UNITED STATES PATENT OFFICE.

CARL CHRISTIAN FERDINAND OTTO, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN COMPOUNDS FOR FUEL.

Specification forming part of Letters Patent No. **151,424**, dated May 26, 1874; application filed September 6, 1873.

To all whom it may concern:

Be it known that I, CARL CHRISTIAN FERDINAND OTTO, of Syracuse, in the county of Onondaga, in the State of New York, have invented a new and useful Improvement in Compounds for Fuel, of which the following, taken in connection with the accompanying specimen, is a full, clear, and exact description.

The object of my invention is to convert coal-dust, or coal of fine particles, into such a form as to make it a cheap and convenient fuel; and it consists in mixing with the coal-dust or fine coal the following substances and chemicals in the proportions and in the manner hereinafter described and claimed.

First, the coal-dust is to be heated to about 212° to 300° Fahrenheit, in suitable reservoir or reservoirs, wherein it can be practically and thoroughly stirred and intermixed, at the proper time, with the materials, and in the manner hereinafter named.

Second, natural or artificial (as may be most expedient at the time) pitch is to be dissolved in pitch-tar or coal-tar, thereby producing an elastic body, which is to be diluted with benzine or petroleum, (as may be most expedient at the time,) in order to make it more fluid, and in suitable condition for properly uniting, and expeditiously and completely intermixing with the coal-dust.

Third, when the coal-dust in the reservoir, as described in paragraph No. 1, has reached the temperature of 212° to 300° Fahrenheit, it is to be intermixed with the solution described in paragraph No. 2 herein, and while the mixture thus produced is at the temperature of 212° to 300° Fahrenheit, there is to be added to it nitrate of kali or nitrate of soda in fine granulated condition in proportion of one of the nitrate to about two thousand of the composition, and the entire mass is to be thoroughly and speedily intermixed.

While still hot and in a molten condition, this composition is to be poured or pressed into suitable molds of various sizes and forms for practical use, from which it can be readily emptied, and as soon as cool will form a solid substance for fuel or such other uses as coal is put to.

The solution of pitch is used for the purpose of cementing the particles of coal together and incite still greater combustion in the compound. The granulated nitrate of kali or soda is used for the purpose of inciting and expediting the incipient combustion of the compound, which it does in a manner of explosion. By using these chemicals in a dry granular state they become distributed and deposited within the voids between the particles of coal, where they explode as soon as the crust between them and the fire is burnt, thereby throwing it off and bringing a fresh surface of the mixture in contact with the fire. A solution of these chemicals would penetrate the particles of coal and add moisture to the mixture, which I wish to expel as much as possible; therefore would not accomplish the object I wish to accomplish.

I do not claim the compound of fine coal or coal-dust with asphaltum, petroleum, tar, pitch, or oil, as I am aware the same is not new.

I claim—

1. The manufacture of coal-dust into artificial lump-coal in the following manner, to wit: heating the coal-dust to a temperature of 212° to about 300° Fahrenheit, then stirring and intermixing the same with pitch, which is diluted with benzine or petroleum, then intermixing the mass thoroughly and speedily with finely-granulated nitrate of potash or nitrate of soda, and finally molding the whole into the required form, substantially as described.

2. In an artificial fuel the combination of coal-dust, pitch, benzine or petroleum, and nitrate of soda, substantially as specified.

In testimony whereof I have signed my name and affixed my seal in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 4th day of September, 1873.

CARL CHRISTIAN FERDINAND OTTO. [L. S.]

Witnesses:

E. LAASS,
SOCRATES W. SQUIER.