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GEAR LUBRICANT

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1 Claim. (Cl. 196—151)

In the manufacture of lubricants for heavy duty gearing, difficulty is often experienced in obtaining sufficient adhesion of the lubricant to the metal of the gears. This is manifested in a tendency for the grease or highly viscous oil to slide off of the contacting faces, leaving only a very thin film which is insufficient to maintain itself against the high pressures encountered. Where the lubricant does not adhere to the metal surface with sufficient tenacity there is danger of the thin film's being penetrated by the engaging metal surfaces, which are thus allowed to come into metal to metal contact and are rapidly damaged or destroyed.

These lubricants may be compounded greases, or they may be heavy and highly viscous residuals from petroleum oils more or less free from asphalt, or for rough open gears they may even consist of crude oil residua containing or blended with petroleum asphalt.

I have discovered that lubricants of this general type, in which color is immaterial and which are to be subjected to high pressures, may have their adhesiveness for metals greatly increased by dissolving in and blending with them the resin remaining from the steam distillation of acid-treated pressure still naphthas.

The motor fuel fraction from pressure cracking operations is, as is well known, customarily redistilled and then treated with small doses of sulfuric acid, after which it is neutralized with alkali and water washed. The treated distillate is then again distilled in a current of steam to yield cracked gasoline.

The residue from this operation is a brownish or blackish oil or tar, which I distil further, in a current of steam, to obtain the resin which I use for the above stated purpose. The distillation should be carried at least to the point at which the residuum in the steam still is highly viscous when cold, and is preferably carried on until the residuum assumed the form of a hard and very brittle resin. This resin is fusible, is soluble in petroleum oils when heated, and has a characteristic aromatic odor. The yield will depend to some extent on the degree to which the original pressure distillate is cracked and also on the amount of acid used in its treatment, and will also vary with the depth to which the steam distillation is carried. Ordinarily the yield will be from 2% to 4% or more of the quantity of treated distillate taken for the second distillation.

These resins may be added to heavy duty lubricants in proportions ranging from 5% to 20% of the total volume, and will be found to yield a lubricant of very superior tackiness and adhesiveness, and one in which these qualities persist over long periods of use. In these respects the above described resins will be found far superior to the asphalts which have heretofore been used for the same purpose.

The term "cracked petroleum distillate" is used in the claims to describe a distilled fraction obtained as a product of a cracking process, and may not be taken to mean the synthetic crude produced by cracking a distillate nor any product containing substantial amounts of the residuum from such a synthetic crude.

I claim as my invention:

A gear lubricant comprising a heavy petroleum residuum with from 5% to 20% of the resin remaining after distilling acid treated and neutralized cracked petroleum distillate, said resin being hard and brittle, of a black color, soluble in heated petroleum oils and having an aromatic odor and the property of imparting adhesiveness to petroleum lubricants.

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