

UNITED STATES PATENT OFFICE.

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COMPOSITION FOR REMOVING CARBON.

1,287,589.

Specification of Letters Patent.

Patented Dec. 10, 1918.

No Drawing.

Application filed January 22, 1917. Serial No. 143,835.

To all whom it may concern:

Be it known that I, CHARLES A. LEWIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Composition for Removing Carbon, of which the following is a specification.

This invention relates to a composition for removing carbon deposits from internal combustion engines or the like.

In the operation of internal combustion engines successive layers of soot are deposited upon the cylinder heads, walls and the piston heads, due to the fact that insufficient oil, or too rich a mixture has been supplied to the cylinders, which soot becomes mixed with the lubricating oil fed to the cylinders, and forms a hard deposit on the various working parts of the engine. In time these layers of carbon become very thick, offering resistance to the freedom of motion of the working parts and decreasing the power of the engine. The carbonaceous deposit at times becomes red hot causing premature explosions of the gas at times when the piston is not in proper position, thereby causing a general strain on the motor and moving parts.

The primary object of this invention is the provision of a composition of the character set forth which will dissolve the gum-like substance which binds the molecules of carbon together to form the layer above referred to, in order that the carbon molecules may be separated from the layer, and blown out through the exhaust ports of the various cylinders.

In order to produce an efficient and proper composition for this purpose it will be seen that the composition must be non-injurious to the cylinder walls; that the composition will burn, in order that no further deposit is left to clog the working parts of the motor, and that the solvents for the gummy matter be so volatilized that they will readily pass off and not interfere with the compression of the engine. Also that sufficient retarding elements be incorporated in the composition in order that the volatile solvents will not volatilize without having had time to act upon the carbon layer to dissolve the gummy portion thereof. After exhaustive experiments it has been found that a very efficient composition may be pro-

vided for the purpose of combining ketone, alcohol, water, essential oil of citronella, or similar oil, and a minute quantity of coloring matter. The following proportions are indicated as approximating the proper percentage of a suitable composition, but it is to be understood that variation from the exact proportions thereof may be made without departing from the spirit of this invention:

A ketone of the aliphatic series	65 per cent.
Alcohol	29 per cent.
Water	5 per cent.
Oil of citronella or similar essential oil	1 per cent.
Coloring matter	to suit.

A ketone of the aliphatic series as for example acetone is used in this composition in large proportion on account of its great solvent power, it dissolving the gum-like binder which is present in all motor carbon, being produced by the baking at the high temperature in the cylinder of the lubricating oil and carbon soot, thus forming the hard incrustation on the metal parts. The ketones of this series are the strongest solvent I have found for this purpose, and I have also found that they are absolutely non-injurious to the metal parts of the engine.

Alcohol while a solvent in itself, yet when combined with one of these ketones gives a longer sustained solvent action of the composition and a much greater dissolving power, it also acting as a partial retardant when used in the proportions specified.

Water is added to the composition to produce, in combination with the ketone and alcohol, a retardent action which is necessary to permit the solvents to act upon the gum binder of the carbon deposit without first volatilizing, and also to convert the water into live steam, which facilitates the breaking up and elimination of the carbon from the motor cylinders through the cut-out valves of the muffler exhausts. The oil of citronella or similar essential oil is added in minute proportion so that the amount of water used in the composition for a retardent action can be reduced to the minimum quantity, the oil of citronella or similar essential oil being added as an additional retardent.

A slight trace of any suitable coloring matter may be added to the composition in order to impart any desired individuality of color thereto.

- 6 This compound is introduced into the cylinders in small quantities through either the pet cock or spark plug opening and permitted to stand several hours. The motor can then be started and the carbon blown out through the exhaust of the motor.

10 Having thus described my composition, what I claim as new and desire to secure by Letters Patent is:

- 15 1. A carbon removing composition containing a ketone of the aliphatic series, alcohol and water, said ketone and alcohol comprising at least 75% of the mixture and said water comprising between 3 and 20% of the mixture.
- 20 2. A carbon removing composition containing acetone, alcohol and water, said acetone and alcohol comprising at least 75% of the mixture and said water comprising between 3 and 20% of the mixture.
- 25 3. A carbon removing composition comprising more than 50% of a ketone of the aliphatic series, more than 15% and less than 40% of alcohol, more than 3% and less than 20% of water.
- 30 4. A carbon removing composition comprising more than 50% of acetone, more than 15% and less than 40% of alcohol, and more than 3% and less than 20% of water.

5. A carbon removing composition comprising more than 50% of a ketone of the aliphatic series, more than 20% and less than 50% of retardents of evaporation, one of said retardents being an essential oil.

6. A carbon removing composition comprising more than 50% of a ketone of the aliphatic series, more than 20% and less than 50% of retardents of evaporation, one of said retardents being oil of citronella.

7. A carbon removing composition comprising more than 50% of a ketone of the aliphatic series, more than 15% and less than 40% of alcohol, more than 3% and less than 20% of water and some essential oil less than 3%.

8. A carbon removing composition comprising more than 50% of a ketone of the aliphatic series, more than 15% and less than 40% of alcohol, more than 3% and less than 20% of water, some oil of citronella less than 3%.

9. A carbon removing composition comprising more than 50% of acetone, more than 15% and less than 40% of alcohol, more than 3% and less than 20% of water, some oil of citronella less than 3%.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES A. LEWIS.

Witnesses:

EDWARD S. ROGERS,
ALLEN M. REED.