

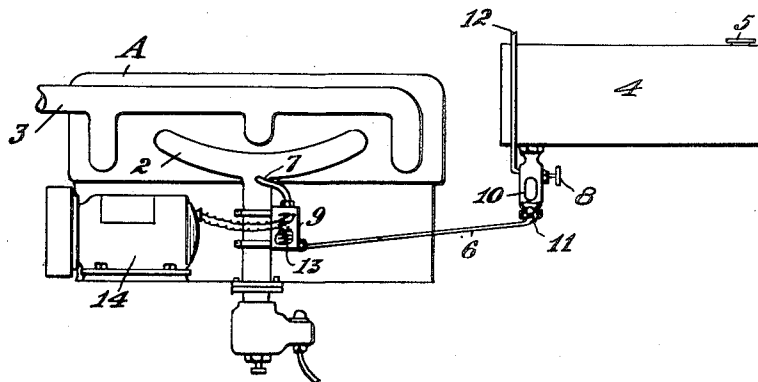
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METHOD FOR ECONOMIZING FUEL AND PREVENTING CARBON DEPOSITS IN EXPLOSIVE ENGINES.

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1,108,608.

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WITNESSES:

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METHOD FOR ECONOMIZING FUEL AND PREVENTING CARBON DEPOSITS IN EXPLOSIVE-ENGINES.

1,108,608.

Specification of Letters Patent. Patented Aug. 25, 1914.

Application filed September 2, 1913. Serial No. 787,594.

To all whom it may concern:

Be it known that I, CHARLES L. NEDOMA, a citizen of the United States; residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Methods for Economizing Fuel and Preventing Carbon Deposits in Explosive-Engines, of which the following is a specification.

This invention relates to a method for economizing hydrocarbon fuel and preventing the formation of carbon deposits within the cylinders and valves of internal combustion engines.

The object of this invention is to provide a method for introducing free oxygen and steam into the inlet manifold of a gas engine for the purpose of causing the complete combustion of the vaporized hydrocarbon fuel in the engine and thereby preventing the formation of carbon deposits within the cylinders and valves and at the same time increasing the power generating property or efficiency of the fuel. Further objects will appear hereinafter.

The invention primarily resides in subjecting H_2O_2 (peroxid of hydrogen) to a sufficient temperature to liberate one of the oxygen atoms and convert the remaining H_2O into steam and introducing the mixture of steam and oxygen into the manifold of the engine.

The invention will be more fully explained by reference to the accompanying drawing, in which the figure is a side elevation of a gas engine showing the application of the invention.

Referring to the drawings, A indicates a standard type of internal combustion engine, provided with the usual form of inlet manifold 2 and exhaust pipe 3. Suitably supported above the engine in any convenient position is a tank 4, provided with a filling opening 5, which tank forms a container for H_2O_2 (peroxid of hydrogen).

Connecting with the tank 4 and inlet manifold 2 is a pair of pipes 6 and 7; the pipe 6 leading from a regulating valve 8, opening to the tank 4, to a steam generator 9 connecting the pipes 6 and 7. The valve 8 is provided with a sight feed attachment 10 so that the amount of H_2O_2 fed to a steam generator 9 can be readily seen; a down-

wardly opening, normally closed check-valve 11 being provided at the conjunction of the pipe 6 and casing of the sight feed 10. This valve 11 opens by suction induced in the manifold by the engine pistons and automatically closes when the engine is not running to prevent excess of H_2O_2 being delivered to the steam generator 9. A vent pipe 12 leads from the casing of the valve 8 and insures a constant uniform flow of the H_2O_2 through the valve 8 into the sight feed 10. The steam generator 9 may be of any suitable character but preferably comprises an inclosed casing having electric heating coils 13 on its interior, which coils are connected to an electric generator 14 of any suitable type.

In operation, after the engine has been started, the vacuum induced in the manifold 2 by the reciprocation of the engine pistons will cause the check-valve 11 to open and will draw a quantity of the H_2O_2 delivered from the tank 4 through the valve 8 into the pipe 6 and through the steam generator 9. The amount of H_2O_2 passing through the valve is regulated to such a quantity as occasion may require, the H_2O_2 being fed usually in drops which are readily seen through the sight feed attachment 10. The H_2O_2 on being brought into direct contact with the hot coils of the heater 9 is immediately converted into oxygen and steam, the oxygen being quickly liberated on the rise of temperature of the H_2O_2 . The mixture of oxygen and steam thus obtained is sucked through pipe 7 directly into the manifold 2 and will there mix with the vaporized hydrocarbon fuel therein and will then be drawn through the inlet valves into the engine cylinders where combustion takes place.

The admission of steam and free oxygen into the manifold produces a more perfect combustible mixture than is ordinarily secured, and accumulations of carbon in the engine cylinders will be absolutely prevented by reason of the affinity of carbon for free oxygen when heated to a high temperature.

In actual practice it has been found that the steam admitted to the engine cylinders has a tendency to absorb any soot formed within the cylinders which would otherwise settle on the walls of the cylinders and the spark plugs, and as a consequence any soot

or carbon that may not be combusted by reason of insufficient oxygen will be discharged through the exhaust valves and exhaust pipe and, therefore, any baking or formation of solid carbon deposits will be entirely obviated.

Any quantity of the H_2O_2 as may be necessary to supply a sufficient quantity of free oxygen to the vaporized hydrocarbon fuel to insure its complete combustion can be delivered to the heater 9 by adjusting the regulating valve 8.

In a series of recent practical tests it was found that where H_2O_2 has been used in conjunction with hydrocarbon fuel, as hereinbefore described, the efficiency of the fuel was increased approximately twenty-five per cent., that is to say, greater speed with less consumption of fuel was attainable where H_2O_2 was employed than where only hydrocarbon fuel was used.

By the use of this invention the cost of running the engine is greatly reduced on account of the saving of fuel; the value of the quantity of fuel saved being much in excess of the cost of the quantity of H_2O_2 used. This, in conjunction with the prevention of carbon deposits in the engine cylin-

ders, renders the invention advantageous and important.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The method of increasing combustibility of hydrocarbon fuels and preventing carbon deposits in explosive engines consisting in heating H_2O_2 (peroxid of hydrogen) to liberate oxygen therefrom, converting the remaining H_2O into steam, and mixing the steam and oxygen with the vaporized hydrocarbon fuel.

2. The method of increasing combustibility of hydrocarbon fuels and preventing carbon deposits in explosive engines which consists in subjecting H_2O_2 to heat to liberate oxygen and then in converting the remainder into steam and introducing the steam and oxygen into the manifold of the engine.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES L. NEDOMA.

Witnesses:

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