(No Model.)

R. H. SMITH.

PROCESS OF MANUFACTURING GAS.

No. 341,354. Patented May 4, 1886.

Fig. 1.

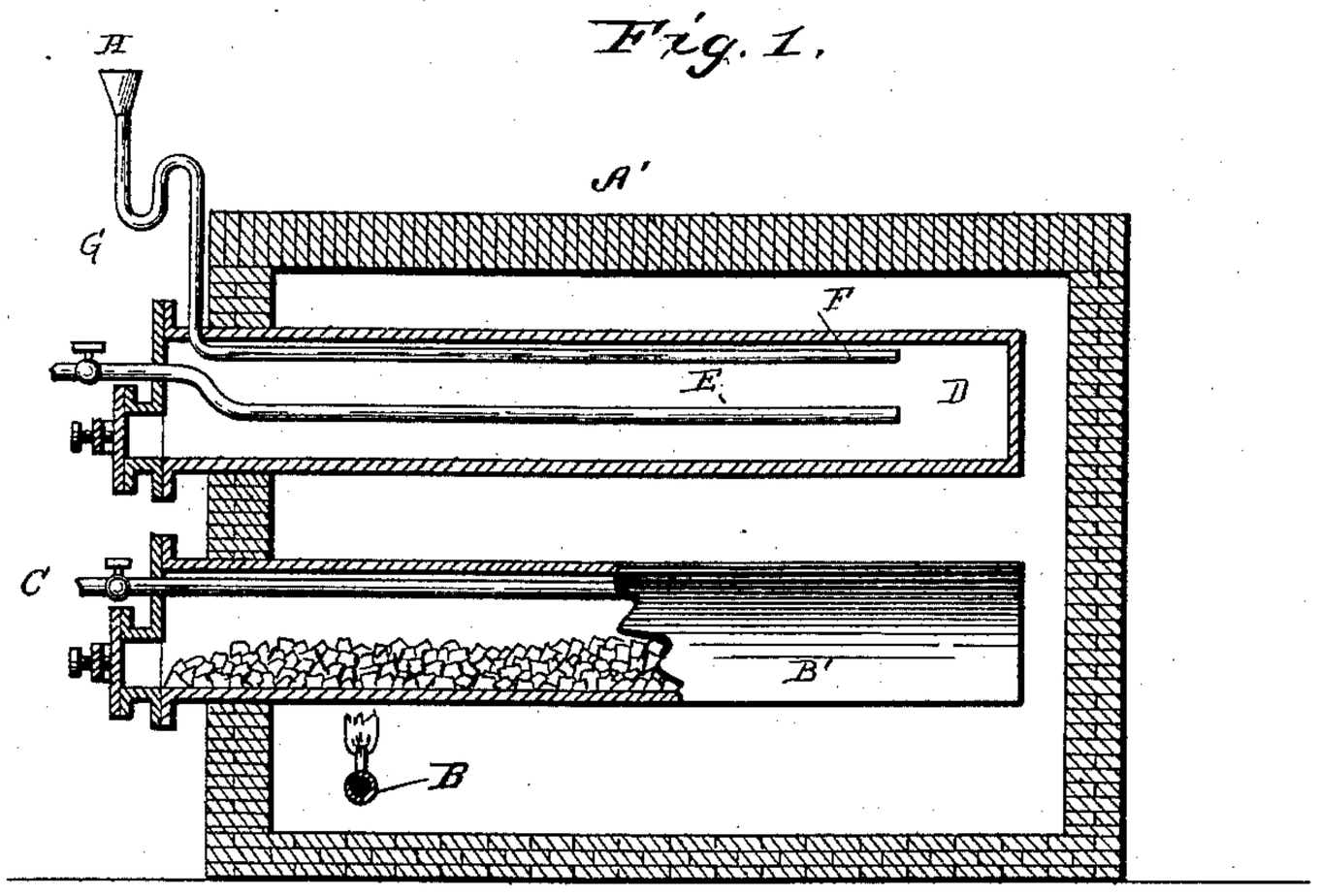
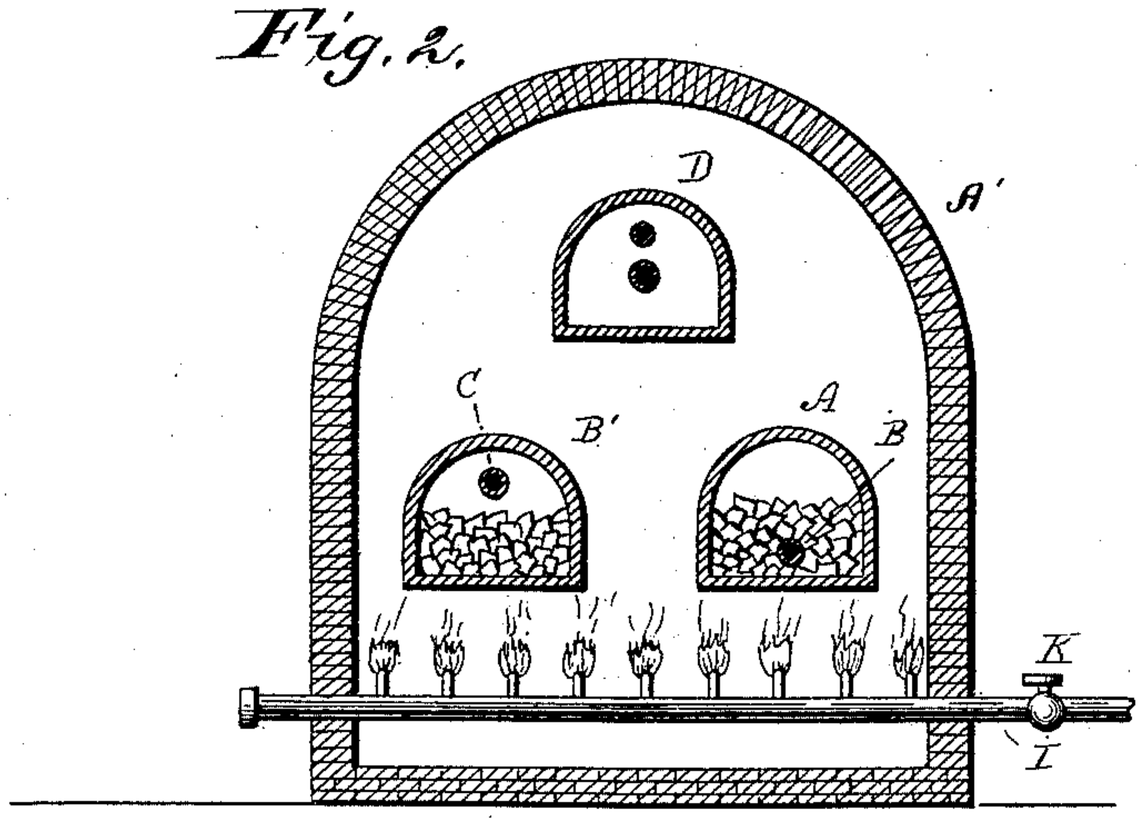


Fig. 2.



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ROLAND H. SMITH, OF PITTSBURG, PENNSYLVANIA.

PROCESS OF MANUFACTURING GAS.

SPECIFICATION forming part of Letters Patent No. 341,354, dated May 4, 1886.

Application filed November 30, 1885. Serial No. 184,322. (No model.)

To all whom it may concern:

Be it known that I, ROLAND H. SMITH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Process of Manufacturing Gas, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in the manufacture of gas; and it has for its objects to provide for the utilization of natural gas for illuminating purposes by combining the same with gases richer in carbon; and it consists in an improved process for preparing such natural gas previous to combining it with the richer gases, so that it will assimilate and unite thoroughly with the same; also, in an improved process of treating the natural gas, when properly prepared, in connection with a suitable hydrocarbon, so as to generate a compound gas; and, finally, in a process of fixing the combined gases as generated in the manner more fully hereinafter specified.

I have discovered that the natural gas, as it issues from the earth, on account of its low temperature and compressed condition, has its atoms or molecules so contracted that it will not thoroughly assimilate with the richer gases and combine with the same, and that in order to produce a homogeneous fixed gas that will not stratify, the natural gas has to be heated, so as to expand or break up the atoms or molecules preparatory to treating the same with the richer gases, in order to bring about the desired decomposition and produce the proper resultant gas.

In practicing my invention the natural gas, as it issues from the earth, is first heated to a temperature sufficiently high to decompose hydrocarbon vapor and to expand the gas so as to separate and diffuse the atoms or molecules. The gas thus heated is then brought into contact with the hydrocarbon, which is thereby vaporized and decomposed, and the resultant combined gases are then fixed so as to form an illuminating-gas that will not condense or stratify.

Any suitable apparatus may be employed in the manufacture of my improved compound gas; but I prefer the apparatus illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of a furnace and the retorts for preparing and manufacturing the gases, and Fig. 2 a transverse sectional view of the same.

The letter A indicates a retort of the usual construction, into which is extended, from the front a pipe, B, which sets close to the bottom of the same and terminates near the rear end in such manner that it will be embedded in the coal when the retort is charged, and will be thoroughly heated thereby. The forward end of said pipe is connected in any suitable manner with the natural-gas main, and is provided with a suitable cock, by means of which the admission of natural gas may be regulated.

The letter B′ indicates a similar retort, which has a pipe, C, extending into it, along the upper part above the bed of coal. This pipe is also provided with a cock and connected to the natural-gas main.

D′ indicates a third retort, which has extended into it a pipe, E, which is located midway between the top and bottom of the same and terminates near the rear, as in the other retorts. This last-mentioned retort has also extended into it a pipe, F, which passes along the upper part of the retort and terminates near the rear thereof. The said pipe at its front is provided with a trap, G, and funnel H, for the introduction of a liquid hydrocarbon. Through the lower part of the furnace extends a pipe, I, which is provided with a series of burners, and connects with the natural-gas main. The said pipe is provided with a cock, K, by means of which the flow of gas to the burners may be regulated.

Any suitable hydrocarbon—such as coal, cannel-coal, oil, or other greasy matter, petroleum, or the like—may be employed for the production of the rich gas, and in case a solid hydrocarbon is used it is charged in the retorts, as indicated at A and B′; but when a liquid hydrocarbon is employed it is supplied through the trapped pipe, as in the retort D.

The operation of my invention is as follows: The burners in the furnace A′, setting under the retorts, supply a series of jets of natural gas, which, being lighted, heat the retorts.

When the temperature is sufficiently elevated, the natural gas is admitted, which becomes heated and expanded to the proper degree in passing through the respective pipes. As it escapes from the said pipes, it meets and decomposes the vapors and rich gases generated from the hydrocarbons in the retorts, and is fixed in said retorts so as to form a gas of the proper illuminating-power, and which will not stratify or condense, as the atoms or molecules originally expanded contract on cooling, thus binding and holding the richer gas.

The respective retorts are connected by means of suitable pipes with the usual hydaulic main from which the final gas is conveyed to the holders.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The process of making illuminating-gas from natural gas and the artificially-produced fixed hydrocarbon gases, the same consisting in mixing the natural gas, artificially heated to about the temperature of the fixed nascent gas, with such gas, so as to produce a permanent combined gas, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ROLAND H. SMITH.

Witnesses:

MILTON I. BAIRD,

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