Examiner

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asbestos Thickener

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LUBRICANT

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8 Claims. (Cl. 252—13)

The present invention relates to new and improved lubricants and more particularly to greases which are suitable for lubrication of gears, open-type shafting or even plug cocks. The new lubricants also emulsify considerable casual water which normally interferes with proper lubrication.

Lubricants may be divided into two classes, those which are intended for use in the presence of water and those which are used under substantially dry conditions. Frequently the latter are rendered unsuitable for further service when extraneous water comes in contact with them. For example, water may leak into or condense in a gear case. The "water resistant" type is also unsuitable because uncombined water interferes with lubrication and promotes rusting. It is, therefore, an object of the present invention to provide greases which will form an invert emulsion with casual water without making any major changes in their lubricating properties. Another object of this invention is to provide a grease wihch can be used for lubricating gears. Emulsification of the water prevents rusting and avoids the danger of its interfering with good lubrication. Still another object of this invention is to provide a grease for the lubrication of washing machine transmission gears and wringer gears.

Wherever a grease is to be used specifically for lubricating a washing machine it must, in addition to the above-mentioned requirements, be of light color and in some cases must have a sufficiently high melting point to permit lubrication while the machine is being assembled and passed through the enameling oven. Greases according to the present invention meet these requirements.

Broadly, the greases described herein comprise a substantially large quantity of a petroleum oil such as lubricating oil, a lesser quantity of a thickening material which provides the consistency of the product, and an emulsifier. The thickening material may be any one or a mixture of several solids such as powdered mica, finely divided asbestos or air floated asbestos and talc. Graphite may be used in those greases which need not be pure white or in which additional lubricating properties are desired. It is important, however, that the thickening material be substantially non-abrasive. As emulsifiers there may be used any one or a mixture of various esters of fatty acids but preferably the esters of high molecular weight fatty acids and particularly those esters having at least one hydroxyl group. Specifically the emulsifiers may be selected from the following: (1) compound esters such as butyl acetyl esters of fatty acids having at least one hydroxyl group, e. g. butyl acetyl ricinoleate, (2) polyhydroxy alcohols partially esterified with higher molecular weight fatty acids such as glycol mono-oleate and glycerol mono-oleate and, (3) partial fatty acid esters of condensed polyhydroxy alcohols such as di-glycol mono-oleate and di-glycol stearate.

While the proportions of the various components constituting the greases of the present invention may vary between wide limits, it is preferred to use from about 5% to about 45% of the solid, from about 9.25% to about 5% of the emulsifier and the balance lubricating oil. The latter can vary in viscosity depending on the desired use of the final product from that of light lubricating oil of about 80 seconds Saybolt at 100° F. to that of quite heavy stocks such as bright stocks or steam refined stocks of about 200 seconds Saybolt at 210° F. or higher.

Greases with the following specific compositions fulfill all of the necessary requirements and are given here merely as examples and are not to be construed as limitations of the invention.

Example I

	Per cent
Lubricating oil	79
Air floated asbestos	20
Glycerol mono-oleate	1

Example II

Lubricating oil	74
Air floated asbestos	25
Glycerol mono-oleate	1

As stated above the asbestos may be replaced by other solids and the emulsifier may be substituted by any one or a mixture of compounds of the various types disclosed hereinbefore. In the particular case of butyl acetyl ricinoleate it has been found that 2% gives satisfactory results. It has also been found, however, that the emulsifier should be selected according to the temperature to which the grease is subjected. For instance, the glycerol mono-oleate is satisfactory when the temperature involved range from about 35° F. up to 120° F. or 130° F., while if the temperature of operation is about 150° F. and higher the diglycol stearate is satisfactory and may be substituted for the glycerol mono-oleate in the above examples.

It is to be particularly noted that the greases according to the present application do not con-

tain metal or alkali metal soaps as is customary in greases of this type. The presence of soaps, particularly water-soluble soaps such as soda soap, would be disadvantageous because such soaps when emulsified with water tend to break down the structure of the grease and destroy its usefulness. While very small amounts of lime soaps and other water-insoluble soaps would not seriously affect the good qualities of the grease of the present inveniton, it is preferred to omit this kind of soap also.

We claim:

1. A grease-like lubricant capable of forming an invert emulsion with water comprising from 0.25% to 5% of an ester of a high molecular weight fatty acid having at least one hydroxyl group, 5% to 45% of an inert substantially non-abrasive finely divided solid material and 50% to 94.75% lubricating oil.

2. A grease-like lubricant as claimed in claim 1 wherein the lubricating oil has a viscosity of from 80 seconds Saybolt at 100° F. to 200 seconds Saybolt at 210° F.

3. A grease-like lubricant capable of forming an invert emulsion with water comprising from 0.25% to 5% of a polyhydroxy alcohol partially esterified with a high molecular weight fatty acid, from 5% to 45% of an inert substantially non-abrasive finely divided solid material and from 50% to 94.75% lubricating oil.

4. A grease-like lubricant capable of forming an invert emulsion with water comprising from 0.25% to 5% of a partial fatty acid ester of a condensed polyhydroxy alcohol, 5% to 45% of an inert substantially non-abrasive finely divided solid material and from 50% to 94.75% lubricating oil.

5. A lubricant consisting of from 0.25% to 5% glycerol mono-oleate, from 5% to 45% air floated asbestos and the balance lubricating oil.

6. A lubricant consisting of 1% diglycol stearate, 25% air floated asbestos and 74% lubricating oil.

7. A lubricant consisting of 2% butyl acetyl ricinoleate, 24% air floated asbestos and 74% lubricating oil.

8. A lubricant consisting of 1% glycerol mono-oleate, 25% air floated asbestos and 74% lubricating oil.

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CERTIFICATE OF CORRECTION.

Patent No. 2,268,234. December 30, 1941.

ELMER WADE ADAMS, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 15, for "9.25%" read --0.25%--; and line 48, for "temperature" read --temperatures--; page 2, first column, line 10, for "inveniton" read --invention--; 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 10th day of February, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.