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CARBON SOLVENT AND LUBRICANT

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The present invention relates to a composition of matter for addition to various types of mineral oil products, such as gasoline (or blended motor fuels) or to lubricating oils such as automobile motor oil, or too heavy greases (such as gear grease, cup grease and the like, or even to paraffin wax, which latter may be used in the form of crude scale wax, and also embraces the completed mixtures.

One object of the invention is to produce a composition which will improve motor fuels by preventing deposition of carbon in the cylinder, which will also prevent the deposition of heavy solid carbonaceous deposits on the rings (including oil rings) of the cylinders of internal combustion engines, thereby greatly increasing the efficiency of such engines.

The composition may be referred to as a "carbon solvent" because use of this material will rapidly remove deposits of so-called "carbon" in the engines, even though the engines are badly fouled with deposited carbon. It may be called to attention that the black deposit in engines is not, in most cases, pure carbon, but it is a mixture of various substances including solid free carbon, heavy oil, deposited gums (or thermal decomposition products of the same), partial combustion products of oil, accompanied by more or less road dust and other materials. But when the carbon and organic matter are removed, dissolved and/or burned out, by the use of the present composition, the incombustible matter will be blown out and carried away in the exhaust or gotten rid of in other ways. It will also be understood that the so-called "carbon" deposited in the engine, by incomplete combustion is of variable composition, depending on a large number of factors.

Another object is the production of lubricants, suitable for gasoline engines, natural gas engines and also lubricants for various other purposes.

In the ordinary operation of internal combustion engines, in addition to the "carbon" deposits in the cylinder head, on and around the valves, spark plugs, etc., also more or less free carbon, gum, road dust, and other impurities may collect as a hard material in the rings, particularly the oil rings in the cylinders of such engines, which material will also be dissolved by the use of the composition of the present case, particularly by the improved lubricating oil given below. The present composition dissolves or removes the said gum, carbon and other solid matter, thereby avoiding excessive friction and excessive wear of the engine.

When the composition of the present case is applied to any motor lubricating oils (usually consisting wholly or largely of hydrocarbons) that are used in connection with internal combustion engines, such oils are not allowed to carbonize or to deposit carbon, gum, or residue of any sort, or road dust, in any part of the engine, thereby greatly increasing the efficiency of the engine.

The composition of the present case preferably consists of the following materials: benzol, nitrobenzene, trinitrobenzene, naphthalene and pyridine, these being blended with an oil.

In a preferred modification of practicing the present invention, 25 gallons of 100% motor benzol are placed in a receptacle, and 22 lbs. of refined (white) flake form naphthalene are added thereto, and dissolved, preferably at room temperature, preferably while stirring to keep the liquid uniform in composition. Then 6.75 gallons of nitrobenzene are added. This mixture may be stirred for half an hour to thoroughly blend the same together. Then 20 gallons of automobile motor oil are added and well mixed, during which the time the temperature is brought gradually to 140° F. For thus warming the mixture, the tank may be provided with a heating coil, through which steam or hot water or other heating agent may be passed. Then one quart of pyridine (e. g., at 212° F. or 100° C.) is added, the mixing and heating by the coil continued until the temperature reaches 150° F. Then add 2 ounces (by weight) of trinitrobenzol, continue the heating until the temperature reaches 160° F. Continue the agitating or stirring of the mixture for two hours after adding the trinitrobenzol. This should produce thorough blending of the components.

The mixing after adding the motor oil is preferably accomplished by passing the mixture repeatedly through a centrifugal pump with double impeller, to break up the oil globules and to insure thorough blending.

The operator should use extreme care not to inhale the fumes or vapors coming from the mixing steps. Extreme care should of course be used in handling the trinitrobenzene, which is explosive, and also in handling the mixture after adding this.

The motor lubricating oil which is preferably used in this operation, is preferably, a bright stock automobile lubricating oil. For example a motor oil which has a gravity 27 to 28° Bé., flash point 550 to 555°, fire test 625 to 630°, viscosity 150 at 210°, and carbon content 1.4. But

the invention is not limited to the use of this particular oil. Other petroleum cuts (chemically purified, dewaxed), can be similarly used.

In certain cases, as when this is to be used as a motor lubricant, or as a heavy duty lubricant, say in an automobile, an equal amount of a clear glyceride oil (preferably vegetable) such as peanut oil or cottonseed oil, can be added.

The benzol used may be well purified benzene, although the commercial article containing more or less of the homologues such as toluol, can also be used.

The nitrobenzene used may be pure mononitrobenzene or a commercial article consisting largely of mono-nitrobenzene with a small percentage of dinitro-benzene.

The trinitrobenzene may be the pure material or a commercial product containing small amounts of the other nitro compounds.

The benzol, nitrobenzene, and trinitrobenzene can be to some extent replaced by the lower homologues such as toluol or its derivatives.

The naphthalene may be the pure article, or the white sublimed crystals which need not be chemically pure, or to some extent these can be replaced by the relatively crude naphthalene fraction as obtained in the distillation of coal tar.

The pyridine may be the commercial article. Small amounts of impurities in the substances used appear to do no particular harm.

For producing the composition, the other five components referred to above, are mixed with a hydrocarbon oil such as motor oil, in the proportions given in the above examples, but the invention is not limited to these proportions, which can be varied to a reasonable extent.

1 gallon of the mixture (including the mineral lubricating oil) may be added to say 400 gallons of gasoline, which latter is improved by such addition, as indicated above. For this purpose, even a low grade gasoline can be used, which will be greatly improved by such addition. It is immaterial if the gasoline already contains the usual addition of tetra-ethyl lead or similar "improvers".

For motor lubricating oil, say for use in automobiles, I recommend adding one part of the above mixture of six components, to 200 to 400 parts (by volume) of the said oil.

For improving greases such as cup grease, gear grease and the like, one part by volume of the above mixture of six components can be added to 100 to 250 parts by volume of the said grease. For improving scale wax as a heavy duty lubricant, one part by volume of the above-mentioned mixture can be added to 80 to 160 parts by volume of the paraffin or scale wax.

This product is also very useful for addition to fuel oil, e. g., the oil used in heating residences or for industrial heating, greatly lessening the liability of needle valves and small oil passages to become gummed up or clogged with gum, carbon and the like. One part of the six component mixture can be added to 300 to 500 parts of the fuel oil.

But while I have stated certain proportions in which the intermediate can be added to these oily or waxy materials, these proportions are given purely by way of illustration and the proportions to be used can be varied within wide limits.

The mixture of the above components with a lubricating oil, in the proportions stated, forms an over-head lubricant as well as a carbon solvent. Added to the cheaper grades of lubricating products made by the various refiners, this conditions the same to furnish a high grade lubricating oil.

Added to gear greases, it prevents gumming, and improves the lubrication.

This product can also be added to paraffins, (for example scale wax, even in a crude condition) to make a high grade heavy grease for use on heavy-duty bearings such as "roll necks" in steel mills. It can also be used to take the place of tallows heretofore used for such purposes, and it can be used as a wax lubricant in the cold drawing operations, in steel mills.

The mixture of the six components can be added to kerosene, to improve the same, whether the kerosene is to be used as lamp aid or for cleaning purposes.

While I have referred to the use of the above materials in lubricating oils, and have specifically mentioned mineral lubricating oils, greases and the like, it will be understood that the addition of small amounts of fatty oils (liquid or solid) is not precluded.

The above compositions are in no way injurious to metals such as are commonly used in internal combustion engines, bearings and the like.

The composition can be added to any kind of lubricating stock, composed wholly or in large part of mineral oil or mineral oil products or distillates.

The lubricating oils (motor lubricants) produced as above, are also especially useful in gas-fed internal combustion engines, e. g., those fed with natural gas. In such engines, according to the present invention, the usual formation of hard carbon on and around the rings is prevented, and any hard carbon if already formed is converted into a soft form somewhat resembling graphite or lamp black. For this purpose the mixture of lubricating oil and the above mixture of six components, is fed to the cylinder.

For the production of a heavy duty lubricant, say for gears, which also has the carbon solvent effect, I may compound together 6% of the mixture of six ingredients as given above, together with 0.5% up to 1% of aluminum stearate, together with 93% of refined paraffin wax, of say 122 to 124 M. P. A. S. T. M. For this purpose the paraffin wax is first melted, say at 150° F., then the aluminum stearate added and well stirred, and then the carbon solvent as above indicated (mixture of six components). The mixture is kept hot, not exceeding 150° F., for a short period while being thoroughly agitated until a thoroughly uniform mixture is produced.

In another example, I may use 26% of the above mixture of six ingredients, together with 12.5% of aluminum stearate, and 71.5% of the same paraffin wax. The mixing as given above, say for 20 minutes.

This latter product can be molded into various shapes, and put up in paper containers for various uses in steel mills, for example for use as the lubricant on steel mill roll necks, or for any other heavy duty bearing work. It can be used as a packing grease for shaft or drive shaft for motor boats, or ships, where salt water or other water comes into contact with the bearings, to maintain proper lubrication and to prevent the effect of water on the bearing.

What is claimed is:

1. A composition of matter suitable for addition to motor fuels and to lubricating oil and grease, which comprises the following substances in about the proportions stated: low boiling single

ring aromatic hydrocarbon, 25 gallons; a low-nitro single ring aromatic hydrocarbon, 6.75 gallons; a tri-nitro single ring aromatic hydrocarbon, 2 ounces, naphthalene, 22 lbs.; pyridine, 1 quart; such substances being dissolved in 20 gallons of a lubricating mineral oil.

2. A composition of matter suitable for adding in small amount to motor fuels and to lubricating oil and grease, which contains the following in about the proportions given; benzol, 25 gallons; nitrobenzene, 6.75 gallons; trinitrobenzene, 2 ounces; naphthalene, 22 lbs.; pyridine, 1 quart; such substances being dissolved in about 20 gallons of lubricating mineral oil.

3. A composition of matter suitable for addition to motor fuels and to lubricating oil and grease, which comprises the following substances in about the proportions stated: benzol, 25 gallons; a low-nitro single ring aromatic hydrocarbon, 6.75 gallons; a tri-nitro single ring aromatic hydrocarbon, 2 ounces; naphthalene, 22 lbs.; pyridine, 1 quart; such substances being dissolved in 20 gallons of a lubricating mineral oil.

4. A composition of matter suitable for addition to motor fuels and to lubricating oil and grease, which comprises the following substances in about the proportions stated: low boiling single ring aromatic hydrocarbon, 25 gallons; nitrobenzene, 6.75 gallons; a tri-nitro single ring aromatic hydrocarbon, 2 ounces; naphthalene, 22 lbs.; pyridine, 1 quart; such substances being dissolved in 20 gallons of a lubricating mineral oil.

5. A composition of matter suitable for addition to motor fuels and to lubricating oil and grease, which comprises the following substances in about the proportions stated: low boiling single ring aromatic hydrocarbon, 25 gallons; a low-nitro single ring aromatic hydrocarbon, 6.75 gallons; naphthalene, 22 lbs.; trinitrobenzene, 2 ounces; pyridine, 1 quart; such substances being dissolved in 20 gallons of a lubricating mineral oil.

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