

STAH \* X16 89-023350/03 \* US 4793-904-A  
 Electro-catalytic process for converting methane or other light hydrocarbon(s) to synthesis gas uses fuel cell with solid electrolyte and metal or metal oxide coatings as electrodes

STANDARD OIL CO (OHIO) 05.10.87-US-105120

E36 H04 J03 (27.12.88) C25b-03

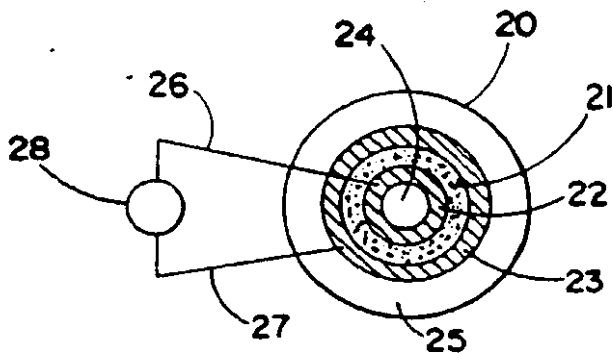
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Electrocatalytic process for converting CH<sub>4</sub>, natural gas or other light hydrocarbons to synthesis gas comprises: (a) providing an electrochemical cell comprising a solid electrolyte with a 1st surface coated with a conductive metal, metal oxide or their mixts., able to facilitate the redn. of O<sub>2</sub> to oxygen ions, and a 2nd surface coated with conductive metal, metal oxide or their mixts., both coatings being stable at operating temp.; (b) heating the cell to at least 1000 deg.C; (c) passing an O<sub>2</sub>-contg. gas in contact with the 1st surface coating; (d) passing the above hydrocarbons in contact with the 2nd surface coating; and (e) recovering synthesis gas.

ADVANTAGE - CH<sub>4</sub> conversion is e.g. 100%, and molar selectivity to CO e.g. 99.9%. In addn. to syngas, the prods. can include C<sub>2</sub>H<sub>2</sub> and C<sub>2</sub>H<sub>4</sub>. Electricity can be generated in an external circuit connected between the 2 surfaces. (6pp Dwg.No.2/3)

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