UNITED STATES PATENT OFFICE.

GEORGE D. PLATTE, OF HENDERSON, KENTUCKY, ASSIGNOR OF TWO-THIRDS TO CHARLES W. SHELDON, OF FOREST, AND PETER NOMMEUSEN, OF WILSON, ILLINOIS.

COMPOUND FOR PRODUCING ARTIFICIAL FUEL, &c.

SPECIFICATION forming part of Letters Patent No. 561,725, dated June 9, 1896.

Application filed May 21, 1895. Serial No. 550,134. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE D. PLATTE, a citizen of the United States, residing at Henderson, in the county of Henderson and State of Kentucky, have invented a new and useful Compound for Producing Artificial Fuel and for Hardening Soft Materials, of which the following is a specification.

This invention relates to hardening compounds for soft materials; and it has for its object to provide a composition of matter of this character possessing exceptional qualities for homogeneously crystallizing slack coal or culm into lump coal. In the attainment of this object the invention also contemplates providing a new and useful compound available for use to harden clay or brick materials for the purpose of making brick without burning, for hardening plaster, for hardening mortar, and for hardening paving compositions or other soft material.

To this end the invention primarily consists in a hardening compound composed of one gallon of crude petroleum, one pound of asphalt, one gallon of crude naphtha, one pound of rock-salt, one pound of zinc ore, and thirty gallons of clear water.

The several ingredients of the compound are thoroughly mixed and ground together, so as to reduce the mixture to a thick fluid, after which the same is ready for use in hardening soft materials. The proportions specified are sufficient to produce a compound for hardening one ton of slack coal, and in order to prepare such coal into lump coal by the use of this compound the slack coal and the compound are thoroughly mixed together in a crusher or other suitable machine. After the coal has been thoroughly saturated and intermingled with the compound the resultant mixture is introduced into a press-machine or hand-mold for shaping the product into conveniently-shaped lumps, and the product is then subjected to a sufficient degree of heat to provide for the removal of the moisture and the very volatile constituents, thereby insuring the rapid crystallization of the product, so as to form a homogeneous mass, which provides an excellent artificial fuel that is entirely smokeless, sootless, cinderless, and odorless.

In the manufacture of the artificial fuel just described by the use of the hardening compound it is to be noted that the adhesive properties of the ingredients are not depended upon; but the chemical action of the ingredients in connection with the heating causes the product to be formed by crystallization and therefore homogeneous and stable.

Another advantageous characteristic of the coal product described is that the same is very hard and capable of easy handling, while at the same time being perfectly clean, so that it will not soil the hands or other object with which it may come in contact. Other desirable properties of the lump coal produced by the hardening compound may be stated to be that the same will not slack again after having been once made, and when broken quite fine does not lose any of its burning qualities, but always burns to a clean white ash and drops through the grate without shaking.

An important feature of the present invention is to be noted in the fact that (especially in the manufacture of artificial fuel by the use of the herein-described hardening compound) the complete hardened mass is very stable and is not easily disintegrated even by the action of heat when burning. This is of the utmost importance in artificial fuels, which ordinarily are very crumbly and easily disintegrated and are therefore not well adapted for the purpose for which they were intended. In securing this result—that is, the homogeneous hardening of the mass so as to make the same very stable and not easily disintegrated—it is to be noted that the adhesive properties of the ingredients are not entirely depended upon, although certain of the ingredients necessarily have a cementing action and assist in binding the other ingredients together in a solid mass, but in the process of drying sufficient crystallization occurs to produce a mass of the desired stability. The asphalt is known to possess cementing or binding qualities as well as being a combustible; but in the present invention only sufficient thereof is added to the compound to

increase the combustible character thereof, and it is more important to note in this connection that an excessively large quantity of water is employed in the compound. This excessive quantity of water necessarily destroys practically all of the adhesive properties of the other ingredients; but the quantity of water used is necessary to insure the crystallizing action referred to during the process of drying the complete mass, preferably by heat.

As to the other products hardened by the compound, one of the most important is the making of brick by mingling the compound with the ordinary clay or stone material, and the brick produced is made without burning and will have a fine color, and in pressed brick the compound prevents efflorescence.

By mixing the compound with plaster, mortar, and the like such materials or substances will be caused to harden in a very short time, while at the same time imparting thereto durability and strength.

Many other uses of the compound will readily suggest themselves to those skilled in the art.

Having thus described the invention, what I desire to claim and secure by Letters Patent is—

A composition of matter for cementing and hardening artificial fuel and other soft materials composed of crude petroleum, crude naphtha, rock-salt, zinc ore, asphalt, and water, combined in substantially the proportions specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE D. PLATTE.

Witnesses:

ISAAC VOORHEES,

J. P. KNIGHTS.