Patented Apr. 28, 1936

2,038,630

UNITED STATES PATENT OFFICE

2,038,630

MOTOR FUEL AND PROCESS OF PRODUCING THE SAME

Harry T. Bennett and Le Roy G. Story, Tulsa, Okla., assignors, by mesne assignments, to Gasoline Antioxidant Company, Wilmington, Del., a corporation of Delaware

No Drawing. Application November 12, 1926, Serial No. 148,096

3 Claims. (Cl. 44—9)

This invention relates to motor fuels and processes of producing the same; and comprises an improved motor fuel containing a chemical compound; preferably pyrogallol, hydroquinone, catechol or their derivatives; or other substances which have the property of absorbing or otherwise combining with oxygen; or compounds known chemically as reducing agents, in sufficient quantity to prevent the formation of a detrimental quantity of gummy material when the fuel is vaporized. The agents referred to are autoxidizing compounds having greater affinity than the motor fuel, for oxygen.

When certain motor fuels are evaporated, a dark colored resinous gum is produced, the quantity of gum depending on the nature of the product. This is especially true of fuels containing large amounts of unsaturated hydrocarbons, such as "cracked" gasolines and distillates.

It has also been noted that when these fuels are burned in automotive engines that a similar gummy material is deposited in the carburetor, valves and other places where vaporization occurs. This eventually results in serious engine trouble such as valves ceasing to function, carbon deposits, etc.

Of late years, it has been proved that motor fuels containing naphthene hydrocarbons, aromatics and other unsaturated hydrocarbons are less detonating or produce less "knock" in an automotive engine than those fuels composed of paraffinic or saturated hydrocarbons.

Heretofore, in the manufacture of these motor fuels, due to their "cracked" or highly unsaturated hydrocarbon content, it has been customary to treat them with acid or fuller's earth in order to remove certain products which are conducive to gum formation. In such treatment products which are of value for anti-detonating properties are often removed.

We have found that by merely incorporating in these fuels a small quantity of one of the above mentioned materials and then evaporating the resultant product, the gum formation is decreased to an amount equal to or even below that which is produced by a corresponding fuel treated in accordance with the ordinary methods. We point out then, the advantage of the simplicity of our process, whereby acid treatment, redistilling, clay treatment, etc. become unnecessary. Not only is a better fuel cheaply produced in which none of the valuable hydrocarbons inherent to the product are removed, but no harmful reaction products are produced as often occurs in the other methods, and especially in the acid treatment.

In actual operation we have tested a cracked gasoline which on evaporation produced 420 milligrams of gum per 100 cubic centimeters. Without further treatment 5 to 10 milligrams of pyrogallol per 100 cubic centimeters was incorporated into it and the gum formed by evaporation was reduced to 15 milligrams per 100 cubic centimeters. The amount of pyrogallol is preferably 2 to 10 milligrams per 100 cubic centimeters of gasoline. Similar results have been obtained with the compounds previously mentioned in this specification. Other examples could be given but this serves to illustrate the invention and the advantage resulting from the use of very small quantities of the material required to inhibit gum formation.

We claim:

1. A cracked, highly unsaturated, hydrocarbon motor fuel distillate of less-radially detonating type, normally tending to develop gum-forming constituents, containing catechol in quantity sufficient to prevent development of such gum-forming constituents.

2. A motor fuel comprising cracked gasoline normally tending to deteriorate and develop gummy substances and containing a small proportion of catechol in quantity sufficient to retard such gum formation.

3. A method of preserving cracked hydrocarbon motor fuel distillates which deteriorate and develop gums, by incorporating therein a small proportion of catechol in quantity sufficient to retard such gum formation.

HARRY T. BENNETT.
LE ROY G. STORY.