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HYDROCARBON TREATMENT

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1 Claim. (44—57)

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This invention relates to treatment of hydrocarbons, more particularly of petroleum hydrocarbon character, for modification to improved properties. Other objects and advantages will appear from the following description.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claim, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

The invention will be understood from an illustrative example of its practice:

A cycle gas oil is reacted with phosphorus pentasulphide at a temperature around 350° F., at atmospheric pressure. Twenty per cent of the reagent may be applied. After reacting for about five hours, with agitation, sludge is separated, as by centrifuging, and the oil may be blown with nitrogen to remove any hydrogen sulphide. This product has excellent anti-knock properties and is useful for very high compressions as an addition in amounts of 2 per cent and more, as desired, in Diesel fuel. Substantially all of the sulfur in such a fuel is supplied by the reaction product.

This reaction may be availed of with naturally occurring hydrocarbons or products of cracking, for instance such as gas oils, etc., that is petroleum hydrocarbons heavier than gasoline or for instance of boiling point above about 400° F. Application with lubricating oils is illustrated in the following:

The treated products may be made up and be added to the oil in amounts of 0.05 to 10 per cent, or much more, according to particular conditions.

While the products of reaction can, as above-described, be added to Diesel fuels, for some uses as a further refinement of the invention, the initial reaction products are reacted in turn with a base, as for example metal oxides, hydroxides or sulphides, and such final products have the further advantages of being without corrosive action, and also having detergent characteristics on metal surfaces, very pronounced in character.

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Other sulphides of phosphorus, as phosphorus sesquisulphide, sulphur and phosphorus, etc. may be applied. And, in the converting to a metal compound, the oxides, hydroxides or sulphides of desired metals may be used, including for instance the alkali metals, the alkalin earth metals, aluminum, tin, lead, cadmium, titanium, zirconium, chromium, copper, molybdenum, manganese, cobalt, etc., the alkalin earth metals being particularly desirable. Other means of introducing the metal may be employed, as for instance reaction by an alcoholate of the metal, etc. More than one metal may be incorporated, e. g. calcium and barium.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in the following claim, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

A motor fuel comprising a Diesel fuel and the reaction product of a cycle gas oil reacted with about 20% of phosphorus pentasulfide at a temperature of about 350° F., said reaction product being in an amount of about 2% based on the mixture of the Diesel fuel and the reaction product, substantially all the sulfur contained in said fuel being supplied by said reaction product.

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