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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF LIQUID FUELS.

No Drawing. Application filed July 15, 1924, Serial No. 726,162, and in Germany January 14, 1924.

Our invention relates to improvements in the production of liquid fuels and has for its object to increase the usefulness of organic liquids which may be used as fuels.

We have now found that such improvements are effected by adding to a liquid fuel a small amount of a carbonyl compound of iron. We do not claim in this present application a motor fuel comprising a combustible liquid in combination with a metal carbonyl other than iron carbonyl, such being claimed in our copending application Serial No. 745,026 filed October 21st, 1924.

The fuels so obtained are particularly suitable for use as motor fuels being free from liability to cause "knocking," their mixture with air being therefore capable of being brought to much higher pressures in the motor cylinders without undergoing self-ignition, by which property the economy in the use of the fuel is considerably increased. In other cases, as for example for welding, an addition of iron carbonyl proves also useful.

The aforesaid addition can be made to liquid fuels of most varied kinds, for example hydrocarbons such as gasoline and other fuels, and also to mixtures of several constituents forming a liquid fuel. The addition may also be made by producing the iron carbonyl simultaneously with the production of the fuel, effecting the latter in the presence of carbon monoxid and finely divided iron. The quantity of the iron carbonyl compound best suited to produce the desired effect varies according to the particular fuel to which it is added and the special use for which it is intended. Generally speaking, between about a tenth and one per cent will be sufficient, for example ten grammes per gallon or less.

As an example, an automobile fitted with a six cylinder motor having a compression ratio of 1 to 5.8 and driven with ordinary gasoline of 0.72 specific weight showed heavy "knocking" especially when running with full load and reduced rotation of the motor, for example, uphill. This "knocking" was completely eliminated when a small addition of iron carbonyl was made to the fuel.

The iron compound may also be dissolved in an organic solvent up to a rather concentrated solution, which may then be added to the fuel in an amount giving the desired percentage of metal compound.

What we claim is:

1. A motor fuel comprising a combustible liquid in combination with between about a tenth and one percent of an iron carbonyl.

2. A motor fuel comprising a combustible liquid in combination with an iron carbonyl.

3. As a composition of matter, gasoline containing between about a tenth and one per cent of an iron carbonyl.

4. The process of adding to a liquid fuel a carbonyl compound of iron.

5. The process of adding to a liquid fuel between about a tenth and one percent of an iron carbonyl.

In testimony whereof we have hereunto set our hands.

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