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SUSPENSION FOR LUBRICATION AND OTHER PURPOSES

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5 Claims. (Cl. 252—59)

The subject of this invention is a suspension suitable for lubrication and other purposes.

As is well known, it has not yet been possible to find for so-called Bentheimer asphaltite and allied pyrobitumens an industrial use which corresponds to their valuable constituents. Bentheimer asphaltite is known in geology as a hydrocarbon, (pyrobitumen). In reality this natural product does not belong to the bitumens which are characterised by their fusibility and their ready solubility in known solvents. It is rather to be classed with the asphaltic pyrobitumens which are infusible and only slightly soluble.

For the purpose of the present specification Bentheimer asphaltite, elaterite, wurtzilite, albertite, and impsonite as found in the United States of America are classed as asphaltic pyrobitumens, as in Abraham's Asphalts and Allied Substances.

It has now been found that these infusible and only slightly soluble substances, which are here embraced in the term pyrobitumen, can be put to valuable industrial use. For this purpose the pyrobitumen is disintegrated by the use of a swelling agent. As swelling agents there have been found suitable mineral oils as well as animal and vegetable oils of widely different nature, and also tri-chlorethylene. A particularly simple means for causing swelling of the pyrobitumen is mineral lubricating oil, which constitutes the continuous phase of the suspension. When pyrobitumen is subjected to the action of such a swelling agent it is disintegrated so as to form a uniform suspension of the nature of mud. In accordance with generally known technological principles the time required for producing such a mud is materially shortened if the pyrobitumen is first comminuted and reduced to the form of a very fine powder before being subjected to the action of the swelling agent, and if, further, the mixture of pyrobitumen and swelling agent is stirred, and still more if it is heated either immediately after stirring or simultaneously therewith. Such swelling agents have different degrees of receptivity for pyrobitumen. Especially with the use of mineral oil there may be obtained a very highly enriched suspension which has the peculiarity that by the addition of the pyrobitumen there is effected no material alteration in colour of the swelling agent. When, in the foregoing, reference is made to swelling agents, it is intended to convey that the added liquids have the property of loosening the finest particles of the pyrobitumen from one another and that each of these particles passes into suspension in the liquid so that there is obtained a true, persistent mud. Production of this mud is accompanied by a considerable increase in volume of the pyrobitumen which accounts for the apparent swelling. Actually, the pyrobitumen takes up the liquid in the same way as a dry sponge takes up water. It is not necessarily the case that each individual particle of pyrobitumen considered by itself undergoes swelling and is present in the suspension in a swollen condition.

For the essence of the invention it is important that the pyrobitumen, that is, for example, the asphaltite, constituting the highly disintegrated disperse phase should be present in the mud in the form of minute particles with rounded corners and edges. These particles behave in a manner closely similar to graphite particles. The product of the invention is thus adapted for use as a lubricant either by itself or with addition of lubricating oil or other lubricant. As the lubricating capabilities of the mud are extremely high, it suffices, in general, to add a small quantity of the mud to a lubricant to render the latter at least equivalent in respect of lubricating power to the known graphite-containing lubricants.

The swelling agent may be selected with a view to the subsequent use. For example, if the mud is to be added to a mineral oil, the same mineral oil may be used as a swelling agent, though this is not absolutely necessary.

The round form of the pyrobitumen particles contained in the mud contributes advantageously to the reduction of friction. The addition of a pyrobitumen suspension to mineral oil has a double effect, namely, one due to the friction-reducing viscosity of the pyrobitumen, and the other due to the physical form of the particles. This circumstance entails a considerable advantage over the use of graphite powders.

The uses of pyrobitumen suspensions prepared in the manner described are not confined to lubricating purposes, although lubrication is the main field of the invention. Such suspensions may be used with advantage where it is desired to influence the viscosity and also the electrical constants of mineral oil or animal or vegetable oil for special purposes.

It has been found particularly advantageous to comminute the pyrobitumen, for example, the asphaltite, as by grinding, before adding the swelling agent, and to utilise for this grinding operation a rotary ball mill which is subjected

to vibrations and which is charged with porcelain balls of about 12 millimetres diameter. In this way there is obtained a pyrobitumen powder consisting of the finest particles, as uniform in size as it is possible to obtain.

What is claimed is:

1. A suspension for lubrication and other purposes comprising a continuous phase of oil and a disperse phase of highly disintegrated asphaltic pyrobitumen particles.

2. A suspension for lubrication and other purposes comprising a continuous phase of mineral oil and a disperse phase of highly disintegrated asphaltic pyrobitumen particles.

3. A lubricant comprising a mixture of lubricating oil and a dispersion of highly disintegrated asphaltic pyrobitumen particles in oil.

4. A suspension for lubrication comprising an oil as the suspension medium, and a dispersed asphaltic pyrobitumen characterized by its infusibility and insolubility in said oil, said pyrobitumen being present in highly comminuted form.

5. A method of producing a lubricant which comprises the steps of comminuting a mass of an asphaltic pyrobitumen by subjecting the same to the grinding action of relatively light balls while simultaneously vibrating the mass to form minute particles having curved surfaces thereby reducing friction and increasing surface area, introducing said particles of pyrobitumen into an oily suspension medium to swell and wet the particles, and stirring and heating the mixture to produce a permanent suspension in the form of a mud of uniform viscosity.

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