

UNITED STATES PATENT OFFICE.

HENRY N. LYONS, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO DOHERTY RESEARCH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

SPRING OIL.

No Drawing.

Application filed January 22, 1925. Serial No. 3,948.

The present invention relates to that class of liquid lubricants adapted for use on leaf springs and the like and for loosening and preventing rust.

There are known several compositions of matter called "spring oils" on account of their most common use. "Spring oils" should have the qualities of high capillarity, rust removing or cutting, and rust preventing, combined with good lubricating quality. A composition or compound having all of the qualities mentioned penetrates between the leaves of a leaf spring or like structure, when applied thereto, removes rust and dirt, prevents squeaking and further rusting, and lubricates the points where the leaves of the spring rub together. Compounds or compositions of matter having the qualities or characteristics above mentioned are also useful for application to many devices other than springs.

It is highly desirable, in making a compound or composition for the purposes and having the characteristics just mentioned, to be able to use mineral lubricating oil as the bases of the composition on account of its chemical inertness, giving absence of rancidity, its good lubricating qualities, its power of protecting against rust, and its comparative cheapness. The flat surfaces between leaf springs do not readily hold a lubricating oil and therefore it is desirable in obtaining the best form of lubrication to use a lubricating oil having a comparatively high viscosity in order to maintain the lubrication of the springs after the oil has once penetrated between them. Mineral lubricating oils, however, do not of themselves have high penetrating or rust removing powers, and it is necessary to incorporate into the compound or composition an ingredient which will impart these properties thereto.

The present application is based primarily on the discovery by the applicant that secondary alcohols, such as secondary butyl alcohol or isopropyl alcohol, not only are very good solvents for mineral lubricating oils, but impart to a composition of which they are a part a high capillarity or power of penetration as well as high rust cutting or loosening power. The secondary alcohols which are preferably used in the present composition are the secondary alcohols derived as a by-product of petroleum. The olefine content of cracked petroleum oil

gases serves as the source for manufacture of secondary alcohols, isopropyl, secondary butyl and amyl alcohols. These alcohols are all excellent solvents for petroleum oils and at the same time they all possess high penetrating powers. To assist the alcohol in penetrating between the leaves of the springs or into the threads of bolts and nuts, it is preferred to use kerosene which has a comparatively high penetrative power. The kerosene assists the alcohols in carrying the lubricating oil between the rust layers, and after it has penetrated therein the alcohol and kerosene evaporate to leave the lubricating oil in place.

In the preferred form of the invention, the ingredients are employed in the following proportions:

	Per cent.
Secondary butyl alcohol	25
South Texas pale lubricating oil, 300 viscosity	75
Kerosene	50
	25

While the above example is the preferred form of the invention, I do not limit myself thereto either as to the ingredients or the proportions stated. For instance, another kind of lubricating oil may be used in place of the South Texas oil and the proportion of kerosene reduced or the kerosene omitted entirely. Higher or lower percentages of kerosene may be employed, depending upon the purpose for which the oil is to be used. Where high penetrating power is required, high percentages of kerosene may be used because the kerosene assists the alcohol in penetrating into the space between metal surfaces, and thus reduces the amount of alcohol which is necessary in order to lubricate the metal surfaces or loosen the rust therebetween. When changes are made in the proportions or characteristics of the other ingredients, the proportion of secondary alcohol is to be changed accordingly to preserve the high penetration and high capillarity characteristics of the composition as far as possible. Moreover, although its availability for use with mineral and especially paraffine base oils is one of the important advantages of the secondary alcohols, I do not limit myself to mineral oils. Also finely pulverized graphite may be used in small amounts in the composition according to the present invention, if desired. It will be understood, moreover, that where-

ever the degree of viscosity is referred to, both in the foregoing description and in the appended claims, the viscosity is assumed to be measured by the Saybolt viscosimeter.

5 Where percentages are referred to they are to be taken as percentage by volume.

Having thus described my invention, I claim:

1. A composition of matter for oiling
10 springs and for like purposes, comprising a lubricating oil and a secondary alcohol.

2. A composition of matter for oiling
springs and for like purposes comprising a mineral lubricating oil and a secondary alco-
15 hol of mineral oil origin.

3. A composition of matter for oiling
springs and for like purposes comprising a lubricating oil and secondary butyl alcohol.

4. A composition of matter for oiling

springs and for like purposes comprising
kerosene, a mineral lubricant, and a second-
ary alcohol.

5. A composition of matter for oiling
springs and for like purposes comprising
kerosene, a mineral lubricant, graphite and
25 secondary butyl alcohol.

6. A composition of matter for oiling
springs and for like purposes comprising
twenty-five percent of kerosene, twenty-five
percent of secondary butyl alcohol, and fifty
percent of a mineral lubricating oil of about
300 viscosity Saybolt.

7. A composition of matter for oiling
springs and for like purposes comprising
kerosene, a mineral lubricant, and secondary
butyl alcohol.

In testimony whereof I affix my signature.

HENRY N. LYONS.