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OXYGEN CONCENTRATOR EQUIPED IC ENGINE

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Abstract - *There have been many developments (advancements) in the field of fuel used in ic engines and also in the air-fuel mixture ratios. But there is no any significant development in the field of air supply to the inlet means of engine.A method for decreasing hydrocarbons and oxides of nitrogen emanating from the exhaust system of an internal combustion engine involves supplying substantially pure oxygen to the air intake means of the engine. Such pure oxygen may be passed from a tank in which it is stored to the air intake means of the engine. The pure oxygen may be created by storing a chemical compound in a chamber and heating the chamber so that the compound may release the oxygen, or oxygen can be created by electrolytically decomposing water, passing oxygen generated by such decomposition into a storage tank coupled to the air intake means of the engine.*

Key Words: *IC Engine, Decreasing Hydrocarbons, Pure oxygen to the Intake, Increasing Efficiency*

1.INTRODUCTION

The state of the automotive art is to draw in air from the atmosphere to mix with the fuel, such as gasoline or other petrol products, whether through a carburetor or a fuel injection system for providing this mixture to the combustion chamber so as to ignite this mixture therein.The major problem with this method is that, aside from undesired chemicals in the fuel per se, the intake of air results in an intake of about 21% oxygen and 78% nitrogen and 1% of other gases. Since oxygen is the only element needed to support combustion of the fuel, air unnecessarily inhibits complete combustion since the greatest portion of any given volume intake is nitrogen. This results in uncombusted portions of the fuel that make their way through the exhaust system into the atmosphere contributing to the hydrocarbon component of smog. It also results in very much reduced efficiency of engine operation and the wasting of a major portion of fuel, having economic consequences.

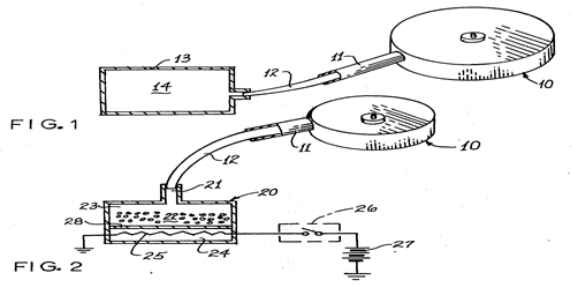
1.1 BACKGROUND OF INVENTION

This invention is based on the idea of supplying an oxygen enhanced air from supply tank to the inlet means of engine. Since oxygen is only necessary for the combustion of the fuel. Nitrogen being unnecessary compound for the combustion of fuel, decreases the thermal efficiency of the engine and also act as cause of atmospheric effluent like nitrogen oxide. Additionally, the presence of the nitrogen of air intake in combining with the fuel during combustion there of results in objectionable nitrous oxides that are contaminants of the atmosphere

2. OXYGEN CONCENTRATOR SETUP

Storing a chemical source of oxygen which is at least one compound selected from the group consisting essentially of potassium perruthenate, potassium pyrophosphate in a chamber, heating said at least one compound to a temperature within the range of about 100° to 360° Fahrenheit so as to release oxygen.

2.1 OXYGEN CONCENTRATOR SETUP DIAGRAM

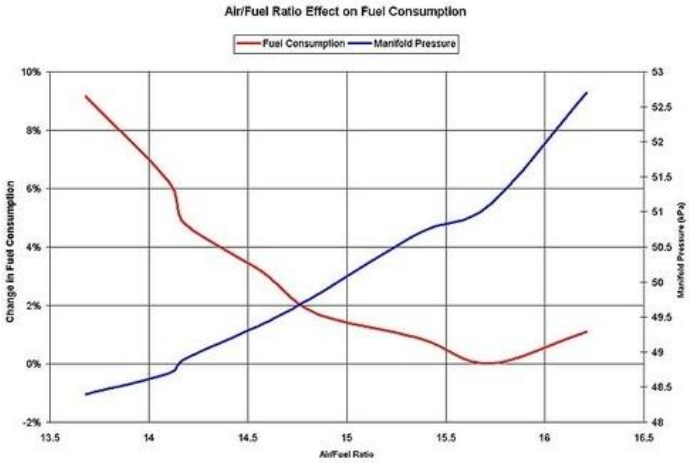


2.2 WORKING DESCRIPTION OF THE DIAGRAM

FIG. 1 is a view partially in perspective and partially in cross-section of an automotive air filter retainer, its intake connected to a tank containing substantially pure oxygen. FIG. 2 is a view partially in perspective and partially in cross-section of an automotive air filter retainer, its intake connected to a heatable tank and containing an oxygen releasing compound. Conventional air filter retainer of an automobile as used for air intake and normally installed as described in connection with FIG. 1 is indicated at 10.Filter retainer 10 has air intake extension 11 that is connected to a flexible hose as at 12. Flexible hose 12 is connected to supply port 21 of chamber 20. Chamber 20 is provided with suitable opening for loading a suitable oxygen reeling compound 22 in compartment 23 thereof. Chamber 20 has another compartment 24 below compartment 23 in which is housed

electrical heating element 25 electrically connected through ignition switch 26 to automotive battery 27. Upon closing of the ignition switch to start the automobile engine the heating element will be energized to heat the oxygen releasing compound so as to supply oxygen directly to the air intake extension 11. Rate of oxygen supply will depend upon a number of variables such as the compound used, the temperature of element 25 and the rate of transfer of heat between compartment 24 and 23. These can be determined by making suitable selection of the compound to be used first which will dictate temperature required and hence the size or resistance of element 25 as well as the thickness of compartment separator wall 28 and the type of material used therefore.

2.3 FLOW CHARTS



Experimental Analysis done using Oxygen Concentrator used in a IC Engine

LIST OF CONTENTS	NORMAL IC ENGINE	OXYGEN CONCENTRATOR IC ENGINE
Fuel	Petrol	Petrol
Quantity	100ml	100ml
Engine Speed	80 km/hr	110 km/hr
Time Taken	3.40 sec	6.04 sec

2.4 PRACTICAL ADVANTAGES

The engine can be much smaller and lighter for the same power production. An engine that uses pure oxygen would produce much more power or could be made much smaller and lighter to produce the same amount of power. Considering how much weight the engine weighs, this is not insignificant. **Higher efficiency.** Due to the absence of nitrogen, which is normally ~3/4 of all molecules in the fuel/air mixture and which is mostly inert, the reaction is likely to be much more complete, more quickly, meaning more likely to occur inside the piston during the power stroke. This would address the up to 45% of total available power lost to incomplete fuel burn. Also, 30%-55% of total available power is lost as heat of a high temperature exhaust, which is mostly hot nitrogen. If pure oxygen were used, there will still be hot exhaust gases, only there will be 4x less of it, which would be roughly the same amount of CO_2 ,H_2O and O_2 as in an equally powered air-consuming engine and none of the nitrogen.

3. CONCLUSIONS

Such an engine would produce no oxides of nitrogen, which are known atmospheric pollutants and components of both smog and acid rain. Presently, catalytic converters and fuel/air mixture modification are used to limit the production of these pollutants, where the air/fuel mixture is a compromise between the need for low carbon monoxide, low unburned fuel and low oxides of nitrogen Using pure oxygen would eliminate the need for a compromise and the engine could run at a higher air/fuel ratio of higher efficiency

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