

UNITED STATES PATENT OFFICE

ROBERT E. BURK, OF CLEVELAND, OHIO, ASSIGNOR TO THE STANDARD OIL COMPANY,
OF CLEVELAND, OHIO, A CORPORATION OF OHIO

IMPROVING CRACKED PETROLEUM DISTILLATES

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Petroleum which has been subjected to pyrogenetic decomposition, as for instance in the processes of cracking gas oil and the like, exhibits a tendency to develop more or less gum formation, such gum becoming manifest on evaporation, and occasionally tending to give trouble in carburetor-fed engines using such distillates for fuel. This gum formation tendency in certain instances is found to be accentuated on storage. The prevention or inhibition of gum tendency is accordingly highly desirable; and it is among the objects of the present invention to provide products satisfactory in this respect.

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

In proceeding in accordance with my invention, the cracked petroleum distillate such as is prone to develop gum formation is subjected to the action of an organic compound inhibitive of such tendency and result. As such treating agent, there is employed an organic compound containing $=N-N=$, as semicarbazide or derivative thereof in which substituent radicals are in the 4 position, for example 4, 4 diphenyl semicarbazide, or as hydrazine in which one or more hydrogen atoms is replaced by an alkyl radical or an aryl radical except mononaphthyl, for example unsymmetrical diphenyl hydrazine, iso-amyl phenyl hydrazine, meta, nitro-benzhydrazine, 2, 4 di-nitro phenyl hydrazine, or mixtures of such.

The amount of such agent required is small, for instance 0.0004 to 0.5 per cent. In general therefore, it is not necessary to exceed one-half of one per cent., or at the outside one per cent., and amounts therebeyond are wasted. A desirable manner of incorporating the material into petroleum distillate may involve first dissolving the

agent in a suitable solvent, for instance conveniently ether, benzol, or the like, and such solution may then be mixed with the petroleum. The petroleum distillate may have been previously subjected to a customary lye wash if desired, and in fact a slight alkaline or at least neutral reaction is advantageous. The mixing may be effected in any convenient manner, adding the agent to the petroleum in the container and suitably agitating to a good dissemination, or proportionally feeding the same into a flowing stream of the petroleum in calibrated amount.

As an illustrative example: 20 pounds of 4, 4 di-phenyl semicarbazide is dissolved in benzol to make up substantially ten gallons volume, and this is in turn mixed with twenty-five hundred barrels of the cracked gasoline.

As another example: 20 pounds of unsymmetrical diphenyl hydrazine is dissolved in benzol to make up substantially ten gallons volume, and this is mixed into twenty-five hundred barrels of the cracked gasoline.

Similarly, as indicated, any of the various agents contemplated can be incorporated, and cracked distillates be so treated, the treatment having the advantage of fitting well into the usual character of procedure, without interfering with customary practice otherwise.

Other modes of applying the principle of the invention may be employed instead of the details disclosed, change being made as regards such details, provided the features set forth in any of the following claims, or the equivalent of such, be employed.

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

1. A volatile cracked petroleum distillate motor fuel treated with about 0.0004 to 1 per cent of a reagent selected from the group consisting of semicarbazide, derivatives of semicarbazide in which substituent radicles are in the 4 position, and hydrazines containing an aromatic radicle except mononaphthyl.

2. A volatile cracked petroleum distillate motor fuel treated with about 0.0004 to 1

per cent of a reagent selected from the group consisting of semicarbazide or derivatives of semicarbazide in which substituent radicles are in the 4 position.

5 3. A volatile cracked petroleum distillate motor fuel treated with about 0.0004 to 1 per cent of a hydrazine containing an aromatic radicle except mono-naphthyl.

10 4. A volatile cracked petroleum distillate motor fuel treated with about 0.0004 to 1 per cent of 4, 4 di-phenyl semicarbazide.

5. A volatile cracked petroleum distillate motor fuel treated with unsymmetrical di-phenyl hydrazine.

15 Signed by me this 7th day of August, 1929.

ROBERT E. BURK.

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