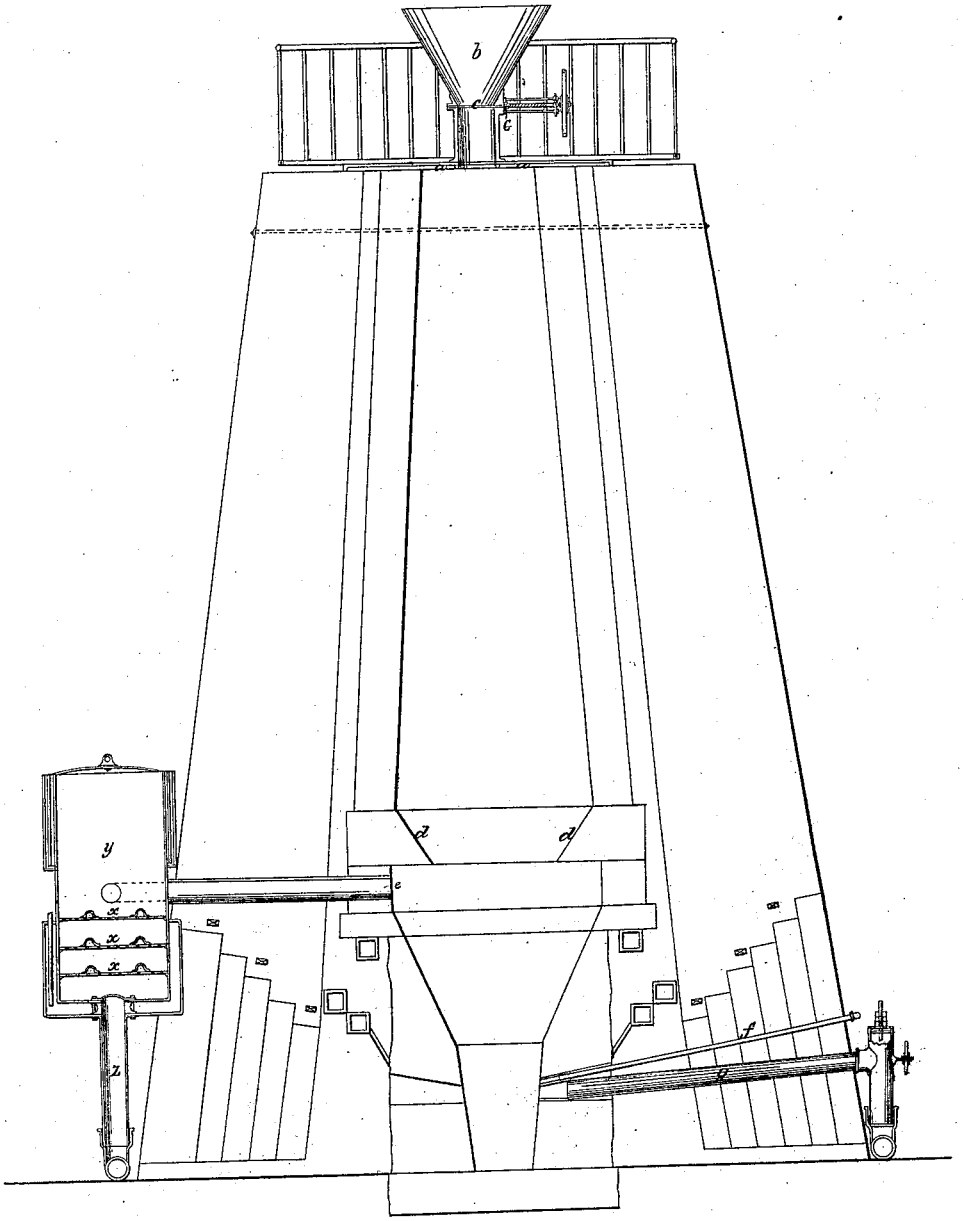
C. Michiels,

Gas Furnace,

No. 4,789. Patented Oct. 3, 1846.



UNITED STATES PATENT OFFICE.

GEORGES MICHIELS, OF PARIS, FRANCE.

MANUFACTURE OF GAS.

Specification of Letters Patent No. 4,789, dated October 3, 1846.

To all whom it may concern:

Be it known that I, GEORGES MICHIELS, of Paris, in the Kingdom of France, but now residing in the Island of Guadeloupe, have made a certain new and useful Invention of Improvements in the Manufacture of Gas for Lighting and Heating; and I do hereby declare that the nature of the same is fully set forth and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

The invention consists of a mode of manufacturing gas, (which I term oxid of carbon) for the purposes of light and heat, by causing anthracite coal (or other equivalent) when in a state of combustion, to be subjected to streams of air, and steam, so as to produce gas, and in order that the invention may be most fully understood, and readily carried into effect, I will proceed to describe the means pursued in carrying the same into practice.

The furnace for the making of gas, according to this invention, is similar in construction to a blast furnace, employed in making iron from iron stone mine, or ore, with only slight modifications, to adapt the same to the purpose of gas making from anthracite coal, by applying thereto streams of air and steam.

The drawing above mentioned, shows a vertical section of a blast furnace, constructed suitably for carrying out the invention.

The upper part of the furnace is closed by a plate *a*, through which there is an opening, with a hopper *b*, affixed, as is shown; C being a valve or slide to be withdrawn, when charging the furnace, and closed when the charge has been introduced.

At *d*, *d*, the furnace is contracted, which is just above the boshes, and below such contraction of the furnace, there is an outlet *e*, to which a pipe is fixed, and it is at this point the gas (oxid of carbon) passes off from the furnace, as generated; and as the gas is liable to carry with it fine dust of the coal and ashes it may be made to pass through several finely perforated metal or other proper plates *x*, *x*, *x*, placed in a vessel *y*, at a distance apart, so as to intercept the dust, and separate it from the gas. The gas then passes through a suitable pipe *z* and into an ordinary gasometer or suitable receiver, from which the gas is conducted, by other, pipes to burners, to be used for the purpose of light and heat.

f is the blast pipe for introducing a hot blast of air, which I have found does not require to be at a greater pressure, than from three to four ounces on the inch. *g* is a steam pipe, by which steam is freely passed into the furnace, taking care that the quantity admitted, does not cool the furnace down below a very bright red heat, and the steam so admitted is first heated, by passsing through suitable heating apparatus, in the same way as air is heated for a hot blast, and I prefer that the steam should be raised to 600° of Fahrenheit.

In charging the furnace (after it has been lighted and well heated, as is well understood) if only gas, for the purposes of light and heat are intended to be produced, then only anthracite coal or any proper equivalent will be introduced into the furnace, and the process will simply consists of keeping up the charge in the furnace, as it becomes consumed, and from time to time, stopping the admission of the blast and the steam, and raking out the ashes at the bottom of the furnace, through a suitable opening, which may be covered with an iron plate, and closed and luted, when the furnace is working off the gas.

By the above described means it will be seen that the gas (oxid of carbon) is obtained by subjecting anthracite coal, or other equivalent when in an ignited state, to streams of air and steam. I would remark that oxid of carbon is a gas, which is well known, and has before been obtained by different means, from those herein described, and its capability of being used as a means of producing light and heat, when inflamed, is well known, and I mention these circumstances, in order to state that I do not claim any novelty, in applying such gas to the purposes of light and heat. And I would only further state, that when using the gas (oxid of carbon) for the purposes of light, I use it with a portion of carbonated hydrogen, to increase its brilliancy. The substance which I prefer for this purpose is oil of turpentine, but other convenient compounds of carbon and hydrogen rich in carbon may be employed.

The end of the pipe by which the oxid of carbon is conveyed from the gasometer or receiver is immersed in the oil of turpentine, and the gas in its passage through such liquid takes up sufficient to give brilliancy to the light; or other modes may be

resorted to, for causing the gas to become mixed with such substances.

In burning the gas (oxid of carbon) obtained according to this invention, for the purpose of heat I prefer to combine it with atmospheric air, and this I do by supplying air from another gasometer or receiver, similar to that which contains the gas, so that he air and gas may come to the burner in like quantities, and at like pressure, and be mixed near the burner; but this using of air is not essentially necessary.

Having thus described the invention and the best means I am acquainted with for performing the same, I would have it understood that, what I claim, is—

1. The hereinbefore explained improvement in the manufacture of gas from anthracite, or other equivalent, for the purpose of lighting or heating; the same consisting in the employment of a closed furnace (constructed and combined with a gasometer as described) and streams or jets of heated steam and air forced into the charge thereof, in a state of combustion, all in the manner as above specified.

2. I also claim the peculiar manner of increasing the illuminating power of the gas (generated as above) through the agency of oil of turpentine, or other equivalent matter, by causing the gas to pass through the olefiant fluid and be impregnated by it essentially as set forth.

In testimony whereof I have hereto set my signature.

G. MICHIELS.

Witnesses:
J. HISELAIN,
ED. T. CASEY.