UNITED STATES PATENT OFFICE.

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PROCESS OF TREATING USED LUBRICANTS.

Specification of Letters Patent. Patented Oct. 15, 1918.

1,281,355.

Application filed July 5, 1917. Serial No. 178,805.

No Drawing.

To all whom it may concern:

Be it known that I, JAMES O. HANDY, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Processes of Treating Used Lubricants, of which the following is a full, clear, and exact description.

My invention is designed to provide a cheap, simple and effective process by which used lubricants, such, for example, as those which have been used in lubricating explosive engines, may be regenerated.

These used oils or lubricants usually contain tarry or asphaltic material produced by oxidation during service, and usually acid bodies and unsaturated hydrocarbons formed by exposure to heat and air.

In carrying out my process, in its preferred form, I first dissolve the used oil, previously clarified to some extent by settling or by centrifuging, in a hydrocarbon solvent, such as petrolic naphtha or gasolene. The solvent is preferably in large volume proportionate to the amount of oil, for example, four times as much gasolene as used oil. This mixture is then preferably shaken with bone-black, fullers' earth, or similar material, the latter being preferably about one-eighth of the mixture by weight. The sediment or solid impurities contained are then removed by filtering, or equivalent action. Filtering is preferable on account of its cheapness, and this treatment removes the tarry or asphaltic materials, including any coloring matters, the particles of bone-black or clay exerting an attraction thereon, known as adsorption. The remaining solution is next treated with a two per cent. solution of caustic soda (sodium hydroxid) to neutralize the acid bodies. The caustic soda is then separated and the oil solution washed with water to remove the traces of reagent and purify the solution. The gasolene or other solvent is then distilled off, leaving the oil or lubricant of the same viscosity or body as the original oil, and of a satisfactory color.

The dissolving of the oil or lubricant in hydrocarbon solvent is important since thereby the chemicals used are prevented from acting so violently as to destroy or affect the quality of the oil. By thus treating the dissolved oil or lubricant with the chemicals, the recovered oil is substantially equal in quality to the original oil, and the amount lost by the refining treatment does not usually exceed ten per cent.

The advantages of my invention will be obvious to those skilled in the art, since a comparatively cheap, simple and effective method is provided for recovering waste lubricants and restoring them.

The bleaching or decolorizing, which is preferably carried out by shaking with bone-black, fullers' earth, or similar material, and then filtering, may be carried out as the final step of the process; and in my claims, which include this bleaching or decolorizing, I do not consider myself limited to the steps in the specific order recited, as the decolorizing may be carried out either as above described or as a final step.

This process is particularly adapted for used oils of such a nature that the acid step recited in my co-pending application, Serial No. 170,572, filed May 23, 1917, for process of treating used lubricants, is unnecessary. The present process may be successfully used, for example, where the oil has not been used to such an extent, or does not contain such a mixture, that the acid step is necessary. In other words, I have found that the acid step is not necessary in the case of certain types of used lubricants.

I claim:

1. In the method of treating used lubricants, the steps consisting of dissolving the lubricant in a hydrocarbon solvent, removing the coloring matter by adsorption, then treating the solution with alkali, and then removing the solvent, substantially as described.

2. In the method of treating used lubricants, the steps consisting of dissolving the lubricant in a hydrocarbon solvent, removing the solid suspended matters, decolorizing the solution by adsorption, then treating the solution with an alkali, and then removing the solvent, substantially as described.

3. In the method of treating used lubricants, the steps consisting of clarifying the used lubricant, dissolving it in a hydrocarbon solvent, decolorizing the solution by adsorption, and then treating the solution with an alkali, substantially as described.

4. In the method of treating used lubricants, the steps consisting of clarifying the used lubricant, dissolving it in a hydrocar-

bon solvent, decolorizing the solution by adsorption, and then treating the solution with a caustic alkali, substantially as described.

5. In the method of treating used lubricants, the steps consisting of clarifying the used lubricant, dissolving it in a hydrocarbon solvent, decolorizing the solution by adsorption, then treating the solution with an alkali, washing the solution, and then removing the solvent, substantially as described.

In testimony whereof I have hereunto set my hand.

JAMES O. HANDY.