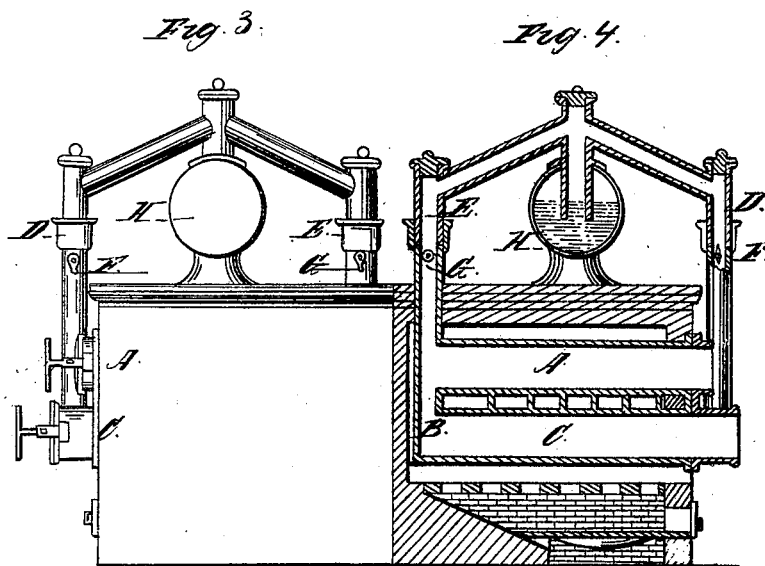
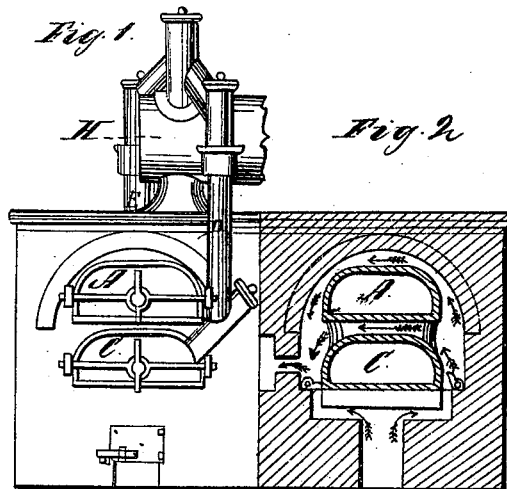


*T. O. Meara,*  
*Gas Apparatus,*  
*No 100,863,      Patented Aug. 30, 1870.*



*Witnesses:*  
*Andrew R. Fryer*  
*Robert M. Fryer*

*Inventor:*  
*Timothy O. Meara*

# UNITED STATES PATENT OFFICE.

TIMOTHY O'MEARA, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF, JAMES F. PRESTON, ROBERT M. FRYER, DWIGHT MARCY, AND ANDREW R. FRYER, ASSIGNORS TO UNITED STATES GAS COMPANY, OF ROCKVILLE, CONNECTICUT.

## IMPROVEMENT IN APPARATUS FOR PRODUCING GAS FROM COAL.

Specification forming part of Letters Patent No. 106,863, dated August 30, 1870.

*To all whom it may concern:*

Be it known that I, TIMOTHY O'MEARA, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Gas Apparatus and Process, of which the following is a specification:

My invention consists in the construction of an apparatus, by which means the two following results can be obtained: First, to generate into permanent gas the volatile portion of coal in its early stages of distillation, in the process of gas-making, which is now carried off with the gas in a condensable state; second, to treat the coal and its product during its later stage of distillation, according to the usual method of gas-making.

Referring to the accompanying drawing, Figure 1 is a front elevation. Fig. 2 is a transverse section. Fig. 3 is a side elevation. Fig. 4 is a longitudinal section.

A is the upper retort. B is the passage or connection between A and C. C is the lower retort. D is the stand-pipe, leading from C to the hydraulic main. E is the outlet-pipe, leading from A to the hydraulic main. F is the valve in pipe D. G is the valve in pipe E. H is the hydraulic main.

In the present method, when a charge of coal is placed in a heated retort, the coal, being cold, naturally absorbs a large portion of the heat, reducing the temperature, and the heat but gradually penetrating the body of the coal, while its surfaces are exposed to its greatest degree, thus exposes various portions of the charge to very unequal temperatures, and this occurring while the coal is giving off its richest and most abundant vapors, the result is that but a small portion of permanent gas is made, while a large portion of the product is carried off in heavy vapor, and arrested in the hydraulic main, and resolved into coal-tar, water, &c., thus causing, at the commencement of the charge, the loss of a large quantity of the richest gas-producing material.

The loss thus sustained I propose to obviate, and to convert into permanent gas the

whole or a large portion of the constituents carried off.

To effect this, I employ, in the lower retort, charcoal, or other similar chemical, for the purpose of taking up the oxygen given off, and converting the lighter vapors into hydrogen, carbonic oxide, &c., and to assist in furnishing the heat required for generating the heavy vapor into gas.

Operation: The coal is placed in the upper retort, and the distillate is carried down and passed through the charcoal, or other chemical employed, in the lower retort. The permanent gas is permitted to pass on, and the heavy vapor brought into contact with the necessary degree of heat for its conversion into gas, the oily portion being converted into a rich illuminating-gas, and the aqueous vapor, by the action of the charcoal, is converted into hydrogen, carbonic oxide, &c., which in their passage through the retort, saturate themselves with much free carbon that would otherwise be lost, and also increase the rapidity with which the gases generated leave the retort.

When the charge is sufficiently run, so that the richest portions of the oily and aqueous vapors are expended, the gas generated in the upper retort is conducted directly to the main, by means of the pipe leading from the rear, without passing through the lower retort. This is effected by opening the valve G and closing the valve F.

The object of changing the route of the gas made at the last of a charge is, that the assistance of the charcoal is unnecessary, the coal having arrived at a heat sufficient in itself to convert the product into permanent gas.

In the construction of a bench, the pipe E, leading from the rear of the upper retort A, could be placed in front, and the result would be as above; but by having it as shown, the passage B, between the two retorts, can be cleaned when necessary.

I claim as my invention—

1. The combination of the retorts A and C,

the passage B, pipes D and E, and valves F and G, substantially as and for the purpose hereinbefore set forth.

2. The process of converting the product of coal into gas, by the introduction and assistance of charcoal, or its equivalent, into the retort, substantially as and for the purposes hereinbefore set forth.

3. The combination of the two distinct processes herein described, substantially as and for the purposes hereinbefore set forth.

TIMOTHY O'MEARA.

Witnesses:

DWIGHT MARCY,  
J. P. TUSTON.