

United States Patent Office.

JOHN A. BASSETT, OF SALEM, MASSACHUSETTS.

Letters Patent No. 66,070, dated June 25, 1867.

IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING GAS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN.

Be it known that I, JOHN A. BASSETT, of Salem, in the county of Essex, and State of Massachusetts, have invented a new and useful Improvement in Manufacture of Illuminating Gas; and I do hereby declare the following to be a full description of the same.

My invention consists in making an improved illuminating gas for lighting cities, towns, etc., by mixing atmospheric air with coal gas or carburetted hydrogen, and enriching the mixture thus obtained by charging it with any suitable hydrocarbon vapor, carburetting it up to any desirable photometric value; the object being to produce a cheap illuminating gas by the mixture of the vapors of the light hydrocarbons (preferably from petroleum) which are abundant and cheap, and coal gas or carburetted hydrogen.

When this process is to be carried on at the gas-works, I make use of two gas-holders, one of which is filled with ordinary coal gas, (carburetted hydrogen,) and the other is filled with atmospheric air. From each of these holders an outlet pipe, furnished with regulating-cocks, connects with a gas carburetter of any suitable form, so that the mingled gas and air are enarged with the vapor of a hydrocarbon just before it issues to the distributing main. Any suitable arrangement which will expose a large surface of hydrocarbon fluid to the volume of mingled gas and air may be used; but I prefer to use for this purpose a chamber containing a series of shallow pans, placed one above the other, over the surface of which the gas and air are compelled to pass; the pans being filled with a liquid hydrocarbon—the light products of petroleum being the cheapest for this purpose—the specific gravity of which should be from 70° to 80° B. The object of the valves before mentioned is to regulate the flow of the gas and air, so that the proportionate quantity of either may be allowed to pass to the carburetter. As the coal gas varies in its illuminating power, different proportions of air may be required to make the proper mixture, having the right illuminating value. Instead of two holders, used as above set forth, one holder for coal gas may be retained, and the air introduced, by an air-pump or blower, to the main leading to the carburetter, by which the coal gas passes.

Under some conditions, for special reasons, it may be desirable to enrich the volume of air with the hydrocarbon before mixing it with the coal gas, and afterwards mix it with the volume of gas, either carburetting the gas or not, as may be required. In place of the carburetter described, the enriching of the mixture of gases may be performed in the main leading from the gas-holders, where, by injecting the hydrocarbon in the form of fine spray, the volume of gas and air becomes carburetted on its passage through the main, or any other means may be used to evaporate the hydrocarbon at any desirable point in the main. It may be necessary, in severely cold weather, to either heat the gas before it passes to the carburetter or to warm the hydrocarbon in the carburetting chamber, so as to more thoroughly volatilize the hydrocarbon. In summer weather it will be found possible to use a larger proportion of atmospheric air than in winter, as the hydrocarbons evaporate more uniformly and produce a better illuminating compound, and there is less condensation of the light-giving constituents of the gas. Any carburetted hydrogen may be used for this purpose, either made from coal, peat, shale, wood, rosin, tar, or liquid hydrocarbons; or the products of the decomposition of water upon red-hot carbon (hydrogen and carbonic oxide) may be substituted for the hydrocarbon gases. In the use of all these gases it is necessary to modify the quantity of air according to the photometric value of the gas; and by increasing or diminishing the surface or power of the carburetter, and the quantity of hydrocarbon vapor used, the illuminating power may be perfectly controlled. It is obvious that the combined carburetted hydrogen and air may be distributed through the mains and the mixture of gases enriched at the point of consumption. The carburetter may be placed on the consumer's premises, and the gas required for illuminating purposes carburetted, while the volume of combined gas which comes from the gas-works may be used direct for heating and other purposes. By connecting the carburetter with a reservoir of hydrocarbon liquid a continuous supply is maintained for a long time, requiring little attention. Street lanterns may also have a small carburetting device applied in the same way and accomplishing the same result.

Claim.

Having thus described the nature of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The process herein described for the manufacture of illuminating gas, which process consists in charging a mixture of coal gas, or its equivalent, and air with the vapor of any suitable hydrocarbon liquid, substantially as described.

2. The improved illuminating gas, made substantially as set forth.

Witnesses:

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