UNITED STATES PATENT OFFICE.

PAUL RAOUL DE FAUCHEUX D'HUMY, OF LIVERPOOL, ENGLAND, ASSIGNOR TO THE PATENT EXPLOITATION, LIMITED, OF SAME PLACE.

MANUFACTURE OF ANTHRACITE BRIQUETS.

SPECIFICATION forming part of Letters Patent No. 666,229, dated January 15, 1901.

Application filed November 2, 1900. Serial No. 35,288. (No specimens.)

To all whom it may concern:

Be it known that I, PAUL RAOUL DE FAUCHEUX D'HUMY, a citizen of the Republic of France, residing at Liverpool, in the county of Lancaster, England, (whose postal address is 142 Prince's road,) have invented certain new and useful Improvements in the Manufacture of Anthracite Briquets, of which the following is a specification.

This invention has for its object a process of making briquets from anthracite-coal dust. It is very easy to make briquets out of caking-coal dust, as the dust being agglomerated by almost any sticky material that will harden when the briquets are placed in the fire they coke together instead of falling to pieecs. If, however, an anthracite briquet be made in the ordinary manner with tar or the like, when the tar burns or evaporates the anthracite falls to pieces and chokes the fire. Now my invention is designed to prevent this and to form in the interstices of the anthracite a material which shall coke and at the same time cement itself thoroughly to the anthracite; and the invention consists, essentially, in forming the briquets in the usual manner of making ordinary caking-coal briquets—namely, by mixing together in a heated pug-mill pulverized pitch and the anthracite-dust, but adding thereto an agglutinator of the following description—namely, a hydrocarbonaceous body having a high evaporative point and an alkali or a soap capable of solidifying the hydrocarbonaceous material and a comminuted absorbent material capable itself of coking—such, for instance, as sawdust or peat-dust. It has long been known that the various petroleums and liquid petroleum residues can be solidified by the addition of soap or, what is equivalent, by the addition of alkali and resins or fats; also, that alkali will alter the constitution of pitch.

Now I form my agglutinant of raw petroleum or of refuse petroleum after the more valuable products have been distilled from it, but preferably still in the liquid condition, and I add thereto resin and a carbonated or caustic alkali and heat the three together with stirring with sufficient water to enable them to combine until they become a uniform liquid and then a solid. This is again dissolved in water. This liquid is now absorbed by means of sawdust or pulverized peat stirred up in the liquid and heated till the peat or sawdust begins to carbonize, and the mass thus formed is added to the pitch and anthracite-dust in the pug-mill. The pitch, indeed, is not absolutely essential to the process; but if pitch be used much less of the agglutinator is required. Further, in the agglutinator resin is not absolutely necessary; but without resin the alkali and the petroleum do not readily mix. The alkali performs the treble purpose of solidifying the petroleum, neutralizing the acid of the pitch, and of causing the coke formed from the liquid and fibrous organic matters to adhere tightly to the anthracite. The alkali combines with the phenols and other acids of the pitch, converting the latter from an acid material into a neutral or alkaline very adhesive material which sticks resolutely to the anthracite and cokes instead of evaporating. Indeed, the use of alkali alone with the pitch and anthracite is found to make a briquet which will not fall to pieces of itself in the fire; but such a briquet is still so friable that it will not stand any great weight or poking while being burned without breaking up. With, however, the solidified petroleum and the sawdust or peat assisting to fill up the interstices a very hard briquet which remains hard while burning is the result.

A good recipe for making ordinary anthracite briquets is as follows: agglutinator—eleven parts of resin, eleven parts of soda crystals, twenty-one parts common soap, twenty-seven parts of raw petroleum, and thirty parts water, heated together to boiling and stirred till it begins to solidify. Then add nearly its weight of water and twice its weight of peat-dust and stir well till the peat begins to carbonize.

For making the briquets five to fifteen parts of the above agglutinator are thoroughly mixed in a pug-mill with ninety parts of anthracite-dust and ten parts of powdered pitch, so as to form a somewhat plastic mass, and is pressed into molds while still hot. Where a brilliant flame is required, it is well to add a considerable quantity of the agglutinator or use an agglutinator made with a smaller

amount of peat or sawdust; but for steam-coal about five per cent. of agglutinator will do. The exact quantities of pitch to the coal-dust differ with the various varieties of pitch and the coarseness or fineness of the coal-dust, and the agglutinator can be increased in quantity and the pitch reduced proportionately without material injury to the product.

Bitumen, natural or artificial, and thick tars can take the place of pitch to a more or less extent, but must be thoroughly mixed with the anthracite-dust.

I declare that what I claim is—

1. The process of making anthracite briquets which consists in preparing an agglutinator by mixing hydrocarbon oil, resin, alkali and water while subjected to heat till reduced to a uniform liquid and then to solid condition, dissolving the resulting solid in water, absorbing the solution by fibrous organic matter and heating the mixture till the organic matter becomes partially carbonized, then thoroughly mixing this composition in suitable proportion with anthracite-coal dust to agglutinate the particles, and molding while hot.

2. The fuel composition composed of anthracite-coal dust mixed with an agglutinator composed of mineral oil, a sufficient amount of saponaceous material to solidify the oil, and fibrous organic matter as an absorbent for the oil, and in a partially-carbonized condition, substantially as described.

3. The fuel composition composed of anthracite-coal dust and pitch mixed with an agglutinator composed of mineral oil, a sufficient amount of saponaceous material to solidify the oil, and fibrous organic matter as an absorbent for the oil and in a partially-carbonized condition, substantially as described.

In witness whereof I have hereunto signed my name, this 24th day of October, 1900, in the presence of two subscribing witnesses.

PAUL RAOUL DE FAUCHEUX D'HUMY.

Witnesses:

JOHN ARTHUR MIDDLETON,

ALBERT C. B. HENRI.