UNITED STATES PATENT OFFICE.

ARNOLD PHILIP, OF PORTSMOUTH, ENGLAND.

TREATING OILS.

1,286,091. Specification of Letters Patent. Patented Nov. 26, 1918.

No Drawing. Application filed June 5, 1914. Serial No. 843,295.

To all whom it may concern:

Be it known that I, ARNOLD PHILIP, a subject of the King of Great Britain, residing at His Majesty's Dockyard, Portsmouth, Hampshire, England, have invented a new and useful Improvement in Treating Oils, of which the following is a specification.

Naphthalene is well known as a cheap combustible, and because of its cheapness various efforts have been made to use it as a fuel in internal combustion engines, either alone, or dissolved in or admixed with petroleum and other oils. It has also been used in smaller proportions in various processes for the manufacture of a fuel suitable for internal combustion engines from heavy petroleum and the other oils, by chemical or heat treatment and addition of light oils, as well as in processes for deodorizing such fuels.

Except for its cheapness, however, naphthalene is generally regarded as an undesirable constituent in a fuel oil because of its tendency to deposit on cooling. This property seems on the other hand to give it some value in connection with lubricating materials to which it has been added for the purpose of increasing their consistency.

Now I have discovered that natural petroleum oils which are too viscous to be readily pumped or otherwise handled, and which therefore cannot at present be used as combustibles, for instance in oil-fed furnaces in which the fuel oil is pumped to the burners and atomized, may be rendered less viscous by the simple addition of naphthalene, that is, without any further chemical or heat treatment.

According to the present invention therefore, this substance is added in proportions up to about 8% by weight of the mixture to the more viscous natural petroleum oils—as used for fuel purposes, *i. e.* for instance after removal of the low flash point oils or such ordinary preliminary treatment,—prior to their storage for use as fuels. It is not necessary for this purpose that the naphthalene should be pure nor even that it should be utilized in solid form. If desired gas coal tar oil, blast furnace tar oil, coke oven tar oil, natural petroleum oil, or oil residuum or shale oil may be used to dissolve naphthalene and the solution may be added to the mineral oils to be rendered less viscous, or a solution of it may be made in any other suitable organic solvent for this purpose.

The proportion of 8% above suggested is that which can be contained by most mineral oils at a temperature of 0° C. without risk of deposition. If the lowest temperature likely to be encountered is higher than this a proportionally greater amount of naphthalene may be used. The proportion necessary to reduce the viscosity to the extent desired may readily be ascertained by experiment.

Naphthalene is effective where the viscosity of the oils or mineral products is due to their containing a proportion of the heavier or more solid paraffins, viz. the paraffin waxes, in order to lessen the viscosity resulting from their presence. By this means oils which have a very high viscosity at ordinary temperatures down to say 32° C. due to the presence of paraffin wax may be rendered sufficiently fluid to be conveniently pumped and thus become available for use as oil fuel, which is commonly atomized at the burners without the necessity of using special heating arrangements; and hence paraffin wax may be added to oils in proportions hitherto inadmissible for use as liquid fuel. But these are not the only cases where the invention is useful, as naphthalene seems to lower the viscosity of any natural petroleum oil to which it may be added, whether the viscosity be due to paraffin, bitumen or any other causes.

What I claim is:

1. A method of rendering highly viscous petroleum oils which cannot readily be pumped or otherwise handled suitable for use as fuels which consists in the simple addition of naphthalene to said highly viscous petroleum oils to thereby change the oil to a freely flowing liquid.

2. The process of utilizing highly viscous petroleum oils which comprises adding a quantity of naphthalene to the highly viscous oil, and pumping the resulting freely flowing liquid as desired.

3. The process of utilizing highly viscous petroleum oils which comprises adding a quantity of naphthalene to the highly viscous oil, pumping the resulting mobile liquid and supplying the same to fuel burners.

4. The process of utilizing highly viscous petroleum oils which comprises adding a quantity of naphthalene to the highly viscous oil, preferably about 8% by weight, and conducting the resulting mobile liquid through suitable conduits for the purposes desired.

5. A process of making a fuel oil, which comprises adding to a crude petroleum oil having a high viscosity due in part to the presence of paraffin wax, a suitable proportion of naphthalene, thereby effecting a solution of the contained paraffin wax and reducing the viscosity of the oil, changing it into a mobile liquid that may be readily pumped.

6. An oil suitable for use as fuel, comprising a normally highly viscous mineral oil having incorporated therein a suitable proportion of naphthalene which renders it a mobile liquid that may be easily pumped.

7. An oil suitable for use as fuel, comprising a mineral oil which is normally highly viscous due in part to the presence of paraffin wax, having incorporated therein a proportion of naphthalene which renders it a mobile liquid at ordinary temperatures that may be easily pumped.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARNOLD PHILIP.

Witnesses:
A. E. O'DELL,
A. S. WITHERDEN.