Patented May 13, 1930 1,758,446

UNITED STATES PATENT OFFICE

FREDERICK L. KOETHEN, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO ACHESON GRAPHITE COMPANY, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF NEW JERSEY

LUBRICANT

No Drawing. Application filed November 10, 1926. Serial No. 147,615.

The invention relates to lubricants of improved lubricating efficiency or "oiliness". The compositions of the invention are formed by adding an iron soap to a lubricating oil.

In a typical embodiment of the invention, I employ an iron soap in the proportion of 1% by weight of the oil. Any of the usual lubricating oils may be employed, as, for example, a red mineral oil of 200 seconds at 100° F. on the Saybolt universal instrument. This oil has a specific gravity of .905. I have found that the use of iron soap greatly increases the lubricating quality of the oil. The proportion of the soap to the mineral oil may be varied and I have found that as high as 30% by weight of the total composition may be employed.

To prepare a lubricating composition consisting of a mineral oil having a Saybolt viscosity of 200 seconds at 100° F. with 1–15% of iron soap I proceed as follows: The starting material is an ordinary commercial soda soap which has been made in the ordinary way from stock consisting of approximately 3 parts of stearine and 1 part of oleine, and the soap is dissolved in an excess of hot water using roughly 5 times the weight of the soap. The solution is heated to a temperature between 90–100° C. and into it is poured slowly with constant stiring a 10% solution of ferric chloride until there has been added approximately 18 pounds $FeCl_3$ for each 100 pounds of soda soap taken at the start. Transposition takes place which produces iron soap and sodium chloride. The precipitated soap is washed by decantation until practically free from sodium chloride, then dried in the presence of an equal quantity of the mineral oil mentioned above by heating in a kettle to the boiling point. After dehydrating, the balance of mineral oil required to bring the iron soap percentage down to that desired is added as quickly as possible with vigorous stiring.

The iron soap separates out in very small solid particles after the composition has been chilled but if the manufacture is carried out as described above these particles will stay in suspension well enough for all practical purposes. However, where it is desirable to secure more perfect suspension of the iron soap particles, introduction of 2–10% soda soap will accomplish this result and will in no way affect the object sought, since the result obtained with the iron soap in the presence of the soda soap are much superior to those obtained with soda soap alone.

In preparing the lubricant, the soap is not dissolved in the oil but is merely suspended in a very fine state of subdivision.

An emulsion containing a large amount of free water is not contemplated in this invention.

I claim:

1. A lubricating compound consistitng essentially of iron soap and mineral lubricating oil.

2. A substantially water-free lubricating composition comprising an iron soap and a lubricating oil.

3. A substantially water-free lubricating composition comprising an iron soap and a mineral lubricating oil.

4. The process of lubricating a metal bearing surface which comprises applying thereto an iron soap and a mineral lubricating oil.

5. The process of lubricating a metal bearing surface which comprises applying thereto a substantially water-free composition containing an iron soap and a lubricating oil.

6. The process of lubricating a ferrous metal bearing surface which comprises applying thereto a substantially water-free composition containing an iron soap and a lubricating oil.

In testimony whereof I affix my signature.

FREDERICK L. KOETHEN.