A Practical Guide to 'Free Energy' Devices

Part PatE3: Last updated: 28th January 2006 Author: Patrick J. Kelly

Please note that this is a re-worded excerpt from this patent. It describes how to burn the hydrogen and oxygen gas mix produced by electrolysis of water. Normally, the flame produced is too hot for practical use other than cutting metal or welding. This patent shows a method of reducing the flame temperature to levels suitable for general use in boilers, stoves, heaters, etc.

United States Patent 4,421,474 December 1983 Inventor: Stanley A. Meyer

HYDROGEN GAS BURNER

ABSTRACT:

A hydrogen gas burner for the mixture of hydrogen gas with ambient air and non-combustible gasses. The mixture of gasses when ignited provides a flame of extremely high, but controlled intensity and temperature.

The structure comprises a housing and a hydrogen gas inlet directed to a combustion chamber positioned within the housing. Air intake ports are provided for adding ambient air to the combustion chamber for ignition of the hydrogen gas by an ignitor therein. At the other end of the housing there is positioned adjacent to the outlet of the burner (flame) a barrier/heating element. The heating element uniformly disperses the flame and in turn absorbs the heat. The opposite side to the flame, the heating element uniformly disperses the extremely hot air. A non-combustible gas trap adjacent to the heating element captures a small portion of the non-combustible gas (burned air). A return line from the trap returns the captured non-combustible gas in a controlled ratio to the burning chamber for mixture with the hydrogen gas and the ambient air.

CROSS REFERENCE:

The hydrogen/oxygen generator utilised in the present invention is that disclosed and claimed in my co-pending patent application, Serial. No.: 302,807, filed: Sept. 16, 1981, for: HYDROGEN GENERATOR SYSTEM. In that process for separating hydrogen and oxygen atoms from water having impurities, the water is passed between two plates of similar non-oxidising metal. No electrolyte is added to the water. The one plate has placed thereon a positive potential and the other a negative potential from a very low amperage direct-current power source. The sub-atomic action of the direct current voltage on the non-electrolytic water causes the hydrogen and oxygen atoms to be separated--and similarly other gasses entrapped in the water such as nitrogen. The contaminants in the water that are not released are forced to disassociate themselves and may be collected or utilised and disposed of in a known manner.

The direct current acts as a static force on the water molecules; whereas the non-regulated rippling direct current acts as a dynamic force. Pulsating the direct current further enhances the release of the hydrogen and oxygen atoms from the water molecules.

In my co-pending patent application, Serial. No. 262,744, filed: May 11, 1981, for: HYDROGEN AERATION PROCESSOR, there is disclosed and claimed the utilisation of the hydrogen/oxygen gas generator. In that system, the burn rate of the hydrogen gas is controlled by the controlled addition of non-combustible gasses to the mixture of hydrogen and oxygen gasses.

SUMMARY OF INVENTION:

The present invention is for a hydrogen gas burner and comprises a combustion chamber for the mixture of hydrogen gas, ambient air, and non-combustible gasses. The mixture of gasses is ignited and burns at a retarded velocity rate and temperature from that of hydrogen gas, but at a higher temperature rate than other gasses.

The extremely narrow hydrogen gas mixture flame of very high temperature is restricted from the utilisation means by a heat absorbing barrier. The flame strikes the barrier which in turn disperses the flame and absorbs the heat therefrom and thereafter radiates the heat as extremely hot air into the utilisation means.

Positioned on the opposite side of the heat radiator/barrier is a hot air trap. A small portion of the radiated heat is captured and returned to the combustion chamber as non-combustible gasses. Valve means in the return line regulates the return of the non-combustible gas in a controlled amount to control the mixture.

The present invention is principally intended for use with the hydrogen generator of my co-pending patent application, supra; but it is not to be so limited and may be utilised with any other source of hydrogen gas.

OBJECTS:

It is accordingly a principal object of the present application to provide a hydrogen gas burner that has a temperature controlled flame and a heat radiator/barrier.

Another object of the present invention is to provide a hydrogen gas burner that is capable of utilising the heat from a confined high temperature flame.

Another object of the present invention is to provide a hydrogen gas burner that is retarded from that of hydrogen gas, but above that of other gasses.

Another object of the present invention is to provide a hydrogen gas burner that utilises the exhaust air as non-combustible gas for mixture with the hydrogen gas.

Another object of the present invention is to provide a hydrogen gas burner that is simple but rugged and most importantly safe for all intended purposes.

Other objects and features of the present invention will become apparent from the following detailed description when taken in conjunction with the drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS:

Fig.1 is an overall cross-sectional view of the present invention in its most preferred embodiment.

Fig. 1

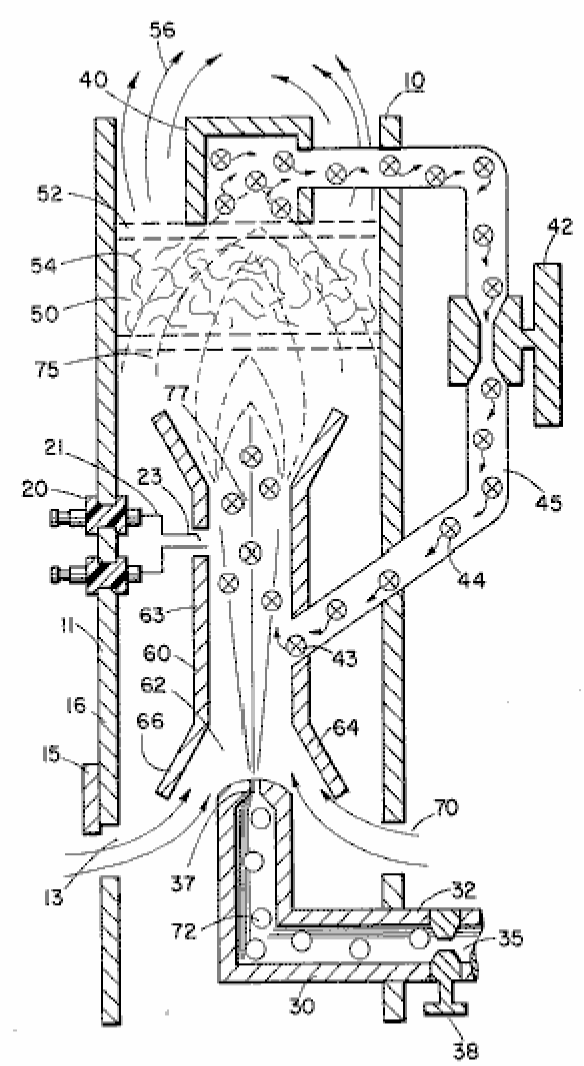
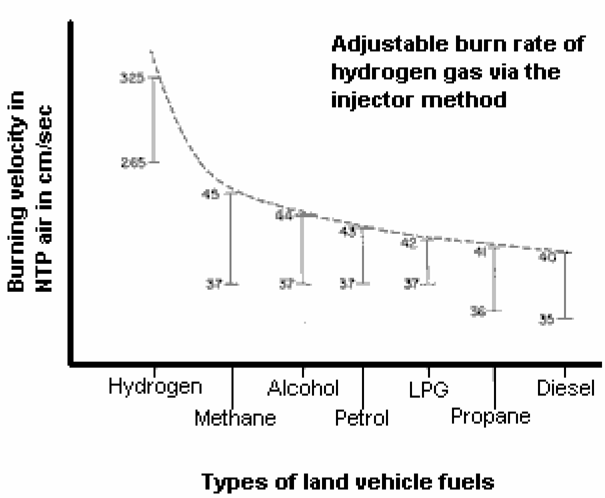


Fig.2 is a graphical illustration of the burning of various standard fuels with that of hydrogen velocities.

Fig. 2



DETAILED DESCRIPTION OF INVENTION:

With particular reference **Fig.1** there is illustrated in a schematic cross-section the principals of the present invention. The structure of the preferred embodiment comprises a housing **10**, having an igniter **20** extending through the wall **11** thereof. A combustion chamber **60** positioned within the housing **10** has a first open end **62**. A hydrogen gas **72** inlet **30** directs hydrogen gas via port **37** from a source **35** to the inlet **62** of the combustion chamber **68**. Also directed to the same inlet **62**, and assisted by flanges **64** and **66**, is ambient air **70** entering through ports **13** in the housing **10**.

Adjacent the opposite end of the combustion chamber **60** the gas mixture **75** is ignited by the ignitor **20** to produce flame **77**. The velocity of the flame **77** causes it to strike and penetrate the barrier/radiator **50**. The barrier **50** is of a material, such as metallic mesh or ceramic material, to disperse therein the flame and in turn become saturated with heat. The flame **77** is of a size sufficient to be dispersed throughout the barrier **50**, but yet, not penetrate through the barrier **50**.

Radiated from the surface **52** of the barrier **50** is superheated air **56** (gasses) to be passed on to a utilisation device. Adjacent to surface **52** of barrier/radiator **50** is a hot air trap **40** with closed loop line **45** returning non-combustible gas **44** to the combustion chamber **60**. Control valve **42** is intermediate the line **45**.

In operation of the preferred embodiment hydrogen gas, **72**, emitted from the nozzle **37** is directed to the combustion chamber **60**. The flanges **64** and **66** on the open end of housing **63** of the combustion chamber **60** enlarges the open end of **62**. In the enlargement ambient air from the opening **13** in the housing **10** is also directed to the combustion chamber **60**.

The ambient air and hydrogen traverses the opening **43** and further mixes with the non-combustible gas **44** from the closed loop line **45** with the hot air trap **40**. The mixture of hydrogen gas **72**, ambient air **70**, and non-combustible gas **44**, is ignited by the ignitor **20** having electrical electrodes **21** and **23**. Upon ignition flame **77** ensues. The mixture is controlled with each of three gasses. That is, the line **32** from the hydrogen source **35** has a valve **38** therein for controlling the amount of hydrogen **72** emitted from the nozzle **37**. The opening **13** has a plate adjustment **15** for controlling the amount of ambient air **60** directed to the combustion chamber **60**, and the closed-loop line has valve **42**, as aforesaid, for controlling the amount of non-combustible gasses in the mixture.

It can be appreciated that the temperature of the flame **77** and the velocity of the flame **77** is a function of the percentage of the various gasses in the mixture. In a practical embodiment, the flame **70** temperature and velocity was substantially retarded from that of a hydrogen flame per se; but yet, much greater than the temperature and velocity of the flame from the gasses utilised in a conventional heating system.

To maintain a sufficient pressure for combustion of the hydrogen gas mixture with a minimum of pressure (for safety) and to limit blow-out, the nozzle **37** opening **39** is extremely small. As a consequence, if the hydrogen gas were burned directly from the nozzle **37**, the flame would be finite in diameter. Further, its velocity would be so great it is questionable whether a flame could be sustained. The mixing of ambient air and non-combustible gas does enlarge the flame size and reduce its velocity. However, to maintain a flame higher in temperature and velocity than the conventional gasses, the size and temperature of the flame is controlled by the mixture mentioned earlier.

Therefore, to utilise the flame **77** in a present day utilisation means, the flame is barred by the barrier **50**. The barrier **50** is of a material that can absorb safely the intense flame **77** and thereafter radiate heat from its entire surface **52**. The material **54** can be a ceramic, metallic mesh or other heat absorbing material known in the art. The radiated heat **56** is directed to the utilisation means.

As stated earlier, the mixture of gasses which are burned include non-combustible gasses. As indicated in the above-noted co-pending patent applications, an excellent source of non-combustible gasses is exhaust gasses. In this embodiment, the trap **50** entraps the hot air **74** and returns the same, through valve **42**, to the combustion chamber **60** as non-combustible gas.

With reference to **Fig.2** there is illustrated the burning velocity of various standard fuels. It can be seen the common type of fuel burns at a velocity substantially less than hydrogen gas. The ratio of hydrogen with non-combustible oxygen gasses is varied to obtain optimum burning velocity and temperature for the particular utilisation. Once this is attained, the ratio, under normal conditions, will not be altered. Other uses having different fuel burn temperature and velocity will be adjusted in ratio of hydrogen/oxygen to non-combustible gasses in the same manner as exemplified above.

Further, perhaps due to the hydrogen gas velocity, there will occur unburned gas at the flame **77** output. The barrier **50**, because of its material makeup will retard the movement and trap the unburned hydrogen gas. As the superheated air **77** is dispersed within the material **54**, the unburned hydrogen gas is ignited and burns therein. In this way the barrier **50** performs somewhat in the nature of an after-burner.