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PROCESS OF TREATING COAL, COKE, AND THE LIKE

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This invention relates to an improvement in a process of treating fuels, such as hard and soft coal and coke, by coating the same with a suitable liquid, whereby to render the coal and coke dustless and to provide for the protection of said coating against the weather, also to augment thereby the fuel value of the coal and coke.

One of the objects of my invention is to coat the fuel with a dust-allaying liquid, which has a fuel value.

Another object of my improvement is to prevent the washing away of the said liquid coating from the coal and coke when the latter is exposed to rain and bad weather.

A further object of my improvement is to provide a dust-allaying liquid coating for coal and coke, which will not evaporate from the coal, when the latter is stored, at either high or low temperatures nor at any degree of humidity of the atmospheric air.

A further object of my improvement is to provide a dust-allaying liquid coating for fuel, such as coal and coke, which will incidentally also improve the appearance of the fuel, by making the latter bright and lustrous.

A still other object of my improvement is to have the said coating liquid of a nature and composition which will prevent the coal and coke from freezing when it is exposed to low temperatures; said coating having a low freezing point.

Another object of my improvement is to have said coating liquid of a composition that will not corrode metals.

Thus, it will be noted that by the use of oils of any suitable nature, and by the process herein outlined, the color of coal and the like may be enhanced so that when the same is stored in the open it may be protected against weathering or graying and also against freezing due to the film coating on the coal, and allays the dust.

Almost any oil is useful for this purpose and it is to be understood that I am not to be limited to any particular kind of oil but, from an economic standpoint, it is obvious that in the treatment of the coal and coke by the herein process fuel oil or low grade oils, which are not costly, would be a satisfactory source of supply for treating coal, coke and the like.

While I have referred to modifications herein in the form of emulsified oil treatment, it is obvious that some oils are better adapted for the purpose herein outlined when untreated and unmixed with other ingredients, while, on the other hand, some oils may require treatment or mixing with other materials to change their viscosities or other latent conditions thereof.

I attain these objects by the process which consists in putting a thin film of oil over the coal or coke. This can be done either by immersing the coal or coke, which is to be treated, in a bath of oil, or by spraying the fuel with oil under pressure, whereby the entire surface of each individual piece of coal is coated with a film or thin layer of oil.

Satisfactory results are also obtainable with a non-evanescent oil, which has been diluted with some other liquid before treating the coal.

Successful results have been attained by an oil-water emulsion, consisting of one part of Standard 18 plus fuel oil, ten parts of water and a minute quantity of an emulsification agent, such as clay, soap and the like.

A satisfactory coating liquid is also obtained by the dilution of an asphalt emulsion. One part of the emulsion is added to ten parts of water, and this mixture will remain uniform without agitation.

Both of the above noted coating liquids will leave the surface of the coal or coke covered with a waterproof coating, after the excess of water has evaporated.

Oil can also be diluted with naphtha, gasolene, kerosene, carbon tetrachloride, and other agents; but these are more costly.

Practically all oils are suitable for treating coal or coke for the above mentioned purposes; but for commercial use the cheaper oils, such as those sold as fuel oils or road oils are most practical.

Variations are possible, and some of the above ingredients may be used without other ingredients.

I claim as my invention and desire to secure by Letters Patent:

1. In a process of treating coal or coke the part process consisting in applying to said coal or coke a surface coating of an oil-water mixture consisting of one part of Standard 18 plus fuel oil, ten parts of water and a minute quantity of a mixing agent, such as clay, soap, etc., and subsequently retaining said coating upon the exterior of the material.

2. In a process of treating coal or coke the part process consisting in applying to said coal or coke a surface coating of an oil-water emulsion, formed by the dilution of an asphalt emulsion, and subsequently retaining said coating upon the exterior of the material.

3. In a process of treating coal or coke the

part process, consisting in applying to said coal or coke a surface coating of an oil-water emulsion, formed by the dilution of an asphalt emulsion, in the proportion of one part of the emulsion added to ten parts of water, and subsequently retaining said coating upon the exterior of the material.

4. A process of treating material such as coal comprising immersing pieces of the material in a bath consisting of one part 18 plus fuel oil, ten parts water and a minute quantity of an emulsification agent such as clay, soap and the like; and retaining, on the entire surface of the pieces, a coating of the oil thick and adherent enough to increase the combustibility of the material, to absorb dust on the material dustless, to prevent the washing away of the coating by rain, to prevent evaporation from the material when stored at high temperature, to give the material a bright lustrous appearance, and to prevent the pieces from being frozen together when exposed to sleet and the like.

5. A process of treating commercial coal or coke, said process comprising applying to said coal or coke a non-binding emulsion consisting of a quickly evaporating liquid and a slowly volatile emulsion of a substance selected from a group consisting of a petroleum and an asphalt; said emulsion having a viscosity sufficient to render the coal substantially dustless and insufficient to cause the lumps of coal or coke to bind together or to cause clogging during flow in chutes.

6. A process of treating commercial coal or coke, said process comprising spraying the coal or coke at substantially atmospheric temperatures with a non-binding emulsion consisting of one part of a slowly volatile petroleum emulsified with 10 parts of water.

7. A process of treating commercial coal or coke, said process comprising applying to said coal or coke a non-binding emulsion consisting of a quickly evaporating liquid and a slowly volatile petroleum oil; said emulsion having a viscosity sufficient to render the coal substantially dustless and insufficient to cause the lumps of coal or coke to bind together or to cause clogging during flow in chutes.

8. The method of treating coal and coke consisting of finely dividing an emulsion of one part of Standard 18 plus fuel oil with 10 parts of water to provide a spray; and then spraying the coal or coke in the spray, for a length of time sufficient to cover the pieces of coal or coke with an enveloping film of oil; the amount of oil adhering to the fuel by said spraying being such as will distribute a very small quantity of oil, substantially less than one-half gallon of oil over approximately one ton of coal or coke.

9. The method of treating coal and coke consisting of emulsifying a mineral oil of high gravity, high flash point and a high boiling point, in order that it will not evaporate at ordinary temperatures whereby to provide a fine mist or spray; and then spraying the coal or coke in the mist or spray, for a length of time sufficient to deposit on the pieces of coal or coke, an enveloping film of oil of such amount as will distribute a small quantity of oil, substantially less than one gallon of oil over approximately one ton of coal or coke.

10. A process of treating commercial fuel such as coal or coke, said process comprising applying to said coal or coke a non-binding emulsion consisting of water and a slowly volatile petroleum oil, to form a thin film on the fuel; said emulsion and the resulting film having a viscosity sufficient to render the coal substantially dustless, and insufficient to cause the lumps of coal or coke to bind together or to cause clogging during flow in chutes.

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