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UNITED STATES PATENT OFFICE.

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CARBON REMOVER.

No Drawing.

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This invention relates to mixtures for removing carbon deposits from the interior walls of the chambers of internal combustion engines.

harmful corrosive effects are discernible on the interior parts of engines after the use of this carbon remover. A mixture of this nature may be safely handled and stored in quantities by the dealers without substantial fire hazard.

Although various compositions and mixtures for this purpose have been proposed and used heretofore, none of such products embodies all of the properties favorable for universal use in removing carbon deposits of various characteristics. It appears to be necessary that such mixtures embody some ingredient having physio-chemical properties causing the material to penetrate deeply into the carbon incrustations. One or more of the ingredients of the mixture should also be such as to dissolve the greasy part of the carbon crust, thus liberating the hard carbon which is then blown out. The characteristics of the carbonaceous deposit will vary between wide limits under various conditions of combustion and with the use of fuels and lubricating oils of varying qualities and compositions. In view of this fact I have found it desirable to include in the carbon removing mixture a plurality of materials having a solvent action effective upon most, if not all, of the carbonaceous deposits formed in the present conventional types of internal combustion engines.

The denatured alcohol, together with the various higher alcoholic materials of the fusel-oil including amyl alcohol and a small amount of iso-propyl alcohol, offer the necessary variety of solvent properties to quickly dissolve the various forms of greasy binders which retain the carbon particles. For practical purposes iso-propyl alcohol, which is known commercially as Petrohol, may be easily and cheaply obtained and used alternatively with the fusel-oil. The use of such alcoholic materials appears to substantially improve the property of the carbon remover to penetrate into the under surface of the carbon incrustations.

Various and more specific objects, features and advantages of my invention will more clearly appear from the detailed description given below, the invention comprising the novel product as above referred to and as described by way of examples in the following specification, the invention being more particularly pointed out in the appended claims.

In using the above mixture, the engine is preferably operated until well heated. Then approximately 1 ounce of the mixture is introduced in each cylinder as by removing the spark plugs. The cylinders are then closed and the engine operated for several minutes. The carbon will then be blown out through the exhaust in a very dry powdered or granulated form. If the carbon deposits are unusually heavy, the operation may be repeated several times until the interior walls of the engine chambers become bright and substantially entirely free from carbon. An important characteristic of the mixture is that the carbon is liberated in a finely divided dry form which is quickly blown away and does not tend to stick in the passages, valves, etc., where it would cause further trouble.

A suitable mixture embodying my invention may be made with various ingredients added in quantities substantially as follows:

- 2 oz. fusel-oil (or alternatively iso-propyl alcohol).
- 1 pt. denatured alcohol (C. D. #1).
- 1 pt. acetone.
- 2 oz. concentrated ammonia water

Baumé.
½ oz. identifying color, such as caramel.
Water to make up one gallon.

This mixture has been found to be very penetrating and capable of attacking carbon deposits having a wide variety of characteristics. The various ingredients of this mixture are easily obtainable and are relatively inexpensive and are easily miscible. Also, when the ingredients are thus combined, no

It has been found desirable to add the coloring material as above noted for the purposes of identifying the mixture and to prevent any danger of confusion with other products sold by the same dealers.

While I have described my invention in considerable detail and with respect to certain preferred forms of the product embodying the invention, it will be understood by those skilled in the art after having understood my invention that various changes and modifications may be made without departing from the spirit and scope of the invention, and I aim in the appended claims to cover all such modifications and changes

as come within the spirit of the invention.

What I claim as new and desire to secure by United States Letters Patent is:

1. A mixture for removing carbon deposits
5 from internal combustion engines formed by
mixing the following ingredients in proportions
in the neighborhood of the following:—denatured alcohol, 1 pint; acetone, 1
pint; fusel-oil, 2 ounces; concentrated ammonia
10 water, 2 ounces; sufficient water to
act as an effective vehicle when vaporized.

2. A mixture for removing carbon deposits
from internal combustion engines formed by
mixing relatively small quantities of fusel
15 oil and concentrated ammonia water with
relatively larger quantities of acetone and

denatured alcohol, and a substantial amount
of water.

3. A mixture for removing carbon deposits
from internal combustion engines 20
formed by mixing relatively small quantities
of ammonia and an oily liquid comprising
a mixture of higher alcohols, one of
which is iso-propyl alcohol, with relatively
larger quantities of acetone and denatured
25 alcohol, and a sufficient amount of
water to act as a vehicle for carrying away
the deposits.

In testimony whereof I have signed my
name to this specification.

WILLIAM M. GROSVENOR.