Patented May 27, 1941

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UNITED STATES PATENT OFFICE

2,243,485

LUBRICANT

John M. Musselman, Cleveland, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio, a corporation of Ohio

No Drawing. Application March 11, 1939, Serial No. 261,366

6 Claims. (Cl. 252—51)

It has been proposed already to improve the resistance of mineral lubricating oils against deterioration, by adding certain amines. While in the main productive of advantageous results, a difficulty arises in that under some circumstances of usage which is quite drastic, particularly by high temperature exposure, such products do not last as long as is desirable. I have found however that particularly durable lubricants may be prepared, capable of standing up under various drastic usage conditions.

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.

Taking an oil as a desired base, as, for instance a mineral oil the viscosity of which may be as desired, I incorporate therewith one or more compounds of detail more particularly referred to hereinafter. Thus, a petroleum stock for example of viscosity of 47 to 200 Saybolt Universal at 210° F. may be employed, and with this incorporated a small amount of an aryl amine compound of a fatty acid radical of at least ten carbon atoms or a naphthenic acid, and especially a phenylethylenediamine compound of the acid. Preferably as such compounds are s-diphenylethylenediamine stearate, s-diphenylethylenediamine naphthenate, s-diphenylethylenediamine laurate, di-o-tolylethylenediamine naphthenate, di-o-tolylethylenediamine stearate, di-o-tolylethylenediamine laurate, etc., these compounds being made by combining molecular proportions of the acid and the base and reacting at moderate temperatures, as for instance 200° F., in a solvent or alone. Particularly desirable and preferred are the s-diphenylethylenediamine compounds, such as the naphthenate. The said compounds are applied in quite minor proportion in the composition with the oil, in general it being unnecessary to exceed one per cent thereof in the total composition, and proportions as low as 0.01 per cent may be employed, depending somewhat upon the oil and the particular use in view. The reaction products of the amines with these acids are soluble in mineral oil, and being of generally rather high boiling points are capable of maintaining stable mixtures.

As an example: With a Mid-Continent lubricating stock having a viscosity of 300 Saybolt Universal at 100° F., there is incorporated 0.01 per cent of s-diphenylethylenediamine naphthenate.

As another example: With a similar lubricating stock there is incorporated 0.01 per cent of di-o-tolylethylenediamine stearate.

This application is a continuation, in part and as to common subject matter, of my application Ser. No. 105,747, filed Oct. 15, 1936.

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.

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

1. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of an arylethyleneamine compound from the group consisting of phenyl and tolyl derivative with a carboxylic acid of the group consisting of fatty acids of at least ten carbon atoms and naphthenic acid.

2. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of a phenylethylenediamine compound of a carboxylic acid of the group consisting of fatty acids of at least ten carbon atoms and naphthenic acid.

3. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of a di-o-tolylethylenediamine compound of a carboxylic acid of the group consisting of fatty acids of at least ten carbon atoms and naphthenic acid.

4. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of s-diphenylethylenediamine naphthenate.

5. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of s-diphenylethylenediamine stearate.

6. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of di-o-tolylethylenediamine naphthenate.

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2. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of a phenylethylenediamine compound of a carboxylic acid of the group consisting of fatty acids of at least ten carbon atoms and naphthenic acid.

3. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of a di-o-tolylethylenediamine compound of a carboxylic acid of the group consisting of fatty acids of at least ten carbon atoms and naphthenic acid.

4. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of s-diphenylethylenediamine naphthenate.

5. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of s-diphenylethylenediamine stearate.

6. As a lubricating composition, a mineral oil of lubricating viscosity and a small amount of di-o-tolylethylenediamine naphthenate.

JOHN M. MUSSELMAN.

CERTIFICATE OF CORRECTION.

Patent No. 2,243,485. May 27, 1941.

JOHN M. MUSSELMAN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Second column, line 25, claim 1, for the word "derivative" read --derivatives--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of July, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.