# UNITED STATES PATENT OFFICE.

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## FUEL FOR INTERNAL-COMBUSTION ENGINES.

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*To all whom it may concern:*

Be it known that I, GEORGE B. SELDEN, a citizen of the United States, residing at Rochester, in the county of Monroe, in the State of New York, have invented an Improvement in Fuel for Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in the composition of liquid fuels for internal combustion engines,—the said improvements being fully described in the following specification and the novel features thereof being specified in the claims annexed to the said specification.

By experiment with admixtures or solutions of many substances with the liquid hydro-carbon adapted for use in internal combustion engines, with a view of increasing the power at the least expense, I have observed that greatly improved results are obtained by the picrate or other nitrated compounds of naphthalene or similar compounds of the condensed benzin nuclei. In using these compounds they are added directly to the fuel, if soluble therein, and otherwise they are dissolved in a suitable solvent, such as one of the alcohols, benzin, benzole, acetone, etc., and the solution mixed with the liquid fuel. The proportion of the material added to the fuel may vary within considerable limits,—from one-half of one per cent. to five per cent. or more,—according to the judgment of the user, the amount of increased power he desires from his loaded fuel, the strength of the engine, and other circumstances, such as the solubility of the loading compound in the solvent, or the liquid fuel employed. I have found by actual brake tests that two per cent. of picrate of naphthalene, when dissolved in the fuel, will increase the power obtained in the engine, over that obtained in the same engine by plain or unloaded fuel, by more than 100 per cent. In dissolving the naphthalene or similar compound it is immaterial whether the solvent of the compound is slightly in excess and the mixture may be made either directly in the solvent or in the fuel. The loaded fuel thus produced is of a decided yellow color, which serves as a distinctive mark. This loaded fuel may be used in any of the ordinary types of engines, the result being a greatly increased explosive effect,

The exhaust does not differ materially either in appearance or odor from the exhaust when unloaded fuel is used, and if desired it may be completely deodorized by the addition of a small quantity of suitable peroxid or an ether. Peroxid of hydrogen, preferably in a non-aqueous solution, accomplishes this purpose of deodorization excellently. Only a small quantity is required, not more than one-half of one per cent. The ethers, such as an oxalic ether, for example, produce the same effect. Under the same circumstances, a peroxid and an ether may be used together with advantage.

I have found by experiment that a fuel thus loaded will greatly increase the effectiveness of the engine, and that a less amount of fuel is required than if it is used with no addition thereto. The expense, therefore, is not increased, as the increased effectiveness of the loaded fuel pays the cost of the load. Furthermore, the addition to the fuel permits the use of a fuel of heavier specific gravity, thus reducing the expense. Another advantage is that just as high pressures can be obtained in the engine cylinder with less compression, which thereby reduces the resistance of the engine.

The property of producing the increase of power described is practically inherent in the picrate compounds of the hydrocarbons of the condensed benzin nuclei type, such as naphthalene $C_{10},H_8$; phenanthrene, $C_{14},H_{10}$; fluoranthene, $C_{15},H_{10}$; pyrene, $C_{16},H_{10}$; chrysene, $C_{18},H_{12}$; and picene $C_{22},H_{14}$.

I claim:

1. The herein described improved fuel for internal combustion engines, consisting of a suitable liquid hydrocarbon containing picrate of naphthalene, substantially as described.

2. The herein described fuel for internal combustion engines, consisting of a suitable liquid hydrocarbon containing a picrate of a suitable hydrocarbon, substantially as described.

3. The combination with a suitable liquid hydrocarbon, of picrate of naphthalene and a suitable peroxid, substantially as described.

4. The combination with a suitable liquid hydrocarbon, of picrate of naphthalene and peroxid of hydrogen, substantially as described.

GEO. B. SELDEN.

Witnesses:
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