

## UNITED STATES PATENT OFFICE.

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MOTOR FUEL AND PROCESS OF MAKING SAME.

No Drawing.

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This invention relates to improvements in motor fuels and process of making same and refers more particularly to a motor fuel and process of making same consisting in an emulsion of a volatile hydrocarbon such as kerosene, water and an emulsifying agent.

For many years past, attempts have been made to perfect a kerosene carburetor. They have been largely unsuccessful, one of the main reasons being that where kerosene is used as a motor fuel, the cylinders quickly carbonize. Mechanical devices for introducing water into the cylinders or carburetors have not been successful and are open to various well known objections. It is highly desirable, however, that water be introduced into the explosive mixture but to get satisfactory results, the water should be very finely and evenly dispersed throughout the kerosene and in such a form that there will be no free water in the carburetor.

It is also desirable that the emulsion be relatively permanent. It may also be desirable to make the mixture relatively non-freezing. The following example of carrying out the process may be given and is one which has been successfully tried out.

I take 99 parts of kerosene of 42° Baumé gravity and dissolve in it one part by weight of naphthenic acid. To this is gradually added not in excess of 10 parts of water by weight and the mixture rapidly agitated. This is done with the liquids at ordinary temperature. The emulsion is formed of 99 parts by weight of kerosene, 5 parts by weight of water and one part by weight of naphthenic acid. The excess of water is drawn off. The remainder of the water is retained in a relatively stable emulsion.

I have found that this mixture will stand in this emulsified condition over an extended length of time. This emulsion which I have made in the manner above stated is practically white and the particles of water are dispersed through the kerosene and in extremely fine state of subdivision so that no individual particles of water can be seen and the mixture has a homogeneous milky appearance. The above mixture, as it stands, makes a useful motor fuel.

If it is desired, the water may be made slightly alkaline with ammonia, which assists in stabilizing the mixture. It would also tend to prevent the mixture from freezing. The mixture may be made non-freezing by adding to the water an alcohol. Suf-

ficient alcohol should be added to prevent the freezing of the water at any given temperature. This alcohol would not, in any way, prevent the emulsion from being made and would give additional power to the motor fuel.

After this emulsion is made and either with or without the addition of the ammonia or alcohol or both, it may be forced through a homogenizer under high pressure such as is well known that these homogenizers give. This will tend to further very finely subdivide the particles of water and tend to make the emulsion still more permanent, and also will probably permit larger quantities of water being incorporated.

This emulsion may be forced through the homogenizer cold or heated to a temperature below the volatile or boiling point of the various constituents. I have described the use of kerosene in carrying out the process. It is understood that gasoline, pressure distillate, benzol or such fuels as are used in Diesel engines may be used.

It should be noted that the motor fuel produced by this process has the water in the disperse phase and the oil or emulsifying agent in the continuous phase, and thus presents a film of oil in direct contact with the air introduced into the carburetor.

I claim as my invention:

1. A fuel for internal combustion engines, consisting of a homogeneous emulsion of a combustible liquid hydrocarbon oil, water, between two percent and ten percent naphthenic acid as an emulsifying agent dissolved in said combustible hydrocarbons.
2. A fuel for internal combustion engines, consisting of a homogeneous emulsion of a combustible liquid hydrocarbon oil, water, between two percent and ten percent, and naphthenic acid as an emulsifying agent, dissolved in said combustible hydrocarbons, and a non-freezing constituent such as alcohol.
3. A process of producing an explosive fuel for use in internal combustion engines, consisting in dissolving an emulsifying agent in a combustible liquid hydrocarbon, and then gradually agitating this mixture in the presence of water and forming an emulsion of said oil, water and naphthenic acid as an emulsifying agent.
4. A process of producing an explosive fuel for use in internal combustion engines, consisting in dissolving naphthenic acid as an

emulsifying agent, in kerosene, and then gradually agitating this mixture in the presence of water and forming an emulsion of said oil, water and an emulsifying agent, in which the water is in the dispersed phase and the oil and emulsifying agent are in the continuous phase.

5. A process of producing an explosive fuel for internal combustion engines, consisting in dissolving naphthenic acid in a combustible liquid hydrocarbon and then gradually agitating this mixture while adding small quantities of water to form an emulsion with the oil, the water being added to an amount not in excess of 10% and being emulsified in the dispersed phase of the

emulsion, the oil being in the continuous phase.

6. Fuel for internal combustion engines, comprising an emulsion of a combustible hydrocarbon liquid as the continuous phase, an oil soluble emulsifying agent and an internal phase comprising water containing a non-freezing constituent.

7. Fuel for internal combustion engines, comprising an emulsion of a combustible hydrocarbon liquid as the continuous phase, an oil soluble emulsifying agent and an internal phase comprising water containing alcohol.

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