J. H. BOWMAN.

PROCESS FOR MANUFACTURING CARBURETTED HYDROGEN GAS.

No. 191,749. Patented June 12, 1877.

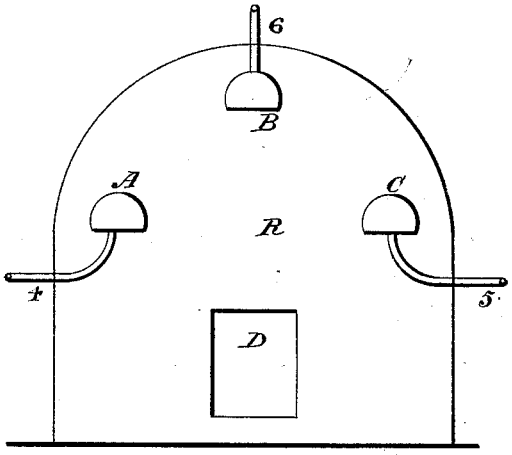

Fig. 1.

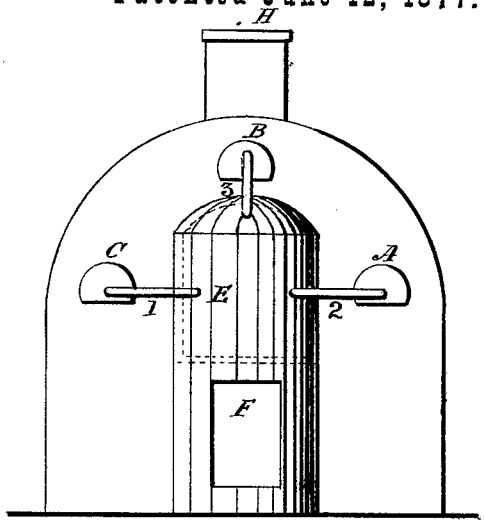

Fig. 2.

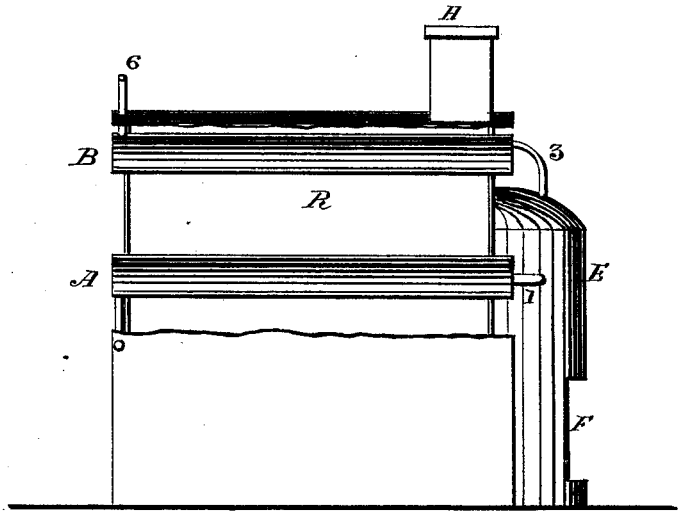

Fig. 3.

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JAMES H. BOWMAN, OF WARREN, PENNSYLVANIA.

IMPROVEMENT IN PROCESSES FOR MANUFACTURING CARBURETED HYDROGEN GAS.

Specification forming part of Letters Patent No. **191,749**, dated June 12, 1877; application filed June 12, 1876.

To all whom it may concern:

Be it known that I, JAMES H. BOWMAN, of Warren, State of Pennsylvania, have invented a new Process of Manufacturing Carbureted Hydrogen Gas, of which the following is a specification:

The object of my invention is to produce a fixed gas for illumination by combining heated carbureted air, hydrogen gas, and the vapors of any hydrocarbon liquid, the same to be so chemically united that they will not separate or condense, but remain a fixed gas for the purposes of illumination.

A B C, Figure 1, represent the end of three retorts placed in a furnace, R, with the fire-box at D. The retort A is filled with charcoal or coke or other carbonaceous material. 4 is a pipe, through which a blast or current of air is blown. The retort B is filled with a mixture of charcoal or carbonaceous material and broken fragments of iron or iron turnings. The retort C is filled with fragments of iron and iron turnings or scrap-iron. 5 is a steam-pipe from a suitable steam-boiler, through which a current of steam is admitted into the retort C.

Fig. 2 represents the rear end of the furnace, with the three retorts A B C projecting therefrom. E is a still, filled with petroleum or any hydrocarbon fluid. F is a fire-box. 1 2 3 are pipes opening into the still from the retorts A B C. Fig. 3 is a side sectional view of the furnace, showing the two retorts A and B. H is a chimney, E the still, and 6 the pipe by which the gas is conveyed to the purifier, and, as in the common gas-works, purified before being admitted into the gas-main for consumption.

The operation of my process is as follows, to wit: When the retorts have all been filled, as described, and heated by the fire in the furnace R, a blast of air is blown through 4 into the retort A, which is filled with charcoal, coke, or other carbonaceous material. The air, in its passage through the retort, becomes highly charged with carbon, and then passes into the still E, which is filled with the heated vapor of the hydrocarbon liquid thrown off by the fire in fire-box F. Steam from a boiler is passed through the retort C, which is filled with fragments of iron. In its passage the steam is decomposed, the oxygen uniting with the heated iron, the hydrogen is liberated, and passes off through the tube 1 (see Fig. 2) into the still E, where it mixes with the vapors of hydrocarbon and air, and then this combination passes through the tube 3 into the retort B, which is filled with fragments of iron and coal or coke. Here the combination is again subjected to great heat, any surplus oxygen taken up by the iron, and any deficiency of hydrogen and carbon supplied by the coke and carbonaceous material in the retort, and a perfect chemical union of all the vapors formed into carbureted hydrogen gas.

What I claim as my invention is—

The herein-described process of making carbureted hydrogen gas—that is to say, by passing steam into a heated retort containing iron or other suitable metal, and by passing air into another heated retort containing charcoal, coke, or other suitable carbonaceous material, the gases so generated being then passed from said retorts into a still or suitable chamber and mixed with hydrocarbon vapors there generated, the gases and vapors so united being then passed into and through a third heated retort containing a mixture of carbonaceous material and metal in suitable form, whereby the gases and vapors become chemically and permanently combined in the form of carbureted hydrogen gas, ready for illuminating purposes, substantially as set forth.

JAMES H. BOWMAN.

Witnesses:

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