

UNITED STATES PATENT OFFICE.

FREDERIC DIXON, OF ISLINGTON, ENGLAND.

IMPROVEMENT IN ARTIFICIAL FUEL.

Specification forming part of Letters Patent No. **177,626**, dated May 23, 1876; application filed February 24, 1876.

To all whom it may concern:

Be it known that I, FREDERIC DIXON, of Southgate Road, Islington, in the county of Middlesex, England, a subject of the Queen of Great Britain, have invented or discovered a new and useful Improved Artificial Fuel; and I, the said FREDERIC DIXON, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

My invention of an improved artificial fuel consists of treating and combining coal, usually small coal, or that known as "slack," and whether of the anthracite or non-bituminous kind, or bituminous or lignite, brown coal, peat, or other similar carbonaceous substances, or charcoal, coke, and other allied carbonaceous substances with gummy matters and hydrocarbons, the effect of which treatment is to fix the carbon in the fuel produced thereby, so that little or no smoke is generated on ignition. Combustion is so perfect as to leave little or no residuum of ashes, while among other advantages attending the use of this artificial fuel may be claimed its freedom from liability to spontaneous combustion, its density and cohesiveness, its being impervious to water, and the fact that it cokes well, qualities which render it valuable for use in steamships especially, and for exportation.

And in order that my said invention may be well understood, I will now proceed to describe the process I adopt for the manufacture of my said improved artificial fuel.

In the first place a mixture is to be made of dextrine, British or foreign gums, or gummy or adhesive matters, or a mixture of any two or more of such substances in, as near as possible, the following proportions: One part of dextrine or other gummy or adhesive matter is to be mixed with two and a half parts of water, and tairy grains of aluminate of soda are to be added to each gallon of the aforesaid mixture. Solution is effected in a suitable tank or other vessel heated by steam, in which the mixture is to be boiled, and then conveyed through a pipe and tap into a boiler or steam-cylinder, in which ten parts of pitch or bitu-

men have been previously melted. The whole contents of the boiler are then to be intimately mixed together by boiling under moderate pressure; and, lastly, a stated quantity of fusel-oil is to be added, say eight to ten fluid ounces to the hundred weight of the above composition. By means of a revolving mixer or otherwise, the respective substances in the boiler are to be caused to unite. The next process is to cause the hereinbefore-mentioned composition to become united with the small coal, coke, or other carbonaceous matters, and is to be effected by fuel-machines now employed in the manufacture of artificial fuel, or machines which may hereafter be specially constructed for that purpose, so much of the aforesaid composition being added to the small coal, coke, or other carbonaceous matters, which are to be in a disintegrated or granular state, as will cause the particles to adhere when pressed, and become, when dry, consolidated and cohesive.

Although I have hereinbefore stated the proportions of the ingredients of the composition, which I have found answer well, the precise quantities will more or less vary according to and in relation to the particular carbonaceous matters with which they are to be mixed, and it is to be understood that such proportions are only approximative and not definite.

I would also here remark that fusel-oil is also known as pentylic or amylic alcohol or grain or potato spirit, the several names designating one and the same fluid-matter, which, however, may vary in strength, and although I may prefer to use fusel-oil, I claim to use other forms of alcohol, méthylated spirit, or methylic alcohol, naphtha, rock-oils, or other similar hydrocarbons, which may be advantageously used in the production of the hereinbefore-described composition, and I therefore do not exclusively limit myself to the use of fusel-oil.

After the composition has been well mixed by mechanical means with the aforesaid carbonaceous matters, the mass is to be run or injected into metal molds, and the blocks, balls, or other forms thus made of the artificial fuel, will become thoroughly dried and

consolidated without the use of artificial heat.

Having now fully described the nature of my said invention, and the manner in which the same is to be carried into effect, I wish it to be understood that what I claim, and desire to secure, is—

An artificial fuel, consisting of a mixture or composition of aluminate of soda and dextrine or gummy matters, and of fusel-oil, naphtha, rock-oils, alcohol, or hydrocarbons, with suitable carbonaceous matters in a disintegrated

or granular state, in or about in the proportions hereinbefore set forth.

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