

UNITED STATES PATENT OFFICE

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COAL AND COKE TREATED WITH OIL

No Drawing.

Application filed July 14, 1930. Serial No. 467,980.

This invention relates to fuels, such as commercial coal, coke or similar fuels, treated to prevent dusting during handling or storage.

5 An object of the invention is to produce a more desirable fuel by treating such fuels with a spray of oil, or an emulsion of oil and water, in quantities sufficient to prevent dusting but insufficient to materially alter the character or affect combustion of the fuel.

10 Another object is to produce at a reasonable cost, a fuel having the above mentioned advantages.

15 The present invention resides in the application of atomized or emulsified oil, or other binder substance, to commercial coal or coke and its dust as it is moved along a conveyor or chute or is dumped from a storage bin or other container. An oil of about 32 to 34 gravity, having a burning point rating of approximately 400 degrees F., with a high flash point, (approximately 350 degrees F.) produces excellent results. The oil used, therefore, is a light mineral oil which is liquid enough to atomize readily when subjected, in an atomizer, to air pressure of about 100 pounds per square inch. In practice, it has been found that one-third to one gallon of oil for each ton of coal is sufficient to preclude dusting of coal without rendering it noticeably greasy, the amount of oil necessary for treating coke and hard coal being somewhat less.

25 The equipment necessary to treat the coal or coke consists merely of an atomizer and air pump, and the amount of oil required is comparatively small. The cost, therefore, of treating the coal or coke is not so great as to render the treatment impractical from a cost standpoint. The dust of coal or coke treated in the foregoing manner, tends to adhere to the slightly oily lumps or larger particles, the dust particles themselves and the larger particles carrying sufficient oil to cause adhesion of the dust thereto. The handling of commercial coal, coke or similar fuel treated in the foregoing manner, is rendered less inconvenient and disagreeable, thereby increasing its popularity as a fuel in domestic as well as in industrial consumption.

The word "commercial", as applied herein to coal, coke and similar fuels, means that character of fuel in any form, for example, run-of-mine, lump or slack.

In instances wherein an immediate and limited amount of handling is contemplated, an emulsion of oil and water may be used with good results.

The disclosure herein, so far as concerns the oil used, is illustrative, it being readily recognized that the gravity, flash and viscosity may vary somewhat without appreciable change so far as effect or ultimate result is concerned. The oil should have a flash point lower than the ignition point of the coal, coke or similar product, it should not be too low because of possibility of thereby creating the hazard of spontaneous combustion. The oil should be of such specific gravity that it may be readily applied, taking into consideration temperature and available apparatus for applying same, also the specific gravity of the oil should not be such that the oil would be classified amongst the oils that are volatile and will oxidize at ordinary temperatures and pressures and/or so heavy that they cannot readily cover the outer faces of the coal particles and penetrate the coal particles to some little distance. Although an oil of the characteristics heretofore mentioned herein will give very satisfactory results, good results may be obtained from various oils that have substantially the following limitations, viz: flash approximately 350 degrees F.; specific gravity approximately 32 degrees Baumé and of a viscosity such that it will atomize quite readily when subjected to air pressure of about 100 pounds per square inch.

Some of the advantageous attainments from the invention are absence or decrease of clinker residue, facilitates ignition of the fuel, produces clean dustless fuel, stimulates demand for run of mine coal for domestic or residence use, and obviates need of wood for kindling a fire in a stove or furnace.

There may be some variation in the amount of oil that is applied to the fuel, however, one-half gallon to one gallon should be adequate to provide a surface covering

to one ton of fuel. It is obvious that more oil may be required to surface a ton of slack coal than a ton of lump coal because of the total exposed or surface area on the larger number of small particles of slack is greater than the surface area of the lesser number of larger pieces of fuel in the lump coal. The oil should not be used in so large a quantity as will permit any free oil to separate from the mass of fuel. It is therefore evident that the character of the combustible matter, namely, coal, coke, fine, coarse and mixed may require some slight variation in the quantity of oil to be applied to attain the best results, however, good results will be attained within the limits mentioned herein, regardless of the characteristics of the fuel base or combustible matter.

What is claimed is:

1. As a fuel, commercial coal or coke sprayed with a light mineral oil of approximately 32 to 34 gravity in the proportion of approximately one-third gallon to one gallon of oil to each ton of coal or coke.

2. A fuel product comprising combustible matter of coal or coke origin and having mineral oil applied to its outer face, the oil being proportional to the combustible matter, in the ratio of approximately one-half to one gallon of oil to one ton of fuel, the oil having a burning point rating approximately 400 degrees F. and a flash point approximating 350 degrees F., specific gravity approximating 32 degrees Baumé and a viscosity such that it will atomize readily when subjected, in an atomizer, to air pressure approximating 100 pounds per square inch.

3. A fuel product comprising combustible matter of coal or coke origin having a surface coating of and some penetration by a mineral oil of approximately 32 degrees Baumé specific gravity and a flash point of approximately 350 degrees F.

In testimony whereof, I have hereunto subscribed my name this 11th day of July, 1930.

FRANK C. BROEMAN.

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