Patented Dec. 29, 1942 2,306,971

UNITED STATES PATENT OFFICE

2,306,971

IMPROVING LUBRICATING OILS

Elliott B. McConnell, Shaker Heights, and John M. Musselman, South Euclid, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio, a corporation of Ohio

No Drawing. Application August 16, 1939, Serial No. 290,488

8 Claims. (Cl. 252—47)

It has been suggested already, to incorporate an amine in lubricating oil to assist in maintaining the oil against sludging in high temperature usage. We have now found however, that the product of reacting sulphur on aliphatic amines is surprisingly advantageous, and acts not only more effectively in guarding the oil against break-down, but also in maintaining its body and lubricating qualities in drastic usage, such as in internal combustion engines.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, 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.

Sulphur is reacted upon an aliphatic amine, by heating the materials together in suitable proportions. If molar proportions be taken, no excess of uncombined component is left in the reaction mass. The sulphur employed may be conveniently in finely divided form or flour of sulphur. In general, the aliphatic amines of suitable boiling point so reactable can be used, some being more practically desirable than others. Instances of such amines are triamylamine, dimethylamine, octylamine, stearylamine, butylamine, etc. Thus, molecular proportions of triamylamine and sulphur are heated together to approximately 200° F. for about thirty minutes. Analogously also, the sulphur products of the other amines may be prepared. The reaction product is then incorporated in a lubricating oil base, such as a mineral oil of lubricating viscosity, as for instance 45 to 200 Saybolt Universal at 210° F. The amount of the reaction product need not be very much, not over ten per cent, and in general at least 0.01 per cent is desirable. Usually, 0.1 per cent is suitable.

As an example: A Mid-Continent lubricating oil of viscosity 50 Saybolt Universal at 210° F. is compoundded with 0.1 per cent of the reaction product of sulphur and triamylamine.

As another example: A similar lubricating oil is compounded with 0.1 per cent of the reaction product of sulphur and dimethylamine.

As another example: Lubricating oil similarly is compounded with 0.1 per cent of the reaction product of sulphur and butylamine.

As another example: Lubricating oil similarly is compounded with 0.1 per cent of the reaction product of sulphur and octylamine.

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 any of the following claims, or the equivalent of such, be employed.

We therefore particularly point out and distinctly claim as our invention:

1. A process of preparing lubricating oils, which comprises heating molar proportions of triamylamine and sulphur to reaction, and incorporating a small amount of the reaction product in a mineral oil of lubricating viscosity.

2. A process of preparing lubricating oils, which comprises heating molar proportions of dimethylamine and sulphur to reaction, and incorporating a small amount of the reaction product in a mineral oil of lubricating viscosity.

3. A process of preparing lubricating oils, which comprises heating molar proportions of butylamine and sulphur to reaction, and incorporating a small amount of the reaction product in a mineral oil of lubricating viscosity.

4. A process of preparing lubricating oils, which comprises heating molar proportions of an aliphatic amine and sulphur to reaction, and incorporating a small amount of the reaction product in a mineral oil of lubricating viscosity.

5. A lubricant comprising a mineral oil of lubricating viscosity and a small proportion of the reaction product of heating triamylamine and sulphur.

6. A lubricant comprising a mineral oil of lubricating viscosity and a small proportion of the reaction product of heating dimethylamine and sulphur.

7. A lubricant comprising a mineral oil of lubricating viscosity and a small proportion of the reaction product of heating butylamine and sulphur.

8. A lubricant comprising a mineral oil of lubricating viscosity and a small proportion of the reaction product of heating an aliphatic amine and sulphur.

ELLIOTT B. McCONNELL.
JOHN M. MUSSELMAN.