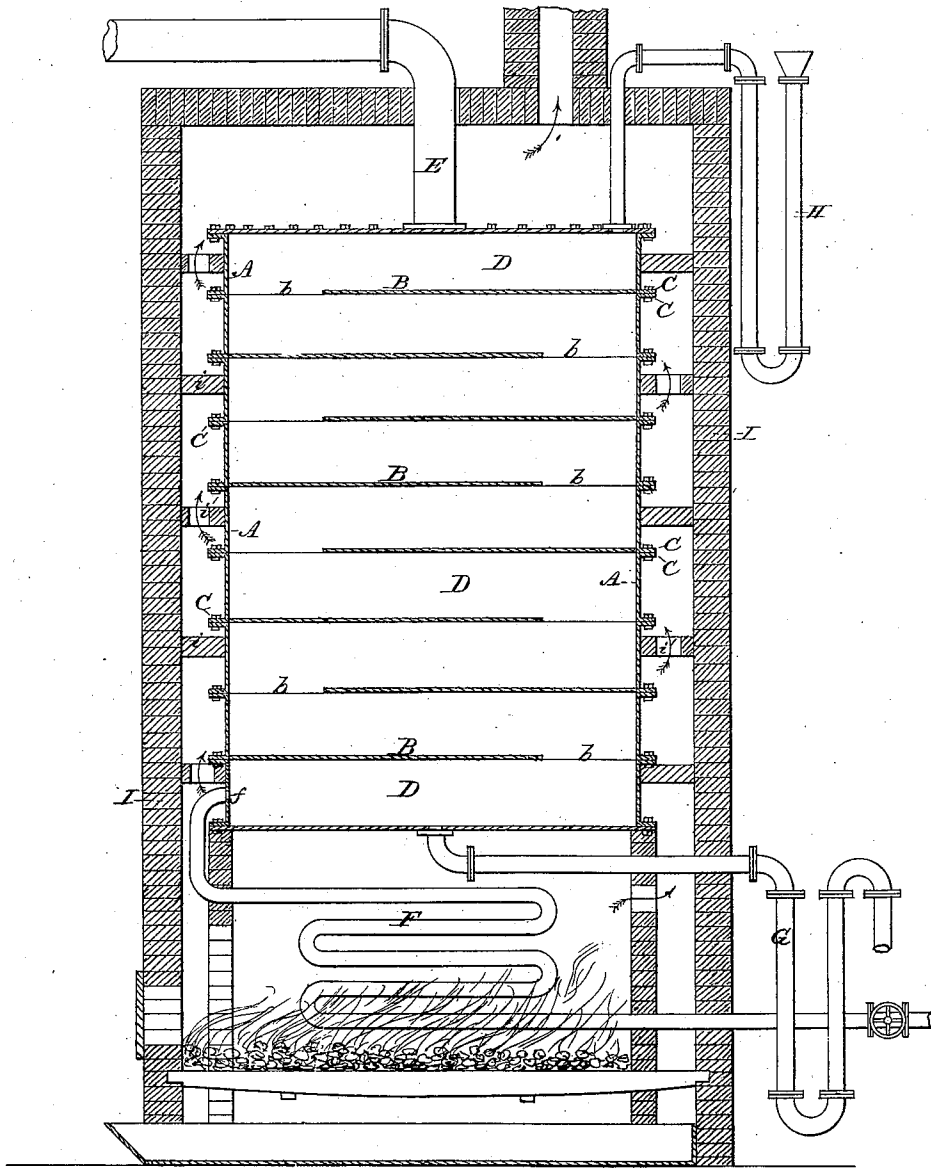
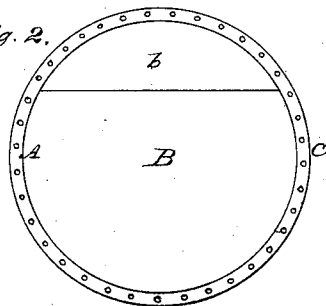


Fig. 2.



Witnesses:

V. C. Clayton
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Inventors:

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UNITED STATES PATENT OFFICE.

HENRY H. EAMES, OF PHILADELPHIA, PENNSYLVANIA, AND CHARLES J. EAMES, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING GAS FROM HYDROCARBONS.

Specification forming part of Letters Patent No. 132,265, dated October 15, 1872.

To all whom it may concern:

Be it known that we, HENRY H. EAMES, of Philadelphia, Pennsylvania, and CHARLES J. EAMES, of New York, in the county of New York and in the State of New York, have invented certain new and useful Improvements in the Manufacture of Illuminating Gas from Hydrocarbons.

The nature of our invention consists in the construction of an apparatus that will completely vaporize petroleum, resin, dead-oil of coal-tar, and other hydrocarbons, by subjecting a descending thin continuous stream of the material to be vaporized with superheated steam to the action of a series of heated plates (over and through which the steam flows) arranged one below the other in a heated metallic chamber, from whence the gas thus formed is conveyed to an ordinary condenser. The object of our invention is to obtain the vapor of petroleum, resin, dead-oil of coal-tar, and other hydrocarbons, and is designed more especially for illuminating purposes.

We have found that in treating the above-named hydrocarbons in a thin continuous stream in the manner herein described we are enabled to vaporize them more thoroughly, rapidly, and economically than if we had vaporized them in a bulky mass, and without permitting a deposit of the carbon, which is a desirable end not heretofore so perfectly attained.

Figure 1 is a vertical section of our invention, and Fig. 2 is a detail view.

A are metallic cylinders, which may be of other than circular form, provided with thin metallic plates B and flanges C, which cylinders are bolted tightly together by their flanges C, made gas-tight with cement, thereby forming a gas-generating chamber, provided with a series of compartments, D, communicating with each other by means of openings *b*—one of them in each of the plates B that form the partitions between the compartments D—and are two inches (more or less) apart. E is the gas-eduction pipe in the top of the gas-generating chamber. F is a "coil" for superheating the steam, having communication with the lower compartment of the gas-generating chamber, but a small amount of steam being

employed. G is an eduction-siphon, by which the residuum is made to continuously flow from the lower compartment of the vaporizing-chamber. H is the siphon by which the hydrocarbon material is fed into the upper compartment of the vaporizing-chamber. This chamber is inclosed within the furnace I and conveniently fixed over the fire. Between said chamber and the furnace we provide divisions *i* with openings *i'* so as to cause the heat from the furnace to slowly ascend and flow in a winding course around this chamber, as indicated in Fig. 1.

We operate our invention, when constructed as above set forth, in the manner following: First, we start the fire in the furnace I and heat the vaporizing-chamber and plates B to a "cherry-red heat;" then turn the cock of a pipe leading to the tank or reservoir containing the material to be vaporized in a flowing condition so as to cause a continuous stream of the material to descend into and out of the siphon H; thence into the upper compartment D, where the material is, by the action of the heat, quickly diffused in a thin stratum over the plate B of said upper compartment, and flows thence, through the opening *b*, to the compartment immediately below; from thence, through the openings *b* in the series of plates B, in and out of the lower compartments D. Just as the material is set flowing the siphon G is "sealed" with water and the steam is admitted into the "coil" F. The steam, as it passes through the "coil," is quickly superheated and passes into the lower compartment of the gas-generating chamber at *f*, and thence up through the series of compartments D, carrying with it the vaporized hydrocarbon material out through the eduction-pipe E to an ordinary suitable condenser, while the residuum of the material is drawn off by the siphon G in a continuous stream as rapidly as the residuum forms, thus rapidly, thoroughly, and economically vaporizing the hydrocarbon material and effectually preventing a deposit of carbon.

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

The method herein described for converting

petroleum, resin, dead-oil of coal-tar, and other hydrocarbons into gas, the same consisting in subjecting the hydrocarbons to the direct action of superheated steam while flowing in a stream, substantially as set forth.

In testimony that we claim the above-described certain new and useful improvements

we have hereunto signed our names this 10th day of September, 1872.

HENRY H. EAMES.

CHARLES J. EAMES.

Witnesses:

V. C. CLAYTON,

EDM. F. BROWN.