

# UNITED STATES PATENT OFFICE.

EUGENE MIANNAY, OF NEW YORK, N. Y.

## IMPROVEMENT IN ARTIFICIAL FUEL.

Specification forming part of Letters Patent No. **18,920**, dated December 22, 1857.

*To all whom it may concern:*

Be it known that I, EUGENE MIANNAY, of New York, in the county and State of New York, have invented a new Composition of Coal, (Artificial Fuel,) which I have called "Ligno-Bituminous Coal;" and I do hereby declare that the following is a full and exact description thereof.

The ligno-bituminous coal is composed, first, of tar issuing from the distillation of coal in gas-manufactories, &c., and also of dry tar; second, of dust of charcoal, wood-coal of all sorts; third, of dust of coke proceeding from gas-manufactories, &c.; fourth, of dust of ordinary coal. The said ligno-bituminous coal, serving for the same purposes as coal and charcoal, is necessarily composed in different proportions, according to its use, for the one or other combustible. I give here the description of four species: First quality, one hundred tons dust of charcoal, thirty tons dust of coke, thirty-nine of tar, or thirty per cent.; second quality, one hundred tons dust of charcoal, eighty tons dust of coke, fifty-four of tar, or thirty per cent.; third quality, one hundred and twenty tons of charcoal, eighty tons of coke, thirty tons of ordinary coal reduced to dust, sixty-two of tar, or twenty-seven per cent.; fourth quality, one ton dust of charcoal, four tons dust of ordinary coal, one-half of dry tar, or ten per cent. The first two qualities are to be used particularly for melting soft metals, the third for hard ones, and the fourth is intended specially for steamers and other machines where smoke is so troublesome and insalubrious. The ligno-bituminous coal gives neither smoke nor smell, and affords great economy and facility in fuel and labor.

**Manufacture:** The ingredients for the ligno-bituminous coal are ground, mixed, molded, and carbonized.

**Grinding:** By this operation the coal and coke are reduced to dust or powder. This is done by the means of tuns, cribble grinders, or grind-mills with vertical millstones.

**Mixture:** The mixture or preparation of the paste is effected by means of tuns with vertical paddle-beams or vertical millstones with circular trough and plow-track. I intend, further, to make use of a machine to mix, grind, and prepare the paste by a single operation.

**Molding:** The molding of the paste is done by way of an engine with pistons—one with double vertical and horizontal pistons and another with simple pistons and partitioned tubes. The molding produces thus a coal of cylindrical form, which is exposed for drying in the open air and carbonized immediately after. I intend, moreover, to mold the paste into different shapes afterward, according to the greater economy in workmanship for each sort of coal, as well in square and parallelogrammic as cylindrical form, and of all dimensions.

**Carbonization:** The molded and dried coal is put orderly in the ovens, filled up at two-thirds of their height, and closed. Fire is first made in the hearth on the grate with ordinary coal. One ton is sufficient. The flames pass through the apertures in the vaults into the chambers, run round the ovens, of which they heat the surrounding walls. They provoke the gas of the ligno-bituminous coal within, which gas penetrates through the holes behind and the chambers, circulating and entering the fire all around. The coal inside, having lost all its gas and smell, is carbonized. Then it is promptly taken out and substituted by other to be carbonized in the same way. This operation uninterruptedly continuing, no new expense of coal for fire is wanted, the flame being constantly maintained by the gas issuing from the fresh ligno-bituminous coal deposited in the ovens and heated by the ever-remaining ardent vaults and walls of the ovens.

This is my whole invention, and produces the ligno-bituminous coal ready for sale and use as soon as taken carbonized from the ovens.

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

The composition of a new coal or artificial fuel by the said several ingredients mixed together in different proportions, called "ligno-bituminous coal," and manufactured as herein described, for the intended above-given purpose.

EUG. MIANNAY.

Witnesses:

GE. CHRISTIANSEN,  
A. FOURY.