

UNITED STATES PATENT OFFICE.

JOSHUA KIDD, OF NEW YORK, N. Y.

IMPROVEMENT IN MANUFACTURE OF ILLUMINATING GAS.

Specification forming part of Letters Patent No. 119,034, dated September 19, 1871.

To all whom it may concern:

Be it known that I, JOSHUA KIDD, of the city, county, and State of New York, have invented a new and Improved Vapor-Generator and Air-Mixer; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same.

My present invention consists in the use for gas-making of a vaporizing and air-mixing apparatus for which I have had two patents granted to me for the United States of America. The first is dated March 9, 1869, No. 87,680. Its object is to vaporize heavy oils by admitting the oil sparingly into a vaporizer. The second patent is dated January 10, 1871, No. 110,857. Its object is to vaporize naphtha, benzine, &c., and mix air with the vapor.

My present improvements relate to the manufacture of gas from the lighter products of petroleum, and consists: First, in the instantaneous evaporation of petroleum, naphtha, &c., by injecting them under pressure into a vaporizer heated below a decomposing heat sparingly. Secondly, in the application of a jet of heated gasoline vapor or steam for inducing air into gas for reducing its illuminating power.

Hitherto the vapor for making a permanent gas has been generated gradually in a common still or boiler, and air has been mixed with the gas by means of a pump or wet-meter drum. When a permanent gas is generated from the products of petroleum a body of the liquid is first placed in a still or boiler and is there gradually vaporized by the application of heat in any convenient way, and the vapor given off from the bulk of the liquid passes through a pipe to the decomposing retort; the result is that the vapors thus generated fly off much faster on the first application of heat than afterward. The first vapors are not so rich in carbon as those that follow after the heat has been continued for some time. This is easily accounted for when it is known that petroleum, naphtha, &c., are composed of different gravities, all having various boiling points. When vapor is thus generated it is difficult to control its decomposition.

I have found in practice that a given amount of heat will change a given amount of naphtha

vapor into a permanent gas. An increased amount of vapor exposed to the same heat will only undergo partial decomposition, but a diminished amount of vapor exposed to the same heat will be over-decomposed and deposit carbon in a retort.

In manufacturing a permanent gas from the lighter products of petroleum, I find that it is essential that vapor should enter the decomposing-retort at an even pressure in an unvarying, regular flow, so that every portion of the vapor entering the decomposing-retort shall be equally acted upon by the heat. My improvements secure this result, and consist in a new method of generating the vapor before retorting the same.

My invention is carried out as follows: Into a vaporizer having an outlet and an inlet made round, tubular, or of other convenient shape, and heated below a decomposing heat, I force from a given elevation liquid hydrocarbon sparingly, so that the injected liquid on entering vaporizer will instantly vaporize. In this way every portion of the liquid is vaporized, superheated, and equally mixed with all the various gravities and parts of the petroleum having different boiling points. If the petroleum or naphtha is entirely free from tarry matter I sometimes cause it to enter decomposing-retort through a tube heated below a decomposing heat fixed into said retort, as the pressure of the vapor never exceeds the falling column of liquid; the exit or passage of vapor into the decomposing-retort never varies. The vapor thus generated is in a much better condition for making a fixed gas, and gives better results, as the extent of its decomposition can be better controlled than when the hydrocarbon is vaporized in bulk in a boiler or still in the ordinary way.

In carrying out my second improvement I simply generate steam or gasoline vapor under pressure, as shown and described in my patent of January 10, 1871, No. 110,857, and inject the air thus induced into the gas-pipes or holder, if a steam-jet is used instead of a gasoline vapor-jet. The steam will condense in the cooler, but gasoline vapor will act as a carbureter and enrich the gas.

The vaporizer and air-mixer required to carry out my invention are fully shown and described

in the two before-mentioned patents, and from the description there given any skilled workman may make the same.

I claim—

1. The method described of first instantly vaporizing the liquid at a heat below its decomposing point by injecting it into a vaporizer sparingly, and then passing the vapors thus generated through a red-hot retort.

2. The use of a jet of gasoline vapor or steam, escaping under pressure, for inducing air into rich gas, as described.

JOSHUA KIDD.

Witnesses:

CHAS. S. LUSK,
E. J. KNOWLES.

(37.)