J. H. EICHHOLZ.

GAS APPARATUS.

No. 169,973. Patented Nov. 16, 1875.

Fig. 1

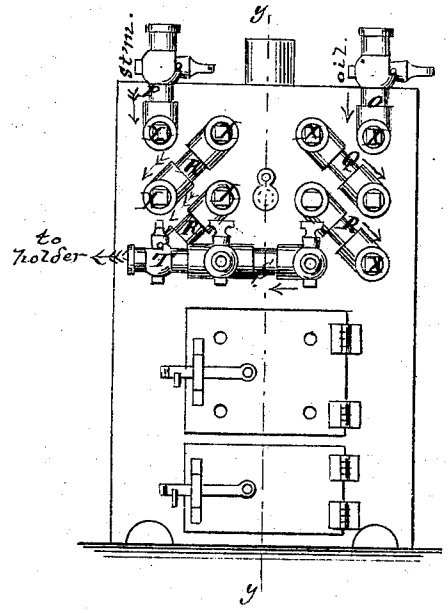


Fig. 2

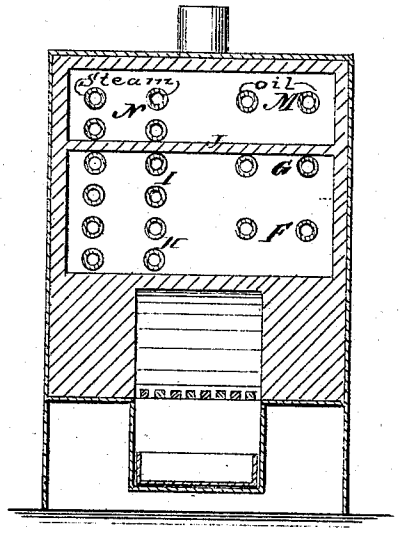
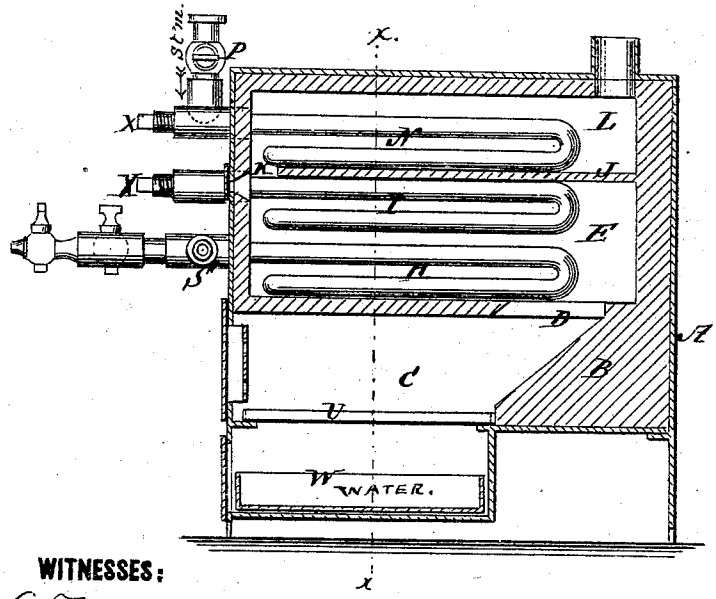


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN H. EICHHOLZ, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND HORACE A. GREEN, OF NEW YORK CITY.

IMPROVEMENT IN GAS APPARATUS.

Specification forming part of Letters Patent No. **169,973**, dated November 16, 1875; application filed September 25, 1875.

To all whom it may concern:

Be it known that I, JOHN H. EICHHOLZ, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Gas Apparatus, of which the following is a specification:

The object of my invention is to provide a simple, cheap, and efficient small portable apparatus for the manufacture of illuminating-gas of hydrogen and the vapor of hydrocarbon substances, to enable consumers to find ready and cheap apparatus for making their own gas.

The apparatus consists of a furnace and oven made of a sheet-metal case and fire-brick lining, in which are retorts for the oil in one set, and another set for steam, contrived in a simple way, for graduating the heat to the different substances according to the progress of the work, all as hereinafter described.

Figure 1 is a front elevation of my improved gas-machine. Fig. 2 is a transverse section taken on line *x x*. Fig. 3 is a longitudinal section.

Similar letters of reference indicate corresponding parts.

A represents the exterior metal case; B, the fire-brick or clay lining for controlling the heat; C, the furnace; D, the passages through the top of the same for passage of the heat from the rear part into the oven E, in which are retorts F G and steam-retorts H I. J is a partition in the oven, causing the heat to traverse along the retorts to the front end, where it escapes through the passage K into the upper oven L, in which are oil-retorts M and steam-retorts N. These retorts are made of iron tubes, those for oil being bent double, and those for steam being quadruple, to afford the requisite proportions of capacity for steam and oil. The ends of the retorts project through the front of the oven to receive the oil and steam, and to connect the retorts of each series together, and also to connect the two series, to mix the two gases, and, finally, to connect with the pipe for conducting the gas to the holder. The oil-feed connection is at O, and the steam-connection at P. Q and R are outside connections of the retorts. S is the connection of the two series of retorts, and T is the connection for the pipe, by which the manufactured gas is conducted to the holder. U represents the fire-grates, which I propose to make of wrought-iron bars, in order that the pieces of the bars burned apart may be saved by welding them together to make new bars, which cannot be done with cast-iron bars. W is a water-pan, which I propose to put in the ash-pit to hold water for extinguishing the sparks and coals dropping from the fire, as a precaution against danger to the building in case the apparatus is located in one. Besides being connected together at the outer ends, the retorts have a plug, X, in each outer end, to be taken out for blowing steam through to remove obstructions in case any occurs. Instead of connecting the two series of retorts by the pipe S, as shown, the hydrogen gas from the decomposed steam may be conducted into the oil-retorts when the oil is fed in, and so be passed through them with the oil.

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

The combination of furnace C, having passage D, the oven E, having oil-retorts F G and steam-retorts H I, the partition J, having passage K, and the oven L, having oil-retorts M and steam-retorts N, all arranged substantially as and for the purpose specified.

JOHN HENRY EICHHOLZ.

Witnesses:

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