

UNITED STATES PATENT OFFICE

2,050,139

LUBRICANT AND METHOD OF TREATING

Ernest Wanamaker and Harry D. Allgeo, Chicago, Ill., assignors to Patents Research Corporation, Chicago, Ill., a corporation of Illinois

No Drawing. Application August 19, 1933, Serial No. 685,966

7 Claims. (Cl. 87-9)

This invention relates to lubricants and methods of treating lubricants.

An object of the invention is to produce a lubricant which will form on a surface a highly persistent lubricating film, the film remaining substantially intact when exposed to relatively high temperatures, or to contact with water, or solvents such as gasoline, kerosene, etc. A further object is to provide a lubricant which has little or no tendency to form sludges in the crank case of a motor car or in other apparatuses in which sludges are ordinarily produced. A further object is to provide a lubricant having a high degree of oiliness and penetration, while, at the same time, forming a film which persistently adheres or clings to a metal surface under hard usage and adverse conditions. Other specific objects and advantages will appear as the specification proceeds.

I have discovered that by treating an ordinary hydrocarbon lubricant under somewhat elevated temperatures with a compound of aluminum, that a change is produced in the lubricant giving it the qualities or characteristics mentioned above. Various methods of treating the lubricant with the aluminum compound may be employed. The following is given as one example of a process which has operated successfully.

I mix a compound such as aluminum oxide (Al_2O_3) or preferably aluminum hydrate



or both, with a suitable inert filler or body material which aids in the mixing of the aluminum hydrate. Pumice is satisfactory for this purpose. The mixed materials may then be introduced into a vat containing a lubricant which has been heated to a suitable temperature such as 160°-200° F. The mass is preferably mechanically agitated for a period of, say, 6 to 8 hours, while the temperature of the oil is maintained. I have found that the temperatures of the oil may be widely varied but, for the purpose of economy, I have used the above temperatures.

At the end of the treating period, I prefer to cool the material to a temperature around room temperature, and then to filter the mass. If desired, the agitation may be stopped, the solids allowed to settle out and the supernatant oil drawn off. The lubricant recovered after the removal of the solids is the final product and has the characteristics set out above.

The quantity of treating material, temperature, time element, are all interrelated and may

be varied to reduce or increase the time, temperature or quantity, as desired.

The percentages of aluminum compound and filler may be widely varied. I have found that the following percentages of aluminum hydrate and pumice may be satisfactorily used in treating an ordinary hydrocarbon motor oil:

	Per cent
Al_2OH_6	.0056
Pumice.....	.012 10

When a motor oil lubricant, which has not been treated as described above, is evaporated with a solvent such as naphtha or gasoline, in an open vessel, the walls of the vessel tend to remain comparatively dry. When, however, such a lubricant has been treated as described above, and then heated with a solvent under the same conditions as the first sample, a film of lubricant creeps up the walls of the vessel and down over the outer walls.

When the treated lubricant is applied to a bearing, it forms a film which can be removed only with great difficulty, and it tends to persist even under high temperatures, or when in contact with water or hydrocarbon solvents. It has been found that a motor oil treated by the process described, can be used in a motor car more than twice as long as the original untreated motor oil, and without forming substantial amounts of sludges or other harmful bodies in the oil.

While in the illustration given, I have set forth certain specific illustrations of the use of an aluminum compound in treating a motor oil, it will be understood that the specific examples are illustrative only, and that the process may be used within wide limits in the making of greases, lubricating oils, and other types of lubricant. The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

We claim:

1. The method of producing a hydrocarbon lubricant, comprising isolating a lubricant body and then subjecting the lubricant to contact with aluminum hydrate in the absence of aluminum chloride under an elevated temperature.

2. The method of producing a hydrocarbon lubricant, comprising isolating a lubricant body and then heating the lubricant in contact with

aluminum oxide and in the absence of aluminum chloride.

3. The method of producing a hydrocarbon lubricant, comprising isolating a lubricant and heating the lubricant in the absence of aluminum chloride and in contact with an aluminum oxide at a temperature about 160° F.

4. The method of producing a hydrocarbon lubricant, comprising mixing aluminum hydrate with a filler, forming a lubricant and heating the lubricant in contact with the filler and aluminum hydrate and in the absence of aluminum chloride.

5. The method of producing a hydrocarbon lubricant, comprising mixing aluminum hydrate with a filler, forming a lubricant and heating the lubricant in contact with the filler and aluminum

hydrate and in the absence of aluminum chloride, and separating the lubricant from the treating materials.

6. The method of producing a hydrocarbon lubricant, comprising mixing aluminum hydrate with a filler forming a lubricant body and heating the lubricant in contact with the filler and aluminum hydrate and in the absence of aluminum chloride, cooling, and filtering the mass.

7. The method of treating a refined lubricating hydrocarbon oil for the purposes set forth, comprising introducing aluminum hydrate into the lubricant body and heating to a temperature in the neighborhood of 180° F. and in the absence of aluminum chloride.

ERNEST WANAMAKER.

HARRY D. ALLGEO.