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COMPOSITION OF MATTER FOR USE AS FUEL.

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This invention relates broadly to fuel for internal combustion engines and more particularly to means for preventing the deposition of carbon from the fuel in the cylinders of internal combustion engines.

The motor fuel at present in general use, termed gasolene, petrol, etc., is the product of a distillation or combined distillation and cracking operation carried out in a manner to produce the greatest yield and with the result that it contains a proportion of complex hydrocarbon compounds. When the fuel is burned in an engine carbon and hydrocarbon compounds with very high decomposition temperatures resulting from cracking of some of the fuel in the engine, are deposited in the cylinders and eventually bake to an objectionable scale, which must be removed from time to time, as is well known.

The addition of various substances or compounds to gasolene to overcome this disadvantage have been proposed from time to time but in many cases the proposals are not commercially practical, either because of high cost, or danger, or because the added substances separate in time from the gasolene.

It has been discovered that if certain aldehydes, such as acetaldehyde and notably paraldehyde, which will diffuse readily in and make stable solutions with liquid hydrocarbon fuel, are added to gasolene or a similar hydrocarbon fuel the accumulation of carbon in the engine when the fuel is burned is substantially eliminated without any detrimental effect to the engine and also with a slight increase of power. From tests conducted it would appear that the effect is increased if an unsaturated hydrocarbon gas which will remain permanently in solution in the mixture is added.

To illustrate the practical embodiment of the invention, the following example is cited, but it will be understood that the invention is not confined to the particular substances or proportions disclosed.

Example I.

A mixture containing from 2% to 20% of paraldehyde, and 98% to 80% commercial gasolene may be burned in an internal combustion engine, such as the engine of a motor car, and the carbon deposit found in the engine, even after long periods of operation,

such as 300 to 500 hours, is negligible in amount. The proportion of paraldehyde should be varied according to the specific gravity of the gasolene or its tendency to deposit carbon. For ordinary grades of gasolene, 3½% to 10% of paraldehyde will suffice, but the amount may be increased with good effect as regards power development and without detrimental effect on the engine.

Example II.

Paraldehyde having acetylene gas dissolved therein is mixed with gasolene in approximately the proportions of Example I and the effect obtained is practical elimination of carbon deposition. Preferably the paraldehyde is saturated at ordinary temperatures and pressures with acetylene (about 12 volumes of gas to 1 of paraldehyde, which solution is stable up to about 130° F.) but the proportion of acetylene may be less.

In preparing mixtures according to this invention, and particularly according to either of the examples, the aldehyde, either with or without dissolved gas, is added to the hydrocarbon fuel and diffuses almost instantly making a perfectly homogenous mixture or solution from which the aldehyde and gas do not separate under ordinary conditions.

Having thus described my invention, what I claim is:—

1. A composition of matter for fuel containing liquid hydrocarbon fuel and an acetic aldehyde having acetylene gas dissolved therein.

2. A composition of matter for fuel containing liquid hydrocarbon fuel and paraldehyde and acetylene gas dissolved in the liquid.

3. A composition of matter for fuel containing gasolene and an acetic aldehyde having acetylene gas dissolved therein.

4. A composition of matter for fuel containing gasolene and paraldehyde having acetylene gas dissolved therein.

5. A composition for admixture with liquid fuel such as gasoline comprising, an acetic aldehyde and acetylene gas dissolved therein.

6. A composition, for admixture with liquid fuel such as gasolene, comprising paraldehyde and acetylene dissolved therein.

7. A composition, for admixture with liq-

uid fuel such as gasolene, comprising paraldehyde substantially saturated at ordinary temperatures and pressures with acetylene.

8. A method of treating hydrocarbon fuel intended for use in internal combustion engines for the purpose of preventing the deposition of carbon in the engine cylinders, which consists in introducing into said fuel an acetic aldehyde readily soluble therein in a quantity which will make a stable solution and containing in solution acetylene gas in such amount as will remain permanently in solution at ordinary atmospheric temperatures.

15 9. A composition of matter for fuel con-

taining liquid hydrocarbon fuel, an acetic aldehyde and acetylene gas in stable solution in the liquid at ordinary temperatures and pressures, the amount of gas being greater than would be held under like conditions by the liquid hydrocarbon alone.

10. A composition of matter for fuel containing 98 to 80 parts of a liquid hydrocarbon fuel, 2 to 20 parts of paraldehyde, and up to 12 volumes of acetylene per volume of paraldehyde.

In witness whereof, I have hereunto set my hand.

HUGH S. REID.