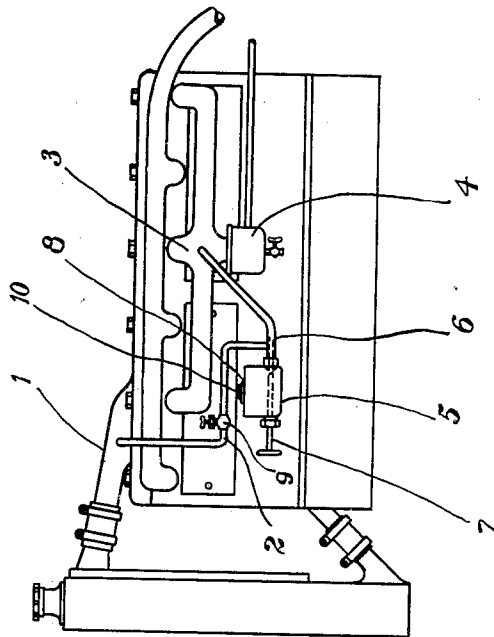


G. TOROSSIAN.
CARBON REMOVER.
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1,386,385.

Patented Aug. 2, 1921.



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INVENTOR.

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CARBON-REMOVER.

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To all whom it may concern:

Be it known that I, GREGORY TOROSSIAN, a subject of Armenia, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Carbon-Removers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a process and a product for the removal of carbonaceous deposits in explosion engines.

It is well known that explosion engines accumulate deposits of carbon due to the oil present in the engine and to the use of excess gasolene or other fuel. The deposits consist of carbon held together by a tarry or oil binder and it is the object of my invention to free the engine of carbon deposits by destroying the binder so that the loosened particles are blown out of the exhaust manifold.

It is another object to so arrange the apparatus for carrying out the process that the user of the machine can readily free his engine of carbon deposits without removing any of the engine parts. Other objects will appear in the following description, reference being had to the drawing in which:

The single figure of the drawing illustrates the carbon removing apparatus applied to an engine.

I have found that carbon tetrachlorid, chloroform and similar compounds of carbon and chlorin, or carbon, chlorin and hydrogen, destroy the binder of carbon deposits when passed into the cylinder of the engine while it is hot and running under its own power. This property is enhanced greatly by the presence of steam in the cylinders, and I prefer, therefore, to mix the said compounds with hot water or steam before they are drawn into the cylinders.

Referring to the drawing, the hot water radiator pipe 1 of the engine is tapped and a pipe 2 secured therein. The other end of the pipe is attached to the intake 3 of the engine, preferably above the carbureter 4. A small reservoir 5 has a pipe 6 joined to the water pipe 2 and this is closed by an adjusting valve 7. The preferred way of carrying out the process is then as follows:

A small amount of the compound, or com-

pounds, mentioned is placed in the tank or cup 5 through the plug 8, the valve 7 being sealed to prevent flow of liquid into the water pipe 2. With valve 9 in the water pipe closed, the engine is started and when warmed up the water valve 9 is opened slightly to admit hot water. At the same time, or a little later, the valve 7 is eased off and the carbon tetrachlorid, or equivalent, enters into the intake manifold with the water, a small air hole 10 in the plug 8 permitting this. The engine may tend to stall, but in this case valves 7 and 9 may be closed while the engine runs for a few seconds to permit the tetrachlorid and steam to loosen the carbon. The steps are repeated a number of times, depending upon the amount of carbon in the engine, and the carbon will be quickly removed.

The carbon tetrachlorid entering the engine cylinder probably decomposes from the heat and the tetrachlorid or the resulting products, or both, combine with the binder in such a way as to free the solid carbon particles and permit their passage out through the exhaust manifold. I am not sure of the chemical reactions taking place, but the tetrachlorid or something derived from it appears to oxidize or destroy the binder that holds the carbon particles to the pistons and cylinder head. I do know, however, that the compound referred to will free the engine of carbon in a very short time when injected into the hot cylinders of the engine running under its own power, and the invention, therefore, is not to be limited to any particular theory of operation.

It may be that free chlorin or hydrochloric acid results from decomposition of the carbon tetrachlorid in the hot gases of the engine cylinder but this would not injure the engine parts, as it would be immediately used up in oxidizing or combining with the binder of the carbonaceous deposits.

I find that the action of the carbon remover is improved by using a light cylinder or machine oil with the carbon tetrachlorid, or other equivalent compound, and, therefore, may be mixed with it before adding it to the cup 5. Various amounts of oil may be used, but I have found five per cent. or less of oil is satisfactory.

A great advantage of my process resides in the ease with which it is carried out. No engine parts have to be removed, and by con-

necting the valves to the dash of the car the carbon can be removed at any time while the automobile is in use.

I am aware that coal oil, alcohol and various mixtures of alcohol with other chemicals have been added to the engine cylinder for removing carbon, but none of the substances are effective. They require almost continued use to free the engine of carbon, while my product will remove the carbon in a very short time, and with no trouble to the operator.

Having described my invention, what I claim is:

1. The process of removing carbonaceous deposits from an engine, which consists in running the engine under its own power and then admitting carbon tetrachlorid to the engine cylinder to loosen the carbon and blow it out through the exhaust manifold.

2. The process of removing carbonaceous deposits from an engine, which consists in

running the engine under its own power and then admitting water and carbon tetrachlorid to the cylinder to loosen the carbon and blow it out through the exhaust manifold.

3. The process of removing carbonaceous deposits from an engine, which consists in running the engine under its own power and then admitting carbon tetrachlorid and an oil to the engine cylinder to loosen the carbon and blow it out of the exhaust manifold.

4. The process of removing carbonaceous deposits from an engine, which consists in running an engine under its own power and passing carbon tetrachlorid, oil and water into the cylinder to loosen the carbon and blow it out of the exhaust.

In witness whereof I have hereunto signed my name this 24th day of December, 1919.

GREGORY TOROSSIAN.

Witnesses:

O. T. WEAVER,
B. B. PUTENIK.