

UNITED STATES PATENT OFFICE

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LUBRICATING COMPOSITION

No Drawing.

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This invention relates to a lubricating composition or compositions of the general nature of grease, particularly suitable for the lubrication of gears and of surfaces under high pressures.

In ordinary grease, used for lubrication, there is a tendency for it to become too hard for satisfactory use under certain conditions such as very cold weather or too soft in very warm weather or when the friction of the bearings has caused the heating of the grease.

The purpose of this invention is to provide a composition which is not susceptible to temperature change, has a high specific heat and has other desirable properties as to consistency.

It more specifically relates to the compounding of very low cold test, high viscosity lubricating oils of the nature of those made from the Texas Gulf coast oils, those made by the polymerization by aluminum chloride of unsaturated hydrocarbons or from castor oil and with metallic soaps to form a lubricating jelly. To this material may be added flake graphite which has the property of preventing the actual contacting of two metal surfaces under very high pressures such as gears and high-pressure screws. A satisfactory lubricating oil for this purpose is one known as Texaco heavy lubricating oil which has a specific gravity of 0.927, a Baumé gravity of 21.1°, cold test of -21° F., a flash point of 360° F., fire test of 420° F., and a Saybolt viscosity at 70° F. of 1835. A similar oil may be made from the crude oils near Laredo, Texas, or from the northern fields of California in and around Bakersfield. These oils have a very high viscosity, at the same time have a very low cold test and are practically free from wax.

The addition of metallic soap such as aluminum oleate gives a gelatinous condition to the oil at high temperatures so that graphite, mica or other solid lubricants do not settle out. At the same time, the low cold test of 20° below zero prevents the oil from becoming stiff or solid above that temperature so that when such a compound of grease is used in a transmission box, no material resistance is encountered in shifting gears or in trans-

mitting the power. Furthermore, the graphite is always kept in a suspended condition so that it is always placed on the bearing surfaces.

For certain lubricating purposes, such as the cutting of threads, it is desirable for water to be present on account of its high specific heat. In this case, an excellent emulsified jelly is produced by the use of the low cold test, high viscosity lubricating oil, metallic soap, a special hydrous silicate of alumina known as bentonite and distilled water. Graphite may or may not be added. A typical mixture which has been used with success is as follows:

	Per cent
Texaco heavy lubricating oil (-20° F. cold test)-----	50
Aluminum oleate (powdered)-----	3
Graphite (flake) or mica-----	3
Bentonite-----	4
Distilled water-----	40

This formula is compounded by first heating the lubricating oil to a temperature of 400° F. more or less, then slowly add the aluminum oleate while heating and stirring and continuing the heating until the aluminum oleate is completely dissolved as indicated by the absence of sediment and the clarity of the solution. Graphite is now added to this, stirring in thoroughly until the solution is cool. The bentonite is now mixed with water in the proportion of one part to ten parts. For this purpose, a good grade of bentonite or one capable of jelling readily should be used such as may be obtained from the deposit near Ardmore, So. Dak., from near New Castle, Wyo., or Death Valley, Calif., and other localities. This bentonite should have a water absorption and form a gel with water in the proportion of one part of bentonite to twenty parts of water. The water gel of the bentonite is now thoroughly mixed with the solution of aluminum oleate in the lubricating oil. When thoroughly stirred, a highly viscous grease is obtained which is ideal for a thread cutting compound and for all lubricating purposes where a cooling effect is desired. For the plain gear lubricant, the same proportion of lubricating oil, aluminum

oleate and graphite may be used while the proportion of bentonite relative to the water content may be considerably increased. Any high viscosity, low cold test lubricating oil or castor oil may be used instead of the Texaco oil. Any other metallic soap such as oleates, stearates or palmitates of magnesium, calcium, aluminum, zinc, copper, lead or other metals may be used. Copper oleate is particularly good in making an emulsion but ordinarily, aluminum oleate is satisfactory. Instead of graphite, mica is a very satisfactory solid lubricant. Instead of bentonite in certain cases, organic gums may be used but in this case, preservatives are required.

What I claim is:

1. A material for lubricating purposes consisting of a petroleum oil jellied by dissolved metallic soap to which has been added a solid lubricant and a water jelly of hydrated bentonite.

2. A material for lubricating purposes consisting of a petroleum oil jellied by dissolved metallic soap to which has been added a graphite and a bentonite gelatinized with water.

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