M. H. STRONG.

MANUFACTURE OF GAS.

No. 191,082. Patented May 22, 1877

Fig. 1.

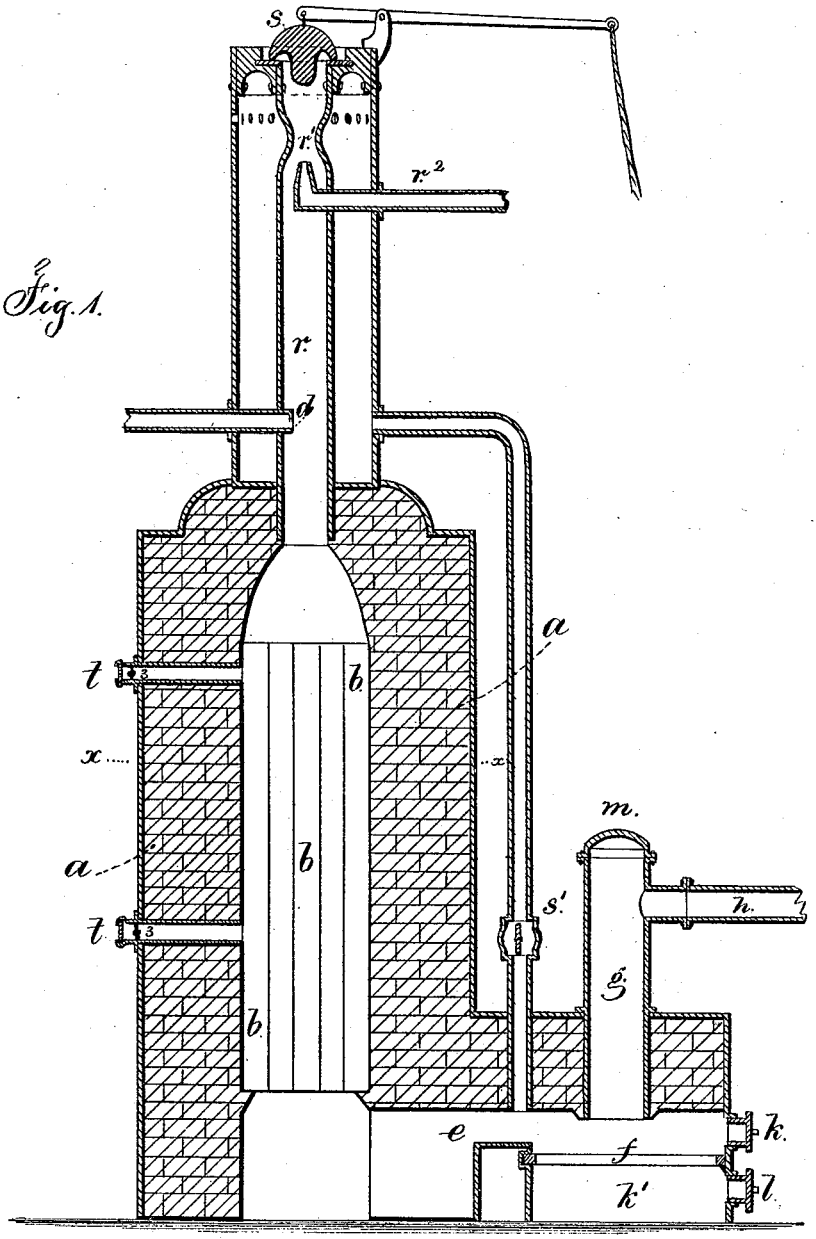
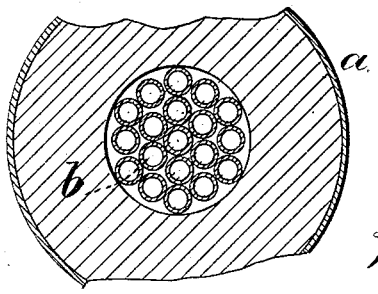


Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

MYRON H. STRONG, OF BROOKLYN, NEW YORK, ASSIGNOR TO LEMUEL W. SERRELL, TRUSTEE FOR SAID STRONG, SIDNEY CORNELL, HENRY M. PIERSON, AND WALTER E. LAWTON.

IMPROVEMENT IN THE MANUFACTURE OF GAS.

Specification forming part of Letters Patent No. **191,082**, dated May 22, 1877; application filed July 26, 1876.

To all whom it may concern:

Be it known that I, MYRON H. STRONG, of the city of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in the Manufacture of Gas, of which the following is a specification:

I make use of petroleum or similar liquid hydrocarbon, and run the same into a heated retort. The carbon is deposited, and the gas that is liberated is passed through coal in a heated condition, and in so doing there is added olefiant gas, or the gas becomes sufficiently carbureted to be available for illuminating purposes. When the temperature of the apparatus becomes too low to operate advantageously the supply of petroleum is stopped, the gas-making ceases, the retort is shut off from the gas-holder, and atmosphere is admitted into the retort to burn up the carbon that was deposited during the gas-making operation, thereby heating the retort again. This operation is farther aided by the combustion of the coke from the coal. The products of combustion go off by a chimney, and the draft is aided by a jet of steam. When the retort has become sufficiently heated, the escape-chimney is closed, and the gas-making resumed by the admission of petroleum or similar hydrocarbon.

In the drawing, Figure 1 is a vertical section of the apparatus, and Fig. 2 is a sectional plan at the line *x x*.

The retort is composed of the walls *a* within an air-tight metal casing lined with fire-brick, and containing the ranges of vertical tubes *b*, which are preferably made of clay, and supported at their lower ends by narrow vertical partitions of fire-tiles, so that both ends of the tubes are open. These tubes are used as a heating-surface for vaporizing and decomposing the petroleum that is supplied at the upper end of the retort by a pipe, *d*, and the gas passes down through these tubes *b* and along the horizontal flue *e* over the fire-bed *f*, and through the hopper *g* containing the coal, thence by the pipe *h* to the gas-holder.

In place of clay tubes, broken brick or other suitable material may be used, as shown in my patent dated June 27, 1876.

There is a door, *k*, at the end of the fire-bed *f*, and another door, *l*, to the ash-pit *k'* below *k*, and there is a cap, *m*, to the hopper *g*. These doors and cap are to be made so that they can be closed air-tight by a luting of clay or otherwise.

The chimney *r* is above or connected with the retort *a*, and there is a contraction at r^1 and a pipe, r^2, with a nozzle, that is in the center, so that the discharge of steam promotes the movement of the air-draft through the retort.

A valve, *s*, preferably of iron or steel, with a sharp cylindrical edge resting upon a ring of copper, serves to close the chimney tightly when not in use. The chimney *r* is preferably surrounded with a casing for heating atmospheric air, that can be allowed to pass by the pipe and cock *s'* to the horizontal flue *e*, and there are tubes *t t* passing through the walls of the retort and closed at the outer end by mica or glass, and each provided with a valve, 3, that serves to protect the glass or mica from heat, but which valve may be turned momentarily to allow the attendant to inspect the interior of the retort and judge of the heat of the same.

The operation is as follows: The retort being heated by fire upon the grate-bars *f*, and the chimney-valve open, the required temperature is obtained; the chimney-valve *s* is closed and coal introduced into the hopper *g*, and the doors *k* and *l* and cover *m* are closed tightly; petroleum is run or forced in by the pipe *d*; the heat vaporizes and decomposes the same, and the carbon deposits upon the tubes as the gas descends; and the gas, in a highly-heated condition, goes by the flue *e*, over the fire-bed, through the coal in the hopper *g* to the pipe *h*, thence to the water-seal of the hydraulic main of the gas-works as usual. The hydrogen of the retort combines or mixes with the gas from the coal, and, after a little practice, the operations can be conducted so as to

introduce the proper proportion of olefiant or other gas with the hydrogen to give the proper illuminating properties.

When the retort has become too cool to operate well, the supply of oil is shut off, the ash-door *l* is opened, also the chimney-valve *s*, and steam is supplied to the jet r^2, and heated air is allowed to pass into the retort from the pipe *s'*. The result is that a violent combustion takes place of the carbon deposited upon the surfaces of the tubes. This, with the combustion of the coke, effects the rapid and thorough heating of the retort and tubes, and the heated atmosphere through the pipe *s'* supplies the oxygen that is necessary to consume the carbon in the retorts. When this is done, the door *l*, valve *s'*, and valve *s*, are all closed again, and the petroleum admitted so that the gas-making operations again take place.

I claim as my invention—

The herein-described process of manufacturing illuminating-gas, which consists in subjecting the hydrocarbon to a high degree of heat, whereby the carbon will be deposited within the retort, and carbureting the resulting gas by passing it through incandescent carbon, and, subsequently, to make the process continuous, reheating the retort by the combustion of the carbon deposited from the liquid and the incandescent coke, substantially as set forth.

Signed by me this 11th day of July, 1876.

MYRON H. STRONG.

Witnesses:

GEO. D. WALKER.

GEO. T. PINCKNEY.