

UNITED STATES PATENT OFFICE.

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MOTOR FUEL.

No Drawing.

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This invention relates to a novel fuel for internal combustion engines, and to a method of compounding the same.

It has been proposed to introduce aniline in small proportions into motor fuels of the alcohol-ether type for the purpose of neutralizing acidity. It has also been proposed to use 3.0% or more of aniline as an additive to motor fuels of the gasoline type for the purpose of preventing detonation of the explosive mixture. In this latter use however the difficulty has been encountered that the solubility of aniline in commercial gasoline fuels is low, and varies greatly with the temperature, with the result that when the aniline is added in proportion to be effective for the intended purpose, there is danger, more particularly in cold weather, of such separation of the aniline as may result in clogging the carburetion system.

Our experiments have demonstrated that aniline, when introduced under special conditions and in properly adjusted proportions into commercial gasoline, is capable of bringing about a variety of useful effects is the operation of motors of the internal combustion type. Thus it checks the tendency to explosions of the detonating character, which explosions are one of the common causes of engine knocking; it acts as an accelerator of combustion; and it functions both as a carbon remover and as a preventive of carbon deposition. In order to accomplish these results it is preferable that the aniline should be preliminarily dissolved in a suitable solvent having on the one hand a higher solvent power for aniline than the commercial grades of gasoline, and capable, on the other hand, of yielding with the aniline a solution which is (as compared with aniline itself) more readily soluble in or miscible with the gasoline. By proceeding in this manner we have been able to prepare thoroughly blended solutions of aniline in gasoline, which are stable throughout the usual range of atmospheric temperature conditions, and which possess all of the valuable qualities above enumerated. The addition agent is preferably a substance which will both promote the ultimate solubility and also accelerate the rate of solution of the aniline in the gasoline,

and will be hereinafter referred to, for convenience of description, as a "blending material". Such blending materials are usually liquids at ordinary temperatures, and the following may be mentioned as examples illustrative of the class: benzol, xylol, toluol, solvent naphtha, light oils from tar, acetone, alcohols, and turpentine or mixtures of these. Our invention is not however limited to the particular blending agents above mentioned by way of examples.

A preferred mixture embodying our invention comprises approximately equal volumes of aniline and a solvent therefor consisting largely of aromatic hydrocarbons including benzol, toluol, xylol and solvent naphtha. Such complex and undetermined mixtures as are sold under the name of "motor benzol" or "motor-toluol" have been found well suited for the purposes of this invention.

We prefer to introduce the said mixtures into the gasoline in such proportions that the aniline will constitute approximately 1% by volume of the whole mixture. For the best results the proportion of aniline should not be substantially less than 0.75% or substantially more than 1.50% by volume. Our invention however is not to be regarded as restricted to these preferred proportions, inasmuch as useful results can be obtained on either side of the range specified.

We have further discovered that the addition of from 0.5 to 2.0% of aniline to motor gasoline, without the blending agent, has distinct advantages, especially in the operation of motors of the automotive type. We have found that such proportions of aniline serve to remove carbon and prevent further deposition thereof, and to prevent knocking; and that with such addition a substantial increase in power is obtained.

We claim:

1. A motor fuel comprising gasoline principally, benzol and aniline, the aniline being homogeneously blended in the fuel.
2. A motor fuel consisting of commercial aniline, benzol and gasoline.
3. A motor fuel consisting of one-to-one solution of commercial aniline in benzol, and gasoline, the benzol and aniline being less than the amount of gasoline in the fuel.

4. A motor fuel comprising commercial gasoline, aniline and benzol, the aniline constituting from .75% to 1.5% by volume of the motor fuel.
- 5 5. A motor fuel comprising commercial gasoline, aniline and benzol, the aniline constituting about 1% by volume of the motor fuel.
6. A motor fuel comprising commercial gasoline, aniline and benzol, the aniline and benzol being in about equal parts by volume and the aniline constituting from .75% to 1.5% of the motor fuel.
- 10 7. As a novel composition of matter, a modifying agent for commercial gasoline comprising aniline and benzol.
8. A motor fuel comprising gasoline principally, aniline and a solvent for aniline consisting largely of aromatic hydrocarbons including benzol, toluol, xylol and 2 solvent naphtha.
9. A motor fuel comprising gasoline principally, aniline, and motor benzol.

In testimony whereof we affix our signatures.

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