

Base : FAMPAT**SEARCH STRATEGY****SS Results**

35	1	34 AND 24
34	14	1 AND 2
33	0	31 AND 5
32	1	31 AND 2
31	124	30 NOT NATURAL/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
30	303	29 NOT METHANE/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
29	414	14 NOT DIOXIDE/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
28	8	14 AND 24
27	1	26 AND 6
26	81	24 AND UREA/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
25	12	24 AND 6
24	2894	(C25B-001/02)/IPC
23	16	22 AND 6
22	6788	..SIMILARITY SS 21 RANKED 1
21	1	(MX2011013384)/PN
20	58	19 NOT STORAGE/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
19	181	17 AND UREA/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
18	11	17 AND 6
17	6796	(C01B-003/00)/IPC
16	336	14 AND 4
15	2	14 AND 2
14	880	13 AND 6 AND 3
13	160323	(GENERAT+ 1D HYDROGEN)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
12	12	10 AND 6 AND 3
11	1	10 AND 7
10	6074	(G01N-027/28)/IPC
9	6	6 AND 2
8	0	7 AND 2
7	2669	6 AND 4 AND 3
6	103350	(EXCREMENT OR EXCRETA POOP OR MUCK OR SHIT)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
5	2604	(HYDROGEN REACTOR)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX
4	598052	((REACTOR)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (HYDROGEN)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX)
3	56222035	PD<20171207
2	519	((HYDRONIUM 1D IONS)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (HYDROXYL 1D IONS)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX)
1	1713	((ANODE)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (CATHODE)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (MEMBRANE SYSTEM)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX)

12 Documents

Publication numbers	Title	Current assignees
WO2013180081 A1	Electrochemical reactor and method for production of fuel gas	JAPAN SCIENCE & TECHNOLOGY AGENCY
WO2009157454 A1	Electrochemical reactor and fuel gas manufacturing method using the same	KAGOSHIMA UNIVERSITY
WO201203849 A1	Process for converting biogas to a gas rich in methane	HALDOR TOPSOE
CA2975132 A1	Systems and methods using anodes	CALERA
WO201522912 A1	Electrochemical reactor , and method for producing hydrogen and carbon dioxide from carbon monoxide and water vapor using same	KAGOSHIMA UNIVERSITY
FR2971789 A1	Method for producing methanol or hydrocarbons from a carbon material, including a reforming step, the operating conditions of which are selectively adjusted	AREVA
US20110111475 A1	Biological/electrolytic conversion of biomass to hydrocarbons	ION RESEARCH, ...
WO201504143 A1	Flexibly operable power plant and method for the operation thereof	MITSUBISHI HITACHI POWER SYSTEMS
BE-853018 A	IMPROVED METHOD FOR PREPARING HYDROGEN AND OXYGEN ON THE BASIS OF THE WATER	RWE
DE102017113027 A1	Method for the transportation and storage of hydrogen	N ERGIE
US20090014336 A1	Electrolysis of carbon dioxide in aqueous media to carbon monoxide and hydrogen for production of methanol	UNIVERSITY OF SOUTHERN CALIFORNIA
JP2007271246 A	Urine treatment device of livestock	NAKAMURA SHINICHI

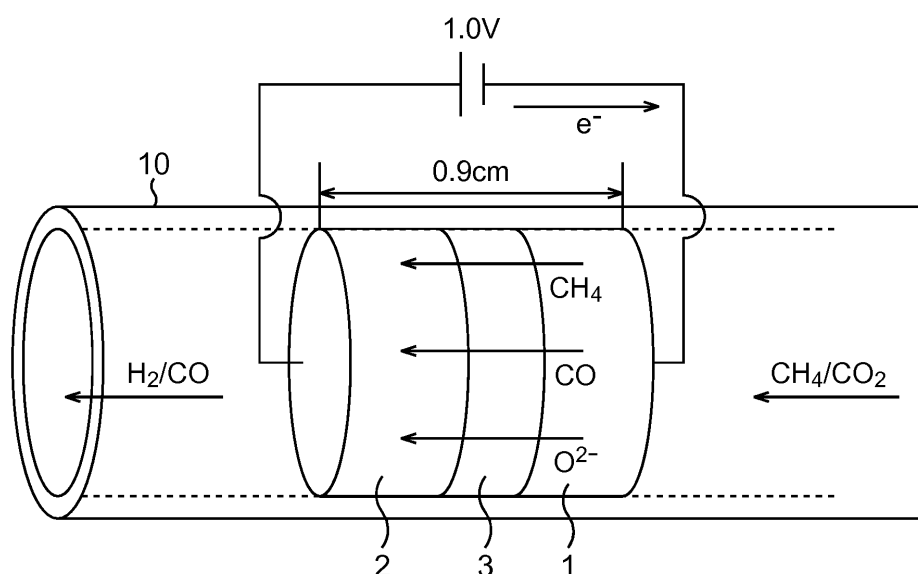
Family 1/12 - FAMPAT - ©Questel

Title

(EP2857554)

Electrochemical **reactor** and method for production of fuel gas**Images**

FIG. 1

**Publication data including kind & date**

WO2013180081	A1	2013-12-05	WO2013180081
KR20150013214	A	2015-02-04	KR20150013214
CN104350180	A	2015-02-11	CN104350180
EP2857554	A1	2015-04-08	EP2857554
US20150167186	A1	2015-06-18	US20150167186
JPWO2013180081	A1	2016-01-21	JP2013180081W
EP2857554	A4	2016-01-27	EP2857554

**Abstract**

(EP2857554)

Electrons are introduced to a **cathode** (1) side of a cell (10) to promote the reduction of carbon dioxide. On the other hand, the oxidation of methane is promoted in an **anode** (2) side by an oxide ion transported via a porous GDC electrolyte (3). When carbon monoxide and an oxide ion are generated, they are transported to the **anode** (2) together with methane gas to generate carbon monoxide and **hydrogen**. In addition, Cu and an oxide ion are reacted in the **anode** (2) to promote the oxidation of methane gas.

Inventors

HIRATA YOSHIHIRO

SAMESHIMA SOICHIRO

MATSUNAGA NAOKI

Latest standardized assignees - inventors removed

JAPAN SCIENCE & TECHNOLOGY AGENCY

Family 2/12 - FAMPAT - ©Questel

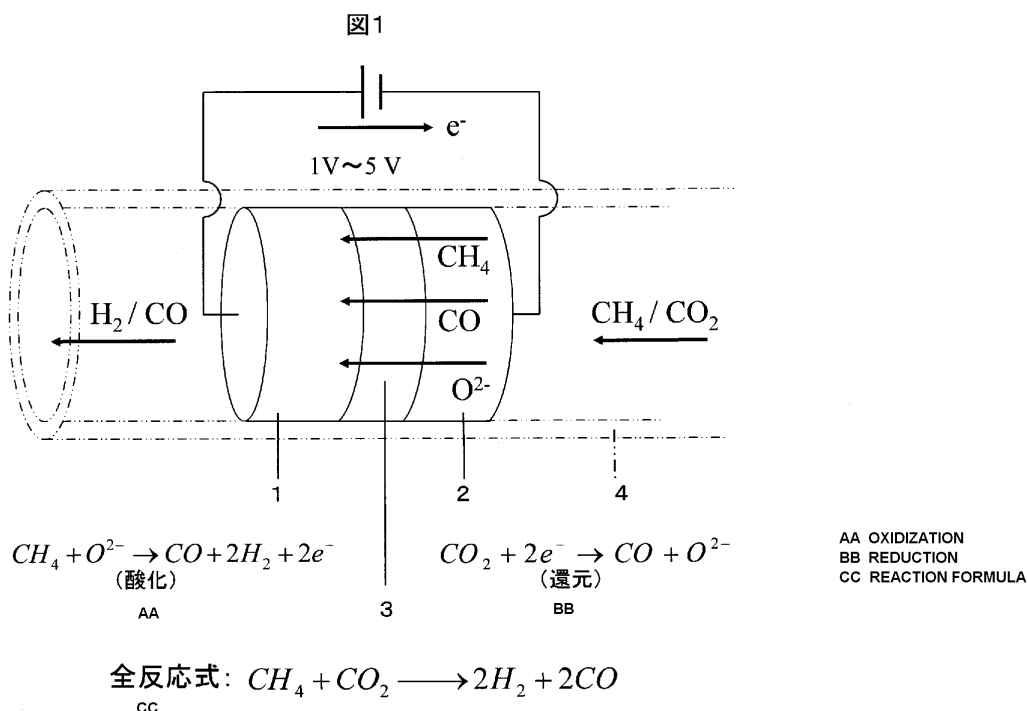
Title

(WO2009157454)

Electrochemical **reactor** and fuel gas manufacturing method using the same

Images

[図1]



Publication data including kind & date

WO2009157454	A1	2009-12-30	WO2009157454
JPWO2009157454	A1	2011-12-15	JP2009157454W
JP5376381	B2	2013-12-25	JP5376381



Abstract

(WO2009157454)

An electrolyte film (3) is sandwiched between an **anode** electrode (1) and a **cathode** electrode (2). The **anode** electrode (1) is made from, for example, a mixture of SrRuO₃ and GDC. The **cathode** electrode (2) is made from, for example, a mixture of Ni and GDC. Moreover, the electrolyte film (3) is made from, for example, a porous material of GDC. Moreover, the electrolyte film (3) has a thickness in the order of 50 μm, for example. Thus, an electrochemical **reactor** is configured. The electrochemical **reactor** is inserted into a tube (4), for example, for use.

Inventors

HIRATA YOSHIHIRO

Latest standardized assignees - inventors removed

KAGOSHIMA UNIVERSITY

Family 3/12 - FAMPAT - ©Questel

Title

(EP2591148)

Process for converting biogas to a gas rich in methane

Images

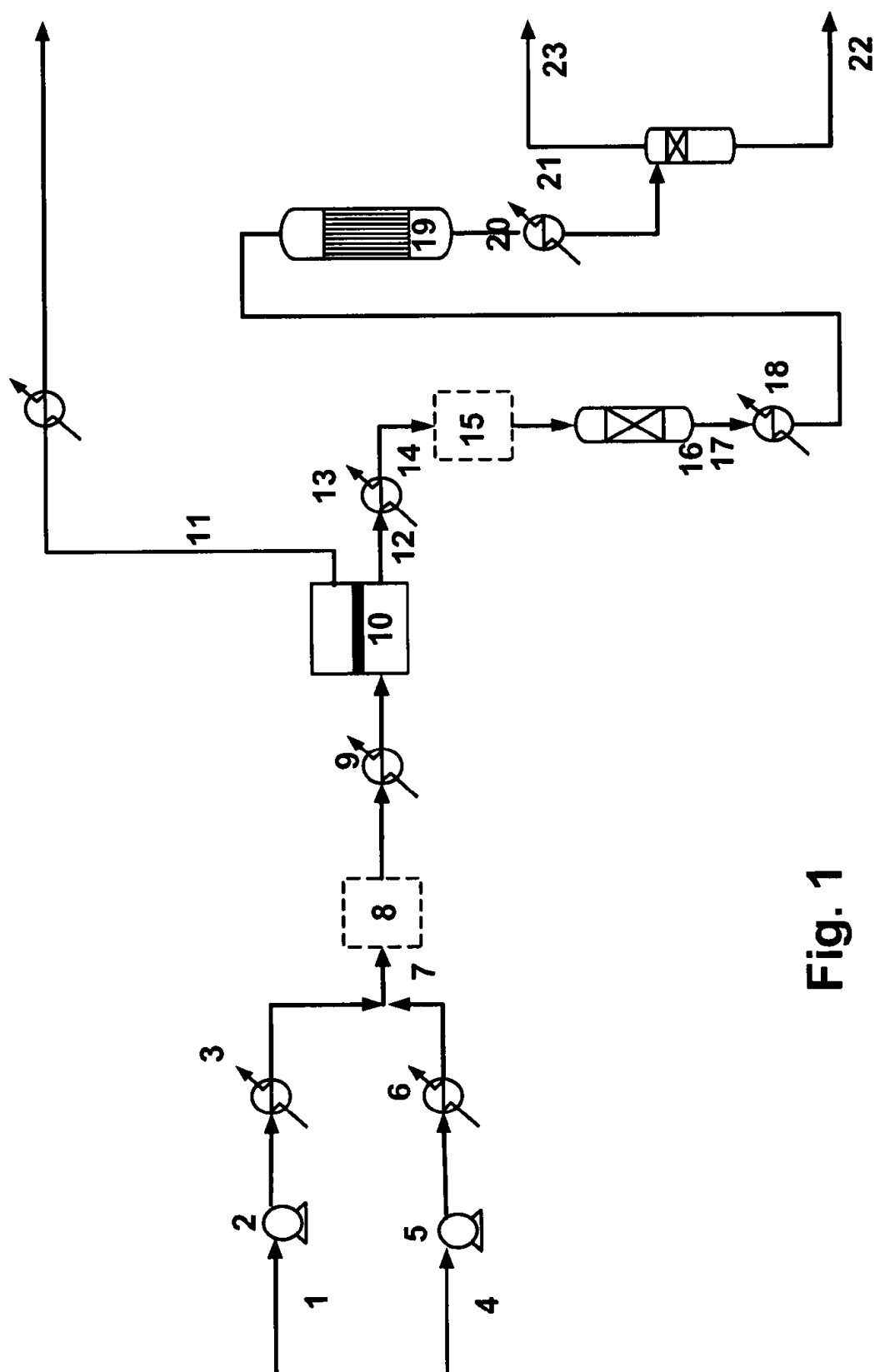


Fig. 1

Publication data including kind & date

WO2012003849	A1	2012-01-12	WO201203849
CA2804409	A1	2012-01-12	CA2804409
AU2010357037	A1	2013-01-24	AU2010357037
US20130109767	A1	2013-05-02	US20130109767
EP2591148	A1	2013-05-15	EP2591148
CN103140606	A	2013-06-05	CN103140606



EA201390087	A1	2013-06-28	EA201390087				
KR20130089641	A	2013-08-12	KR20130089641				
JP2013533245	A	2013-08-22	JP2013533245				
BR112013000541	A1	2013-12-31	BR112013000541				
AU2010357037	B2	2014-01-16	AU2010357037				
US8865780	B2	2014-10-21	US8865780				
JP5738989	B2	2015-06-24	JP5738989				
IN0107/CHENP/2013	A	2016-05-13	IN2013CN00107				
BR112013000541	A2	2016-05-24	BR112013000541				

Abstract

(EP2591148)

Process for converting biogas to a gas rich in methane comprising the steps of : - mixing a carbon dioxide-comprising biogas with steam to form a mixture comprising carbon dioxide, methane and steam; electrolysing the mixture comprising carbon dioxide, methane and steam in a high temperature solid oxide electrolyser cell unit, to obtain a gas comprising mainly **hydrogen** and carbon monoxide; catalytically converting **hydrogen** and carbon monoxide in the gas comprising **hydrogen** and carbon monoxide to methane in one or more methanation steps to obtain a gas rich in methane.

Inventors

HANSEN JOHN BOEGILD

Latest standardized assignees - inventors removed

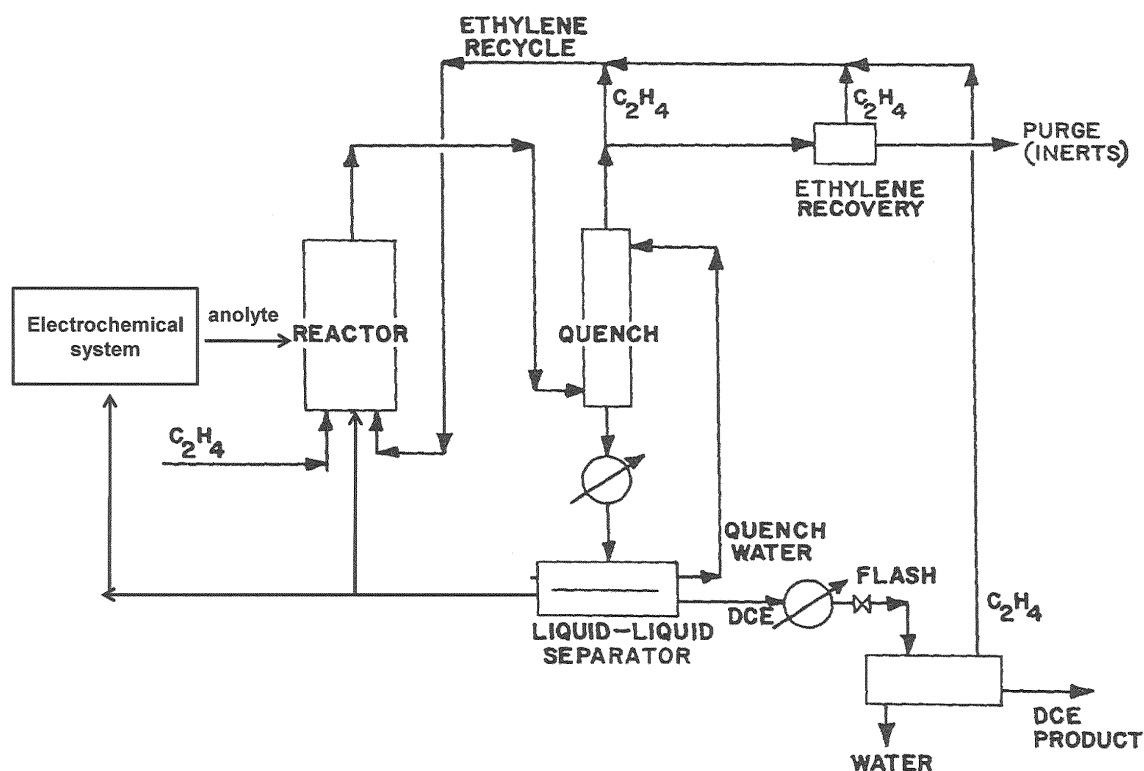
HALDOR TOPSOE

Family 4/12 - FAMPAT - ©Questel

Title

(EP3219829)

Systems and methods using anodes

Images**Publication data including kind & date**

CA2975132	A1	2012-11-22	CA2975132				
CA2836581	A1	2012-11-22	CA2836581				

WO2012158969	A1	2012-11-22	WO2012158969				
US20120292197	A1	2012-11-22	US20120292197				
US20120292196	A1	2012-11-22	US20120292196				
TW201313958	A	2013-04-01	TW201313958				
CN103238233	A	2013-08-07	CN103238233				
US20130206606	A1	2013-08-15	US20130206606				
WO2013148216	A1	2013-10-03	WO2013148216				
AU2012255123	A1	2013-12-12	AU2012255123				
BR112013029590	A1	2014-01-07	BR112013029590				
EP2710650	A1	2014-03-26	EP2710650				
KR20140048888	A	2014-04-24	KR20140048888				
VN38366	A	2014-07-25	VN--38366				
JP2014518946	A	2014-08-07	JP2014518946				
EA201391646	A1	2014-09-30	EA201391646				
US20140353146	A1	2014-12-04	US20140353146				
CN104271810	A	2015-01-07	CN104271810				
IN10001/CHENP/2013	A	2015-01-16	IN2013CN10001				
TH139513	A	2015-01-30	TH-139513				
EP2831313	A1	2015-02-04	EP2831313				
EP2710650	A4	2015-03-25	EP2710650				
JP2015083723	A	2015-04-30	JP2015083723				
EP2831313	A4	2015-06-10	EP2831313				
JP2015522706	A	2015-08-06	JP2015522706				
CN103238233	B	2015-09-16	CN103238233B				
US9187835	B2	2015-11-17	US9187835				
US9187834	B2	2015-11-17	US9187834				
US20150337443	A1	2015-11-26	US20150337443				
US9200375	B2	2015-12-01	US9200375				
US20150361564	A1	2015-12-17	US20150361564				
US20160040304	A1	2016-02-11	US20160040304				
US20160060774	A1	2016-03-03	US20160060774				
US20160108529	A1	2016-04-21	US20160108529				
AU2012255123	B2	2016-04-21	AU2012255123				
TH151669	A	2016-06-03	TH-151669				
AU2016203230	A1	2016-06-09	AU2016203230				
TW1537424	B	2016-06-11	TW1537424				
US20160230291	A1	2016-08-11	US20160230291				
EP2710650	B1	2016-10-26	EP2710650				
EA024710	B1	2016-10-31	EA--24710				
JP6039054	B2	2016-12-07	JP6039054				
BR112013029590	A2	2016-12-13	BR112013029590				
JP2017053041	A	2017-03-16	JP2017053041				
US20170073823	A1	2017-03-16	US20170073823				
JP2017075398	A	2017-04-20	JP2017075398				
CN104271810	B	2017-05-03	CN104271810B				
EP2831313	B1	2017-05-03	EP2831313				
KR20170056707	A	2017-05-23	KR20170056707				
KR101738907	B1	2017-05-23	KR101738907				

EP3173509	A1	2017-05-31	EP3173509
JP6183961	B2	2017-08-23	JP6183961
CA2836581	C	2017-09-19	CA2836581
EP3219829	A1	2017-09-20	EP3219829
CN107254689	A	2017-10-17	CN107254689
KR20170128629	A	2017-11-22	KR20170128629
KR101813930	B1	2018-01-02	KR101813930
JP6261007	B2	2018-01-17	JP6261007
JP2018066067	A	2018-04-26	JP2018066067
US9957623	B2	2018-05-01	US9957623
JP6333347	B2	2018-05-30	JP6333347



Abstract

(EP3219829)

There are provided methods and systems for an electrochemical cell including an **anode** and a **cathode** where the **anode** is contacted with a metal ion that converts the metal ion from a lower oxidation state to a higher oxidation state. The **anode** is a corrugated porous **anode** (corrugation amplitude 1 to 8 mm, corrugation period 2 to 35 mm).

Inventors

GILLIAM RYAN J

BOGGS BRIAN

MILLER JOHN HUNTER

MOHANTA SAMARESH

Latest standardized assignees - inventors removed

CALERA

Family 5/12 - FAMPAT - ©Questel

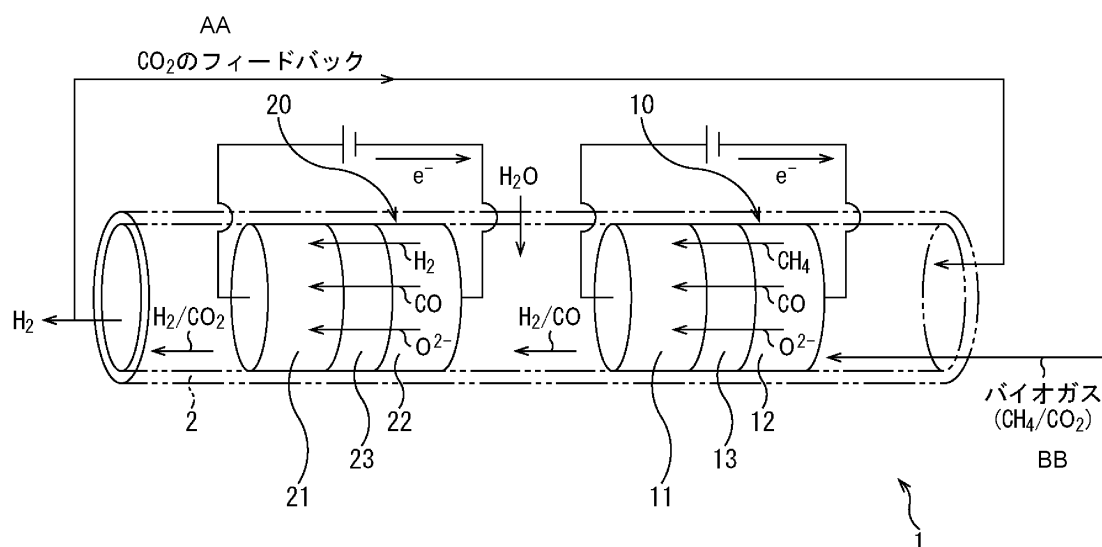
Title

(WO201522912)

Electrochemical **reactor**, and method for producing **hydrogen** and carbon dioxide from carbon monoxide and water vapor using same

Images

図1



AA Feedback of CO₂

BB Biogas

Publication data including kind & date

WO2015022912	A1	2015-02-19	WO201522912
JPWO2015022912	A1	2017-03-02	JP2015022912W

**Abstract**

(WO201522912)

An electrochemical **reactor** (20) is equipped with: an **anode** electrode (21) which contains iron and gadolinium-doped ceria; a **cathode** electrode (22) which contains cobalt and gadolinium-doped ceria; and a porous electrolyte film (23) which is arranged between the **anode** electrode (21) and the **cathode** electrode (22) and contains gadolinium-doped ceria.

Inventors

HIRATA YOSHIHIRO

SAMESHIMA SOICHIRO

SHIMONOSONO TARO

Latest standardized assignees - inventors removed

KAGOSHIMA UNIVERSITY

Family 6/12 - FAMPAT - ©Questel

Title

(EP2678268)

Method for producing methanol or hydrocarbons from a carbon material, including a reforming step, the operating conditions of which are selectively adjusted

Images

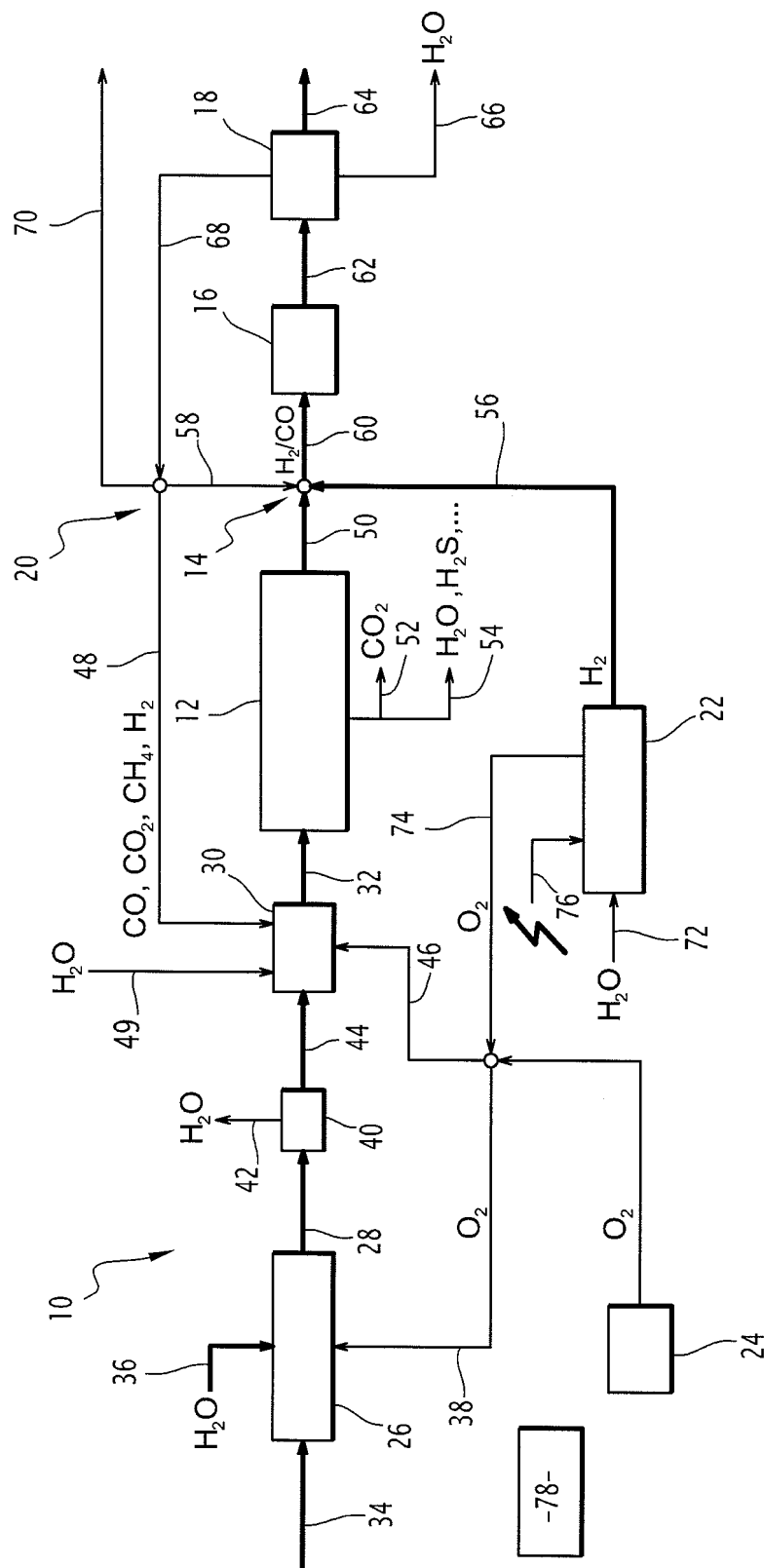


FIG.1

Publication data including kind & date

FR2971789	A1	2012-08-24	FR2971789
WO2012113832	A1	2012-08-30	WO2012113832
FR2971789	B1	2013-02-22	FR2971789
CN103476704	A	2013-12-25	CN103476704
US20130345325	A1	2013-12-26	US20130345325
EP2678268	A1	2014-01-01	EP2678268



KR20140012992	A	2014-02-04	KR20140012992				
JP2014517806	A	2014-07-24	JP2014517806				
RU2013142918	A	2015-03-27	RU2013142918				
CN103476704	B	2016-01-20	CN103476704B				
IN7239/DELNP/2013	A	2016-04-29	IN2013DN07239				
EP2678268	B1	2016-10-19	EP2678268				
BR112013021433	A1	2018-04-03	BR112013021433				
BR112013021433	A2	2018-06-12	BR112013021433				

Abstract

(EP2678268)

The production method of the invention includes the following steps: producing a synthetic gas from the carbon material according to a method including at least one reforming step, the synthetic gas having a first **hydrogen**/carbon-monoxide molar ratio under the first operating conditions for the reforming operation; producing a stream of **hydrogen** from a hydrogenated raw material and from a first consumed electrical power, the **hydrogen** stream having a first molar flow rate for said first consumed electrical power; and lowering the consumed electrical power for producing the **hydrogen** stream to a second electrical power lower than the first electrical power, and transitioning to second operating conditions that are different from the first operating conditions for the reforming operation in order to compensate for the lowering of the molar flow rate of the **hydrogen** stream, the synthetic gas having, under the second operating conditions, a second **hydrogen**/carbon-monoxide molar ratio that is greater than the first **hydrogen**/carbon-monoxide molar ratio.

Inventors

LECOMTE MICHEL

MOURGUES CODERN ALEJANDRO CARLOS

Latest standardized assignees - inventors removed

AREVA

Family 7/12 - FAMPAT - ©Questel

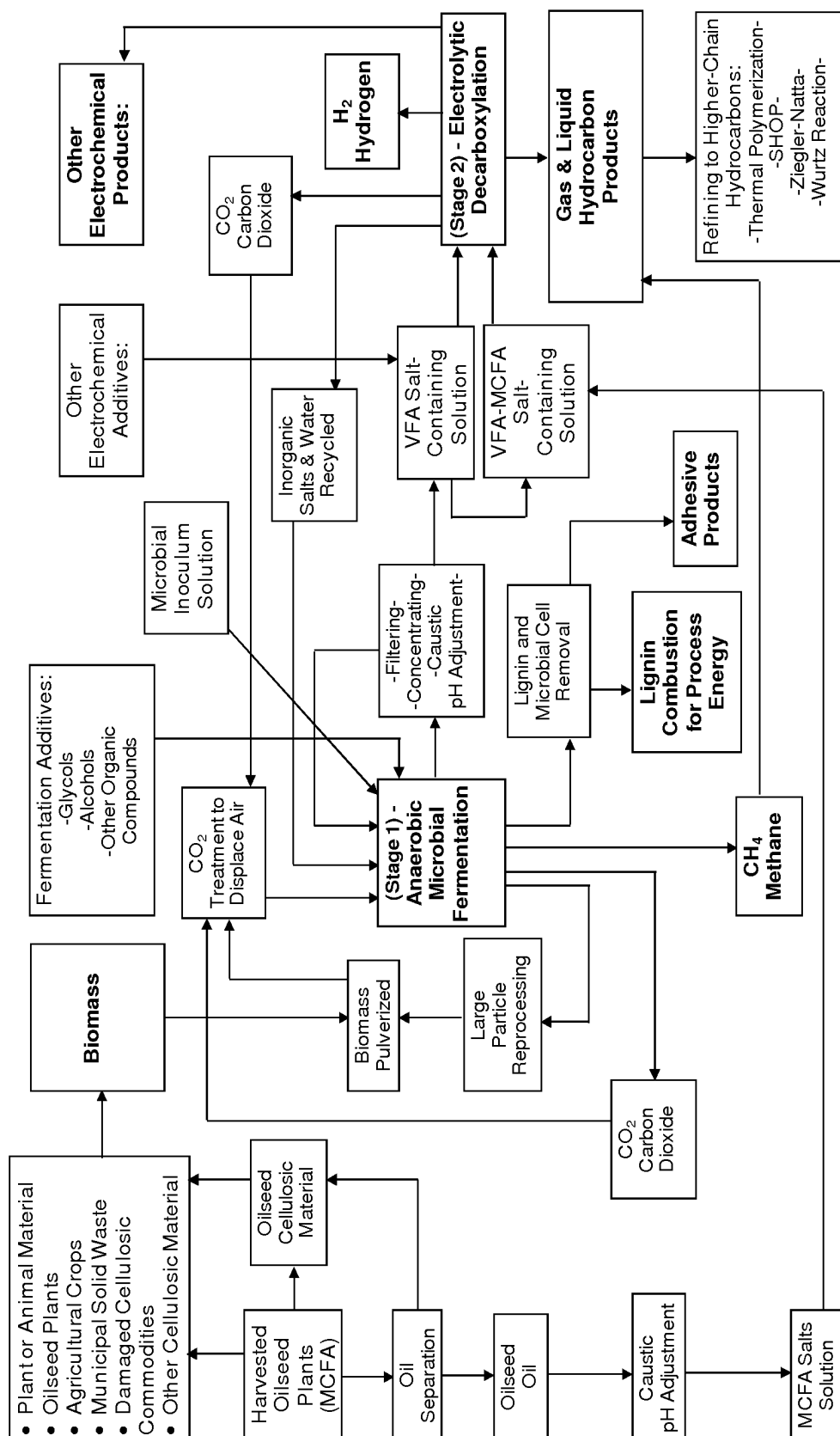
Title

(US9663864)

Biological/electrolytic conversion of biomass to hydrocarbons

Images

BEC - Biological / Electrolytic Conversion of Biomass to Hydrocarbons, Hydrogen, and Biobased Products:



Publication data including kind & date

US20110111475	A1	2011-05-12	US20110111475
US8518680	B2	2013-08-27	US8518680
US20140038254	A1	2014-02-06	US20140038254
US20140353163	A1	2014-12-04	US20140353163
US9663864	B2	2017-05-30	US9663864



Abstract

(US9663864)

Hydrocarbon and **hydrogen** fuels and other products may be produced by a process employing a combination of fermentation and electrochemical stages. In the process, a biomass contained within a fermentation medium is fermented with an inoculum comprising a mixed culture of microorganisms derived the rumen contents of a rumen-containing animal. This inoculated medium is incubated under anaerobic conditions and for a sufficient time to produce volatile fatty acids. The resultant volatile fatty acids are then subjected to electrolysis under conditions effective to convert said volatile fatty acids to hydrocarbons and **hydrogen** simultaneously. The process can convert a wide range of biomass materials to a wide range of volatile fatty acid chain lengths and can convert these into a wide range of biobased fuels and biobased products.

Inventors

KUHRY ANTHONY B

WEIMER PAUL J

Latest standardized assignees - inventors removed

ION RESEARCH

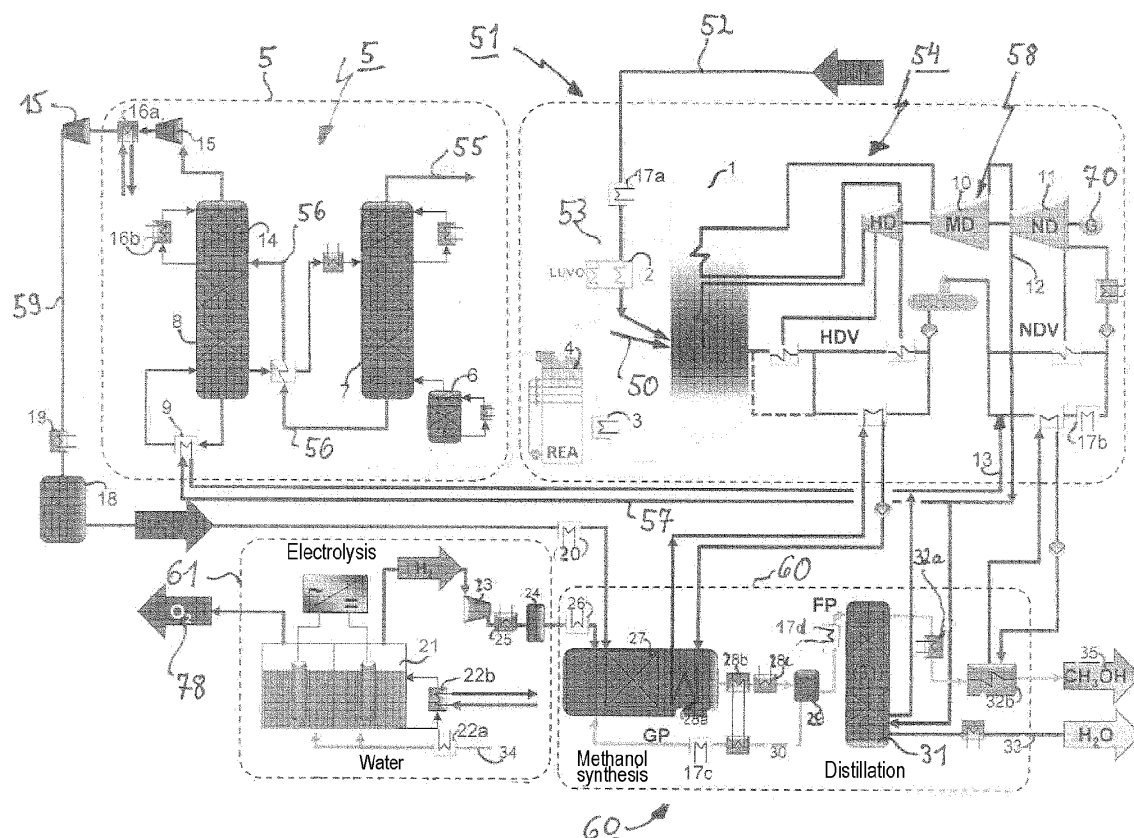
US DEPARTMENT OF AGRICULTURE

Family 8/12 - FAMPAT - ©Questel

Title

(EP3019582)

Flexibly operable power plant and method for the operation thereof

Images**Publication data including kind & date**

WO2015004143	A1	2015-01-15	WO201504143
CA2917738	A1	2015-01-29	CA2917738
WO2015010895	A1	2015-01-29	WO201510895



BR112016000482	A1	2016-01-19	BR112016000482				
BR112016000475	A1	2016-01-19	BR112016000475				
KR20160028479	A	2016-03-11	KR20160028479				
KR20160030559	A	2016-03-18	KR20160030559				
CN105518113	A	2016-04-20	CN105518113				
CN105518112	A	2016-04-20	CN105518112				
EP3019581	A1	2016-05-18	EP3019581				
EP3019582	A1	2016-05-18	EP3019582				
US20160153316	A1	2016-06-02	US20160153316				
IN201617000804	A	2016-07-15	IN201617000804				
IN201617002480	A	2016-08-12	IN201617002480				
US20160237858	A1	2016-08-18	US20160237858				
JP2016530235	A	2016-09-29	JP2016530235				
JP2016531973	A	2016-10-13	JP2016531973				
EP3019582	B1	2017-09-06	EP3019582				
DK3019582	T3	2017-12-11	DK3019582T				
ES2646094	T3	2017-12-12	ES2646094				
PT3019582	T	2017-12-13	PT3019582T				
US9885257	B2	2018-02-06	US9885257				
PL3019582	T3	2018-02-28	PL3019582				
CY1119656	T1	2018-04-04	CY1119656				
CN105518112	B	2018-07-03	CN105518112B				
BR112016000482	A2	2018-11-06	BR112016000482				
BR112016000475	A2	2018-11-06	BR112016000475				
CN105518113	B	2019-01-18	CN105518113B				

Abstract

(EP3019582)

In a power plant having a large steam generator (1), which is equipped with hydrocarbon-fired burners and/or with a gas turbine and which has a water/steam circuit (54) connected thereto, and comprising at least one device for generating a CO₂-rich gas flow, wherein the electrical power output of the electricity-generating part of the power plant (51) to the electrical grid (71) is subject to power regulation controlled at the power grid side, it is the intention to realize a solution which provides a flexible operating method for the power plant that is fired with hydrocarbon-containing fuel, which operating method permits in particular a rapid adaptation of the power plant output to the power demands from the grid. This is achieved in that the at least one device for generating a CO₂-rich gas flow and at least one electrolysis installation (61) for producing **hydrogen** (H₂) and at least one synthesis installation (60) for producing methanol and/or secondary products of methanol from at least CO₂ fractions of the CO₂-rich gas flow and the **hydrogen** produced in the electrolysis installation (61) are connected to and interconnected with one another by means of flow-conducting and media-conducting lines such that the electricity generated by the power plant during the operation of the power plant (51) can be utilized entirely or partially selectively for the operation of one, several or all of said group of devices and installations composed of the at least one device for generating a CO₂-rich gas flow, the at least one electrolysis installation (61) for producing **hydrogen** (H₂) and the at least one synthesis installation (60) for producing methanol and/or secondary products of methanol.

Inventors

BERGINS CHRISTIAN

BUDDENBERG TORSTEN

KOYTSOUMPA EFTHYMIA-IOANNA

Latest standardized assignees - inventors removed

MITSUBISHI HITACHI POWER SYSTEMS

invention also relates to a method for generating electrical power and optionally heat, the method is first carried out for storing and storage of **hydrogen**.

Inventors

FLEISCHER DR PATRICK

Latest standardized assignees - inventors removed

N ERGIE

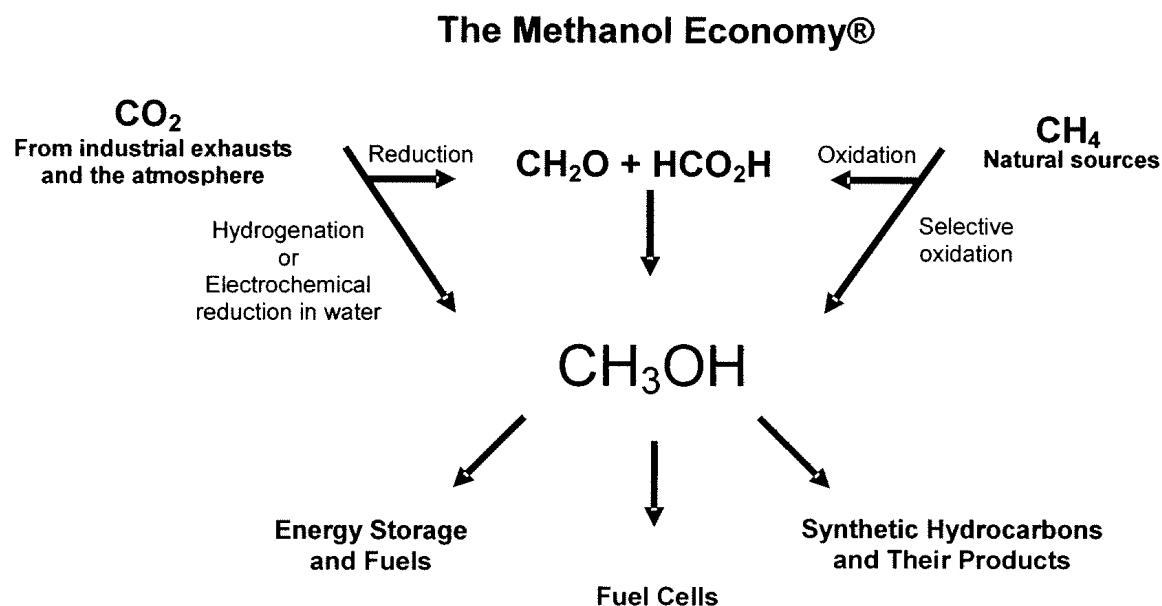
Family 11/12 - FAMPAT - ©Questel

Title

(EP2167706)

Electrolysis of carbon dioxide in aqueous media to carbon monoxide and **hydrogen** for production of methanol

Images



Publication data including kind & date

US20090014336	A1	2009-01-15	US20090014336
WO2009012154	A2	2009-01-22	WO200912154
CA2690980	A1	2009-01-22	CA2690980
AU2008276180	A1	2009-01-22	AU2008276180
WO2009012154	A3	2009-04-09	WO200912154
EP2167706	A2	2010-03-31	EP2167706
KR20100036317	A	2010-04-07	KR20100036317
US7704369	B2	2010-04-27	US7704369
CN101743343	A	2010-06-16	CN101743343
IN2349/MUMNP/2009	A	2010-06-18	IN2009MN02349
US20100193370	A1	2010-08-05	US20100193370
JP2010533784	A	2010-10-28	JP2010533784
AU2008276180	B2	2011-08-04	AU2008276180
US8138380	B2	2012-03-20	US8138380
CN101743343	B	2012-07-04	CN101743343B
JP5144755	B2	2013-02-13	JP5144755
CA2690980	C	2015-06-16	CA2690980
IN272695	B	2016-04-22	IN-272695
EP2167706	B1	2017-11-15	EP2167706
ES2659978	T3	2018-03-20	ES2659978



Abstract

(EP2167706)

An environmentally beneficial method of producing methanol from varied sources of carbon dioxide including flue gases of fossil fuel burning power plants, industrial exhaust gases or the atmosphere itself. Converting carbon dioxide by an electrochemical reduction of carbon dioxide in a divided electrochemical cell that includes an **anode** in one cell compartment and a metal **cathode** electrode in another cell compartment that also contains an aqueous solution comprising methanol and an electrolyte of one or more alkyl ammonium halides, alkali carbonates or combinations thereof to produce therein a reaction mixture containing carbon monoxide and **hydrogen** which can be subsequently used to produce methanol while also producing oxygen in the cell at the **anode**.

Inventors

OLAH GEORGE A

PRAKASH G K SURYA

Latest standardized assignees - inventors removed

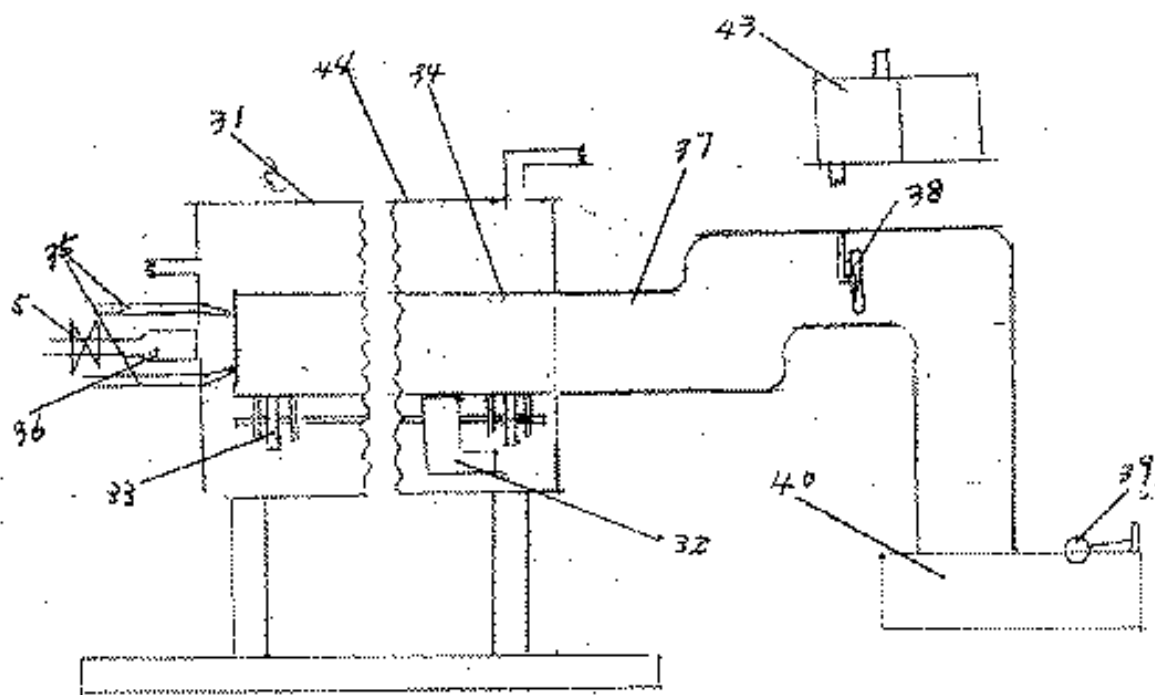
UNIVERSITY OF SOUTHERN CALIFORNIA

Family 12/12 - FAMPAT - ©Questel

Title

(JP2007271246)

Urine treatment device of livestock

Images**Publication data including kind & date**[JP2007271246](#)

A

2007-10-18

JP2007271246

**Abstract**

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PROBLEM TO BE SOLVED: To provide a device for efficiently treating waste water mainly consisting of urine of livestock.

SOLUTION: Six electrode plates are provided in solution in a tank. **Hydrogen** gas and hot water are delivered to the urine treatment device of livestock from a **hydrogen** generation device in which **hydrogen** gas is generated by electrolytic action and cooling water between double tanks becomes hot by high heat generated at the same time. While rotating a cylindrical rotation furnace, the waste water such as urine is blown into it from a nozzle and burned by a **hydrogen** gas burner. To enhance combustion efficiency, an exhaustion cylinder with a built-in exhaustion fan is connected and slight remnants after combustion is discharged to a water tank with an adjusting float. Utilizing heat at the time of combustion, the livestock urine

treatment device includes a hydrogen generation device assembled with a steam generation device with pipes aligned so as to enclose the rotation furnace and takes in the hot water from the hydrogen generation device, generates steam, rotates a turbine to generate electricity, utilizes steam after generating electricity to heat a livestock barn and a vinyl house.
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