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UNITED STATES PATENT OFFICE.

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NONFREEZING FUEL.

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To all whom it may concern:

Be it known that I, WALTER T. SCHREIBER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a certain new and useful Improvement in Nonfreezing Fuel, of which the following is a specification.

My invention relates particularly to fuels designed for use in internal combustion engines, and which are especially applicable for use in operating aeroplane motors.

The object of my invention is to provide a fuel adapted for use in internal combustion engines of many different kinds, and which is especially applicable for use in connection with aeroplane motors, inasmuch as a fuel made in accordance with my invention will not freeze at any atmospheric temperature. The object of my invention is, therefore, to provide a fuel by means of which aeroplanes may be driven therewith at any desired altitude and at any desired longitude of the earth without danger of the fuel freezing. The object of my invention is more particularly to provide a fuel of this character which contains an alcohol and light hydrocarbon, such as a petroleum distillate.

While my invention is capable of embodiment in many different forms, for the purpose of illustration I shall describe only certain forms of my invention hereinafter.

For example, a fuel made in accordance with my invention may be comprised of the following constituents in the proportions given:

40 parts by volume of ethyl alcohol.
28 parts by volume of gasoline.
17 parts by volume of benzol.
7.5 to 10 parts by volume of ether.
8 parts by volume of toluol.

Another example is the following:

20 parts by volume of ethyl alcohol.
20 parts by volume of gasoline.
15 parts by volume of kerosene.
35 parts by volume of methyl-ethyl-ketone.
5 parts by volume of ether.

Another example is:

15 parts by volume of benzol.
40 parts by volume of alcohol.
30 parts by volume of gasoline.
15 parts by volume of ether.

Another example is:

12 parts by volume of benzol.
30 parts by volume of gasoline.
40 parts by volume of absolute alcohol.

In the above compositions any desired alcohol may be used, such for example as methyl alcohol, ethyl alcohol, etc., but I prefer to use ethyl alcohol, and the number of parts thereof in the above compositions may vary to a considerable extent. Furthermore, instead of the gasoline other hydrocarbons may be used, and the range of the proportions of the same in the above compositions may vary to a considerable extent. Different blending agents may be used which are of such a character as to blend the above constituents, but which will also not produce a composition which would freeze at atmospheric temperatures.

The toluol is especially advantageous in preventing the freezing of such compositions and particularly where benzol is used as the blending agent.

Compositions of the above character will not freeze within the range of the usual atmospheric temperatures, as for example, a temperature as low as minus 50° F. nor even down to temperatures of minus 60° F.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit thereof.

By atmospheric temperatures I mean temperatures down to minus 50° F.

Claims:

1. A fuel that has a freezing point below —50° F.; and that comprises alcohol, gasoline, benzol, ether, and toluol, the proportion of benzol being approximately 15% of the mixture.

2. A fuel that has a freezing point below —50° F.; and that comprises about 40% alcohol, about 30% gasoline, about 15% benzol, from 7 to 15% ether, and about 8% toluol.

3. A fuel that has a freezing point below —50° F.; and that comprises alcohol, gasoline, benzol, ether, and toluol; the proportion of ether being from about 25% to 50% of the gasoline, and the proportion of benzol being about 15% of the mixture.

4. A fuel that has a freezing point below —50° F.; and that comprises alcohol, gasoline, benzol, ether, and toluol; the proportion of ether being from about 25% to 50% of the gasoline, the proportion of toluol being about 8% of the mixture, and the pro-

portion of benzol being about 15% of the mixture.

5. A fuel that has a freezing point below −50° F.; and that comprises about 40% alcohol, about 15% benzol, and also comprises gasoline and ether; the ratio of gasoline to ether being approximately two to one.

6. A fuel that has a freezing point below −50° F.; and that comprises alcohol, gasoline, benzol, ether, and toluol; the proportion of ether being about 25% to 50% of the gasoline, the proportion of toluol being about 8% of the mixture, and the proportion of benzol being about 15% of the mixture.

In testimony that I claim the foregoing, I have hereunto set my hand this 24th day of March, 1919.

WALTER T. SCHREIBER.