

## UNITED STATES PATENT OFFICE.

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## METHOD OF TREATING AND FORMING ARTIFICIAL FUELS.

No Drawing.

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My invention relates to improvements in method of treating and forming artificial fuels and the resultant fuel produced thereby; the object of my invention being to produce a fuel preferably from varying small sizes of anthracite which shall be commercially available for domestic and other use.

Hitherto, difficulty has been experienced in using varying and coarser sizes of anthracite for briquetting by reason of the fact that continued adhesion of these irregular sizes could not be obtained and such efforts as have been made along these lines resulted in a fuel that was commercially unsatisfactory.

Accordingly, I have directed my efforts toward the proper treatment of anthracite by combining the irregular sizes and culm with a suitable binder, which I have found in the oxidizing or drying oils, i. e., preferably oils that will thicken under atmospheric action alone, or augmented by heat, if desired, in order to hasten the action thereof.

As an example of my improved process, I may state that with a given quantity of the finer breaker products of anthracite, comprising roughly a major imbedding content of culm and twenty per cent (20%) each of Nos. 1, 2 and 3 buckwheat, for example, I combine approximately two and one-half per cent (2½%), by weight, of any suitable oxidizing or drying oil, such as the low grades of linseed oil, chinawood oil, treated resin oil, asphalt oil or even coal tar products, preferably purchasing a product that may not otherwise be used in the arts, for my instant purpose.

My instant process has the obvious advantage and economy of making available the finer anthracite products just as they come from the breaker, without drying, but permitting the excess water to escape, whereupon the oil content is added thereto and thorough and complete agitation of the mixture is accomplished at normal temperature. The said process primarily is dependent upon the principle of displacing the water coating or film upon the subdivided particles of anthracite by an oil film, owing to the greater attraction or adherence of the latter, whereby the oil evenly covers or is

applied to the fuel particles and the maximum binding effect is obtained for a small percentage of the filming binding oil.

Any suitable mixing device or agitator may be used for this purpose. The coating operation progresses rapidly so that a minute film of oil forms over each of the water coated particles by almost immediate displacement thereof, thereby forming a surface oil film on each particle of the anthracite.

Any excess water apparent from this displacement operation is then drained off and the product may be introduced immediately to a briquetting machine for producing briquettes of any desired size. These briquettes preferably are subjected to a moderate heating or drying action in order to hasten production and insure oxidation or solidifying of the oil film or binder, thereby obtaining satisfactory adhesion of the mass.

It is my understanding that the oxidized or solidified oil binder will burn approximately the same as the adherent anthracite particles. In consequence, the briquettes produced in accordance with my invention are equally satisfactory for purposes of transportation and combustion, which is not the case where some classes of binders are used.

While I have above instanced the use of suitable oils for practicing my invention, I do not wish to be understood as necessarily limiting the same to the somewhat expansive drying or semi-drying oils, since the same contemplates any suitable fluid binder that will produce a potentially adherent film under the conditions of using the moist anthracite without artificial drying, and treating the same and briquetting as above described.

Having now described the preferred procedure for practicing my instant invention, I claim as new and desire to secure by Letters Patent, together with such modifications as to procedure and ingredients, as may be supplied by one ordinarily skilled in the art:

1. The herein described method for coalescing irregular small sizes of anthracite and the like, which consists in treating a mass thereof in moistened condition with a suitable filming oil to displace the water and thereafter effecting the drying of said

oil to insure its adherent action, substantially as set forth.

2. The herein described method of filming carbon particles to insure adhesion thereof, which consists in treating the same in moistened condition with a small percentage of filming oil capable of readily drying at relatively low temperatures and subjecting bodies of the mass to pressure to induce adhesion thereof, substantially as set forth.

3. In a process for treating artificial fuels preliminary to briquetting the same, the step of subjecting the particles of fuel while is moist condition to the action of a filming oil, substantially as set forth.

4. The process of treating mixed particles of carbonaceous fuel while in moistened condition with a filming oxidizable oil and effecting their agglomeration thereby, substantially as set forth.

5. The herein described artificial fuel, comprising particles of carbonaceous material filmed over by a suitable oxidizable oil acting as a binder therefor and evenly applied to the particles, substantially as set forth.

6. A fuel comprising the smaller breaker products of anthracite having a filmed adherent oil binder evenly applied to the particles thereof and dried in closely contacting relation, substantially as set forth.

7. An artificial fuel, comprising various small sizes of carbonaceous material, the particles of which are coalesced by a filmed oxidizable binder evenly applied throughout to the surfaces thereof, substantially as set forth.

In testimony whereof I do now affix my signature.

HERBERT E. WETHERBEE.