

UNITED STATES PATENT OFFICE.

CHARLES F. DIETERICH AND AUGUST SCHÜSSLER, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. 129,720, dated July 23, 1872.

To all whom it may concern:

Be it known that we, CHARLES F. DIETERICH and AUGUST SCHÜSSLER, of the city, county, and State of New York, have invented a new and useful Improvement in the Manufacture of Gas for illuminating purposes, of which the following is a specification:

Our invention relates to the manufacture of illuminating-gas by mingling the gases produced by the ordinary combustion of coal, coke, or other equivalent carbon with the vapor of petroleum or other equivalent hydrocarbon, and then combining them all into a permanent illuminating-gas by passing them through a heated retort.

The said gases, with which the vapor of petroleum or other equivalent hydrocarbon is to be mingled in making illuminating-gas by our method, it is preferable to produce by forcing atmospheric air through a mass of coke or coal that is undergoing combustion at a heat a little below complete incandescence of the entire mass, as by this means the product will be both oxide of carbon and carbonic acid, with the vapor of whatever moisture there may have been in the coke or coal. The combustion may be thus checked and made to proceed slowly by frequently putting on fresh coal in small quantities, or by laying down upon the surface of the burning mass a plate of metal, stone, or some other incombustible substance, that is perforated with a number of small holes. This will permit the gases to pass away, but will prevent the production of flame. This combustion of the coke or coal may be effected in a furnace or fire-pot of any convenient form and construction, and the air may be forced through the coal by a fan or bellows, or by any other suitable means. The gases upon coming from the coke or coal, while still hot, may be conducted directly into a closed receiver, in which is deposited petroleum or some other equivalent hydrocarbon. The petroleum will thereby be rapidly vaporized by the heat of the gases, and the gases and vapor become mingled together, when they are to be conducted immediately into a heated retort, where the temperature is sufficient to cause the mingled gases and vapor to combine, forming a permanent illuminating-gas. The hydrocarbon may be vaporized by heat applied otherwise than by

the heated gases mentioned; but the method described is convenient, economical, and deemed the preferable one.

A constant supply of the hydrocarbon may be effected by causing it to flow continuously through a pipe into the receiver as fast as it may be needed. The degree of illuminating power it is desired to give to the gas may be regulated by the rate at which the petroleum is introduced into the receiver.

In this method of making illuminating-gas the carbonic acid, as one of the products of the combustion described, plays an important part, as it acts within the heated retort to take up and combine with the free carbon that may be present, which would otherwise be deposited in the said retort and lost, as occurs in ordinary gas making from coal.

We deem it unnecessary to represent by drawing any apparatus for making gas by the method here described, as we lay claim to no novelty in such apparatus, and as every mechanic skilled in the art will know how to construct one.

When it is desired to make gas for heating purposes only, the vaporizing of liquid hydrocarbon and mingling its vapor with the oxide of carbon as described, are dispensed with, and the gases resulting from forcing air over carbon heated to a heat, or a little below, complete incandescence, are conducted for use to a gas-holder.

In order to produce oxide of carbon in this process it is necessary to prevent a too active combustion of the carbon during the forcing of the atmospheric air. This may be done by laying the coal or other carbon in a thick stratum or mass, and at short intervals adding fresh coal to it; or it may be effected by laying down upon the burning mass a plate of iron, soap-stone, or other incombustible substance having in it a number of perforations, whereby the combustion will be in a measure somewhat smothered, the object being to effect a somewhat active combustion at the bottom of the mass, and a slow-smothered combustion at the top of the same. By this means the product of the combustion will in large measure be oxide of carbon.

In the manner above described either illuminating or heating gas may be made very

economically, while the deposit of free carbon or graphite in the retort, which ordinarily occasions so much inconvenience, is obviated.

What we claim as our invention, and desire to secure by Letters Patent, is—

The process of manufacturing illuminating-gas by mingling together, in a closed receiver, the gases produced by the ordinary combustion of coke, coal, or other equivalent carbon, with the vapor of petroleum or other equiv-

alent hydrocarbon, and combining all together into a permanent illuminating-gas by passing them through a heated retort, substantially as described.

CHAS. F. DIETERICH.
AUG. SCHÜSSLER.

Witnesses:

WM. C. REDDY,
A. LIVINGSTON MILLS.