

# UNITED STATES PATENT OFFICE.

CHARLES NOBLE, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN THE MANUFACTURE OF GAS.

Specification forming part of Letters Patent No. 48,714, dated July 11, 1865.

### *To all whom it may concern:*

Be it known that I, CHARLES NOBLE, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in the Manufacture of Gas; and I do hereby declare that the following is a full, clear, and exact description of the same, which will enable those skilled in the art to fully understand and use it.

This invention consists in the employment or use in the manufacture of gas of lumps prepared from coal-dust or waste coal by aggregating the same with refuse starch-water or other means in such a manner that the heat is enabled to penetrate the mass of coal in the retort evenly and uniformly, and the yield of gas is materially increased, and a saving in fuel is effected.

It is well known among gas-manufacturers that dust of soft coal can be used in the manufacture of gas; but when such dust is introduced into the retort in the same state in which it is obtained from the mines it bakes together in a great lump, and that portion of the coal next the sides of the retort is heated much quicker than those portions nearer to the center. It requires a long time for the heat to penetrate the whole mass, and not only much fuel is wasted, but the yield of gas is also reduced, because from a large portion of the coal-dust the gaseous constituents are separated in the form of vapor before the coal is heated high

enough to produce permanent gas, and these vapors condense again, and are a dead loss. These disadvantages are overcome by forming the coal-dust into lumps previous to introducing the same into the retort. I effect this purpose by aggregating the dust or waste coal with refuse starch-water, as described in Letters Patent granted to me November 8, 1864; but it is obvious that other means might be employed for producing the lumps, and I do not wish to restrict myself to any particular method of aggregating the coal-dust, though I use by preference the method described in the Letters Patent above referred to.

By introducing the coal-dust in the form of lumps the heat is enabled to penetrate the mass in the retort uniformly, and the entire mass is heated with comparatively little fuel to the requisite temperature to produce permanent gas. The yield of gas is increased and the expenditure of fuel diminished.

What I claim as new, and desire to secure by Letters Patent, is—

The employment or use in the manufacture of gas of lumps produced from coal-dust or waste coal substantially in the manner and for the purpose set forth.

CHS. NOBLE.

Witnesses:

GUSTAV MILLER,  
W. HAUFF.