UNITED STATES PATENT OFFICE.

ALBERT HAYES, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO U. S. INDUSTRIAL ALCOHOL CO., A CORPORATION OF WEST VIRGINIA.

METHOD OF FORMING A LIQUID FUEL.

1,363,870. Specification of Letters Patent. Patented Dec. 28, 1920.

No Drawing. Application filed June 18, 1919. Serial No. 305,143.

To all whom it may concern:

Be it known that I, ALBERT HAYES, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Methods of Forming Liquid Fuel, of which the following is a description.

My invention relates to a method of forming a liquid fuel from hydrocarbons of different specific gravities and flash points and alcohol and has for its object to provide a method by which such hydrocarbons of different gravities and flash points may be combined with alcohol into a stable compound which will not stratify and from which none of the ingredients will evaporate separately from the others, and particuarly to provide a method by which a relatively heavy hydrocarbon such as kerosene may be combined with a relatively very light hydrocarbon such as benzol, and with alcohol to form a liquid fuel adapted for use in explosion engines and for similar purposes from which neither the alcohol or the kerosene will separate.

It is well known that a heavy hydrocarbon such as kerosene having a high flash point is not adapted for use as a motor fuel except with a specially constructed carbureter or under other special conditions and it is also well known that alcohol which has a very low flash point is not well adapted for use as a motor fuel except under special conditions, and it has long been evident that if the heavy hydrocarbon in suitable proportions could be combined with the alcohol in such a way as to form a liquid which would not stratify but would be stable under the conditions of use, a highly desirable motor fuel would be formed by the combination. It has, however, been found very difficult, if not impossible heretofore, to so combine the kerosene and the alcohol, so that they would not separate to a greater or less extent. The object of my invention is to overcome this difficulty by combining the heavy and very light hydrocarbon and alcohol in a particular way by which permanence of the combination is insured.

With the above explained object in view my invention consists in the method hereinafter described and claimed.

In carrying out my invention I take a quantity of kerosene and, with about 50 parts of this kerosene I associate about 14 parts of benzol, and three or more parts of ether, the proportion of ether depending on the temperature and specific gravity of the kerosene, the amount of benzol being reduced as the amount of ether is increased, the benzol and ether together forming at least 17 parts to the 50 parts of kerosene. These ingredients are thoroughly mixed together so that the ether and benzol, particularly the ether, may act on all the particles of kerosene throughout the mass so as to put every particle in condition to combine with the alcohol when it is added.

When these ingredients have been thoroughly mixed together I gradually introduce alcohol to an amount equal to about 33 parts to the 50 parts of kerosene preferably introducing the alcohol in the form of vapor keeping the mixture cool and agitating as the alcohol vapor is introduced. The mixture condenses the alcohol vapor as it is introduced and combines with the vapor or with the condensed vapor, and forms a compound which is stable under all ordinary conditions and will not stratify. The compound thus formed works satisfactorily in an ordinary carbureter adapted for use with gasolene and is a highly efficient motor fluid forming an explosive mixture with a flash point substantially that of the explosive mixture formed from gasolene and burns without depositing hard carbon.

It will, of course, be understood that the precise proportions of kerosene and alcohol, as well as of the other ingredients, may be varied from those above stated, the essential features of the invention being the preparation of the kerosene to absorb and combine with the alcohol and the introduction of the alcohol in the form of vapor.

In a co-pending application No. 305,144

filed of even date herewith I have described and claimed an apparatus for introducing the alcohol as vapor into the mixture above described and do not make any claim in this application to such apparatus.

Having thus described my invention what I claim is:

The method of preparing a motor fuel which comprises associating about 50 parts of kerosene with a mixture of about 14 parts of benzol and about 3 parts of ether, and thereafter passing alcohol vapor into the mixture of liquids so associated.

In testimony whereof I affix my signature this 17th day of June, 1919.

ALBERT HAYES.