

UNITED STATES PATENT OFFICE.

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MANUFACTURE OF ARTIFICIAL FUEL.

SPECIFICATION forming part of Letters Patent No. 770,851, dated September 27, 1904.

Application filed May 27, 1904. Serial No. 210,102. (No specimens.)

To all whom it may concern:

Be it known that I, PAULINE GRAYSON, a subject of the King of Great Britain and Ireland, residing at 91 Victoria street, Westminster, London, S. W., England, have invented certain new and useful Improvements in Connection with the Manufacture of Artificial Fuel, of which the following is a specification.

This invention relates to improvements in connection with the production of fuel for use in domestic, manufacturing, or industrial purposes, the object being to provide fuel that can be produced from a number of inexpensive and common ingredients, and thus to secure the production of a fuel in positions where it may be necessary to consume such, and thereby to save the cost of freight associated with the ordinary fuel in connection with its transport from the collieries or the like to positions or districts in which it is to be consumed.

In carrying my invention into effect when manufacturing fuel for use in domestic or other furnaces I employ a number of elements combined in the particular manner hereinafter described, so as to obtain a fuel of considerable calorific value from materials which are incapable of being used or inconvenient for use as simple elements for heat-productive purposes. In one convenient method of manufacture which I employ I utilize water, sawdust, sand, petroleum, oil, lime or cement, plaster-of-paris, pitch, and resin, combined with coal and sometimes with molasses, and I mix these various substances together, so as to produce definite forms or blocks of the combined materials of a size convenient for handling to suit the particular furnace or grate where such are to be consumed.

As an illustration of the method of manufacture that I find convenient in making my improved fuel, I take twenty per cent. of water, eight per cent. of sawdust, twelve per cent. of mineral oil, six per cent. of lime, chalk, or cement, six per cent. of plaster-of-paris or gypsum, six per cent. of pitch, six per cent. of resin, and thirty-two per cent. of coal or sand or portions of each, and I combine the same particularly in the hereinafter-described manner. When producing a fuel

with a smaller amount of oil and a larger quantity of coal and no sawdust, I find the following proportions produce satisfactory results: sixteen per cent. of water, sixty-seven per cent. of coal, three per cent. of plaster-of-paris, three per cent. of pitch, three per cent. of resin, five per cent. of oil, and three per cent. of cement. The dry ingredients, as hereinbefore mentioned, I intimately mix and separate them into two equal portions. Into one receptacle I add the water which is to be employed, while to the other equal portion I add the oil, mixing each particular portion separately, so as to produce a thorough incorporation of the water with the one and the oil with the other. I then bring the two portions together and subject them to an intermingling or thorough mixing, and having thus compounded them I apply thereto the melted pitch and resin, thoroughly stirring and mixing such until a complete and satisfactorily uniform consistency is obtained of the whole composition. By this system of effecting incorporations of the dry materials with water in one portion and with oil in another, or with oil at one time and water at another, I secure a more reliable and thorough admixture and combination of one element with the others than is likely to be produced when oil and water are added to the same portions of dry material. I sometimes secure a satisfactory combination by adding the oil to the pitch and resin that is to be heated and then add the water to the other dry ingredients, when after thoroughly mixing I bring both mixtures together for a further incorporating treatment under heat. After the incorporated masses have been thoroughly intermingled I divide out the material into balls or slabs of any desired shape to suit the particular purpose for which the fuel is to be used. When desired, I may press the material within molds to the desired shape. Having thus formed the block, slabs, or balls, I sometimes coat or sprinkle the surface while hot with lime or other material and then place them in a position where they may harden, preferably in a natural manner. I do not limit the application of my invention to any particular method of in-

corporating these ingredients, and I sometimes vary the proportions of some of the elements employed when producing fuel to be more or less intense in its heat-producing qualities to suit the purposes for which my improved artificial fuel is to be employed. For example, in districts where coal-dust or small coal is abundant the proportion of the coal may be increased to as much as seventy-five per cent., and I may vary the proportions of pitch so that it may be unnecessary to employ resin in my combination.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A process of manufacturing artificial fuel, consisting in mixing coal, sand, plaster-of-paris, sawdust, lime, water, mineral oil, pitch and resin, the dry ingredients being first mixed, then separated into two equal portions, the two portions being separately incorporated the one with oil and the other with water and afterward intermingled with pitch and resin, substantially as described.

2. A process of manufacturing artificial fuel, consisting of mixing coal, sand, plaster-of-paris, cement, water, mineral oil, pitch and resin, the dry ingredients being first mixed, then separated into two equal portions, the two portions being separately incorporated the one with oil and the other with wa-

ter and afterward intermingled with pitch and resin, substantially as described.

3. A process of manufacturing artificial fuel, consisting in mixing coal, sand, plaster-of-paris, sawdust, lime, water, mineral oil, pitch and resin, the dry ingredients being first mixed with water and then added to a mixture of heated oil, resin and pitch, substantially as described.

4. A process of manufacturing artificial fuel, consisting in mixing coal, sand, plaster-of-paris, cement, water, mineral oil, pitch and resin, the dry ingredients being first mixed with water and then added to a mixture of heated oil, resin and pitch, substantially as described.

5. An artificial fuel consisting of coal, sand, plaster-of-paris, sawdust, lime, water, mineral oil, pitch and resin, incorporated together, substantially as hereinbefore set forth.

6. An artificial fuel consisting of coal, sand, plaster-of-paris, cement, water, mineral oil, pitch and resin, incorporated together, substantially as hereinbefore set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

PAULINE GRAYSON.

Witnesses:

ALBERT E. PARKER,
L. H. THOMAS.