Patented Oct. 28, 1941

2,261,075

UNITED STATES PATENT OFFICE

2,261,075

PROCESS FOR PRODUCING READILY INFLAMMABLE SOLID FUELS AND DRIVING SUBSTANCES

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No Drawing. Application June 3, 1938, Serial No. 211,692. In Germany June 9, 1937

2 Claims. (Cl. 44—1)

According to the present invention readily inflammable solid fuels and driving substances are prepared by treating coal extracts of all kinds with oxygen or oxygen-containing gases.

This mild oxidation of coal extracts is for example according to the invention attained by the coal extracts being subjected to a pressure oxidation with or without catalysts at raised temperatures, more particularly at temperatures between 110–200°. In this connection it is advisable to introduce the coal extracts into the reaction vessels after suitable comminution in aqueous suspension and to press thereon, or to lead continuously through the apparatus under pressure, compressed air or oxygen-containing gases having suitable oxygen concentration. According to the oxygen content of the gases employed and the height of the reaction temperature pressures between 25 atms. up to about 200 atms. and more are used.

It is also possible to effect the oxidation of coal at ordinary pressure by bringing together a stream of air or oxygen-containing gases and the powdered dry extracts at raised temperatures. In this connection it has been found to be particularly advisable to raise the temperature gradually in such a way that a commencement is made at comparatively low temperatures of for example 80° and the temperature is increased, up to for example 250°, to the extent to which the melting point of the extract rises.

In the oxidation according to the invention the melting points of the coal extracts rise more and more until finally after sufficient oxidation completely infusible oxidised coal extracts are formed. In the treatment according to the invention the oxidation of the coal extracts up to gaseous carbonic acid takes place, if at all, only to an extremely small extent. The oxygen on the contrary is taken up by the coal extract so that the treated extracts exceed in weight the quantities of extract at the start. For example a mineral coal extract which is treated at 150° at a reaction pressure of round about 50 atms. with suitable replenishment of the consumed oxygen has an oxygen content of about 15%.

Surprisingly enough it has now been found that the extracts treated in the manner provided by the invention are extraordinarily readily inflammable and readily combustible. For whereas for example the ignition point of the original coal extract, ascertained in the Jentzsch ignition point tester, lies at 495–500°, the aforesaid pressure-oxidised extract already inflames at a temperature of 235–240°. The reactivity of these extracts, oxidised and thereby rendered infusible is of such high degree that, once brought to ignition temperature, they continue to incandesce in the air. The coal extracts preliminarily treated in the manner provided by the invention are therefore particularly suitable for example as driving substances for coal dust engines, for not only do they possess outstanding inflammability and combustibility, but they are free from impurities and ash, so that they represent a valuable substitute for the expensive liquid driving substances. However, they have also proved to be particularly suitable as fuels for special firings, oil firings and the like. The most different coal extracts, which have been obtained from coals of all kinds by the most varied extraction methods are suitable for the treatment according to the present invention. However, coal extracts obtained in maximum yields according to U. S. Patent No. 1,881,927 have proved to be particularly suitable.

What we claim is:

1. Method of treating dry pulverulent bituminous coal extract to improve its use for motor fuel by raising its softening point and lowering its ignition temperature comprising treating the pulverulent extract with oxygen containing gas at elevated temperatures above 100° C.

2. A process for preparing readily inflammable solid fuels and motor fuels by raising the melting point and lowering the ignition point of coal extracts consisting in causing powdered dry coal extracts to interact at raised tempertaure with a gas selected from the group consisting of: oxygen gas and oxygen-containing gas.

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