(No Model.)

R. H. SMITH.

GAS APPARATUS.

No. 330,165. Patented Nov. 10, 1885.

Fig. 1.

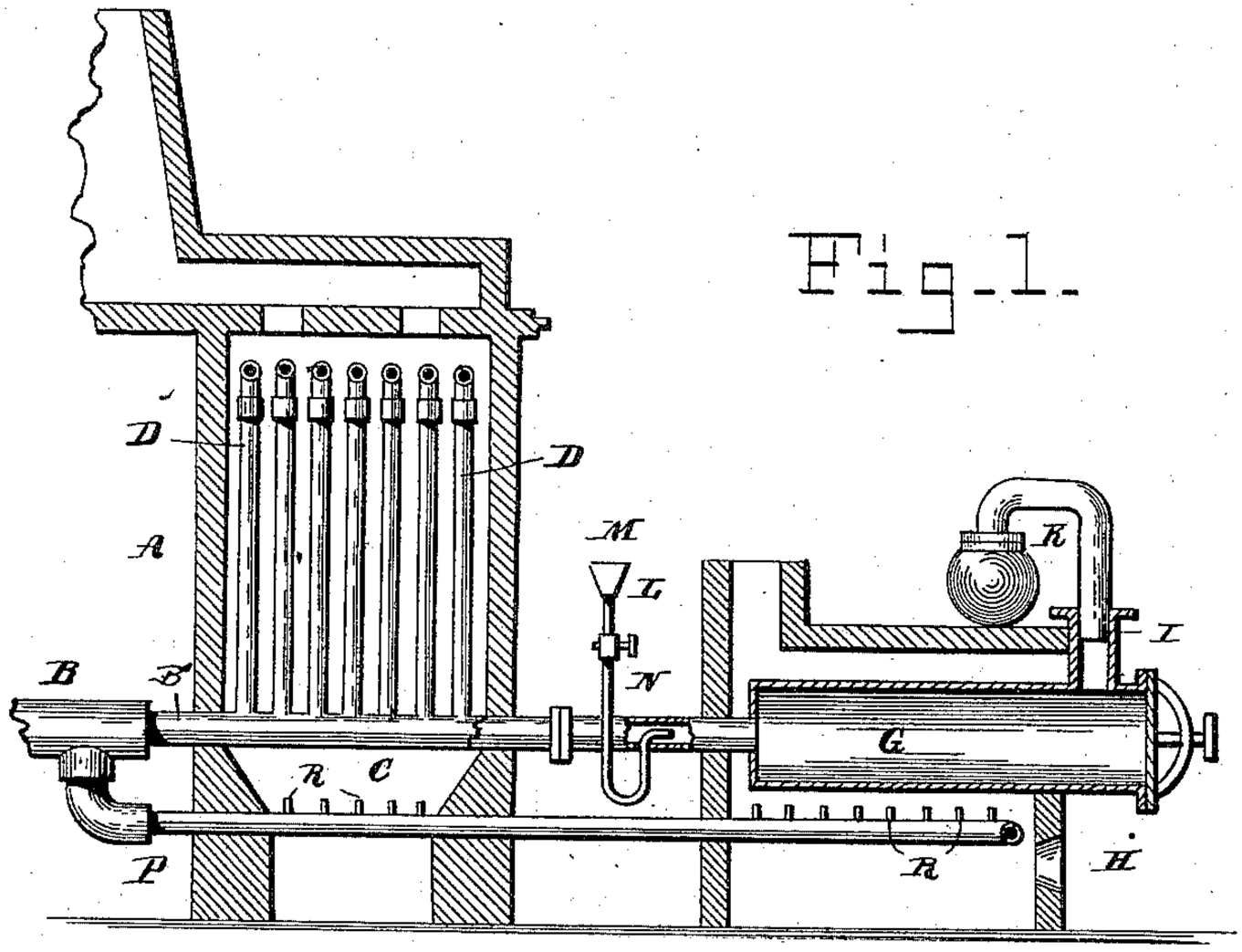
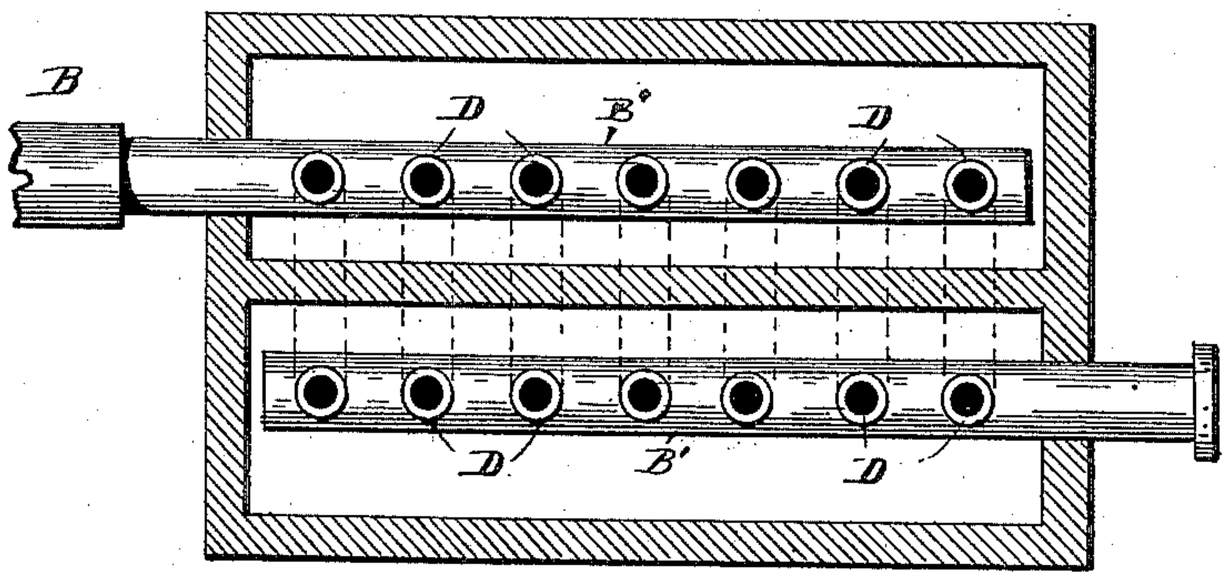


Fig. 2.



R

WITNESSES

Edwin L. Yewell.

J. J. McCarthy.

INVENTOR

R. H. Smith.

By C. C. Alexander

Attorney

UNITED STATES PATENT OFFICE.

ROLAND H. SMITH, OF PITTSBURG, PENNSYLVANIA.

GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 330,165, dated November 10, 1885.

Application filed January 31, 1884. Serial No. 119,372. (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 Gas Apparatus for Natural Gases, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in means and apparatus for the utilization of natural gas.

It is a well-known fact that all or nearly all natural gases are odorless, or nearly so, and that they escape from the earth at very low temperatures, and it is also well known that they contain little or no carbon, which renders them comparatively useless as illuminating agents. On account of their being odorless, they are exceedingly dangerous to use, as leakage in the pipes or fittings may take place and not be detected until an explosion occurs, and on account of their low temperature it is exceedingly difficult to combine them with richer gases or vapors or substances rich in carbon, so as to give them the proper illuminating properties. These objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical sectional view of my improved apparatus complete, and Fig. 2 a horizontal sectional view of the oven or heater forming part of my apparatus.

The letter A indicates a furnace, which may be constructed in any approved manner, but which is represented in the present instance of a vertical rectangular shape.

The letter B indicates the pipe leading from the gas-well or other source of natural gas, and is provided with an extension, B′, of less diameter than the main pipe, which extension leads into the lower portion of the chamber C.

The said pipe B is provided with branch pipes D, which extend upwardly into the furnace, and are connected at the tops so as to form a continuous passage, through which the gas may be passed and heated during its passage. The said pipe B′ connects, also, with a pipe leading to a retort, G, which is located or mounted in a suitable furnace H, in the usual manner, the retort being provided with the usual exit-pipe, I, which connects with the hydraulic main K, in the ordinary manner. Intermediate between the two furnaces, and extending into the connecting-pipe, is a trap-pipe L, having a funnel, M, at its upper end and provided with a regulating-cock, N. The said pipe is to provide for the admission of hydrocarbon fluid to enrich the natural gas, as more fully hereinafter explained. From the forward end of the pipe B extends a branch pipe, P, which passes through the lower part of the furnace A, and into the lower part of the furnace H. The said pipe is provided with burners R, which are located in the respective furnaces, and serve to supply gas to the same to be burned for heating the same. The pipes B, B′, and P are so proportioned as to size as to supply the burners with a sufficient quantity, while the gas is also supplied to the retorts in a larger volume.

The operation of my invention will be readily understood from the above description. The natural gas passes in through the pipe, and is heated in passing through the branch pipes in the furnace A, a portion, however, being carried off by the branch pipe P to heat the respective furnaces. The gases thus heated pass on to the retort, and receive on their way a quantity of hydrocarbon fluid through the trap-pipe. The gases and vapors then pass on into the retort, where they are subjected to further distillation, and are converted into a fixed gas, which passes on through the hydraulic main to the gas-holder and is stored for use in the usual manner.

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

1. The combination of the heating-furnace and the continuously-connected pipes located therein, the connecting-pipe leading to the fixing-retort, and the branch pipe provided with burners to heat the respective furnaces, whereby the natural gases and artificial gases and vapors may be converted into a fixed gas, substantially as and for the purposes specified.

2. The combination of a heating-retort, a mixing-retort connected therewith, a means for conveying hydrocarbons to the said mixing-retort, and burners under the heating and mix-

ing retorts, said burners being connected to the gas-conveying pipe, substantially as and for the purpose specified.

3. The combination of a heating-furnace and continuously-connected pipes located therein, a connecting-pipe leading to a fixing-retort, a trap-pipe provided with a funnel and a regulating-cock, and having one end introduced into the connecting-pipe, and a branch pipe leading from a main supply-pipe to the heating-furnace and to the fixing-retort, under both of which the branch pipe is provided with burners for heating purposes.

4. Combined with a gas-conveyer pipe, a hydrocarbon-conveyer consisting of a pipe with a receptive portion above said gas-conveyer pipe, and a trap or bend below the line of delivery to the same and entering said gas-pipe in line with the travel of the gas, substantially as specified.

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

ROLAND H. SMITH.

Witnesses:

J. J. McCARTHY,

F. T. CHAPMAN.