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**1. [102015002303](#) LEISTUNGSVERSORGUNGSVORRICHTUNG**

DE - 27.08.2015

Int.Class [H02J 1/00](#) Appl.No 102015002303 Applicant Aquafairy Corporation Inventor Umemura Takuya, c/o MAKITA CORPORATION

Eine Leistungsversorgungs Vorrichtung [1] weist Folgendes auf: Eine Brennstoffzelle [5], die zum Erzeugen von elektrischer Leistung durch Bewirken einer Oxidationsreaktion zwischen einem Brennstoff und einem Oxidationsmittel ausgebildet ist; eine wiederaufladbare Batterie [9], die ladbar und entladbar ist; eine Temperaturdetektionseinheit [11C], die zum Detektieren einer Temperatur der wiederaufladbaren Batterie [9] ausgebildet ist; eine Ausgabereinheit [15], die zum Ausgeben von elektrischer Leistung nach außen ausgebildet ist; und eine Steuereinheit [11], die zum Steuern mindestens einer Eingangsleistung, die von der Brennstoffzelle [5] in die wiederaufladbare Batterie [9] einzugeben ist, oder einer Ausgangsleistung, die von der wiederaufladbaren Batterie [9] auszugeben ist, basierend auf einer Detektionstemperatur, die durch die Temperaturdetektionseinheit [11C] detektiert wird, ausgebildet ist.

**2. [14869](#) PHƯƠNG PHÁP VÀ THIẾT BỊ CHẾ TẠO PIN NHIÊN LIỆU**

VN - 25.06.2007

Int.Class [H01M 8/02](#) Appl.No 1200700805 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO, Masakazu

Sáng chế đề cập đến phương pháp chế tạo pin nhiên liệu loại mỏng một cách chắc chắn trong khi loại trừ được sự biến dạng của các chi tiết trong các bước chế tạo và đề cập đến thiết bị dùng để chế tạo pin nhiên liệu. Pin nhiên liệu bao gồm cụm điện cực màng mỏng [10] dạng đĩa và hai tấm kim loại [4] và [5] được bố trí trên cả hai phía của cụm điện cực màng mỏng [10]. Các vùng mép chu vi [4a] và [5a] của các tấm kim loại [4] và [5] được gắn kín bằng cách gấp nếp với lớp cách điện [1a] được bố trí xen giữa. Khi vùng mép chu vi [4a] của tấm kim loại [4] được bố trí nghiêng vào trong để bịt kín bằng cách gấp nếp với cụm điện cực màng mỏng [10] được đặt giữa hai tấm kim loại [4] và [5], khuôn thứ nhất [31] được bố trí ở các vùng giữa [4b] và [5b] của các tấm kim loại [4] và [5] được sử dụng để hạn chế sự biến dạng của các vùng giữa [4b] và [5b] và các khuôn thứ hai [22] và [32] được bố trí ở các vùng mép chu vi [4a] và [5a] và được sử dụng để thực hiện bước xử lý để bịt kín bằng cách gấp nếp. Khi các vùng mép chu vi [4a] và [5a] được gấp nếp bịt kín nhờ các khuôn thứ hai [22] và [32], nên sự biến dạng của các vùng giữa [4b] và [5b] được hạn chế nhờ khuôn thứ nhất [31].

**3. [1200700805](#) PHƯƠNG PHÁP VÀ THIẾT BỊ CHẾ TẠO PIN NHIÊN LIỆU**

VN - 25.06.2007

Int.Class [H01M 8/10](#) Appl.No 1200700805 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO, Masakazu

Sáng chế đề cập đến phương pháp chế tạo pin nhiên liệu loại mỏng một cách chắc chắn trong khi loại trừ được sự biến dạng của các chi tiết trong các bước chế tạo và đề cập đến thiết bị dùng để chế tạo pin nhiên liệu. Pin nhiên liệu bao gồm cụm điện cực màng mỏng [10] dạng đĩa và hai tấm kim loại [4] và [5] được bố trí trên cả hai phía của cụm điện cực màng mỏng [10]. Các vùng mép chu vi [4a] và [5a] của các tấm kim loại [4] và [5] được gắn kín bằng cách gấp nếp với lớp cách điện [1a] được bố trí xen giữa. Khi vùng mép chu vi [4a] của tấm kim loại [4] được bố trí nghiêng vào trong để bịt kín bằng cách gấp nếp với cụm điện cực màng mỏng [10] được đặt giữa hai tấm kim loại [4] và [5], khuôn thứ nhất [31] được bố trí ở các vùng giữa [4b] và [5b] của các tấm kim loại [4] và [5] được sử dụng để hạn chế sự biến dạng của các vùng giữa [4b] và [5b] và các khuôn thứ hai [22] và [32] được bố trí ở các vùng mép chu vi [4a] và [5a] và được sử dụng để thực hiện bước xử lý để bịt kín bằng cách gấp nếp. Khi các vùng mép chu vi [4a] và [5a] được gấp nếp bịt kín nhờ các khuôn thứ hai [22] và [32], nên sự biến dạng của các vùng giữa [4b] và [5b] được hạn chế nhờ khuôn thứ nhất [31].

**4. [20090017354](#) FUEL CELL**

US - 15.01.2009

Int.Class [H01M 2/02](#) Appl.No 10595748 Applicant Aquafairy Corporation Inventor Yano Masaya

The present invention relates to and provides a fuel cell in which sealing can be reliably made for each unit cell, thereby, enabling thinning, facilitating maintenance, and enabling miniaturization and weight reduction, and enabling free shape design. A fuel cell of the present invention is characterized by comprising a sheet-like solid polymer electrolyte **1** and a pair of electrode plates **2, 3** arranged on both sides of the solid polymer electrolyte **1**, and further comprising a pair of metallic plates **4, 5** arranged on both sides of the electrode plates **2, 3**, and provided flow path grooves **9**, and inlets **4c, 5c** and outlets communicating with the flow path grooves, wherein the peripheral edges of the metallic plates **4, 5** are mechanically sealed with an insulation material **6** interposed between the metallic plates.

**5. [1691435](#) FUEL CELL**

EP - 16.08.2006

Int.Class [H01M 8/02](#) Appl.No 04818885 Applicant AQUAFAIRY CORP Inventor YANO M

The present invention relates to and provides a fuel cell in which sealing can be reliably made for each unit cell, thereby, enabling thinning, facilitating maintenance, and enabling miniaturization and weight reduction, and enabling free shape design. A fuel cell of the present invention is characterized by comprising a sheet-like solid polymer electrolyte [1] and a pair of electrode plates [2, 3] arranged on both sides of the solid polymer electrolyte [1], and further comprising a pair of metallic plates [4, 5] arranged on both sides of the electrode plates [2, 3], and provided flow path grooves [9], and inlets [4c, 5c] and outlets communicating with the flow path grooves, wherein the peripheral edges of the metallic plates [4, 5] are mechanically sealed with an insulation material [6] interposed between the metallic plates.

**6. [2016115532](#) FUEL BATTERY SYSTEM, OPERATION METHOD FOR THE SAME AND FUEL CONTAINER**

JP - 23.06.2016

Int.Class [H01M 8/04](#) Appl.No 2014253291 Applicant ROHM CO LTD Inventor TAKAHASHI TETSUYA

PROBLEM TO BE SOLVED: To provide a fuel container that can reduce the amount of water to be blocked by increasing the number of water injection points and suppress hydrogen occurring with a delay, a fuel battery system to which the fuel container is applied to easily perform on/off control on the fuel battery system, and an operation method for the same.

SOLUTION: A fuel container 50 has a solid hydrogen source 1 which is housed air-tightly, a reaction liquid supply pipe 14 which is connected to a pressurization container 10 at one end thereof and inserted in the solid hydrogen source 1 at the other end to inject reaction liquid at multiple points, the pressurization container 10 pressurizing and discharging the reaction liquid under pressure of an internal space, and a hydrogen supply pipe 15 for supplying hydrogen to a fuel battery 30. A fuel battery system to which the fuel container is applied to easily perform on/off control of the fuel battery system, and an operation method for the same are also provided.

SELECTED DRAWING: Figure 7

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**7. 2015103426 POWER GENERATOR**

JP - 04.06.2015

Int.Class H01M 8/0422 Appl.No 2013243734 Applicant AQUAFAIRY KK Inventor ISHIZAKA HITOSHI

PROBLEM TO BE SOLVED: To provide a power generator capable of improving power generation efficiency by intermittently activating a fuel cell and capable of maintaining or recovering pressure for hydrogen generation over a long period of time.

SOLUTION: A power generator comprises: a pressurizing vessel 1 for pressurizing and discharging a reaction liquid 1a by using pressure of its inner space; a reaction vessel 2 to which the reaction liquid 1a is supplied from the pressurizing vessel 1 and which accommodates, in an airtight state, a hydrogen generation agent 2a for generating hydrogen by reacting with the reaction liquid 1a; a fuel cell 3 for generating power using the hydrogen supplied from the reaction vessel 2; power storage means 31 which is capable of being charged by the fuel cell 3 and performs output to the outside; control means for performing control of charging the power storage means 31 by intermittently activating the fuel cell 3; and a pressure adjustment mechanism for maintaining or recovering pressure inside the pressurizing vessel 1 so that the value of the pressure inside the pressurizing vessel 1 is equal to or larger than a prescribed value, at least in intermittently activating the fuel cell 3.

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**8. 2009146596 FUEL CELL**

JP - 02.07.2009

Int.Class H01M 8/24 Appl.No 2007319705 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell capable of contributing to the miniaturization of the whole device by simply constituting a gas passage for connecting power generation cells.

SOLUTION: The fuel cell includes a fuel gas generation part B generating hydrogen gas; a power generation cell C for generating power by supplying hydrogen gas; a cell supporter 6 supporting a plurality of power generation cells C; the supply port and the exhaust port of the hydrogen gas installed in the power generation cell C; a first gas passage formed on the inside of the power generation cell C and connecting the supply port and the exhaust port; a second gas passage formed on the inside of the cell supporter 6; the inlet part and the outlet part in both end positions of the second gas passage; and a rubber bush connecting the inlet part or the outlet part to the supply port or the exhaust port, and the first gas passages on the inside of the power generation cells C are connected with the rubber bush through the second gas passage, and hydrogen gas supplied to the prescribed power generation cell C1 is supplied even to other power generation cells through the first gas passage and the second gas passage.

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**9. 2010202438 HYDROGEN GENERATION METHOD AND HYDROGEN GENERATION APPARATUS**

JP - 16.09.2010

Int.Class C01B 3/08 Appl.No 2009048458 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen generation method and a hydrogen generation apparatus wherein aluminum, which is inexpensive, is used, a state of the maximum hydrogen generation rate can be reached within a shorter time, and desirably, reaction slowness in the initial stage can be mitigated.

SOLUTION: The hydrogen generation method comprises adding a tetrahydroxoaluminate in reacting water with aluminum. The hydrogen generation apparatus is equipped with a hydrogen generation part where water is reacted with aluminum in the presence of a tetrahydroxoaluminate added. It is desirable that the tetrahydroxoaluminate is an alkali metal salt or an alkaline earth metal salt of tetrahydroxoaluminic acid.

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**10. 2010218960 FUEL CELL**

JP - 30.09.2010

Int.Class H01M 8/02 Appl.No 2009066522 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell capable of improving battery output by increasing a contact pressure between an electrode layer and a conductive layer such as a metal layer.

SOLUTION: In the fuel cell, a laminate L including a solid polymer electrolyte layer 1, a first electrode layer 2 and a second electrode layer 3 arranged on its both sides, and a first metal layer 4 and a second metal layer 5 arranged on the outside of these is integrated with a resin molding 6. The first metal layer 4 or the second metal layer 5 has exposed portions 40, 50 which expose partially the surface of the first electrode layer 2 or the second electrode layer 3, and the resin molding 6 has a supply portion 60 for supplying gas or liquid to the first electrode layer 2 or the second electrode layer 3 through the exposed portions 40, 50, and has a contact portion 6a which contacts a part of the first electrode layer 2 or the second electrode layer 3 exposed from the exposed portions 40, 50.

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**11. 2009289676 FUEL CELL AND METHOD OF MANUFACTURING THE SAME**

JP - 10.12.2009

Int.Class H01M 8/02 Appl.No 2008143053 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell of which structure and process for connecting unit cells become simple and in which reliability and durability of the connection part are excellent, and to provide a method of manufacturing the same.

SOLUTION: The fuel cell includes: a plurality of unit cells C which have a solid polymer electrolyte layer 1; a first electrode layer 2 and a second electrode layer 3 installed on both sides of the solid polymer electrolyte layer 1; and furthermore a first conductive layer 4 and a second conductive layer 5 each arranged at the outside of these electrode layers 2, 3; a connection part J which connects electrically the conductive layers 4, 5 of either of the unit cell C1 and the other unit cell C2; and a resin molding 6 which includes integrated these unit cells C and the connecting part J by an insert molding.

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**12. 20150244186 POWER SUPPLY DEVICE**

US - 27.08.2015

Int.Class H02J 7/00 Appl.No 14631476 Applicant MAKITA CORPORATION Inventor Takuya UMEMURA

A power supply device comprises: a fuel cell configured to generate electric power by causing an oxidation reaction between a fuel and an oxidant; a rechargeable battery that is chargeable and dischargeable; a temperature detection unit configured to detect a temperature of the rechargeable battery; an output unit configured to externally output electric power; and a control unit configured to be capable of controlling at least one electric power of an input power to be inputted to the rechargeable battery from the fuel cell and an output power to be outputted from the rechargeable battery, based on a detected temperature detected by the temperature detection unit.



**13. 1821356 FUEL CELL AND POWER GENERATING METHOD**

EP - 22.08.2007

Int.Class H01M 8/02 Appl.No 05787974 Applicant AQUAFAIRY CORP Inventor YANO MASAYA

A fuel cell which discharges a small amount of a hydrogen gas, hardly causes a problem of waste gas treatment and gas release, and can perform power generation stably, continuously and effectively, and a power generating method using the same are provided. In a fuel cell comprising one or a plurality of unit cells UC formed of a sheet-like solid polymer electrolyte [1], its cathode-side electrode plate [2], an anode-side electrode plate [3], an oxygen-containing gas supply unit for supplying an oxygen-containing gas to the cathode-side electrode plate [2], and a hydrogen gas flow path unit for supplying a hydrogen gas to the anode-side electrode plate [3], regarding the unit cell UC which is to be a final stage of hydrogen gas supply, a flow path sectional area of the hydrogen gas flow path unit is not more than 1% of an area of the anode-side electrode plate [3] and, at the same time, a discharge control mechanism [10] for discharging a gas at 0.02 to 4% by volume relative to a hydrogen gas supplied to the unit cell UC is provided at an outlet of the hydrogen gas flow path unit.

**14. 2017105674 HYDROGEN GENERATOR AND POWER GENERATOR**

JP - 15.06.2017

Int.Class C01B 3/06 Appl.No 2015241033 Applicant KYOTO UNIV Inventor HIRAO KAZUYUKI

PROBLEM TO BE SOLVED: To provide a hydrogen generator that can stably generate hydrogen even when a large amount of hydrogen generating agent is used [a case of a large capacity] and can prevent a pressure in a reactor from increasing too much, and a power generator using the same.

SOLUTION: A hydrogen generator of the present invention includes a reactor 2 for storing a reaction liquid 1, a hydrogen generating agent housing part 4 for housing a solid hydrogen generating agent 3 for generating hydrogen by reacting with the reaction liquid 1, a hydrogen generating agent supply part 5 that is attached to the hydrogen generating agent housing part 4 and supplies intermittently the hydrogen generating agent 3 to the reaction liquid 1 by an operation of a driving mechanism 20, a reactor pressure detector 6 for detecting the pressure in the reactor 2, and a control means 7 that controls the pressure in the reactor 2 to pressure higher than a predetermined pressure by intermittently operating the driving mechanism 20 base on the reactor pressure detected by the reactor pressure detector 6.

SELECTED DRAWING: Figure 1

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**15. 2008266076 HYDROGEN GENERATING APPARATUS**

JP - 06.11.2008

Int.Class C01B 3/08 Appl.No 2007112013 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen generating apparatus in which when a reaction liquid is discharged into a reactor, it is possible to perform control so that a small amount of the reaction liquid is discharged.

SOLUTION: The hydrogen generating apparatus comprises: a liquid storage vessel 1 in which water is stored; a reactor 2 containing a hydrogen generating agent which reacts with water discharged from the liquid storage vessel 1 to generate hydrogen gas; a valve mechanism 3 for discharging water from the liquid storage vessel 1 to the reactor 2 side; a hydrogen discharge passage for discharging hydrogen gas generated in the reactor 2; a valve control part 8 to control opening and closing of the valve mechanism 3; and a setting means 9 to set opening and closing timing of the valve mechanism 3, wherein the valve control part 8 intermittently performs opening and closing control of the valve mechanism 3 on the basis of the opening and closing timing set by the setting means 9, so that the water in the liquid storage vessel 1 is discharged to the reactor 2 side.

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**16. 2008021514 HYDROGEN GAS GENERATING DEVICE FOR FUEL CELL**

JP - 31.01.2008

Int.Class H01M 8/06 Appl.No 2006191814 Applicant AQUAFAIRY KK Inventor SUGITA TAIICHI

PROBLEM TO BE SOLVED: To provide a hydrogen gas generating device capable of surely exhausting hydrogen gas from an exhaust port, even if a hydrogen generating agent is contained in a hydrogen generating agent container in a high filling rate.

SOLUTION: The hydrogen gas generating device for a fuel cell includes a supply port 12d where reaction liquid is supplied from a reaction liquid container, a hydrogen generating agent container 12c for housing the hydrogen generating agent to generate hydrogen gas in reaction with the reaction liquid, and an exhaust port 12e for exhausting hydrogen gas generated. A membrane filter 15 for transmitting the hydrogen gas but not the reaction liquid is arranged in the hydrogen generating agent container 12c from the supply port 12d over toward the exhaust port 12e. Preferably, the membrane filter 15 is to be arranged along an inner wall face of the hydrogen generating agent container 12c. Preferably, a filter paper 16 capable of transmitting the reaction liquid is to be arranged from the supply port 12d over toward the exhaust port 12e.

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**17. 2016044104 HYDROGEN GENERATING AGENT AND METHOD FOR PRODUCING THE SAME, AND HYDROGEN GENERATING METHOD**

JP - 04.04.2016

Int.Class C01B 3/06 Appl.No 2014169744 Applicant ROHM CO LTD Inventor NAKAGAWA ATSUSHI

PROBLEM TO BE SOLVED: To provide a hydrogen generating agent which can generate a practical amount of hydrogen gas having sufficiently high reactivity, can maintain a shape of a hydrogen generating agent molding, and can suppress clogging of a filter and the like, powdery dust and the like, even when a content of a metal hydride in a resin is low; a method for producing the same; and a hydrogen generating method.

SOLUTION: There are provided a hydrogen generating agent containing a thermosetting resin, a hydrophilic polymer, and a granular metal hydride, a method for producing the same, and a hydrogen generating method.

SELECTED DRAWING: Figure 1

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**18. 2017226577 HYDROGEN GENERATOR AND POWER GENERATOR**

JP - 28.12.2017

Int.Class C01B 3/06 Appl.No 2016124263 Applicant AQUAFAIRY KK Inventor NAKAGAWA KENJI

PROBLEM TO BE SOLVED: To provide a hydrogen generator which can stably generate hydrogen even in the case of using a hydrogen generating agent in a large amount [in the case of a large capacity], requires less drive energy and hardly causes the breaking of a hydrogen generating agent and to provide a power generator using the same.

SOLUTION: There is provided a hydrogen generator which comprises: a reaction vessel 2 for storing a reaction liquid 1; a hydrogen generating agent storing part 4 for storing a solid hydrogen generating agent 3 which reacts with the reaction liquid 1 to generate hydrogen; and hydrogen generating agent supply means 20 for supplying the hydrogen generating agent 3 from the hydrogen generating agent storing part 4 to the reaction liquid 1, where the hydrogen generating agent 3 contains a magnetic material and the hydrogen generating agent supply means 20 comprises a conveying part 21 for conveying the

hydrogen generating agent 3 by a magnetic force and a dropping part 22 for dropping the hydrogen generating agent 3 which is conveyed to the reaction liquid 1.

SELECTED DRAWING: Figure 1

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**19. 2010003456 FUEL CELL**

JP - 07.01.2010

Int.Class H01M 8/06 Appl.No 2008159451 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell which is further miniaturized by minimizing a piping space to improve space efficiency.

SOLUTION: The fuel cell includes a power generating cell FC for generating power with hydrogen supplied from one surface and oxygen supplied from the other surface, an internal space forming member 31 to form an internal space IS opposed to one surface of the power generating cell FC, hydrogen generating agent 32 arranged in part of the internal space IS for reacting with water vapor to generate hydrogen, and a water reservoir part 33 provided in the rest of the internal space for reserving water. The hydrogen generating agent 32 is encircled by a packing material 34 at least part of which is formed of a hydrophobic porous membrane 34a.

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**20. 2009146597 FUEL CELL**

JP - 02.07.2009

Int.Class H01M 8/04 Appl.No 2007319711 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell achieving miniaturization by efficiently arranging each part constituting the fuel cell and suitable for a mobile apparatus.

SOLUTION: The fuel cell includes: a cell supporter 6 for supporting a plurality of power generation cells C conducting power generation by supplied hydrogen gas; a water receiving part B1 for receiving water; a fuel receiving part B2 for receiving fuel which generates hydrogen gas by the reaction with water; a reaction liquid supply passage for supplying water to the fuel receiving part B2; a valve 24 closing and opening the water supply passage for controlling the supply of water; a gas supply passage for supplying hydrogen gas generated in the fuel receiving part B2 to the power generation cell; a boosting circuit for boosting the output voltage of the power generation cell C; and a circuit part 51 including a control circuit for controlling the valve 24, and the cell supporter 6, the water receiving part B1, and the fuel receiving part B2 are arranged in the major axis shape in order, the cell supporter 6 is formed in a cylindrical frame shape, the valve 24 and the circuit part 51 are housed in the cell supporter 6, the water housing part B1 is arranged at one end of the cell supporter 6, and a power supply terminal 3 is arranged at the other end.

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**21. 2010097721 HYDROGEN GENERATOR, HYDROGEN GENERATION METHOD, AND POWER FEEDING DEVICE**

JP - 30.04.2010

Int.Class H01M 8/06 Appl.No 2008265423 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen generator and a hydrogen generation method, capable of controlling the generation amount of hydrogen by promoting generation of steam in generation of hydrogen by supplying steam to a hydrogen generating agent, and a power feeding device provided with the hydrogen generator.

SOLUTION: The hydrogen generator 30 for generating hydrogen to be supplied to a fuel cell includes a water storage part 31 storing water, a hydrogen generating agent 32 which reacts with steam resulting from vaporization of the water to generate hydrogen; and a fan 33 for fluidizing the steam.

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**22. 2009001456 HYDROGEN GENERATING DEVICE AND HYDROGEN GENERATION METHOD**

JP - 08.01.2009

Int.Class C01B 3/06 Appl.No 2007163900 Applicant AQUAFAIRY KK Inventor YANO MASAYA

PROBLEM TO BE SOLVED: To provide a hydrogen generating device that can feed a reaction liquid in a fixed quantity from a liquid housing unit to a hydrogen generating unit even when the quantity is small.

SOLUTION: The hydrogen generating device is equipped with: a reaction liquid housing unit D housing a reaction liquid; a reaction liquid discharge path discharging the reaction liquid from the reaction liquid housing unit D; a hydrogen generating unit E allowing the discharged reaction liquid to react with a hydrogen generating agent 54 to generate hydrogen gas; a gas housing unit A housing compressed gas; a gas supply path supplying the compressed gas in the gas housing unit A to the reaction liquid housing unit D; an adjusting mechanism C adjusting a cross-sectional size of the passage in the gas supply path; and an opening and closing mechanism provided in a downstream side of the adjusting mechanism C for opening and closing the flow passage of the gas supply path. By switching the opening and closing mechanism from a closed state to an open state, compressed gas temporarily stored in the gas supply path between the adjusting mechanism C and the opening and closing mechanism is made to act on the reaction liquid surface W in the reaction liquid housing unit D so that an excess amount of the reaction liquid can be discharged from the reaction liquid discharge path in the initial stage of the open state.

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**23. 2011032148 HYDROGEN-GENERATING AGENT, METHOD FOR PRODUCING THE SAME, AND METHOD FOR GENERATING HYDROGEN**

JP - 17.02.2011

Int.Class C01B 3/08 Appl.No 2009182684 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen-generating agent, a method for producing the same, and a method for generating hydrogen, in which an inexpensive calcium can be used, the reaction control by a resin base material continues to the latter term of the reaction, and a sufficiently high reaction rate can be obtained.

SOLUTION: The hydrogen-generating agent contains calcium in the base material of a thermosetting resin. The method for producing the hydrogen-generating agent includes the step of curing a mixture containing an uncured thermosetting resin and calcium.

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**24. 2012234727 POWER GENERATING APPARATUS, AND POWER GENERATING METHOD**

JP - 29.11.2012

Int.Class H01M 8/06 Appl.No 2011103000 Applicant AQUAFAIRY KK Inventor ISHIZAKA HITOSHI

PROBLEM TO BE SOLVED: To provide a power generating apparatus capable of automatically generating hydrogen according to the power consumption, and automatically discharging a nitrogen gas or the like from a fuel cell with a simple apparatus configuration, and to provide a power generating method.

SOLUTION: A power generating apparatus in accordance with an embodiment of the present invention comprises a pressure vessel 1 for discharging a reaction liquid 1a by applying pressure, a reaction vessel 2 for containing a hydrogen generating agent 2b which generates hydrogen by reaction with the reaction liquid 1a, an anode-side supply part 3d for supplying the hydrogen, an anode-side outlet 3e for discharging gas, a fuel cell 3 for generating power by the hydrogen supplied to an anode 3a, a reaction liquid supply channel 4 for supplying the reaction liquid 1a discharged from the pressure vessel 1 to the reaction vessel 2 through a check valve 4a, a hydrogen supply channel 5 for supplying the hydrogen discharged from the reaction vessel 2 to the anode-side supply part 3d, and an exhaust-gas introducing channel 6 for supplying the exhaust gas exhausted from the anode-side outlet 3e of the fuel cell 3 to the pressure vessel 1 through a check valve 6a.

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## 25. 2011126721 HYDROGEN GENERATOR

JP - 30.06.2011

Int.Class C01B 3/06 Appl.No 2009283582 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen generator having a simple structure and miniaturizable in size.

SOLUTION: The hydrogen generator for generating hydrogen by reacting a solid hydrogen generating agent 11 with a reaction liquid comprises: the hydrogen generating agent 11 which generates hydrogen by reaction with the reaction liquid; a generating agent housing part 1 which houses the hydrogen generating agent 11; a bottomed cylindrical reaction liquid storage part 2 in which the reaction liquid is stored before initiating the reaction; a reaction liquid housing container 3 which is disposed outside the generating agent housing part 1 and in which the reaction liquid in the reaction liquid storage part 2 is filled into a space 3a between it and the generating agent housing part 1; a water absorbing body 4 supplying the reaction liquid filled into the reaction liquid housing container 3 to the generating agent housing part 1; and a hydrogen supply port 5 for supplying hydrogen generated in the generating agent housing part 1 to the outside of the reaction liquid housing container 3, wherein the reaction liquid housing container 3 is inserted from the open end 2a of the reaction liquid storage part 2, so that the reaction liquid is filled into the space 3a through a reaction liquid passage 32b formed in the bottom face of the reaction liquid housing container 3.

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## 26. 2011184793 METHOD AND DEVICE FOR GENERATING HYDROGEN

JP - 22.09.2011

Int.Class C25B 1/04 Appl.No 2010136275 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a method and device for generating hydrogen, which efficiently performs hydrogen generation reaction on both electrodes for a long period of time.

SOLUTION: The device for generating hydrogen includes an anode 1 comprising magnesium and aluminum, a cathode 2, a porous body 3 which is arranged in contact with the both electrodes and retains an electrolyte aqueous solution 4 therein and a means 5 which conducts electricity between the both electrodes or applies a voltage between both the electrodes, wherein as the cathode 2, the one including magnesium or aluminum is preferable.

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## 27. 8340/CHENP/2010 FUEL CELL AND METHOD OF MANUFACTURE THEREOF

IN - 26.08.2011

Int.Class H01M 8/02 Appl.No 8340/CHENP/2010 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO, MASAKAZU

Provided are a fuel cell making it possible to make contact pressures high between its electrode layers and its metallic layers and others, thereby improving the power of the cell, and a method for manufacturing the cell. A fuel cell of the invention comprises a solid polymer electrolyte layer [1], first and second electrode layers [2,3] located on each of both sides of the solid polymer electrolyte layer [1], and first and second electro conductive layers [4, 5] arranged outside the first and second electrode layers [2, 3], respectively, the individual layers [1 to 5] being integrated with each other through a resin molded body [6] which is an insert-molded body.

## 28. 2008293964 POWER GENERATING DEVICE AND POWER GENERATION METHOD

JP - 04.12.2008

Int.Class H01M 8/06 Appl.No 2008109170 Applicant AQUAFAIRY KK Inventor SUGITA TAIICHI

PROBLEM TO BE SOLVED: To provide a power generating device and power generation method in which output characteristics of a fuel cell is hard to be deteriorated with a time lapse.

SOLUTION: The power generation device is provided with a hydrogen generating means 10 to generate hydrogen by supplying a reaction liquid 14 to a hydrogen generating agent 11 containing a metal hydroxide, a solid polymer electrolyte fuel cell FC for generating power with a supply of hydrogen, and a hydrogen supplying passage 21 for supplying the hydrogen generated in the hydrogen generating means 10. The hydrogen supplying passage 21 is provided with an ammonia removing means 20 for removing ammonia in the hydrogen.

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## 29. 2010272362 ACTIVATION METHOD OF FUEL CELL, AND FUEL CELL SYSTEM

JP - 02.12.2010

Int.Class H01M 8/04 Appl.No 2009123325 Applicant AQUAFAIRY KK Inventor YANO MASAYA

PROBLEM TO BE SOLVED: To provide an activation method of a fuel cell and a fuel cell system utilizing the same, which can reduce fuel consumption upon activation, and prevent problems of long-term deterioration caused by a reverse potential.

SOLUTION: The fuel cell system includes a polymer electrolyte fuel cell FC, a fuel supply means 25 for making the fuel cell FC generate power, and a control means 13 for repeating a current control cycle for generating a large current within one second between both electrodes of the fuel cell FC.

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## 30. 112014006076 WASSERSTOFFERZEUGUNGSVERFAHREN UND WASSERSTOFFERZEUGUNGSSYSTEM

DE - 22.09.2016

Int.Class C01B 3/08 Appl.No 112014006076 Applicant Aquafairy Corp. Inventor Hirao Kazuyuki

Die vorliegende Erfindung ist darauf gerichtet, ein Wasserstofferzeugungsverfahren und ein Wasserstofferzeugungssystem bereitzustellen, welche die Reaktion von Aluminium mit Wasser nutzen, wobei das Wasserstofferzeugungsverfahren und das Wasserstofferzeugungssystem dazu in der Lage sind, Wasserstoff kontinuierlich über einen langen Zeitraum zu erzeugen, ohne eine Abnahme in der Gesamtmenge der Wasserstofferzeugung zu verursachen. Ein Wasserstofferzeugungssystem 1 gemäß einer Ausführungsform der vorliegenden Erfindung umfasst ein Aluminium-Flachmaterial 5, welches in einem Behälter 3 platziert ist, und Calciumhydroxid 7, welches im gleichen Behälter 3 aufgenommen ist. Bei dem Wasserstofferzeugungssystem, welches die vorstehend beschriebene Ausgestaltung aufweist, wird Wasser in den Behälter 3 gegossen, um das Calciumhydroxid 7 zu lösen, so dass eine wässrige Lösung hergestellt wird, und das Aluminium-Flachmaterial 5 wird in diese wässrige Lösung getaucht. Als eine Folge davon setzt die Wasserstofferzeugungsreaktion ein, so dass Wasserstoffgas erzeugt wird. Die Menge, Rate und Dauer der Wasserstoffgaserzeugung können durch Einstellen der Fläche und Dicke des Aluminium-Flachmaterials 5 gesteuert und/oder geregelt werden.

**31. 20160318761 HYDROGEN PRODUCTION METHOD AND HYDROGEN PRODUCTION SYSTEM**

US - 03.11.2016

Int.Class C01B 3/08 Appl.No 15108465 Applicant KYOTO UNIVERSITY Inventor Kazuyuki HIRAO

A hydrogen production method and hydrogen production system using the reaction of water and aluminum, the hydrogen production method and system being capable of continuously generating hydrogen for a long period of time without causing a decrease in the total amount of hydrogen generation. A hydrogen generation system according to one embodiment of the present invention includes aluminum sheet placed in a container and calcium hydroxide contained in the same container. In the hydrogen production system having the previously described configuration, water is poured in the container to dissolve the calcium hydroxide so that an aqueous solution is prepared, and the aluminum sheet is immersed in this aqueous solution. As a result, the hydrogen generation reaction begins, generating hydrogen gas. The amount, rate and duration of the generation of hydrogen gas can be controlled by adjusting the area and thickness of the aluminum sheet.

**32. 2009161378 APPARATUS FOR GENERATING HYDROGEN AND METHOD FOR PRODUCING HYDROGEN**

JP - 23.07.2009

Int.Class C01B 3/06 Appl.No 2007340598 Applicant AQUAFAIRY KK Inventor YANO MASAYA

PROBLEM TO BE SOLVED: To provide a hydrogen generating apparatus which can mildly control the reaction with a reaction solution even in the case of using a highly reactive hydrogen generating agent, can easily shift or suspend the supply amount of the reaction solution, and moreover has a favorable responsibility of the hydrogen generation amount, and a hydrogen generating method.

SOLUTION: In the hydrogen generating apparatus comprising a solution accommodating vessel 1 to accommodate the reaction solution, a reaction vessel 2 to accommodate the hydrogen generating agent, and a reaction solution supply mechanism to supply the reaction solution in the solution accommodating vessel 1 to the reaction vessel 2, the reaction solution supply mechanism discharges intermittently the reaction solution into the reaction vessel 2 such that the discharge amount of the reaction solution for one-time discharge at least in the early period is 10 L or less.

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**33. 2009173460 POROUS ARTICLE FOR HYDROGEN GENERATION, ITS PRODUCING METHOD AND METHOD FOR GENERATING HYDROGEN**

JP - 06.08.2009

Int.Class C01B 3/06 Appl.No 2008010663 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a porous article for hydrogen generation which exhibits superior handleability and achieves a moderate amount of hydrogen only by contacting with a reaction liquid and has satisfactorily high reactivity, its producing method and a method for generating hydrogen.

SOLUTION: Provided are an article for hydrogen generation containing a granular hydrogen generating agent and a resin and favorably being made porous with bubbles and its producing method including a step of hardening a thermosetting resin while generating hydrogen gas from the hydrogen generating agent after mixing the granular hydrogen generating agent and the unhardened thermosetting resin.

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**34. 2010192432 FUEL CELL**

JP - 02.09.2010

Int.Class H01M 8/02 Appl.No 2010011134 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell endowed with an enhanced power generation efficiency and still no fear of deterioration of mass-productibility even in case of a thickness of a solid polymer electrolyte being made thinner.

SOLUTION: The fuel cell is provided with a solid polymer electrolyte layer 1, a first electrode layer and a second electrode layer arranged on both sides of the solid polymer electrolyte layer 1, and each of these layers are insert-molded and integrated into a resin molded body 6. A reinforcing layer 8 is arranged on a periphery part of at least one of the surfaces of the solid polymer electrolyte layer 1.

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**35. 2010143779 METHOD AND APPARATUS FOR GENERATING HYDROGEN**

JP - 01.07.2010

Int.Class C01B 3/08 Appl.No 2008321256 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a method and apparatus for generating hydrogen in which raw material cost is low and hydrogen generation speed can be kept more constant.

SOLUTION: The method for generating hydrogen includes bringing an undissolved component-containing aqueous solution containing an alkaline substance in an amount exceeding saturated concentration into contact with aluminum. It is preferable that an aqueous solution of the alkaline substance at saturated concentration [25C] has pH of <13, and it is more preferable that solubility of the alkaline substance in water lowers in accordance with a temperature rise from 25C.

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**36. 2008037683 HYDROGEN-GENERATING AGENT, AND APPARATUS AND METHOD FOR GENERATING HYDROGEN**

JP - 21.02.2008

Int.Class C01B 3/06 Appl.No 2006212343 Applicant AQUAFAIRY KK Inventor SUGITA TAIICHI

PROBLEM TO BE SOLVED: To provide a hydrogen-generating agent, and an apparatus and a method for generating hydrogen, in which the rising of hydrogen generation reaction is fast even under ambient temperature; and the generation speed in the early stages of hydrogen generation is stable.

SOLUTION: The apparatus for generating hydrogen comprises a supply zone WS for supplying water and a reaction vessel 3 which holds a hydrogen-generating agent 10 which reacts with water to generate hydrogen. The hydrogen-generating agent 10 comprises a main reaction part 11 containing magnesium hydride particles and a reaction heat-generating part 12 which is disposed at the water supply side of the main reaction part 11 and reacts with water to generate reaction heat.

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**37. 2015011940 POWER GENERATOR**

JP - 19.01.2015

Int.Class H01M 8/0485 Appl.No 2013138634 Applicant AQUAFAIRY KK Inventor ISHIZAKA HITOSHI

PROBLEM TO BE SOLVED: To provide a power generator capable of outputting a stable electric power to the outside in addition to narrowing the pressure variation width in a reaction vessel that generates hydrogen.

SOLUTION: A power generator includes: a pressure vessel 1 for pressurizing a reaction liquid 1a and discharging the liquid; a reaction vessel 2 for accommodating a hydrogen generating agent 2a in an airtight state, the hydrogen generating agent 2a reacting with the reaction liquid 1a to generate hydrogen; a fuel cell 3 for executing an electric power generation with the hydrogen supplied to an anode 3a; power storage means 31 capable of covering the output to the outside when the output from the fuel cell 3 is varied because of the control performed by an output control section; and control means 21 for controlling the output control section. The control means 21 controls the output control section so as to vary the output from the fuel cell 3 on the basis of the pressure difference derived by subtracting the pressure detected with a pressure vessel pressure detector 22b from the pressure detected with a reaction vessel pressure detector 22a.

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### 38. 2015159078 POWER SUPPLY UNIT

JP - 03.09.2015

Int.Class H01M 8/04 Appl.No 2014034156 Applicant MAKITA CORP Inventor UMEMURA TAKUYA

PROBLEM TO BE SOLVED: To suppress the life of a secondary battery from expiring in an early stage, in a power supply unit including a fuel cell and the secondary battery.

SOLUTION: At least one power of input power input from a fuel cell 5 to a secondary battery 9 and output power output from the secondary battery 9 is controlled on the basis of a detected temperature T1 detected by a thermometer 11C for detecting the temperature Tb of the secondary battery 9. As a result, the secondary battery 9 can be maintained in a proper temperature range, so that the life of the secondary battery 9 can be suppressed from expiring in an early stage.

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### 39. 2016115533 FUEL BATTERY SYSTEM, OPERATION METHOD FOR THE SAME, FUEL CONTAINER AND INACTIVE GAS DISCHARGE METHOD

JP - 23.06.2016

Int.Class H01M 8/04 Appl.No 2014253294 Applicant ROHM CO LTD Inventor TAKAHASHI TETSUYA

PROBLEM TO BE SOLVED: To provide a fuel battery system which is suitable for hydrogen leak check of inactive gas, an operation method for the same, a fuel container and an inactive gas discharge method.

SOLUTION: A fuel battery system has a pressurization container 10 for pressurizing reaction liquid 11 by pressure of an internal space, a fuel container 50 for housing a solid hydrogen source 1 under an air-tight state with inactive gas, the solid hydrogen source 1 generating hydrogen by reaction with the reaction liquid, a fuel battery 30 for generating power with supplied hydrogen, hydrogen supply pipes 15A and 15B which are connected to the fuel battery and supply hydrogen to an exhaust pipe 16 for exhausting inactive gas and the fuel battery, reaction liquid supply pipes 14A and 14B for supplying reaction liquid from the pressurization container to the fuel container, pressurization pipes 13A and 13B which intercommunicate with the fuel container and are connected to the pressurization container through a check valve 2 for permitting flow-in of hydrogen, a first electromagnetic valve 15S disposed in the hydrogen supply pipe 15A, a second electromagnetic valve 6 connected to the exhaust pipe 16, and a third electromagnetic valve 4 disposed in the reaction liquid supply pipe.

SELECTED DRAWING: Figure 8

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### 40. 2008105878 HYDROGEN GENERATOR

JP - 08.05.2008

Int.Class C01B 3/08 Appl.No 2006288799 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen generator which can transport a liquid reactant such as water at a constant rate even in a small amount when the liquid reactant is sent from a liquid storage part to a hydrogen generation part.

SOLUTION: The hydrogen generator is equipped with: a liquid reactant storage part D for storing the liquid reactant; a passage for discharging the liquid reactant from the storage part D; a hydrogen generation part E for generating hydrogen gas by reacting the discharged liquid reactant with a hydrogen release compound; a gas storage part A for storing compressed air; and a gas supply passage for supplying the compressed air in the gas storage part A to the liquid reactant storage part D. The generator has the constitution that the liquid reactant in the liquid reactant storage part D is allowed to react with the compressed air so that the constant amount of the liquid reactant can be discharged through the supply passage for the liquid reactant. An adjustment mechanism C is provided to adjust the size of the flow path in the gas supply passage.

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### 41. 2009046370 HYDROGEN GENERATING DEVICE AND HYDROGEN GENERATING METHOD

JP - 05.03.2009

Int.Class C01B 3/06 Appl.No 2007216291 Applicant AQUAFAIRY KK Inventor SUGITA TAIICHI

PROBLEM TO BE SOLVED: To provide a hydrogen generating device and a hydrogen generating method sufficiently maintaining the reactivity of a hydrogen generating agent even if a conservation period is prolonged.

SOLUTION: In the hydrogen generating device provided with the hydrogen generating agent 1 containing hydrogenated metal particles activated by removing metal hydroxide on the surface and a dehumidifying agent 2 in a reaction vessel 10 having a hydrogen discharge passage 12 and a moisture supply passage 11, the inside of the reaction vessel 10 is maintained in the state that the air does not flow in.

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### 42. 2008093604 LIQUID QUANTITATIVE DISCHARGE DEVICE/METHOD

JP - 24.04.2008

Int.Class B01J 4/02 Appl.No 2006280288 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a liquid quantitative discharge device capable of feeding a determined amount of a liquid such as water from a liquid storage container even in case the quantity is small.

SOLUTION: This liquid quantitative discharge device comprises the following components: [1] the liquid storage container 2 which stores the liquid, [2] a liquid discharge path 2b which discharges the liquid from the liquid storage container 2, [3] a gas storage container 1 which stores a compressed gas, and [4] a flow regulation part 7 which is interposed between the gas storage container 1 and the liquid storage container 2 and has a hole of existing size 7a for regulating the flow of the gas to be supplied to 10 mL/hr or below in terms of an atmospheric pressure reference.

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### 43. 2010222196 HYDROGEN-GENERATING AGENT, PROCESS FOR PRODUCING THE SAME, AND PROCESS FOR GENERATING HYDROGEN

JP - 07.10.2010

Int.Class C01B 3/06 Appl.No 2009072424 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a hydrogen-generating agent which allows an easy control for the reaction, since the reaction proceeds naturally as the resin base is being disintegrated, gives high reaction rate, and volume efficiency, a process for producing the same, and a process for generating hydrogen.

SOLUTION: The hydrogen-generating agent is composed of a resin base, excluding a water-soluble resin, including 60 wt.% of granular calcium hydride. The process for producing the hydrogen-generating agent involves a step to harden a mixture comprising an uncured thermosetting resin containing 60 wt.% of granular calcium hydride.

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44. 20120058046 PACKAGED HYDROGEN-GENERATING AGENT, MANUFACTURING METHOD THEREFOR, AND HYDROGEN GENERATION METHOD

US - 08.03.2012

Int.Class C01B 3/08 Appl.No 13265987 Applicant Masakazu Sugimoto Inventor Masakazu Sugimoto

Provided is a packaged hydrogen-generating agent, the hydrogen-generating reaction of which is highly stable and repeatable, and which preferably is resistant to influence from changes in the environmental temperature. Also provided are a method for manufacturing said package, and a hydrogen generation method. The packaged hydrogen-generating agent is provided with: a hydrogen-generating agent [1]; a covering material [2] which encloses the hydrogen-generating agent [1] and allows deformation; and a water-absorbing body [3], part of which is in contact with the hydrogen-generating agent [1]. The covering material [2] preferably covers at least the area around the contact part [3a] where the water-absorbing body [3] and the hydrogen-generating agent [1] are in contact, so as to create a firm attachment at the contact part [3a].

45. 3115335 HYDROGEN-GENERATING AGENT AND MANUFACTURING METHOD THEREFOR

EP - 11.01.2017

Int.Class C01B 3/06 Appl.No 16184694 Applicant AQUAFAIRY CORP Inventor SUGIMOTO MASAKAZU

Provided is a hydrogen-generating agent, the hydrogen-generating reaction of which is highly stable and repeatable, and which preferably is resistant to influence from changes in the environmental temperature. Also provided is a method for manufacturing a hydrogen-generating agent. The hydrogen-generating agent comprises a thermosetting resin and granular calcium hydride contained in a matrix of the thermosetting resin, wherein the content of the granular calcium hydride is 60 % or more by weight. The method comprises a step of hardening a mixture wherein granular calcium hydride is contained in an unset thermosetting resin at a concentration of 60 % or more by weight.

46. 6909/CHENP/2010 FUEL CELL, AND METHOD FOR MANUFACTURING THE SAME

IN - 08.07.2011

Int.Class H01M 8/02 Appl.No 6909/CHENP/2010 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO, MASAKAZU

A fuel cell of the present invention comprises a power generating cell [C], which has at least two surfaces, a fuel gas being supplied through one of the surfaces and oxygen being supplied through the other surface, thereby generating electric power, a cell holder [6] that holds the power generating cell [c] to face the one of the surfaces inward, whereby forming an inner space together with the power generating cell [C], and a fuel generating section [B] that is arranged in the inner space of the cell holder [6] and generates the fuel gas.

47. 8491/CHENP/2011 PACKAGED HYDROGEN-GENERATING AGENT, MANUFACTURING METHOD THEREFOR, AND HYDROGEN GENERATION METHOD

IN - 15.03.2013

Int.Class C01B 3/06 Appl.No 8491/CHENP/2011 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO, MASAKAZU

Provided is a packaged hydrogen-generating agent, the hydrogen-generating reaction of which is highly stable and repeatable, and which preferably is resistant to influence from changes in the environmental temperature. Also provided are a method for manufacturing said package, and a hydrogen generation method. The packaged hydrogen-generating agent is provided with: a hydrogen-generating agent [1]; a covering material [2] which encloses the hydrogen-generating agent [1] and allows deformation; and a water-absorbing body [3], part of which is in contact with the hydrogen-generating agent [1]. The covering material [2] preferably covers at least the area around the contact part [3a] where the water-absorbing body [3] and the hydrogen-generating agent [1] are in contact, so as to create a firm attachment at the contact part [3a].

48. 2009283412 FUEL CELL AND MANUFACTURING METHOD

JP - 03.12.2009

Int.Class H01M 8/02 Appl.No 2008136905 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell, capable of improving cell output by increasing the contact pressure between an electrode layer and a metal layer or the like in spite of a simple structure, and a manufacturing method thereof.

SOLUTION: The fuel cell comprises a solid polymer electrolyte layer 1, a first electrode layer 2 and a second electrode layer 3 provided on both sides of the electrolyte layer 1, and a first conductive layer 4 and a second conductive layer 5 disposed respectively on the further outside of the electrode layers 2 and 3. Each of the layers 1-5 is integrated in the form of a resin molded body 6 with each layer being insert-molded therein.

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49. 2010092767 FUEL CELL SYSTEM

JP - 22.04.2010

Int.Class H01M 8/04 Appl.No 2008262963 Applicant AQUAFAIRY KK Inventor YANO MASAYA

PROBLEM TO BE SOLVED: To provide a fuel cell system using the maximum amount of fuel gas supplied to a fuel cell for power generation to increase safety without discharging it to the outside and simplifying the structure.

SOLUTION: The system includes the fuel cell 20 generating power from hydrogen gas supplied from a fuel supply part 10, a DC-DC converter 31 converting an output voltage VFC from the fuel cell 20 to a predetermined voltage value to be output, and a voltage control part for controlling the output voltage VFC to a preset setting voltage. When [A] is the maximum hydrogen gas amount per predetermined time which can be generated from the fuel supply part 10 and [B] is the output current when [A] is supplied to the fuel cell 20, the setting voltage is set to a voltage lower than the output voltage corresponding to [B] obtained from the output current (I)-output voltage (V) characteristic of the fuel cell 20.

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50. 20090004512 LIQUID CONSTANT-RATE EMITTING APPARATUS AND METHOD OF LIQUID CONSTANT-RATE EMISSION

US - 01.01.2009

Int.Class H01M 8/00 Appl.No 12280703 Applicant AQUAFAIRY CORPORATION Inventor Sugimoto Masakazu

[EN] A liquid constant-rate emitting apparatus that in the event of delivering a liquid, such as water, from a liquid accommodating container, even when the amount thereof is small, is capable of constant-rate delivery thereof. There is provided an apparatus comprising liquid accommodating container [2] for water accommodation; water lead-out pipe [11] for water emission from the liquid accommodating container [2]; gas accommodating container [1] for

compressed air accommodation; and introduction pipe [6] for feeding of the compressed air within the gas accommodating container [1] into the liquid accommodating container [2], so that constant-rate water emission from the water lead-out pipe [11] is attained by application of the compressed air to the liquid within the liquid accommodating container [2].

**51. 2006018 LIQUID CONSTANT-RATE EMITTING APPARATUS AND METHOD OF LIQUID CONSTANT-RATE EMISSION** EP - 24.12.2008

Int.Class B01J 4/00 Appl.No 07714995 Applicant AQUAFAIRY CORP Inventor SUGIMOTO MASAKAZU

A liquid constant-rate emitting apparatus that in the event of delivering a liquid, such as water, from a liquid accommodating container, even when the amount thereof is small, is capable of constant-rate delivery thereof. There is provided an apparatus comprising liquid accommodating container [2] for water accommodation; water lead-out pipe [11] for water emission from the liquid accommodating container [2]; gas accommodating container [1] for compressed air accommodation; and introduction pipe [6] for feeding of the compressed air within the gas accommodating container [1] into the liquid accommodating container [2], so that constant-rate water emission from the water lead-out pipe [11] is attained by application of the compressed air to the liquid within the liquid accommodating container [2].

**52. 1020090003284 LIQUID CONSTANT-RATE EMITTING APPARATUS AND METHOD OF LIQUID CONSTANT-RATE EMISSION** KR - 09.01.2009

Int.Class B01J 4/00 Appl.No 1020087023825 Applicant AQUAFAIRY CORPORATION Inventor SUGIMOTO MASAKAZU

A liquid constant-rate emitting apparatus that in the event of delivering a liquid, such as water, from a liquid accommodating container, even when the amount thereof is small, is capable of constant-rate delivery thereof. There is provided an apparatus comprising liquid accommodating container [2] for water accommodation; water lead-out pipe [11] for water emission from the liquid accommodating container [2]; gas accommodating container [1] for compressed air accommodation; and introduction pipe [6] for feeding of the compressed air within the gas accommodating container [1] into the liquid accommodating container [2], so that constant-rate water emission from the water lead-out pipe [11] is attained by application of the compressed air to the liquid within the liquid accommodating container [2]. ©KIP0&WIPO 2009

**53. 2010027594 FUEL CELL** JP - 04.02.2010

Int.Class H01M 8/06 Appl.No 2009074206 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide a fuel cell with a reaction liquid containing section and a fuel generation section separated from each other, generating no useless fuel gas in replacing consumable supplies.

SOLUTION: The fuel cell includes a power generation cell C for generating power when hydrogen gas is supplied from one surface and oxygen is supplied from another surface, a cell holding body A forming an inner space together with the power generation cell C by holding the power generation cell C with the one surface turned inside, a fuel generation section D arranged in the inner space and containing a gas generating agent for generating hydrogen gas by reacting with water, a water containing cartridge B detachable from the cell holding body A, and a reaction liquid introducing mechanism for guiding the water to the gas generating agent 20 in the fuel generation section D. The reaction liquid introducing mechanism includes an outlet port 31a formed on the water containing cartridge B and a water absorbing sheet 20c arranged on the fuel generation section D. When the cartridge B is mounted on the cell holding body A, the water absorbing sheet 20c is inserted in the outlet port 31a, and the water is supplied to the gas generating agent 20 through the water absorbing sheet 20c.

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**54. 101394920 LIQUID CONSTANT-RATE EMITTING APPARATUS AND METHOD OF LIQUID CONSTANT-RATE EMISSION** CN - 25.03.2009

Int.Class B01J 4/00 Appl.No 200780007385.2 Applicant Aquafairy Corp. Inventor Sugimoto Masakazu

A liquid constant-rate emitting apparatus that in the event of delivering a liquid, such as water, from a liquid accommodating container, even when the amount thereof is small, is capable of constant-rate delivery thereof. There is provided an apparatus comprising liquid accommodating container [2] for water accommodation; water lead-out pipe [11] for water emission from the liquid accommodating container [2]; gas accommodating container [1] for compressed air accommodation; and introduction pipe [6] for feeding of the compressed air within the gas accommodating container [1] into the liquid accommodating container [2], so that constant-rate water emission from the water lead-out pipe [11] is attained by application of the compressed air to the liquid within the liquid accommodating container [2].

**55. 2016117601 HYDROGEN GENERATING AGENT, MANUFACTURING METHOD THEREOF AND POWER GENERATOR** JP - 30.06.2016

Int.Class C01B 3/08 Appl.No 2014256957 Applicant ROHM CO LTD Inventor NAKAGAWA ATSUSHI

PROBLEM TO BE SOLVED: To provide a hydrogen generating agent having enhanced tolerance to vibration during transportation and a manufacturing method thereof, and a powder generator to which the hydrogen generating agent is applied.

SOLUTION: A hydrogen generating agent 1 has a bottle shape container B and a solid hydrogen source 3 by containing a water reactive material in a base material containing a resin and solidifying it and the solid hydrogen source 3 is fastened to a bottom in the bottle shape container B. Tolerance to vibration during transportation is enhanced.

SELECTED DRAWING: Figure 1

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**56. 2009070618 POWER FEEDING DEVICE** JP - 02.04.2009

Int.Class H01M 8/04 Appl.No 2007235667 Applicant AQUAFAIRY KK Inventor YANO MASAYA

PROBLEM TO BE SOLVED: To provide a power feeding device having high use efficiency of hydrogen gas irrespective of any charged conditions of a connected apparatus.

SOLUTION: The power feeding device comprises a housing chamber 10 for housing water, a housing chamber 11 for housing a gas generating agent reacting with the water, a valve 13 for opening and closing of a passage supplying the water to the housing chamber 11, a control means 69 for controlling opening and closing of the valve 13 at predetermined opening and closing timing, a fuel cell FC for generating power with supply of hydrogen, a converter 20 for boosting output voltage of the fuel cell FC, an output section 30 for outputting electric power to an external apparatus, an output current detection means for detecting output current of the fuel cell FC, a current control means intervened between an output side of the converter 20 and the output section 30 and controlling the output current from the output section 30 so as not to exceed a set value, and a change means for changing a set-up current value so that a fluctuation pattern for consumption of hydrogen approaches a fluctuation pattern for an amount of supply of hydrogen to the fuel cell FC. The control means 69 can change the opening and closing timing on the basis of detected values of the output current.

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**57. 2017024958 HYDROGEN GENERATOR, MANUFACTURING METHOD THEREOF, AND HYDROGEN GENERATION METHOD**

JP - 02.02.2017

**Int.Class** C01B 3/06      **Appl.No** 2015147853      **Applicant** AQUAFAIRY KK      **Inventor** TATSUMI KAZUHIRO

**PROBLEM TO BE SOLVED:** To provide a hydrogen generator capable of improving utilization efficiency of reaction liquid, and further improving reactivity or responsiveness of hydrogen generation; and to provide a manufacturing method thereof, and a hydrogen generation method.

**SOLUTION:** There is provided a hydrogen generator including a hydrogen generation agent 14 for generating hydrogen by being reacted with reaction liquid 11, and a container 15 for storing the hydrogen generation agent 14. In the hydrogen generator, the container 15 has a feed section 12 for feeding the reaction liquid 11 to a reactive site 17, and the hydrogen generation agent 14 contains a thermosetting resin and a granular metal hydride, and has an erection part 14a along a wall surface of the container 15 with a space 13.

SELECTED DRAWING: Figure 1

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**58. 2009249235 SHEET TYPE HYDROGEN GENERATING AGENT, PLEATED TYPE HYDROGEN GENERATING AGENT, AND METHOD FOR MANUFACTURING THE SAME**

JP - 29.10.2009

**Int.Class** C01B 3/06      **Appl.No** 2008099525      **Applicant** AQUAFAIRY KK      **Inventor** SUGIMOTO MASAKAZU

**PROBLEM TO BE SOLVED:** To provide a sheet type hydrogen generating agent and a pleated type hydrogen generating agent having good handling property, capable of gradually effecting a reaction with a reaction liquid to obtain a more stable hydrogen generation rate, and having a sufficiently high reactivity, and to provide a method for manufacturing these generating agents.

**SOLUTION:** The sheet type hydrogen generating agent has a hydrogen generating layer 2 containing a hydrogen generating agent and a resin, formed on a water absorption sheet 1, wherein, preferably, a hydrophobic porous film 3 is provided on the surface of the hydrogen generating layer 2.

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**59. 2012069407 FUEL BATTERY**

JP - 05.04.2012

**Int.Class** H01M 8/02      **Appl.No** 2010213839      **Applicant** AQUAFAIRY KK      **Inventor** ISHIZAKA HITOSHI

**PROBLEM TO BE SOLVED:** To provide a fuel battery which can securely insulate electrode layers arranged on both sides of a solid polymer electrolyte layer from each other as well as suppress inflow of fuel from the either electrode layer to the other layer even if the solid polymer electrolyte layer is thinned.

**SOLUTION:** The fuel battery comprises: a solid polymer electrolyte layer 1; and a first electrode layer 2 and a second electrode layer 3 provided on both sides of the solid polymer electrolyte layer 1. Each layer is insert-molded and integrated in a resin molding 6. The solid polymer electrolyte layer 1 is configured by bonding two solid polymer electrolyte layer members 1a while holding an insulation member 8 in a peripheral part.

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**60. 2009120441 POWER GENERATING APPARATUS AND POWER GENERATION METHOD**

JP - 04.06.2009

**Int.Class** C01B 3/06      **Appl.No** 2007295718      **Applicant** AQUAFAIRY KK      **Inventor** ISHIZAKA HITOSHI

**PROBLEM TO BE SOLVED:** To provide a power generating apparatus where the output characteristics of a fuel cell is hardly deteriorated with time and space efficiency is excellent and to provide a power generation method.

**SOLUTION:** In the power generating apparatus comprising a hydrogen generating means 10 of generating hydrogen by supplying a reaction liquid 14 to a hydrogen generating agent 11 containing a metal hydride and a solid polyelectrolyte type fuel cell FC to generate power by supplying hydrogen, the hydrogen generating means 10 is characterized in that a granular ammonia removing agent 20 is arranged in a mixed state of the hydrogen generating agent 11 or the ammonia removing agent 20 is arranged in the neighborhood of the hydrogen generating agent 11 in a reaction chamber 12.

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**61. 2011102220 HYDROGEN GENERATOR**

JP - 26.05.2011

**Int.Class** C01B 3/06      **Appl.No** 2009258327      **Applicant** AQUAFAIRY KK      **Inventor** SUGIMOTO MASAKAZU

**PROBLEM TO BE SOLVED:** To provide a hydrogen generator having high stability and reproducibility of hydrogen generation reaction.

**SOLUTION:** The hydrogen generator generates hydrogen by reacting a solid hydrogen generating agent 11 with a reaction liquid, and the hydrogen generator includes: the hydrogen generating agent 11 that expands by the reaction with the reaction liquid; a generating agent housing unit 1 that houses the hydrogen generating agent 11 and is expandable with the expansion of the hydrogen generating agent 11; a reaction liquid housing vessel 2 disposed outside the generating agent housing unit 1 and capable of housing the reaction liquid in a space between the vessel and the generating agent housing unit 1; a water absorber 3 capable of supplying the reaction liquid in the reaction liquid housing vessel 2 to the generating agent housing unit 1; and a hydrogen supply pipe 4 for supplying the hydrogen generating in the generating agent housing unit 1 to the outside of the reaction liquid housing vessel 2. The generating agent housing unit 1 is disposed in such a state that expansion of the housing unit is not inhibited by the inner wall of the reaction liquid housing vessel 2.

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**62. 1020090009237 CHARGER**

KR - 22.01.2009

**Int.Class** H01M 8/04      **Appl.No** 1020087027544      **Applicant** AQUAFAIRY CORPORATION      **Inventor** YANO MASAYA

A charger which can charge a secondary battery suitably with a simple device without particularly requiring fuel supply control, and in which overload to a fuel cell is hard to occur. The charger comprises a fuel supply means (10), a fuel cell (FC) which is supplied with fuel from the fuel supply means (10) to generate and output electricity, a DC voltage conversion circuit (20) for converting the output voltage from the fuel cell (FC) into a predetermined voltage and outputting the converted voltage, an output section (30) connected electrically with one output from the DC voltage conversion circuit (20) in order to output power for charging, a current control circuit (40) interposed between the other output from the DC voltage conversion circuit (20) and the output section (30) and controlling the output current from the output section (30) so as not to exceed a predetermined current value, and a set current alteration means (60) for varying the set current value of the current control circuit (40) such that the variation pattern of fuel consumption approaches the variation pattern of fuel supply to the fuel cell (FC). ©KIPO&WIPO 2009

**63. 2037522 CHARGER**

EP - 18.03.2009

**Int.Class** H01M 8/04      **Appl.No** 07742504      **Applicant** AQUAFAIRY CORP      **Inventor** YANO MASAYA

A charger which can charge a secondary battery suitably with a simple device without particularly requiring fuel supply control, and in which overload to a fuel cell is hard to occur. The charger comprises fuel supply means [10], a fuel cell [FC] which is supplied with fuel from the fuel supply means [10] to generate and output electricity, a DC voltage conversion circuit [20] for converting the output voltage from the fuel cell [FC] into a predetermined voltage and outputting the converted voltage, an output section [30] connected electrically with one output from the DC voltage conversion circuit [20] in order to output power for charging, a current control circuit [40] interposed between the other output from the DC voltage conversion circuit [20] and the output section [30] and controlling the output current from the output section [30] so as not to exceed a predetermined current value, and set current alteration means [60] for varying the set current value of the current control circuit [40] such that the variation pattern of fuel consumption approaches the variation pattern of fuel supply to the fuel cell [FC],

64. **20090167239** CHARGER

US - 02.07.2009

Int.Class H02J 7/00 Appl.No 12299180 Applicant AQUAFAIRY CORPORATION, KYODAI-KATSURA VENTURE Inventor Yano Masaya

(EN) A charger which can charge a secondary battery suitably with a simple device without particularly requiring fuel supply control, and in which overload to a fuel cell is hard to occur. The charger comprises a fuel supply means [10], a fuel cell [FC] which is supplied with fuel from the fuel supply means [10] to generate and output electricity, a DC voltage conversion circuit [20] for converting the output voltage from the fuel cell [FC] into a predetermined voltage and outputting the converted voltage, an output section [30] connected electrically with one output from the DC voltage conversion circuit [20] in order to output power for charging, a current control circuit [40] interposed between the other output from the DC voltage conversion circuit [20] and the output section [30] and controlling the output current from the output section [30] so as not to exceed a predetermined current value, and a set current alteration means [60] for varying the set current value of the current control circuit [40] such that the variation pattern of fuel consumption approaches the variation pattern of fuel supply to the fuel cell [FC].

65. **2010132507** CARRIER HAVING HYDROGEN GENERATING AGENT THEREON AND METHOD FOR MANUFACTURING THE SAME

JP - 17.06.2010

Int.Class C01B 3/06 Appl.No 2008311300 Applicant AQUAFAIRY KK Inventor ISHIZAKA HITOSHI

PROBLEM TO BE SOLVED: To provide a carrier having a hydrogen generating agent thereon which has good handleability, and gradually proceeds a reaction with a reaction liquid and exhibits a more constant hydrogen generating rate, and moreover has a sufficiently high reaction ratio; and to provide a method for manufacturing the same.

SOLUTION: The carrier having hydrogen generating agent thereon is such that a hydrogenated boron metal compound and an alkaline substance are carried on a water absorbing material 1. The method for manufacturing a carrier having a hydrogen generating agent thereon comprises a step of impregnating a water absorbing material 1 with a solution in which a hydrogenated boron metal compound and an alkaline substance are dissolved in a solvent, and a step of removing the solvent from the resultant water absorbing material 1 to make the water absorbing material 1 carry the hydrogenated boron metal compound and the alkaline substance.

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66. **2010006673** HYDROGEN GENERATING AGENT

JP - 14.01.2010

Int.Class C01B 3/08 Appl.No 2008171118 Applicant AQUAFAIRY KK Inventor ISHIZAKA HITOSHI

PROBLEM TO BE SOLVED: To provide a hydrogen generating agent efficiently generating hydrogen gas at room temperature and easily controlling the hydrogen generation rate.

SOLUTION: The hydrogen generating agent contains an alloy containing magnesium and calcium, and preferably, further containing aluminum.

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67. **101438443** CHARGER

CN - 20.05.2009

Int.Class H01M 8/04 Appl.No 200780016486.6 Applicant Aquafairy Corp. Inventor Yano Masaya

A charger which can charge a secondary battery suitably with a simple device without particularly requiring fuel supply control, and in which overload to a fuel cell is hard to occur. The charger comprises fuel supply means [10], a fuel cell [FC] which is supplied with fuel from the fuel supply means [10] to generate and output electricity, a DC voltage conversion circuit [20] for converting the output voltage from the fuel cell [FC] into a predetermined voltage and outputting the converted voltage, an output section [30] connected electrically with one output from the DC voltage conversion circuit [20] in order to output power for charging, a current control circuit [40] interposed between the other output from the DC voltage conversion circuit [20] and the output section [30] and controlling the output current from the output section [30] so as not to exceed a predetermined current value, and set current alteration means [60] for varying the set current value of the current control circuit [40] such that the variation pattern of fuel consumption approaches the variation pattern of fuel supply to the fuel cell [FC].

68. **2651381** CHARGER

CA - 15.11.2007

Int.Class H01M 8/04 Appl.No 2651381 Applicant AQUAFAIRY CORPORATION Inventor YANO, MASAYA

A charger which can charge a secondary battery suitably with a simple device without particularly requiring fuel supply control, and in which overload to a fuel cell is hard to occur. The charger comprises a fuel supply means [10], a fuel cell [FC] which is supplied with fuel from the fuel supply means [10] to generate and output electricity, a DC voltage conversion circuit [20] for converting the output voltage from the fuel cell [FC] into a predetermined voltage and outputting the converted voltage, an output section [30] connected electrically with one output from the DC voltage conversion circuit [20] in order to output power for charging, a current control circuit [40] interposed between the other output from the DC voltage conversion circuit [20] and the output section [30] and controlling the output current from the output section [30] so as not to exceed a predetermined current value, and a set current alteration means [60] for varying the set current value of the current control circuit [40] such that the variation pattern of fuel consumption approaches the variation pattern of fuel supply to the fuel cell [FC].

69. **2008153019** MANUFACTURING METHOD FOR UNIT CELL OF FUEL CELL

JP - 03.07.2008

Int.Class H01M 8/02 Appl.No 2006338687 Applicant AQUAFAIRY KK Inventor SUGIMOTO MASAKAZU

PROBLEM TO BE SOLVED: To provide the manufacturing method for unit cell of fuel cell, capable of satisfactorily keeping electrical contact between a metal plate and a membrane-electrode assembly.

SOLUTION: The manufacturing method of the unit cell of the fuel cell, having a plate-like membrane-electrode assembly and first and second metal plates 5, arranged on each side of the membrane-electrode assembly and mechanically sealing the peripheral regions of these metal plates 5 via an insulating layer has at least a process in which the first metal plate, having an erected part in the peripheral region 5a; the membrane-electrode assembly, and the second metal plate 5 are set vertically, in this order; and the erected part of the peripheral region of the first metal plate is bent inward to be caulked for sealing, and thereafter, a process working the overall shape of the unit cell, from a plane shape to an arch shape.

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**70. 2008266037 HYDROGEN GENERATING APPARATUS**

JP - 06.11.2008

**Int.Class** C01B 3/08      **Appl.No** 2007107263      **Applicant** AQUAFAIRY KK      **Inventor** SUGIMOTO MASAKAZU

**PROBLEM TO BE SOLVED:** To provide a hydrogen generating apparatus in which a liquid discharged together with hydrogen gas from a reactor can be reused without discarding.

**SOLUTION:** The hydrogen generating apparatus comprises: a gas storage vessel 1 in which compressed air for applying pressure to water is stored; a liquid storage vessel 2 in which the water is stored; a liquid discharge passage 17 for discharging the water which receives pressure from the liquid storage vessel 2; a reactor 3 containing a hydrogen generating agent A which reacts with water discharged from the liquid discharge passage 17 to generate hydrogen gas; hydrogen discharge passages 19, 20 for discharging hydrogen gas generated in the reactor 3; an accumulation vessel 4 which is disposed on the course of the hydrogen discharge passages 19, 20 and in which water discharged with the hydrogen gas is accumulated; a water replenishment passage 24 for feeding the water in the accumulation vessel 4 into the liquid storage vessel 2; a check valve 25 put on the course of the water replenishment passage 24; and a degassing part 15 for discharging the compressed air to the outside of the vessel, wherein since the compressed air is discharged from the degassing part 15, it is made possible to feed the water in the accumulation vessel 4 into the liquid storage vessel 2 via the check valve 25.

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**71. 2016115531 FUEL BATTERY SYSTEM, CARBONIZATION PREVENTING METHOD FOR SOLID HYDROGEN SOURCE AND FUEL BATTERY CELL ACTIVATION METHOD**

JP - 23.06.2016

**Int.Class** H01M 8/06      **Appl.No** 2014253289      **Applicant** ROHM CO LTD      **Inventor** TAKAHASHI TETSUYA

**PROBLEM TO BE SOLVED:** To provide a fuel battery system, a carbonization preventing method and a fuel battery cell activation method that can reduce carbonization of a solid hydrogen source and activate a fuel battery cell.

**SOLUTION:** A fuel battery system 20 has a pressurization container 10 for pressurizing water to drain water, a fuel container 50 for housing a solid hydrogen source 1 which reacts with water supplied from the pressurization container 10 to generate hydrogen, a fuel battery 30 for generating power with the supplied hydrogen, hydrogen supply pipes 15A and 15B which are connected to the fuel container and supplies hydrogen to the fuel batter, reaction liquid supply pipes 14A and 14B which are connected to the pressurization container at one ends thereof and inserted in the solid hydrogen source at the other ends thereof to inject water, pressurization pipes 13A and 13B which intercommunicate with the fuel container and are connected to the pressurization container through a check valve 2 for permitting flow-in of hydrogen, a first pressure detector 13P disposed in the pressurization pipe to detect water pressure, and a second pressure detector 15P disposed in the hydrogen supply pipe to detect hydrogen pressure. Water is intermittently injected by changing the differential pressure between the water pressure and the hydrogen pressure.

SELECTED DRAWING: Figure 10

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**72. 2009230902 FUEL CELL**

JP - 08.10.2009

**Int.Class** H01M 8/06      **Appl.No** 2008071842      **Applicant** AQUAFAIRY KK      **Inventor** SUGIMOTO MASAKAZU

**PROBLEM TO BE SOLVED:** To provide a fuel cell in which a fuel gas generation section can be easily attached and detached from a fuel cell body section and coming-off of a pipe between the fuel cell body section and the fuel gas generation section can be surely prevented.

**SOLUTION:** The fuel cell includes a body section in which power generating cells C to generate power by being supplied with hydrogen gas are installed and a fuel gas generation section B which has a water container B1 for containing water and a fuel container B2 for containing a fuel to generate hydrogen by reacting with water. The body section and the fuel gas generation section B are mutually connected by a pipe and a pipe insertion part, and in a state connected by the pipe, the fuel gas generation section B is locked to the body section by a locking member 48, and the locking state is released by giving an external force to a pressing member 49 which is interlocked to the locking member 48.

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**73. 2016117602 HYDROGEN GENERATING AGENT, MANUFACTURING METHOD THEREOF AND POWER GENERATOR**

JP - 30.06.2016

**Int.Class** C01B 3/06      **Appl.No** 2014256959      **Applicant** ROHM CO LTD      **Inventor** NAKAGAWA ATSUSHI

**PROBLEM TO BE SOLVED:** To provide a hydrogen generation agent suppressing poisoning at low cost while using a hydrogen generation source with relatively low purity and capable of suppressing irreversible deterioration of a powder generating cell and a manufacturing method thereof, and a powder generator to which the hydrogen generation agent is applied.

**SOLUTION:** Hydrogen generation agents 1A and 1B have a base material containing a resin 51, a water reactive material (hydrogenated calcium 52) and a remover 500 for removing predetermined impurities contained in the water reactive material (ammonia) and the base material containing a resin 51 contains the water reactive material and the remover 500.

SELECTED DRAWING: Figure 4

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**74. 2016117620 HYDROGEN PRODUCTION APPARATUS, AND HYDROGEN GENERATING VESSEL**

JP - 30.06.2016

**Int.Class** C01B 3/08      **Appl.No** 2014258530      **Applicant** KYOTO UNIV      **Inventor** HIRAO KAZUYUKI

**PROBLEM TO BE SOLVED:** To provide a hydrogen production apparatus and a hydrogen generating vessel, capable of generating hydrogen continuously for a long time without reducing a total generation amount of hydrogen when producing hydrogen using a reaction between water and aluminum, and easy to handle a material for generating hydrogen.

**SOLUTION:** A hydrogen production apparatus 1 is constituted by: a hydrogen generator 10; a hydrogen purifier 20 for removing impurities from hydrogen generated in the hydrogen generator 10; a hydrogen reservoir 30 for reserving hydrogen after purifying; and pipes 43-45 connecting them. The hydrogen generator 10 is constituted by a hydrogen generating vessel 11, and a cooler 12 for cooling the hydrogen generating vessel 11. One gas inlet 13, one gas outlet 14, one safety valve port 15 and one water filler 16, and three attachment ports 17 for attaching a probe of a temperature detector 40 are provided on the upper part of the hydrogen generating vessel 11.

SELECTED DRAWING: Figure 1

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