

UNITED STATES PATENT OFFICE.

JOHN W. IVERY, OF DILLSBURG, PENNSYLVANIA, AND CHARLES M. LINTHICUM, OF
SUDBROOK PARK, MARYLAND.

ARTIFICIAL FUEL.

No. 889,612.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed June 1, 1907. Serial No. 376,852.

To all whom it may concern:

Be it known that we, JOHN W. IVERY, a citizen of the United States, residing at Dillsburg, York county, Pennsylvania, and
5 CHARLES M. LINTHICUM, a citizen of the United States, residing at Sudbrook Park, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Artificial Fuel; and
10 we 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.

15 Our invention relates to a commercial, transportable, weather and atmospheric proof artificial fuel to be made in the form of briquets, and has for its objects to produce an inexpensive fuel in the manufacture of
20 which a large percentage of waste material is utilized, and one which will be highly combustible, and consequently practically smokeless.

A further object of the invention is to
25 combine with the material which forms the body or base of the fuel certain materials which promote combustion and to apply to the otherwise completed fuel a waterproofing, which will effectually exclude moisture and
30 preserve the material in perfect condition for a practically indefinite period.

A further object of the invention is to combine with the body material and combustible materials certain binding materials
35 which will render the mass hard and solid to permit of its being readily molded into briquets, and which will preserve the integrity of the molded material.

With the above and other objects in view,
40 the invention comprises the novel combination of materials, as more fully hereinafter described.

The improved artificial fuel produced in accordance with the invention consists of a
45 base or body material, such as culm, peat, lignite or saw dust, to which is added a material for promoting combustion consisting of lime stone or gypsum in a crude or calcined state combined with black oxid of manganese, the body material and combustion material being united in the mass by a binder composed of sulfate of calcium, and molasses, mixed in suitable proportions to accord with the other materials used in the mass.

50 In carrying out the process, one or more of

the base or body materials above named, together with the combustion material, made of limestone or gypsum and manganese, as above specified, together with the above described binding material, are mixed *en masse* in a suitable mixing machine, together with a sufficient quantity of water to render the mass moldable, and after being thoroughly commingled, are conveyed to a briquet machine and molded into briquets of suitable size and form, the briquets being finally dried and waterproofed. The waterproofing is effected by subjecting the briquets to a bath of tar and pitch of suitable consistency, combined with ground lime or plaster of paris, and manganese, the ingredients being mixed in suitable proportions in accord with the particular base or body material employed in the production of the fuel.

We have found by practical tests that in instances where we employed crushed hard or soft coal or culm, that the best results are attained by mixing the materials in the following proportions:—crushed hard or soft coal or culm, 1800 parts, limestone or gypsum 150 parts, black oxid of manganese 10 parts, sulfate of calcium 20 parts, and molasses 20 parts. It is to be understood, however, that these proportions may be varied to suit the nature or grade of materials and other conditions which may arise.

We have found that under this process we are enabled to utilize the refuse from hard or soft coal, and in the latter instance to convert the soft coal to a condition as desirable for use as is hard coal, and furthermore, that by the employment of limestone or gypsum in a crude or calcined state and combined with manganese, the finished fuel will be highly combustible, and will, in use, be practically smokeless, or, in other words, that the materials in question will so promote combustion as to practically eliminate the production of smoke and other objectionable products of combustion. Furthermore, the waterproofing material employed renders the fuel absolutely impervious to moisture, and consequently, preserves the fuel in a hard and perfect condition for a practically indefinite period.

Having described our invention, what we claim as new and desire to secure by Letters-Patent, is:—

1. An artificial fuel comprising a base or body material combined with limestone or

gypsum, black oxid of manganese, and molasses, mixed in suitable proportions.

2. An artificial fuel comprising the following ingredients mixed in the proportions named: a base or body material, 1800 parts; limestone or gypsum, 150 parts; black oxid of manganese, 10 parts, and molasses, 20 parts.

3. An artificial fuel comprising a body of crushed hard or soft coal or culm, limestone or gypsum, black oxid of manganese, and molasses mixed in suitable proportions.

4. An artificial fuel consisting of a base or body material, limestone or gypsum, black

oxid of manganese, and molasses mixed in suitable proportions and molded into briquets, and a waterproofing material applied to said briquets and consisting of tar and pitch, lime or plaster of paris, and manganese mixed in suitable proportions.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOHN W. IVERY.

CHARLES M. LINTHICUM.

Witnesses:

ROLAND C. BOOTH,

H. B. WILLSON.