UNITED STATES PATENT OFFICE.

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ARTIFICIAL FUEL.

SPECIFICATION forming part of Letters Patent No. 266,971, dated November 7, 1882.

Application filed March 8, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, CAROL H. COGGESHALL, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Artificial Fuel; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the art of making artificial fuel.

In using coal for a fuel there is left from each fire a greater or less quantity of partly-burned coal, commonly called "cinder," which is not to any extent utilized, owing to the fact that the inflammable volatile matters have been partly or wholly extracted therefrom by the heat, leaving an almost inert mass, which has not sufficient gaseous matter therein to consume the carbon by the ordinary means of combustion.

The object of my invention is to utilize this cinder and make a fuel that will burn readily and at the same time be cheap and devoid of dirt or other objectionable matter.

To this end the nature of the invention consists of a fuel consisting of coal-cinder, tar, and sawdust, combined in the manner hereinafter set forth.

In making my fuel, heat is one of the essential elements, as one of the objects is to saturate the cinder with tar, which could not be accomplished unless the cinders were heated to about the same temperature as melted tar; nor could the tar-saturated cinder be coated with sawdust unless the latter were heated to such a temperature that the tar-coated and heated cinder would not be cooled to such an extent that the latter would cling together, forming one mass, instead of each cinder being a separate lump, as desired. Therefore I gradually heat about one bushel of sifted cinders in a suitable vessel until all the cinders are of about the same temperature—say about 100° Fahrenheit—which preferably should be of nearly the same degree as that at which tar boils. Other temperatures might be used if the cinders are heated to such a degree that the melted tar will not be chilled and hardened before the former can absorb or take it up. When the cinders have been sufficiently heated about one-half gallon of melted tar, heated to nearly the boiling-point, which is about 100° Fahrenheit, is added to the cinders and the mixture stirred until all the tar has been absorbed or taken up by the cinders. The elements I prefer to use are bituminous-coal cinder, coal-tar, and sawdust; but it is obvious that many other substances the equivalent of the above-mentioned may be used without departing from my invention. In describing my invention, however, the references will be made to the above-named materials as being the most suitable, while the description is such that a novice or an unskilled person could make the necessary changes, if equivalents be used, without any further instruction. The proportion of tar to a bushel of coal may be varied to suit the different qualities of cinders, as some kinds take up more than others. Experiments, however, have determined that for the ordinary cinder one-half gallon of tar to the bushel of cinder is the best proportion, as it is desirable to have the latter absorb or take up every bit of tar in the vessel. Each cinder will then be separable from the mass and at the same time have enough tar upon its surface to take up a coating of sawdust, which is applied by shoveling the tar-saturated and heated cinders into a bin containing sawdust heated to about 80° Fahrenheit. The cinders are stirred around in the sawdust until the mass has become cooled. The sawdust-coated and tar-saturated cinders are then forked or sifted out of the sawdust, and are ready for use. The residue of the sawdust is again heated for another load of tar-coated cinders.

In heating the sawdust it is not necessary to raise its temperature to a very high degree, as it will readily affix itself to and coat the tar-saturated and heated cinder at a lower temperature. The sawdust adds bulk to each cinder, furnishes a very inflammable surface, and at the same time admits of each piece being easily handled without soiling the hands, thus, with the cinders and tar, making a cheap and clean fuel, and one which will readily burn by the means commonly used to produce such a result.

In stating the above proportions of the ingredients I do not wish it understood that I

limit myself to the specific proportions, as it is evident that many others might be used without departing from my invention. If desired, coal may be added; but it is not essential.

I am aware that sawdust, small coal, and tar, pitch, or rosin have all been mixed together and molded in cakes; that chalk, pitch, sawdust, and sometimes tar and coal have been mixed together and pressed in molds to form blocks; that anthracite coal, sawdust, coke, coal-tar, and water have been mixed together to form a fuel; that petroleum, sawdust, and coal-dust have been treated similarly by mixing with plaster, rosin, or cement; and, finally, that blocks of wood have been coated with sawdust to serve as a fire-kindler; and these I do not claim. Nor do I claim the combination of cinders with a gaseous plastic substance, as I have made a separate application therefor; but,

Having described my invention, I claim as new—

An artificial fuel consisting of cinders, each saturated with tar and coated with sawdust, forming a fuel in a loose or non-compact condition, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CAROL H. COGGESHALL.

Witnesses:
LOUIS R. TATUM,
HEOLON CRANE.