

UNITED STATES PATENT OFFICE.

GEORGE MCKENZIE, OF GLASGOW, SCOTLAND.

IMPROVED COMPOUND FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **100,433**, dated March 1, 1870.

To all whom it may concern:

Be it known that I, GEORGE MCKENZIE, of Glasgow, Scotland, have invented a new and useful Compound for the Manufacture of Illuminating-Gas, of which the following is a specification.

My invention relates to the compounding, with pulverized coal intended to be used for the purpose of making illuminating-gas, some one or more vegetable or animal oleaginous substances, whereby the illuminating-power of the gas that may be made therefrom is rendered superior to that which can be produced from the coal alone.

Before particularly describing my invention it is proper to remark that on the 9th day of July, 1867, Letters Patent of the United States were issued to me, numbered 66,511, for a compound for a purpose similar to the one stated above. That was also a compound of pulverized coal and oil; but the oil to which the literal construction of the language of the specification annexed to that patent would limit me is mineral oil. Since obtaining that patent I have ascertained by experiment that other oils beside mineral will serve the purpose, and I therefore desire and intend in this specification to cover and extend my claim to embrace a compound of pulverized coal and any of the varieties of non-mineral oleaginous substances. Among such substances that I have found suitable for the purpose named I will mention the oil extracted from rosin and rosin-tar, the residuum from the manufacture of spermaceti and hyper-sperm, also the residuum derived from the extracting of oil from lard or any other animal substances. Almost any of the vegetable or animal oils will serve the intended purpose so far as relates to enriching the illuminating gas-producing qualities of coal is concerned; but practically a considerable number of them are too costly to enable them to be economically used. The oil from rosin and the residuum named will often be found sufficiently cheap and abundant to render their use for the purpose indicated practicable. The method of combining pulverized coal with these substances is substantially the

same as that described in the patent referred to for compounding it with mineral oil. The coal is to be first ground in a suitable mill, and then the non-mineral oil or oleaginous substance is to be ultimately incorporated with it by regrinding or in some other suitable manner.

The proportions of oleaginous substance and coal will vary according to the quality of each and the degree of illuminating-power required in the gas to be made from the compound. I have found that when about thirty gallons of rosin-oil is mixed with a ton of pulverized coal it will raise the illuminating-power of the gas some ten or twelve candles. It will usually be found that the incorporation will be most readily and easily effected with the oil when the oil and coal are both heated sufficiently to keep the oil in a very completely fluid state during the operation. To preserve the required fluidity of these oils, it will be found that a small quantity of some of the lighter mineral oils or their extracts can be mixed with the non-mineral oily substances to advantage, and rosin may be dissolved in some suitable solvent instead of being distilled, if preferred. I prefer however, to use the non-mineral oil in a hot state, as it then more readily combines with the pulverized coal. The more thoroughly the coal and oil are incorporated together the more regularly the compound gives off its gas in the process of distillation in the gas-retort, as the coal will not, if thoroughly combined with the oil, let go the gas from the oil until it is itself also carbonized.

I do not intend to limit myself to any particular non-mineral oil, nor to any special method of incorporating the oil and pulverized coal.

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

The compound composed of pulverized coal and a non-mineral oleaginous substance, substantially as and for the purpose specified.

GEORGE MCKENZIE.

Witnesses:

J. P. FITCH,
THOS. A. MASTERSON.