

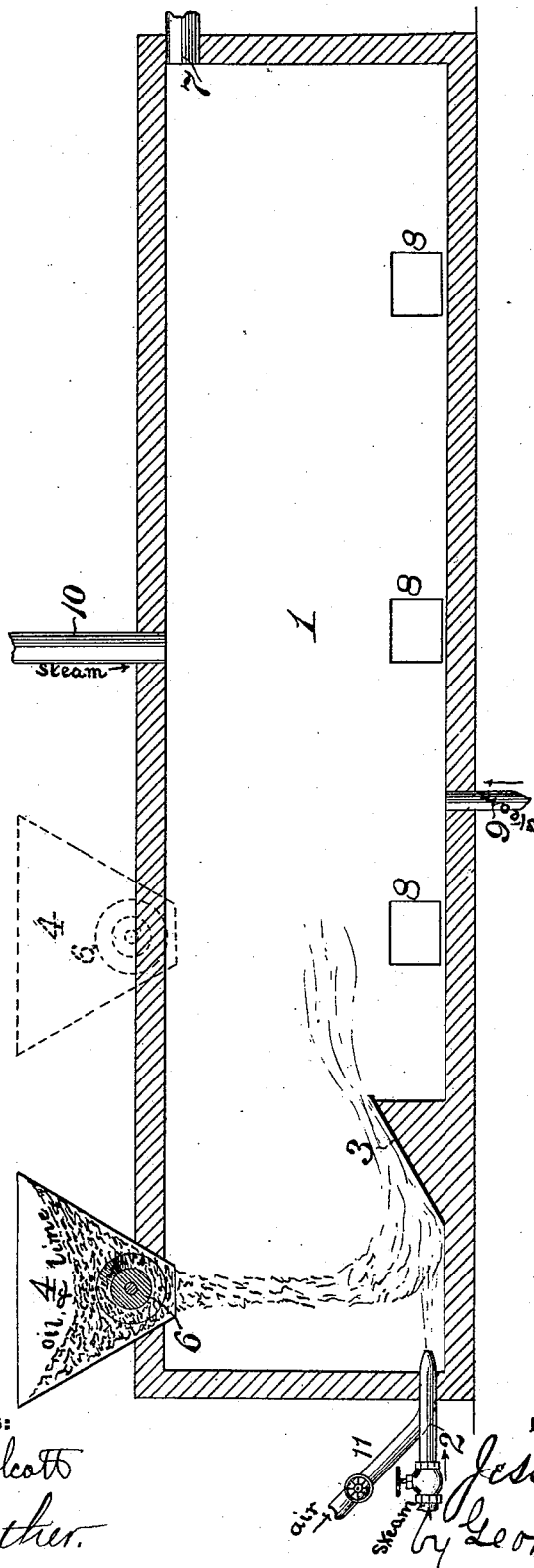
(No Model.)

J. A. DUBBS.

APPARATUS FOR THE MANUFACTURE OF GAS.

No. 470,040.

Patented Mar. 1, 1892.



WITNESSES:

Daniel S. Wolcott
F. E. Gaither.

INVENTOR,

Jesse A. Dubbs.
by *George W. Christy*
Att'y.

UNITED STATES PATENT OFFICE.

JESSE A. DUBBS, OF ALLEGHENY, ASSIGNOR OF THREE-FOURTHS TO SAMUEL M. BOYD, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 470,040, dated March 1, 1892.

Application filed May 26, 1891. Serial No. 394,140. (No model.)

To all whom it may concern:

Be it known that I, JESSE A. DUBBS, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Apparatus for the Manufacture of Gas, of which improvements the following is a specification.

My invention relates to improvements in apparatus for the manufacture of gas, the object being to provide an improved construction of the same, whereby I secure superior results with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts hereinafter fully described.

The accompanying drawing represents a sectional elevation of an apparatus constructed in accordance with my invention.

In the practice of the invention highly-superheated steam at a temperature sufficiently high to be decomposed when brought into contact with oil is introduced into a shell 1, formed of brick or any other suitable material, by means of a pipe 2, inserted through one end of the case near the lower side thereof. The temperature of the superheated steam should be from 700° or 800° Fahrenheit. Inside of the case, at a short distance from the point of entrance of the steam, is arranged an inclined plate 3, constructed to direct the steam toward the upper side of the case. A hopper 4, having its lower end projecting into the case or chamber, is arranged near the front end thereof, and into this hopper is charged a mixture of any suitable hydrocarbon oil and lime in such proportions, preferably, as will form a thick pasty mass, which is forced out of the end of the hopper into the chamber by means of a worm 6 or other suitable means. The lime used is that which contains a large percentage of oxide or caustic lime, (CaO,) although lime containing a large percentage of carbonate (CaCO₃) may be employed, because upon passing through the heated zone of the furnace the carbonic acid is driven off, leaving oxide of lime to effect the decomposition or changes required, and then as it passes to the cooler parts of the furnace it absorbs the CO₂, forming carbonate of lime,

thus leaving the fixed gases practically free from CO₂. The hopper is so arranged that the mixed lime and oil will drop into the stream of superheated steam as it enters the chamber. This superheated steam by contact with the oil will be separated into its constituent elements—hydrogen and oxygen—and these elements, combining with the constituents of the vaporized oil, will form carbonic oxide, (CO,) carbonic acid, (CO₂), and a light hydrocarbon gas. As these gases pass along through the chamber under the impetus of the entering jet of steam, the carbonic-acid gas will combine with the lime, forming CaCO₃ or carbonate of lime, which will fall to the bottom of the chamber. The other gases—to wit, carbonic oxide, hydrocarbon gas, and hydrogen—will escape from the chamber by the pipe 7 and may be conducted by suitable conduits to a reservoir for the desired points of use.

At suitable intervals along the case or chamber are arranged a series of doors 8, through which carbonate of lime may be removed from the chamber. At suitable intervals steam-pipes 9 and 10 are inserted through the walls of the chamber, through which superheated steam may be introduced in case the quantity of oil introduced through the chute is too large to admit of its proper decomposition or separation by the steam introduced through the pipe 2. If desired, wet steam may be introduced through one of the pipes 9 and 10 in order to cause the carbonate of lime to settle more quickly and prevent its being drawn from the chamber through the exit-pipe for gas.

In order to facilitate the separation of the steam into its constituent elements, a jet or stream of highly-heated air may be forced into the chamber through a pipe 11, which is so arranged with reference to the steam-pipe 2 that the entering air will mingle with the steam as it enters the chamber.

I claim herein as my invention—

In an apparatus for the manufacture of gas, the combination, with a rectangular chamber having a combined air and superheated-steam-jet pipe at its lower front end and an exit-pipe at its rear, of the inclined plate on the bottom

of said chamber, the hopper at the front upper end thereof, the superheated-steam pipes intermediate of the inclined plate and the rear of the chamber and located in the top and bottom thereof, and the series of doors in
5 the lower part of said chamber, substantially as described.

In testimony whereof I have hereunto set my hand.

JESSE A. DUBBS.

Witnesses:

R. H. WHITTLESEY,
DARWIN S. WOLCOTT.