

UNITED STATES PATENT OFFICE.

JOHN T. DAVIS, OF SAN FRANCISCO, CALIFORNIA.

MANUFACTURE OF ARTIFICIAL FUEL FROM BREA.

SPECIFICATION forming part of Letters Patent No. 728,680, dated May 19, 1903.

Application filed September 12, 1901. Serial No. 75,156. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN T. DAVIS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Manufacture of Artificial Fuel from Brea, of which the following is a specification.

Many parts of the Pacific coast contain vast dry deposits of a kind of natural asphaltum known as "brea," the greater part of which has hitherto been considered as a worthless product of nature. Such deposits cover large areas of the surface of the ground and in places are of considerable depth. Immense quantities are, however, accessible without mining operations. In the course of time, partly by exposure to the elements and certainly by repeated heating processes occurring at different periods of time, these deposits have been converted into coke and carbonized and hardened, making them actually worthless for the purposes for which ordinary commercial asphaltum is fitted. Attempts have been made to use certain softer selected portions of this deposit mixed with fine coal and vegetable matter as a binder for artificial fuel; but the harder coked portions constituting the greater part of the material have always been rejected as worthless for a fuel. I have discovered that this hard rejected portion when used with the softer portions and with a percentage of crude oil and properly treated produces a fuel equal in combustible value to bituminous coal with the advantage that it leaves no ash.

The hard coked portions of the brea give the fuel the property of standing up in the fire during combustion instead of running, as it would do if no coke were present. I find the proportion of coke requisite to make a good fuel to be from ten to twenty-five per cent., depending on the softness of the brea used in compounding. Care must be exercised in the compounding of the various grades to insure a hardness that will keep its form during combustion, and this is done by determining the amount of coke present

which will not run at a temperature at which combustion goes on and then using the necessary per cent. to prevent the softer grade from running. When an unusually large per cent. of the brea is soft, a proportion of ordinary commercial coke may be added to get the hardening effect; but generally this will not be necessary.

In the manufacture of my new artificial fuel the grades of brea—that is, the harder and softer portions—are assorted and ground separately, so that the proper proportions of the respective grades can be mixed together. To the mixture is added from six to fifteen per cent. of crude petroleum and the mass subjected to a mixing, stirring, heating, and agglomerating action in any suitable machine that will thoroughly incorporate the different elements and which may be an inclosed or an open apparatus. The temperature at which the agglomerating action is carried on ranges from 200° to 500° Fahrenheit and is continued until the brea has entirely absorbed the crude oil. The result is a plastic mass capable of being molded into forms such as briquets.

I have thus utilized a waste product of nature in the production of an artificial fuel without using coal or any expensive or valuable material.

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

1. The process of making an artificial fuel, which consists in grinding separately the harder and softer portions of brea, and mixing them together with crude oil so as to form a substitute for bituminous coal.

2. An artificial fuel composed of hard coked brea, softer grades of the same material, and crude oil.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 17th day of August, 1901.

JOHN T. DAVIS.

Witnesses:

GEO. E. CRANE,
EDW. F. HARRIS.