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(12) Patent:

(54) PRODUCTION OF HYDROGEN AND CARBON MONOXIDE

(54) PRODUCTION D'HYDROGENE ET DE PROTOXYDE

| | |
|------------------------------------|--------------------------------|
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| (71) Filing Date (Country): | |
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I CLAIM AS MY INVENTION:

1) The method of forming carbon monoxide and hydrogen from a hydrocarbon gas comprising reacting said gas with a reducible metallic oxide at an elevated temperature to convert said gas into substantially only carbon monoxide and hydrogen, and collecting said gases.

2) The method of oxidizing a hydrocarbon gas comprising reacting said gas with a metallic oxidizing substance at an elevated temperature to form substantially only carbon monoxide and hydrogen without cracking of said hydrocarbon, and collecting the carbon monoxide and the hydrogen.

3) The method of oxidizing a hydrocarbon gas at a high temperature without cracking or deposition of carbon comprising reacting said gas with a predetermined quantity of hot reducible metallic oxide.

4) The method of oxidizing a hydrocarbon gas at a high temperature without cracking or deposition of carbon comprising reacting said gas with a hot reducible metallic oxide in substantially molecular proportions.

5) The method of obtaining hydrogen from a hydrocarbon without the substantial formation of carbon comprising reacting the hydrocarbon with a reducible metallic oxide at about 950 - 1000° C. to form substantially only carbon monoxide and hydrogen.

6) The method of obtaining hydrogen from a hydrocarbon without the substantial formation of carbon comprising reacting the hydrocarbon with zinc oxide to form substantially only carbon monoxide and hydrogen.

7) The method of obtaining hydrogen from a hydrocarbon without the substantial formation of carbon comprising reacting the hydrocarbon with zinc oxide to form substantially only carbon monoxide and hydrogen at a temperature of about 950 - 1000° C.

8) The method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting said gas with a metallic oxide at a temperature at which the oxide is easily reduced.

9) The method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting said gas with a metallic oxide at about 950° - 1000° C. at which temperature the oxide is easily reduced.

10) The method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting said gas with zinc oxide.

11) The method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting said gas with zinc oxide at about 950° - 1000° C.

12) The method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting said gas with a metallic oxide at a temperature at which the oxide is easily reduced.

13) The method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting said gas with a metallic oxide at about 950° - 1000° C. at which temperature the oxide is easily reduced.

14) The method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting said gas with zinc oxide.

15) The method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting said gas with zinc oxide at about 950° - 1000° C.

16) The method of oxidizing a mixture of hydrocarbons to substantially hydrogen and carbon monoxide comprising reacting the mixture with a metallic oxide of the fourth row of the periodic table at a temperature at which the metallic oxide is easily reduced.

17) The method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting natural gas with a metallic oxide of the fourth row of the Periodic Table at a temperature at which the metallic oxide is easily reduced.

18) The method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting methane with a metallic oxide of the fourth row of the Periodic Table at a temperature at which the metallic oxide is easily reduced.

19) The continuous method of oxidizing hydrocarbons to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with a metallic oxide at a temperature at which the oxide is easily reduced, removing the gases formed, regenerating the metallic oxide and recycling it in the process.

20) The continuous method of oxidizing natural gas to substantially hydrogen and carbon monoxide comprising reacting natural gas with a metallic oxide at a temperature at which the oxide is easily reduced, removing the gases formed, regenerating the metallic oxide and recycling it in the process.

21) The continuous method of oxidizing methane to substantially hydrogen and carbon monoxide comprising reacting methane with a metallic oxide at a temperature at which the oxide is easily reduced, removing the gases formed, regenerating the metallic oxide and recycling it in the process.

22) The method of oxidizing a paraffin hydrocarbon to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with a metallic oxide at a temperature at which the oxide is easily reduced.

23) The method of oxidizing a paraffin hydrocarbon to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with a metallic oxide at about 950° to 1000° C. at which temperature the oxide is easily reduced.

24) The method of oxidizing a paraffin hydrocarbon to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with zinc oxide.

25) The method of oxidizing a paraffin hydrocarbon to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with zinc oxide at about 950° to 1000° C.

26) The continuous method of oxidizing paraffin hydrocarbons to substantially hydrogen and carbon monoxide comprising reacting the hydrocarbon with zinc oxide at about 950° to 1000° C., removing the gases formed, regenerating the zinc oxide and recycling it in the process.