

# *A Practical Guide to 'Free Energy' Devices*

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This patent describes methods for altering HHO gas so that it can be used in vehicle engines without the need to change the spark timing or alternatively, be burned without fear of explosion.

**Patent application WO 82,111,596**

**27th June 1984**

**Inventor: Stanley A. Meyer**

## **HYDROGEN AERATION INJECTION SYSTEM**

### **ABSTRACT**

System and apparatus for the controlled intermixing of hydrogen *volatile* gas with non-combustible gasses in a combustion system. The system utilises a hydrogen generator **10**, for developing a controlled output of hydrogen and oxygen gasses and non-volatile gasses such as nitrogen. The hydrogen gas with the attendant gasses and added gasses are fed via a line **5, 9** to an air intake system **20**, in a controlled ratio. After intermixing, the combined gasses are fed to a combustion chamber **30**, where the mixture is ignited. The exhaust gasses of the combustion chamber **30**, are returned in a closed-loop arrangement to the mixing chamber **40**, as non-volatile gasses to control the velocity and temperature of the volatile hydrogen gas.

### **CROSS REFERENCE AND BACKGROUND**

There is disclosed in my co-pending patent application U.S. Serial Number 302,807 filed 16th September 1981, for a hydrogen Generator, a generating system converting natural water into hydrogen and oxygen gasses. In that system and method, the hydrogen atoms are disassociated from a water molecule by the application of a non-regulated, non-filtered, low-power, DC voltage applied to two similar, non-oxidising metal plates which have water passing between them. The sub-atomic action is enhanced by pulsing the non-regulated and non-filtered DC voltage. Particularly significant with my hydrogen generator disclosed in my co-pending application is that the hydrogen/oxygen gas mix generated has a quantity in excess of that which is necessary for practical use. Further, and equally significant, is the fact that the generation of the hydrogen/oxygen gas mix is controlled by any one of several factors, i.e., varying voltage, varying pulse rate, variable spacing between plates, switching the number of plates, or the plate configuration.

Therefore, the hydrogen/oxygen generation is a demand system, that is to say, the hydrogen/oxygen is only generated when needed and the rate of generation is controlled by the need, such as the accelerator for an automotive device.

In my co-pending application Serial Number U.S. 262,744, filed 5th May 1981, for a Hydrogen Aeration Processor, non-volatile and non-combustible gasses are controlled in a mixing stage with a volatile gas. The hydrogen aeration processor system uses a mechanical rotational gas displacement system to transfer, meter, mix and pressurise the various gasses. In the gas transformation process, ambient air is passed through an open flame gas burner system to eliminate gasses and other substances present. After that, the non-combustible gas mixture is cooled, filtered to remove any impurities and mechanically mixed with a pre-determined amount of hydrogen gas. This results in a new synthetic gas mixture with the desired burn-rate of hydrogen gas. The mechanical rotational gas displacement system in that process determines the volume of synthetic gas to be produced. This multi-stage system can be used in special applications. The hydrogen generator of my other mentioned co-pending application is a very simple and unique hydrogen generator.

### **SUMMARY OF THE INVENTION**

The system of the present invention in its most preferred embodiment is for a combustion system finding use in a mechanical drive system. Particularly, in one instance, to drive the piston of an automotive device. The system uses the hydrogen generator of my co-pending patent application Serial Number 302,807, for developing hydrogen gas and other non-volatile gasses such as oxygen and nitrogen. The hydrogen gas, with the attendant non-volatile gasses in a controlled ratio, are fed via a pipe, to a controlled air intake system. The combined Hydrogen, non-volatile gasses and air, after inter-mixing, are fed to a combustion chamber where the gas mix is ignited. The exhaust gasses in the combustion chamber are returned in a closed loop arrangement, to the mixing chamber to be used as the required non-combustible gasses. More specifically, the generated hydrogen gas is

fed to a gas mixing chamber where it is mixed with non-combustible gasses and the resulting gas mix is then fed through a carburettor to the engine.

The gas mixture is fed through a nozzle in a jet spray. A valve or gate controls the amount of air intake to the jet spray. The gas combines with the air to form a mixture of hydrogen, oxygen and non-volatile gas. The mixture, which is now combustible but not volatile, is fed into a conventional cylinder with a spark plug. The spark ignites the gas mix and pushes the piston downwards.

The exhaust gasses which form the residue of the combustion, are now in a non-combustible form which can be fed to the gas mixing chamber.

**OBJECTS:**

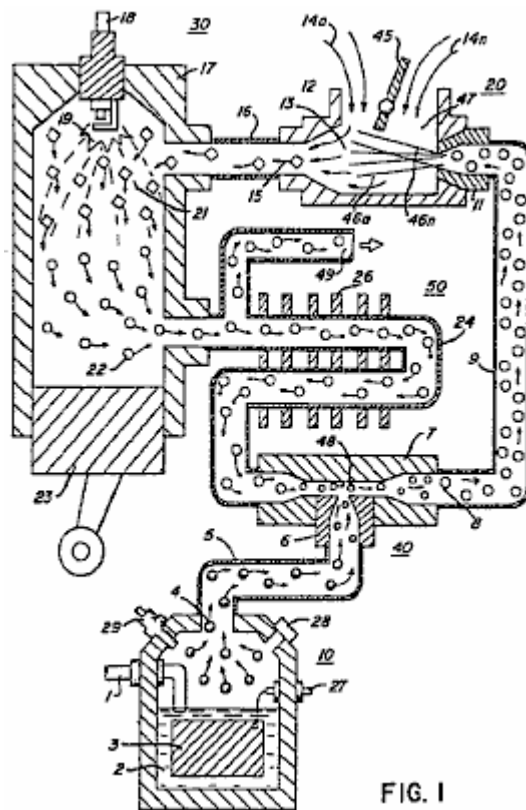
It is a principal objective of the present invention, to provide a combustion system of gasses comprising a mixture of volatile and non-combustible gasses.

Another objective is to provide a combustion system which utilises hydrogen as the volatile gas and the combustion exhaust as the non-combustible gas.

A further objective of the invention is to provide such a combustion system which can be incorporated in a mechanical drive system.

Still other objects and features of the present invention will become apparent from the following detailed description when taken in conjunction with the drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**



**Fig.1** is a cross-sectional mechanical schematic illustration of the present invention in its most preferred embodiment.

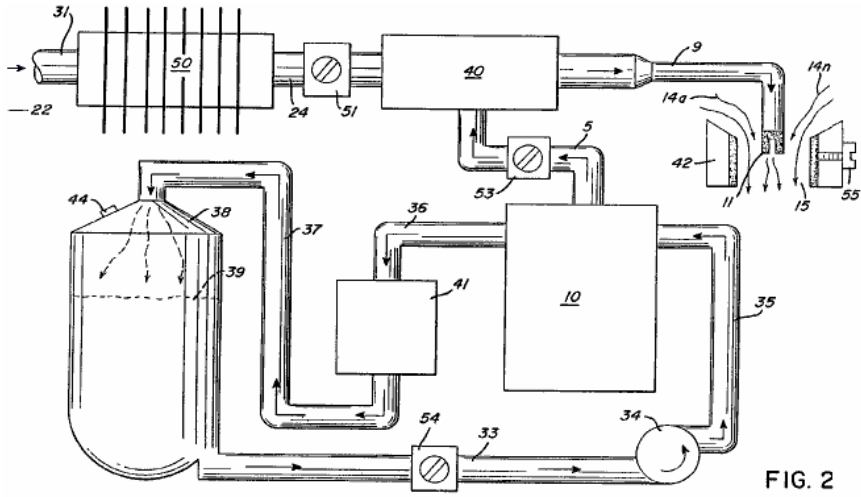


FIG. 2

Fig.2 is a block schematic illustration of the preferred embodiment shown in Fig.1.

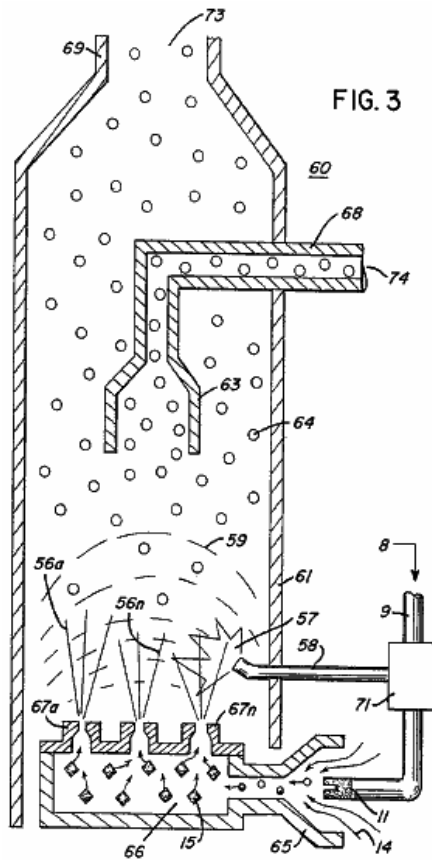


FIG. 3

Fig.3 is an alternative gas system replacement for that shown in Fig.1.

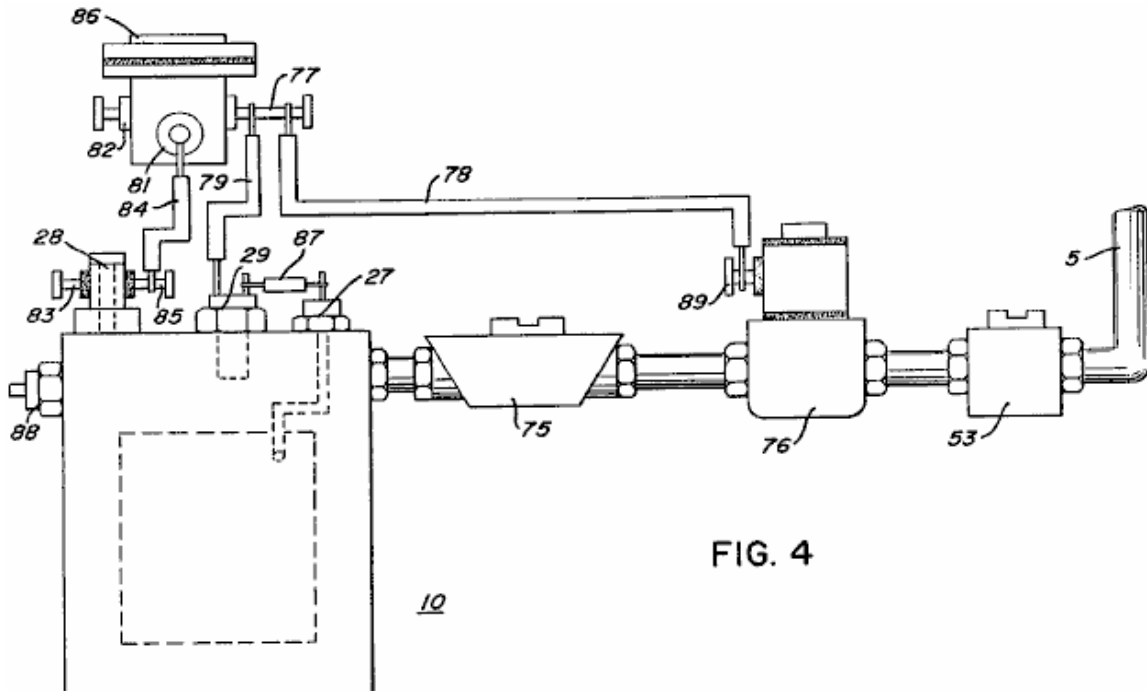


FIG. 4

Fig.4 is a block schematic illustration of a complete drive system using the concepts of the present invention.

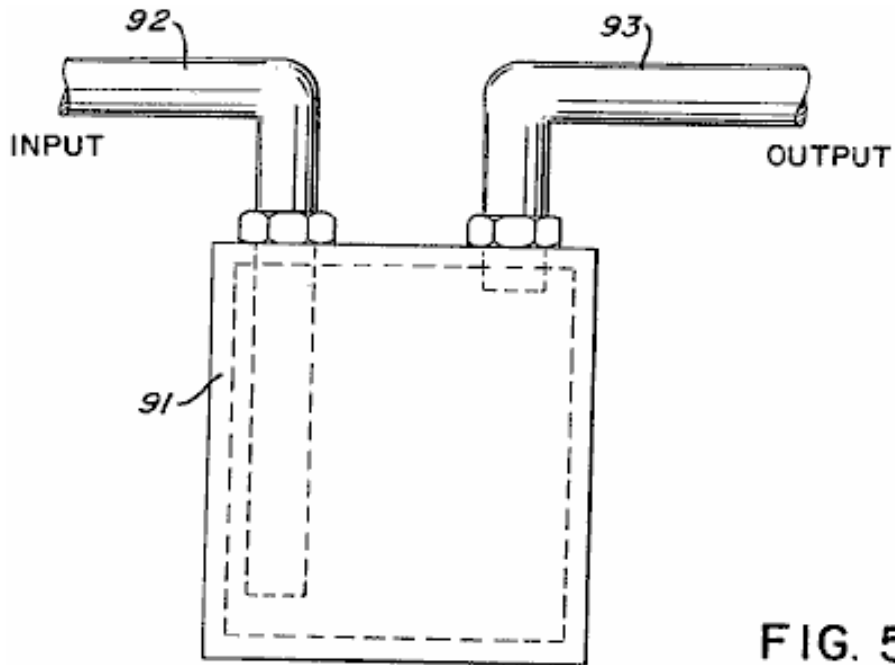


FIG. 5

Fig.5 is a further application of the present invention in a regenerative energy feedback system.

## DETAILED DESCRIPTION OF THE INVENTION

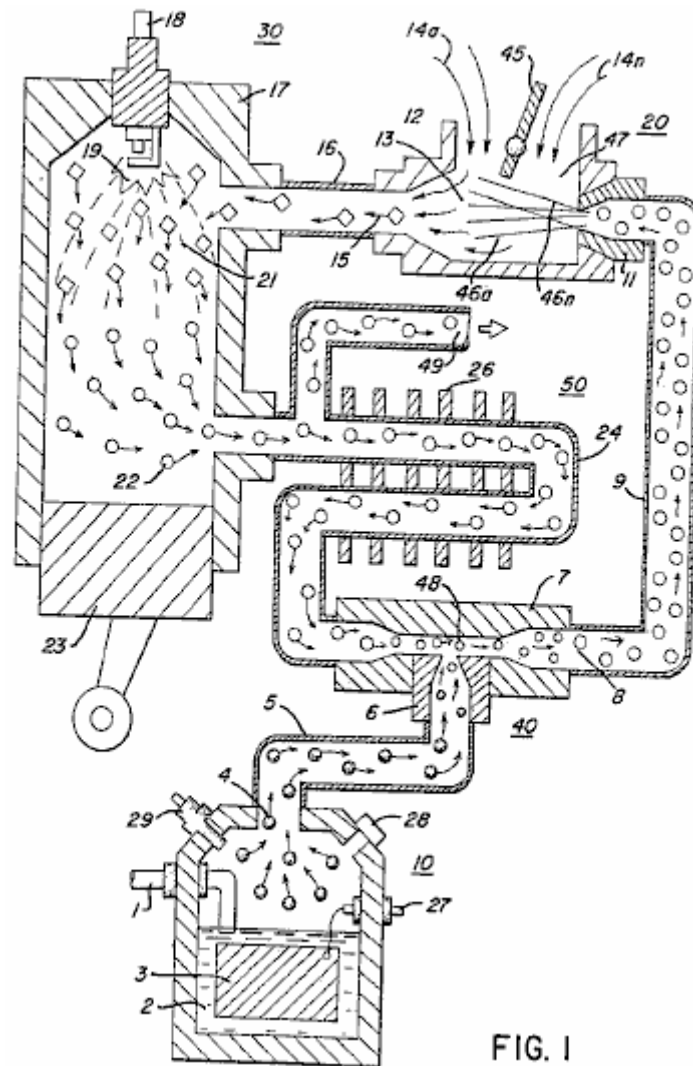


FIG. 1

Referring particularly to **Fig.1**, the complete overall combustion system is illustrated together with a mechanically driven piston. Similarly, **Fig.2** illustrates the complete system in its preferred embodiment.

With particular reference to **Fig.1**, the hydrogen source **10** is the hydrogen generator described in my co-pending patent application as mentioned above. The container **102** is an enclosure for a natural water bath **2**. Immersed in the water **2**, is an array of plates **3**, made from a similar non-oxidising material. Applied to plates **3**, is a source of pulsed DC voltage fed through inlet connector **27**. The action of the pulsed DC, a voltage/current potential on the plates, causes the hydrogen and oxygen atoms to become disassociated from the water molecule. As this action is a sub-atomic action and not a chemical action, any water irrespective of source, may be utilised.

Varying either the voltage of the DC source or the rate of pulsing of the DC voltage will proportionately vary the production rate of the hydrogen/oxygen gas mix. Other factors are disclosed for varying the output of the gas generator. To replace the expended water, the generator provides a continuous water source **1**.

The safety valve **28** will rupture if there is excessive gas pressure build-up. The switch **29** is a gas-pressure switch which maintains a predetermined gas pressure around a regulated low volume.

The generated hydrogen gas **4**, is fed through pipe **5**, to a gas mixing chamber **7**, where it is mixed with non-combustible gasses **22**, from a source described below.

The mixture of volatile gas and non-combustible gasses are fed through pipe **9** to a carburettor (air-mixture) system **20**.

The gas mixture **8**, is fed through nozzle **11** to chamber **47** via jet spray **46**. Valve, or gate **45** controls the amount of air intake. The jet spray of gasses **46** combines with the intake air **14**, to form a gas mixture **15** of hydrogen, non-volatile gas and oxygen. This mixture is now combustible but not volatile and is entered into chamber **30**

through pipe 16. Chamber 30 may be conventional in design and comprises a cylinder 17, capable of withstanding high pressure. At the upper end of combustion chamber 30 is a spark plug igniter 18.

In a controlled manner, relative to the stroke of piston 23, spark ignition 19, caused by plug 18, combusts the mixed gasses 15. The increased pressure 21 caused by this combustion, forces piston 23 downwards in cylinder 17.

The exhaust gasses 22, produced by the combustion, are non-combustible and are fed through pipe 24 to the gas mixing chamber 40, to act as the non-combustible gasses mentioned above.

Pipe 40 passes through cooling chamber 50 in order to cool the gasses. Cooling chamber 50 also functions as a spark-arrestor to eliminate the possibility of gas ignition inside the mixing chamber 40. The excess non-combustible gasses are exhausted through outlet 49, and are expelled into the atmosphere.

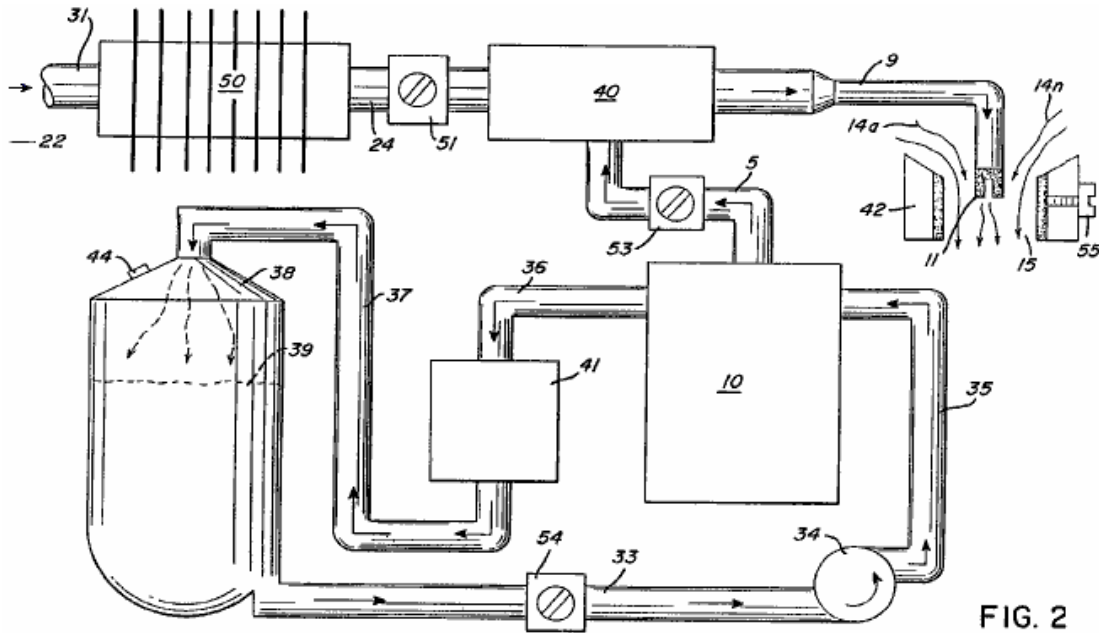


FIG. 2

The apparatus of Fig.2 comprises much the same system as that shown in Fig.1. In this embodiment, the components are depicted more explicitly in their structural relationship in an alternate arrangement. Basically, the system operates in the same way as that shown in Fig.1, in that it uses a mixture of volatile hydrogen gas and non-combustible exhaust gas.

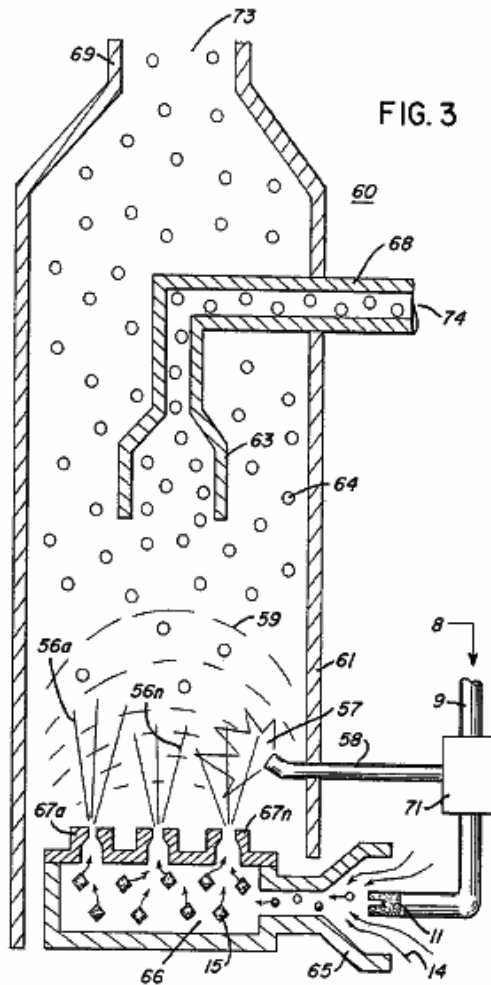
The water system in a closed loop operation, comprises a reservoir or tank 39 with outlet 32 having pipe 33 connected to it. The water flow rate can be adjusted with the control valve 54. Water pump 34 pumps water through pipes 33 and 35 to the gas generator 10. The excess water passes from generator 10 back to tank 39 through pipes 36 and 37, passing through filter 41 on the way, where any particles are removed by the filter.

The gasses generated from the water in generator 10, also include the oxygen component of the water as well as nitrogen. Outlet 5 on generator 10, receives the volatile (hydrogen) and non-volatile (oxygen and nitrogen) gasses generated there and feeds them to the mixing chamber 40. The flow of hydrogen gas is critical and so gas-flow valve 53 is included in pipe 5 to allow the hydrogen flow rate to be adjusted.

The exhaust gasses entering input 22 are fed through inlet pipe 31 through the cooling chamber, and enter the mixing chamber and spark arrestor 50 and into outlet pipe 24. The rate of this flow of mixed gasses is controlled by valve 51 in pipeline 24.

The output of mixing chamber 40, as described relative to Fig.1 and Fig.2, is fed through pipe 9 to a gas mixture system 42. In this instance, the intake air 14, may be in a carburettor arrangement with an intake adjustment 55 which adjusts the plate 42 opening. The gas mixture 15 is fed into the carburettor by nozzle 11 and air 14.

With particular reference to Fig.3, there is illustrated an alternative combustion chamber 60 which may be used instead of the chamber 30 shown in Fig.1 and Fig.2.



In this embodiment, the volatile and non-combustible gas mix which is generated and mixed in the arrangement of **Fig.1** and **Fig.2**, enters inlet **8** and is directed by pipe **9** and nozzle **11** to the cone **65**. The gas mixture combines and mixes with the air **14** as it enters cone area **65**. The combined gas/air mixture is atomised by jet nozzle **11** and directed by cone **65** to the dispersing chamber **66** where, the gas mixture **15** is mixed with additional air. The gas/air mixture is dispersed via ports **67a** to **67n** from the dispersing chamber **66**, into the firing area of the combustion chamber **60**.

The gas mixture entering inlet **8** is also fed by pipe **9** to a separation chamber **71**, which diverts a controlled amount of the intake gas mixture to the pilot light pipe **58**. The pilot light burning gas **57** is controlled by the separation chamber **71** such as through a mechanical drive in much the same way as the cylinder of an automobile engine.

The mixed gas **56**, which is ejected through ports **67a** to **67n** of the dispensing chamber **66**, are ignited by the burning pilot jet **57** and so causing combustion of the mainstream gasses **59**.

As the non-combustible gasses **64** (exhaust gasses **22** of **Fig.1**) rise upwards in cylinder **61** of combustion chamber **6**, cone **63** captures a portion of the non-combustible gasses **64**, which is then returned through pipe **68** and outlet **74** to the combustion process as set in **Fig.1** or expelled for other purposes. The majority of the non-combustible gasses **64** bypass cone **63** and are expelled through outlet **69** and opening **73**.

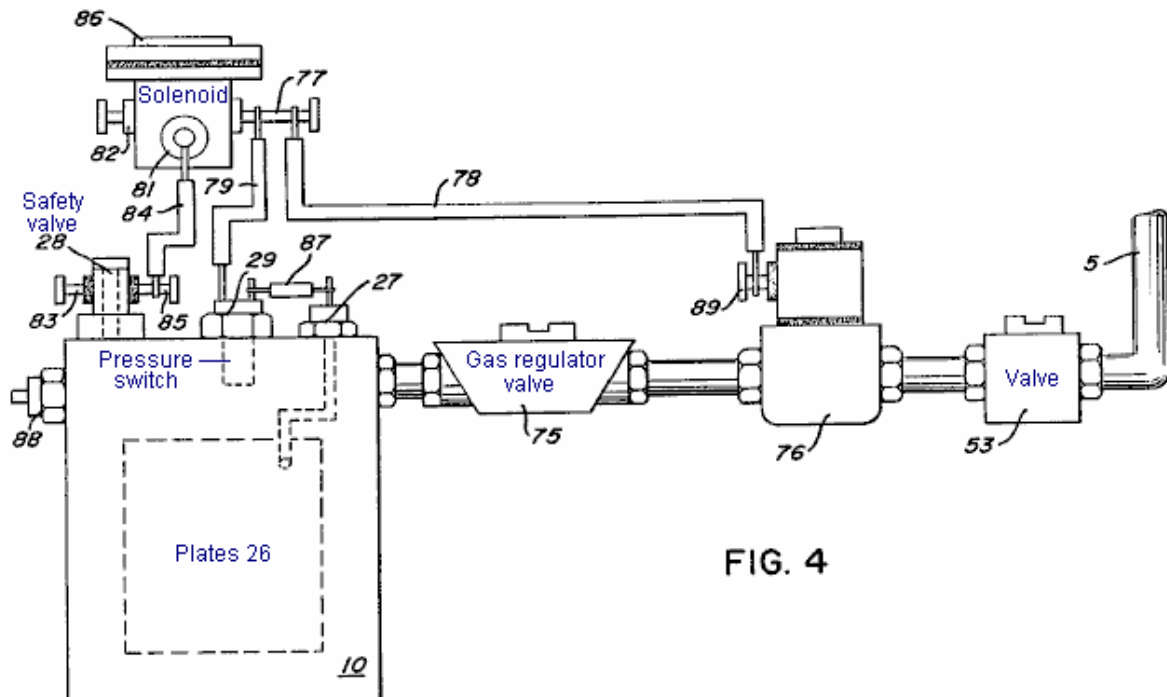


FIG. 4

The construction shown in **Fig.4** is a gas control system which may be retro-fitted to an existing automobile internal combustion engine without changing or modifying its design parameters or characteristics. As low-voltage DC is applied to safety valve **28**, solenoid **86** is activated. The solenoid applies a control voltage to the hydrogen generator plates **26** via terminal **27** and pressure switch **29**. As the electrical power activates electric solenoid **86**, hydrogen gas is caused to pass through flow-adjustment valve **53** and then through output pipe **5** for utilisation.

Gas regulator valve **75** is used to reduce the pressure level inside the hydrogen generator **10**. The pressure difference between the hydrogen gas output pressure to that of the gas mixing chamber **40**, might be, for example, 30 psi to 15 psi. Once hydrogen generator **10** reaches an optimum gas pressure, pressure switch **29** shuts off electrical power to the hydrogen generating plates. If the chamber pressure becomes excessive, then safety release valve **28** disconnects the electric current, shutting the entire system down for safety inspection.

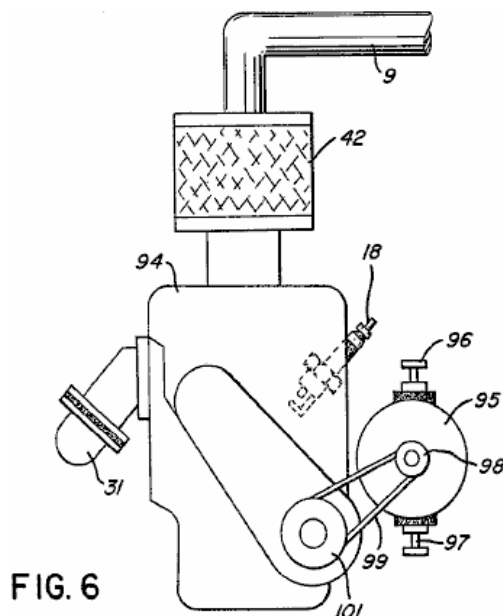


FIG. 6

Similar to an automobile engine or other drive which requires an electrical energising source, the present invention may include the regenerative energy feedback arrangement shown in **Fig.6**. The process uses a mechanical drive system as described when referring to **Fig.1** and **Fig.2**. The mechanical drive may be that of a piston such as is used in a petrol engine. In operation, the process mixture is ignited in much the same manner as in **Fig.1**. The drive mechanism activates the electrical voltage of alternator **95** whose output is fed back to the hydrogen generator as well as being used as the firing voltage for spark plug **18**; again, in a closed-loop arrangement.



Further, as already stated, the Hydrogen-Generator uses a DC voltage source on the energiser plates. In addition to the feed-back closed loop as set forth with respect to the ignition system, the feed-back system of **Fig.6** is equally, and perhaps more significantly, applicable to the process of the hydrogen generator. That is, again referring to **Fig.1**, the electrical voltage applied to contact **27** is in the closed loop with the alternator/mechanical drive of **Fig.6**. In this way, the voltage requirements for the hydrogen generator are reduced drastically.

In the description of the embodiments illustrated in the several Figures of the drawings, the terms non-combustible and non-volatile were used interchangeably. It is intended that there be no distinction between those two terms. Further, relative to the non-combustible gasses, it is completely irrelevant as to the nature of the gasses, the only requirement being that it be non-combustible.

Depending on the utility of the combustion chamber, the ratio of the highly volatile hydrogen gas and the non-volatile gas, controls the combustion rate. Further, as can be readily understood, oxygen is required for combustion, so oxygen is entered into the gas mixture line by the air intake. Again, the ambient air is understood to contain many and variable gasses other than oxygen and so the air intake will add non-combustible gasses to the gas mixture. This may require that the non-combustible gas intake be varied, and in some instances may not be necessary.

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