



US 20050006228A1

(19) **United States**

(12) **Patent Application Publication**
Hyun

(10) **Pub. No.: US 2005/0006228 A1**

(43) **Pub. Date: Jan. 13, 2005**

(54) **BROWN'S GAS GENERATOR**

(30) **Foreign Application Priority Data**

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Feb. 4, 2002 (KR)..... 10-2002-006146

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Publication Classification

(51) **Int. Cl.⁷ C25B 9/00**

(52) **U.S. Cl. 204/274; 204/239; 204/278**

(57) **ABSTRACT**

A Brown's gas generator includes a structure in which Brown's gas is independently generated in different portions within an electrolytic cell in which electrolysis of an electrolyte is performed, and water supply and water cooling are individually accomplished for the different portions, so that the temperature in the electrolytic cell is maintained in an optimal condition and the generation efficiency of Brown's gas is maximized.

(21) Appl. No.: **10/910,634**

(22) Filed: **Aug. 4, 2004**

Related U.S. Application Data

(63) Continuation of application No. PCT/KR02/01794, filed on Sep. 23, 2002.

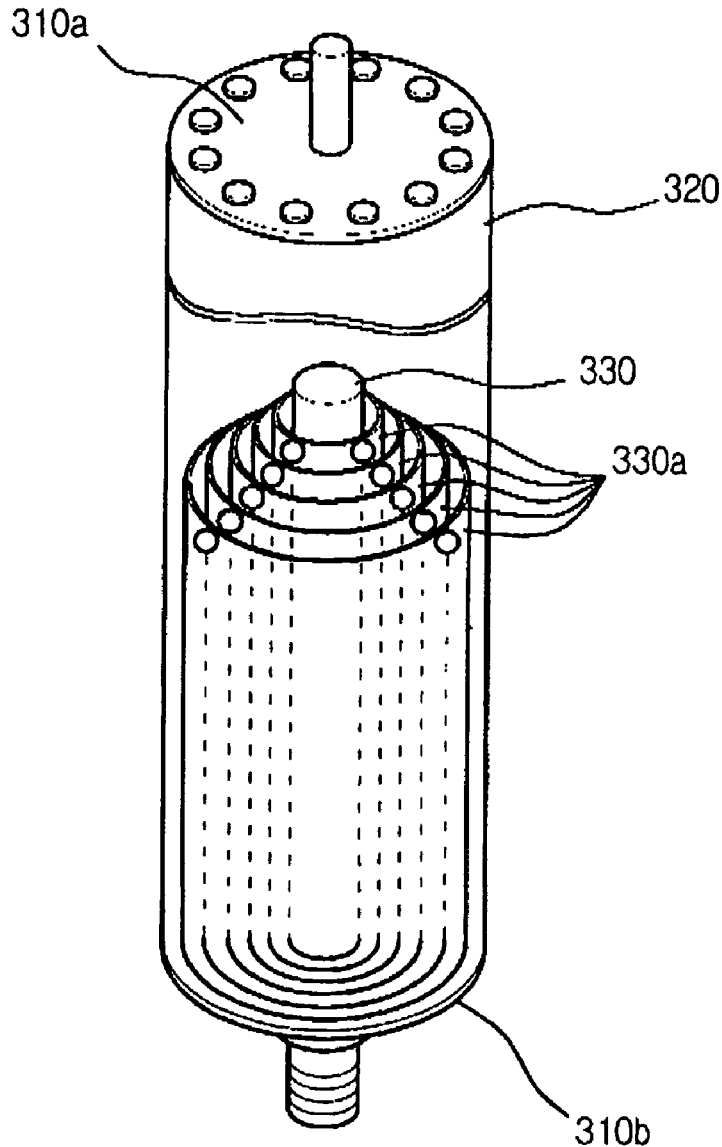


Fig. 1

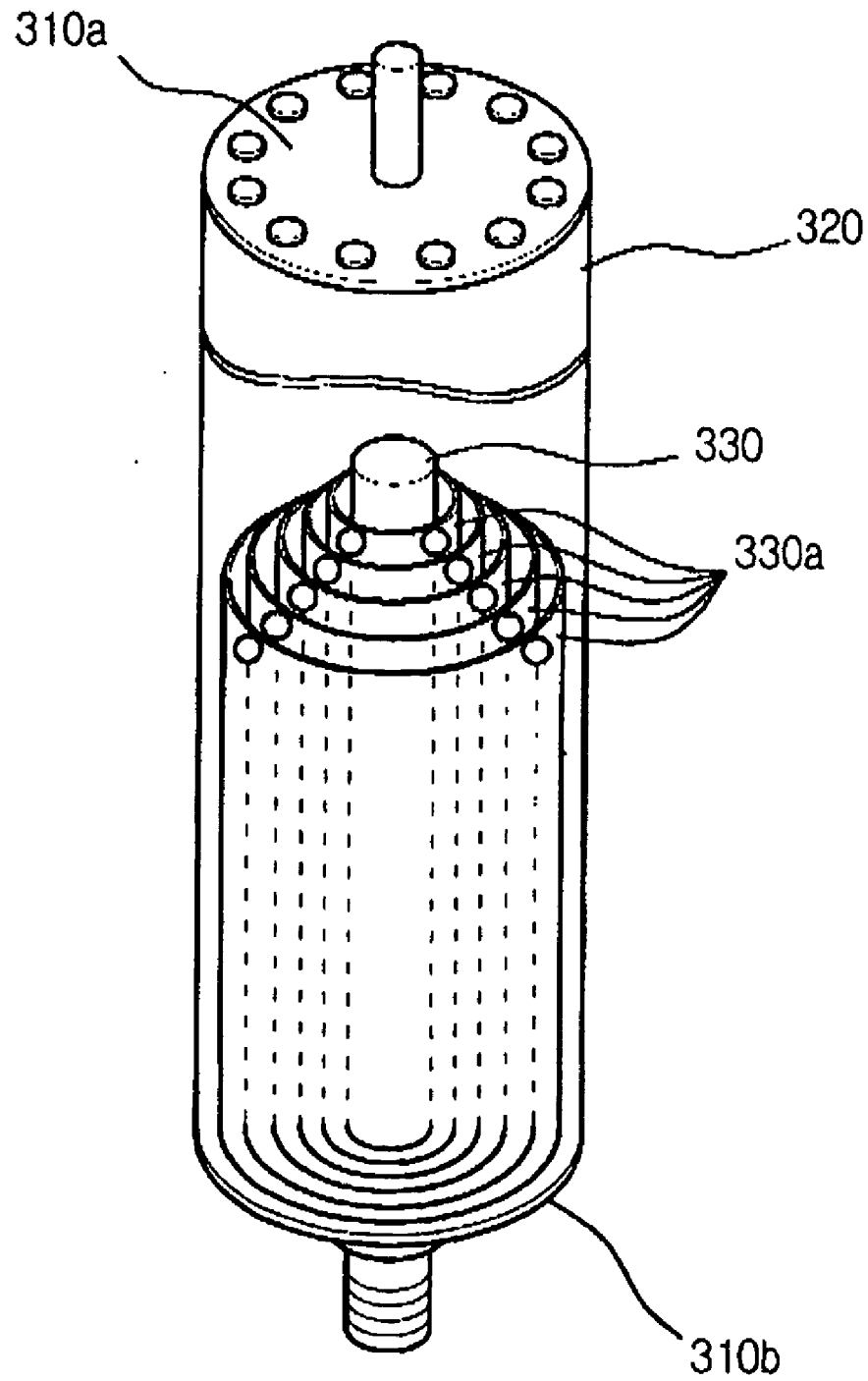


Fig.2

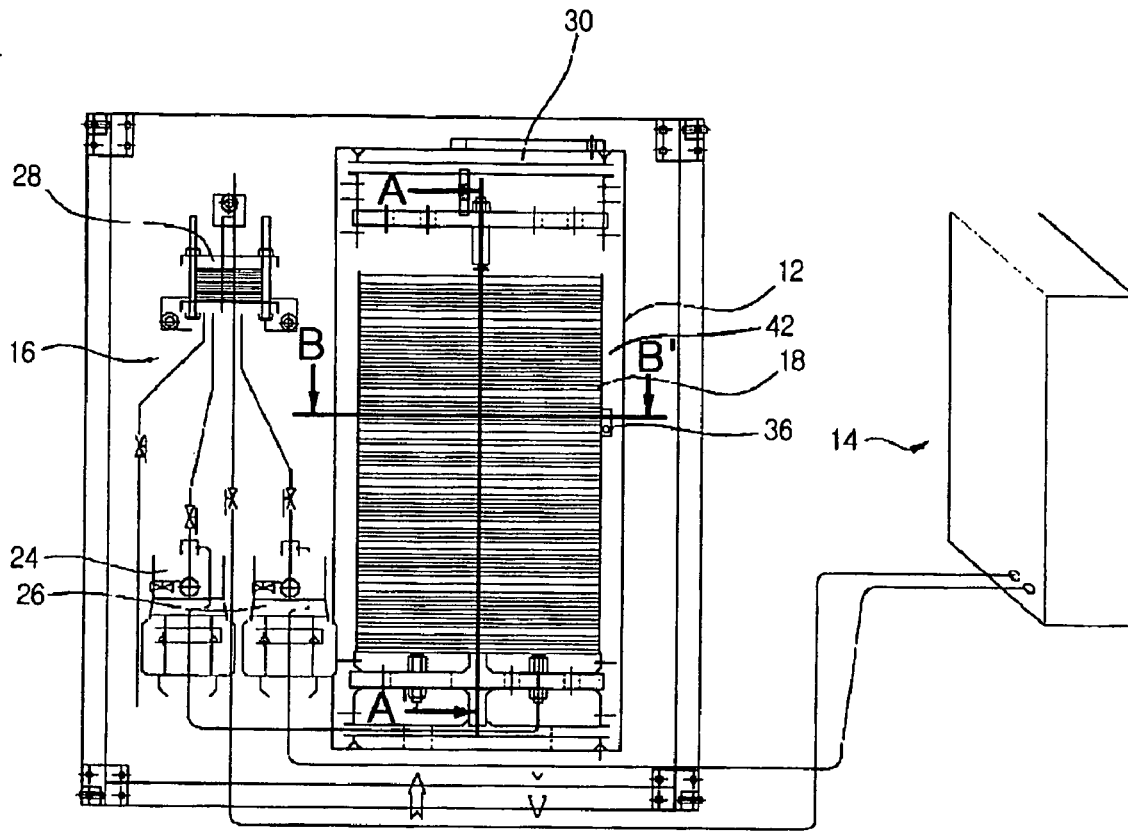


Fig.3

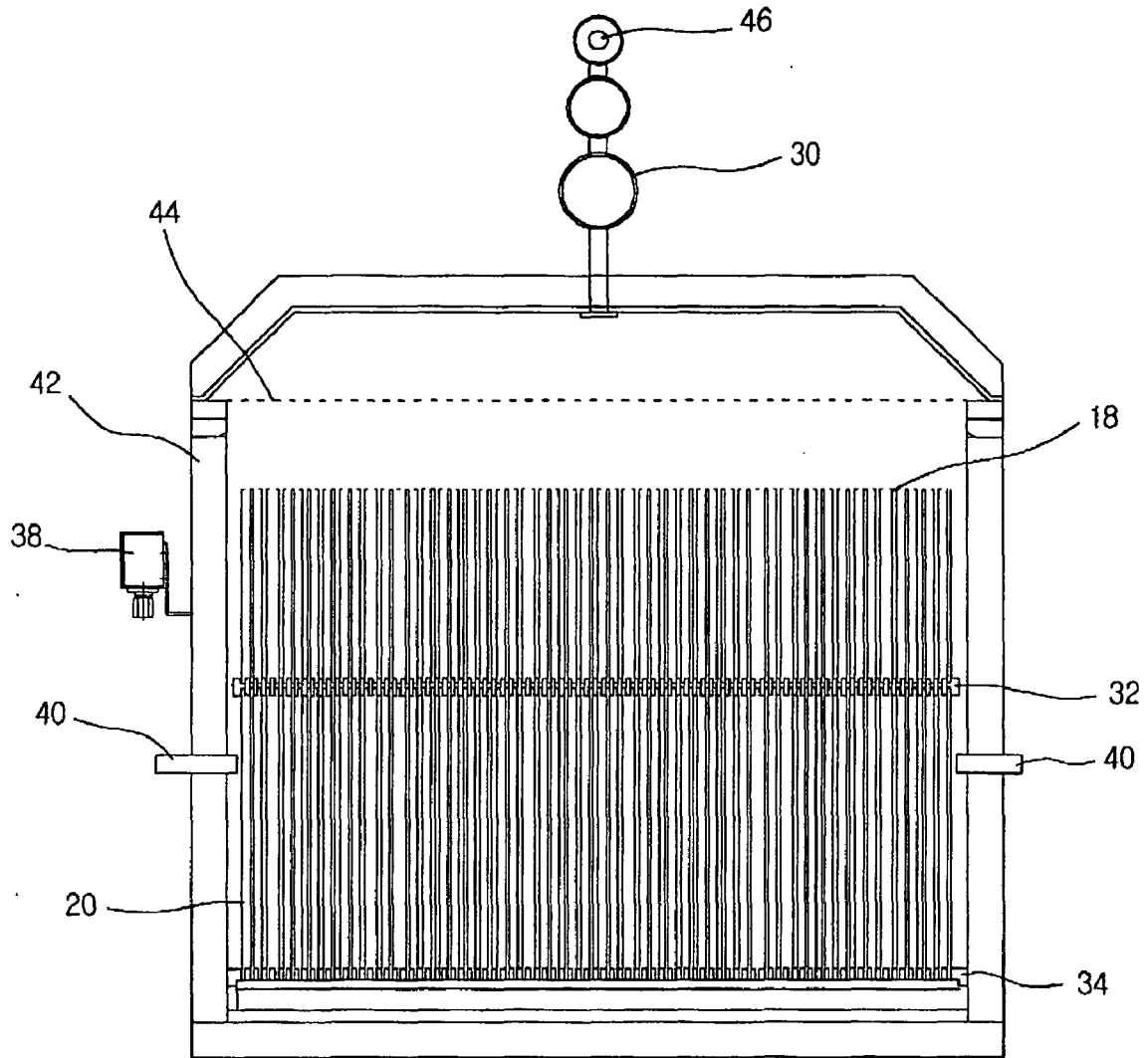


Fig.4

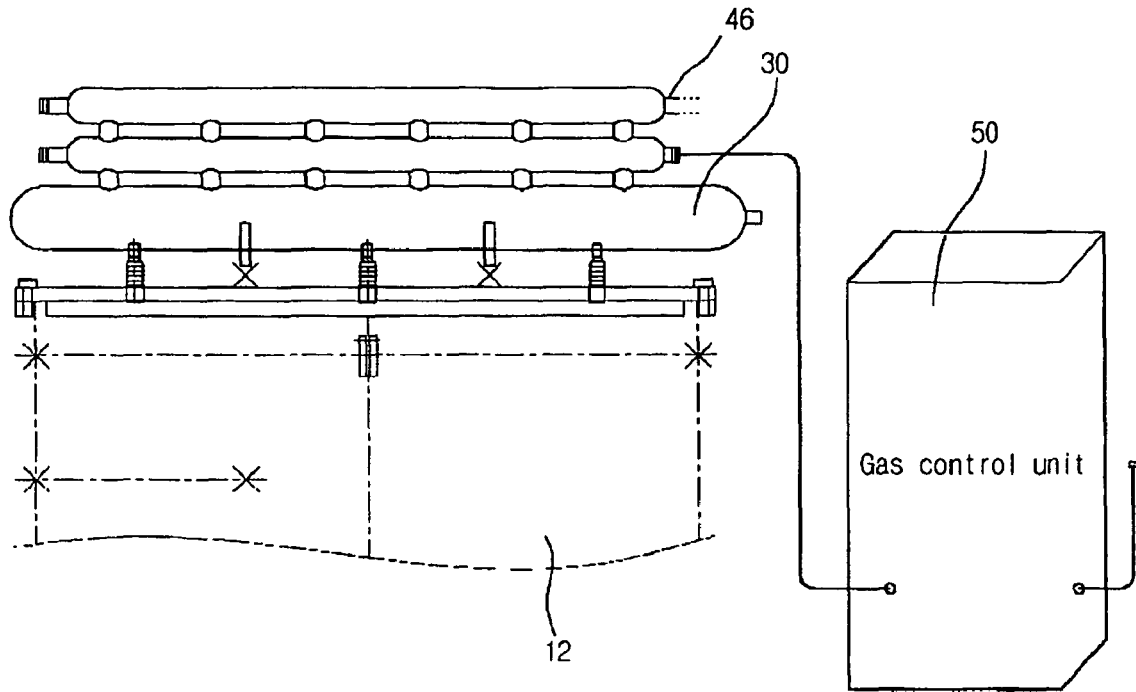
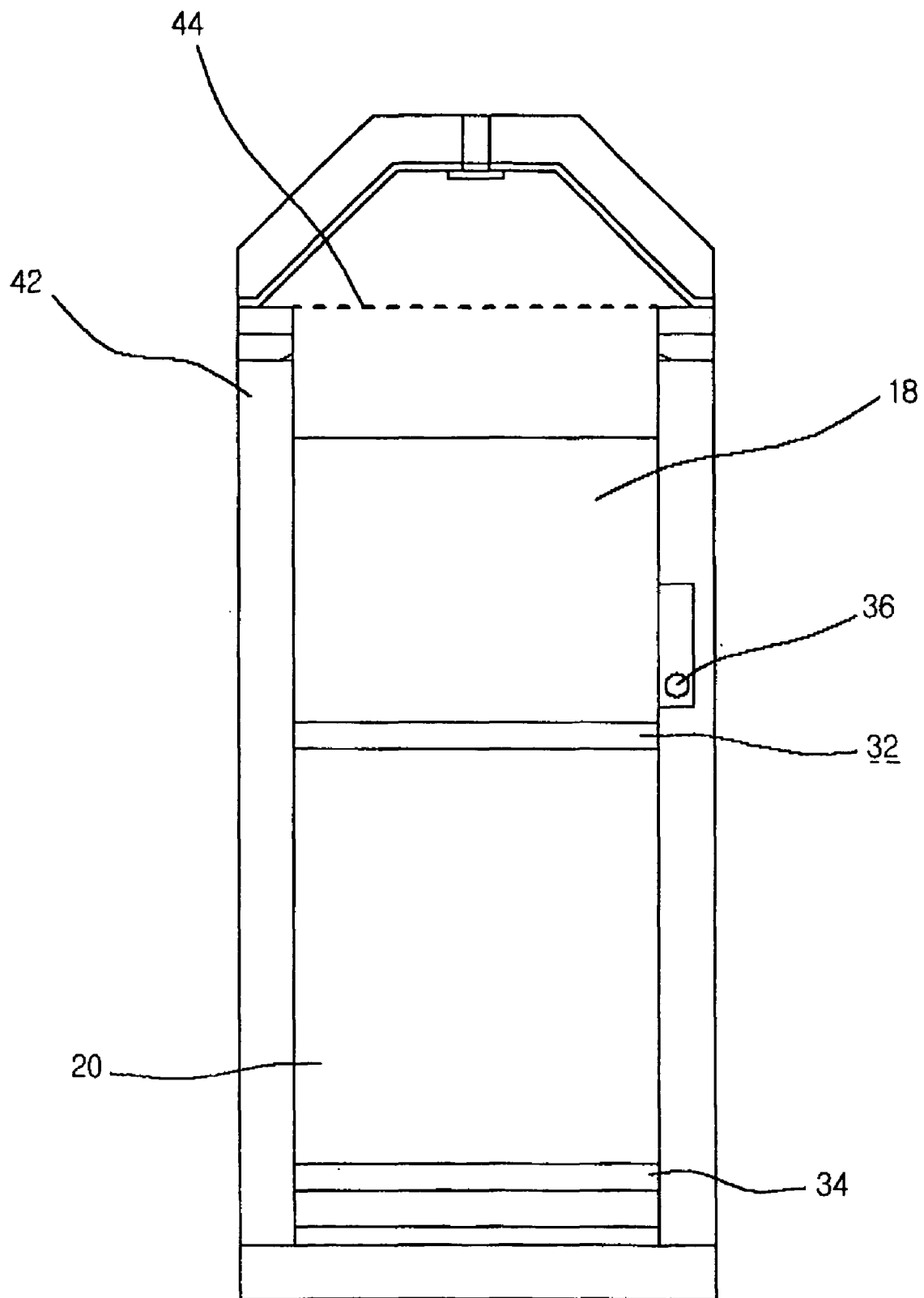


Fig.5



BROWN'S GAS GENERATOR

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of PCT Application No. PCT/KR02/01794, filed on Sep. 23, 2002, and titled "Brown's Gas Generator," which claims priority from Korean Patent Application No. 10-2002-0006146 filed on Feb. 4, 2002, and titled "Brown's Gas Generator," the entire contents of which are hereby incorporated by reference.

TECHNICAL FIELD

[0002] The present invention relates to a Brown's gas generator, and more particularly, to a Brown's gas generator with a structure in which Brown's gas is independently generated therewithin, thereby improving generation efficiency of Brown's gas.

BACKGROUND ART

[0003] Brown's gas is a gas obtained by electrolysis of water and a mixed gas of hydrogen and oxygen in the ratio of 2:1. Generally, if water is electrolyzed, hydrogen and oxygen are generated in a negative pole and a positive pole, respectively. At this time, Brown's gas can be obtained by simultaneously collecting the two gases, not by separately collecting them.

[0004] Unlike general gases, Brown's gas has a peculiar property that causes an implosion phenomenon during the combustion thereof. In other words, an explosion phenomenon does not occur during the combustion of Brown's gas. Instead, flames are inwardly gathered to thereby form a focus and make surroundings vacuous.

[0005] As a result, if Brown's gas is burnt, it is possible to obtain an ultrahigh temperature at which even tungsten having the highest melting point can be sublimated.

[0006] Additionally, since thermic rays are not radiated outwardly, there is no loss of energy, which is caused by a radiant heat, thus obtaining excellent energy efficiency.

[0007] An additional oxygen supply is unnecessary during the combustion of Brown's gas since Brown's gas itself contains oxygen. Further, there is no pollution problem since only water is generated as combustion products.

[0008] Because of the above-described merits, Brown's gas generators have been incessantly improved in performance and safety and are widely used.

[0009] FIG. 1 is a view schematically showing an electrolytic cell of a conventional Brown's gas generator.

[0010] Hereinafter, the electrolytic cell of the conventional Brown's generator will be described with reference to FIG. 1.

[0011] Korean Utility Registration No. 20-203926, issued on Sep. 8, 2000, discloses the electrolytic cell of the Brown's gas generator, in which a plurality of inner tubs 330a are fixed within an outer tub 320 by upper and lower fixing plates 310a and 310b formed of an insulator.

[0012] Here, the inner tubs 330a function as electrodes and are preferably manufactured by plating a surface of mild steel with nickel in an electroless method. Also, the inner

tubs 330 can be variously formed in a cylinder shape, a rectangular shape or a polygonal cylinder shape.

[0013] The electrolytic cell is filled with an electrolyte in which water and electrolyte (KOH) are mixed with each other. A central rod 330, the inner tubs 330a standing upright, and the outer tub 320 disposed at the outermost position are coupled to the upper and lower fixing plates 310a and 310b formed of insulating materials, thus maintaining an insulated state with each other. However, since the electrolyte is filled between the respective members, the inner tubs 330a alternately set to a positive pole (+) and a negative pole (-) if a current is applied to both the central rod 330 and the outer tub 320.

[0014] As described above, due to a current alternately induced at the respective inner tubs 330a as the positive pole (+) and the negative pole (-), oxygen and hydrogen are generated and mixed with each other to thereby generate Brown's gas.

[0015] In such an electrolytic cell, heat caused by the current is inevitably generated when Brown's gas is generated using the electrolysis. When a temperature within the electrolytic cell is in the range of 50° to 60°, Brown's gas can be generated maximally. Meanwhile, if a temperature within the electrolytic cell is higher than 60°, the generation amount of Brown's gas is rapidly reduced.

[0016] Therefore, if the temperature within the electrolytic cell is increased beyond a predetermined temperature when generating Brown's gas, a temperature of the electrolyte must be lowered.

[0017] According to the related art, in order to lower the temperature of the electrolyte contained in the electrolytic cell, fins are provided, which are in contact with an outer periphery of the outer tub and have a wide heat radiation area, as shown in FIG. 1. By contacting the fins with a cool air using a fan, the outer tub is refrigerated and thus the electrolyte contacted with the refrigerated outer tub is also cooled.

[0018] However, in case that the electrolytic cell is refrigerated using the air-cooled method as described above, the outer tub contacted with the fin is primarily refrigerated due to the cool air, and the electrolyte is cooled by its interfacial contact with an inner periphery of the refrigerated outer tub. Consequently, the cooling performance is degraded due to the delay of the cooling time. Therefore, the productivity of Brown's gas is degraded because it is difficult to maintain the electrolytic cell at the optimal temperature (50° to 60°) when generating Brown's gas.

[0019] Additionally, although the electrolytic cell (an electrolytic plate) has been formed in a cylinder shape, a flat-panel shape or a polygonal shape so as to widen the electrolytic area, there is still a limitation on the widening of the electrolytic area.

[0020] Further, the electrolyte is electrolyzed only between the respective inner tubs 330a facing each other, thus generating Brown's gas. At this time, the electrolyte exists independently between the respective inner tubs 330a and it is also replete enough to make all the inner tubs 330a electrified. Therefore, a voltage is also applied between the inner tubs 330a having no relation to the generation of Brown's gas so that a current flows through them. As a

result, an electric loss is incurred. Accordingly, the conventional Brown's gas generator has a disadvantage that degrades the efficiency of gas generation considering the voltage applied from an exterior.

DISCLOSURE OF THE INVENTION

[0021] Accordingly, the present invention is directed to a Brown's gas generator that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

[0022] An object of the present invention is to provide a Brown's gas generator, in which predetermined portions where an electrolysis of an electrolyte is performed are independently provided within an electrolytic cell and water supply and water cooling are individually carried out to the independent portions, thereby maintaining the temperature in the electrolytic cell at an optimal condition and maximizing the generation efficiency of Brown's gas.

[0023] Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention will be realized and attained by the structure particularly pointed out in the written description and claims thereof as well as the appended drawings.

[0024] To achieve the object, there is provided a Brown's gas generator, which comprises: an electrolytic cell having a structure in which flat-type pole plates/insulating plates are coupled in pair with another flat-type pole plates/insulating plates, which are in interfacial contact with the flat-type pole plates/insulating plates, to thereby independently generate Brown's gas, the flat-type pole plates and the insulating plates being fixed at the same positions upward and downward around a middle fixing plate, the flat-type pole plates and the insulating plates being coupled at a regular interval by the middle fixing plate; an electrolyte adjustment means for circulating an electrolyte contained in the electrolytic cell to exchange heat of the electrolyte, and for replenishing a lack of the electrolyte; a refrigerating means for adjusting a temperature of the electrolyte by refrigerating a heat exchanger of the electrolyte adjustment means to a predetermined temperature when the heat of the electrolyte is exchanged; and a multi-stage demister installed in an upper portion of the electrolytic cell, for collecting Brown's gas in one place.

[0025] The Brown's gas generator of the present invention has a structure in which the flat-type pole plate/insulating plate is coupled in pair with another flat-type pole plate/insulating plate, which is in interfacial contact with the flat-type pole plate/insulating plate, to thereby independently generate Brown's gas. In other words, since flat-type pole plate and corresponding insulating plate forms one unit to independently generate Brown's gas without being influenced by other units, Brown's gas can be efficiently generated without any electric loss. Additionally, because the electrolyte is independently supplied and circulated to the respective units, it is possible to maintain the optimal temperature for the generation of Brown's gas.

[0026] It is to be understood that both the foregoing general description and the following detailed description

are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

[0028] In the drawings:

[0029] **FIG. 1** is a view schematically showing an electrolytic cell of a conventional Brown's gas generator;

[0030] **FIG. 2** is a view showing a construction of a Brown's gas generator in accordance with the present invention;

[0031] **FIG. 3** is a side sectional view of the electrolytic cell installed within the Brown's gas generator in accordance with the present invention, taken along the line A-A';

[0032] **FIG. 4** is a view of a demister installed in an upper portion of the electrolytic cell of the Brown's gas generator in accordance with the present invention; and

[0033] **FIG. 5** is a sectional view of an inside of the electrolytic cell including the water level sensor installed in the Brown's gas generator of **FIG. 2**, taken along the line B-B'.

DETAILED DESCRIPTION

[0034] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[0035] **FIG. 2** is a view showing a construction of a Brown's gas generator in accordance with the present invention, and **FIG. 3** is a side sectional view of the electrolytic cell installed within the Brown's gas generator of the present invention, taken along the line A-A'.

[0036] Here, **FIG. 2** is a top view of the Brown's gas generator, in which a demister is not shown in **FIG. 2** so as to explain an inner structure of the electrolytic cell.

[0037] Additionally, although **FIG. 3** is a side sectional view illustrating a predetermined portion of the electrolytic cell of **FIG. 2**, the demister that is not shown in **FIG. 2** is illustrated in **FIG. 3**.

[0038] A construction of the Brown's gas generator in accordance with the present invention will be described below with reference to **FIGS. 2 and 3**.

[0039] The Brown's gas generator of the present invention includes: an electrolytic cell **12** having flat-type pole plates **20** and insulating plates **18** coupled to a middle fixing plate **32**, in which an electrolyte consisting of water and electrolyte (KOH) is filled therein and the Brown's gas is generated by electrolyzing the electrolyte using an induced current generated alternately between the flat-type pole plates **20**; an electrolyte adjustment unit **16** for exchanging a heat of the electrolyte and replenishing a lack of the electrolyte, in which the electrolyte adjustment unit **16** includes a circulation pump **24** for circulating the electrolyte contained in the electrolytic cell **12**, a quantitative pump **26** for supplying

water, and a heat exchanger 28 for performing a heat exchange after the electrolyte introduced into a refrigerating unit 14 is cooled and circulating the electrolyte to the electrolytic cell 12; and the refrigerating unit 14 for automatically lowering a temperature of the electrolyte by refrigerating the heat exchanger 28 to a predetermined temperature when the heat of the electrolyte contained in the electrolytic cell is exchanged through the heat exchanger 28.

[0040] A construction of the electrolytic cell 12 will be described below in detail.

[0041] Referring to FIG. 3, the electrolytic cell 12 includes: a lower fixing plate 34; a plurality of flat-type pole plates 20 coupled to a middle fixing plate 32, an upper portion of the lower fixing plate 34 and a lower portion of the middle fixing plate 32 at regular intervals; and a plurality of insulating plates 18 coupled to an upper portion of the middle fixing plate 32 at the same intervals as the flat-type pole plates 20.

[0042] Additionally, multi-stage demister 30 for collecting the generated gas is installed in an upper portion of the electrolytic cell 12. A water prevention screen 44 is formed between the upper portion of the electrolytic cell 12 and the demister 30. A gas exhaust hole 46 is installed in the uppermost portion of the demister 30.

[0043] Further, a pressure sensor 38 is attached to a lateral outside of the electrolytic cell 12. A water level sensor (not shown) is internally installed in a predetermined space inside an electrolytic cell case 42 adjacent to a lateral side of the electrolytic cell 12. An electricity lead-in unit 40 passing through the electrolytic cell case 42 is installed in a lateral side of the electrolytic cell 12 and a lateral outside facing the electrolytic cell 12.

[0044] An operation of the Brown's gas generator in accordance with the present invention will be described below in detail.

[0045] The middle fixing plate 32 and the lower fixing plate 34 are formed of an insulator. Preferably, the flat-type pole plate 20 functioning as an electrode is manufactured by a plating surface of mild steel with nickel in an electroless method. The insulating plate 18 is formed of an insulator.

[0046] Additionally, the flat-type pole plates 20 and the insulating plates 18 are coupled to the lower and upper portions of the middle fixing plate 32 at the same intervals. The flat-type pole plates 20 and the insulating plates 18, which are in interfacial contact with each other, are coupled in pair and each pair form one unit as an independent structure that generates Brown's gas.

[0047] In other words, one flat-type pole plate/insulating plate is coupled in pair with corresponding flat-type pole plate/insulating plate, which is in contact with the flat-type pole plate/insulating plate, and the respective pairs independently generate Brown's gas.

[0048] Describing the structure in detail, the flat-type pole plates 20 facing each other alternately set to a positive pole (+) and a negative pole (-) due to a voltage applied to the electricity lead-in unit 40 passing through the lateral side of the electrolytic cell 12, and the electrolyte filled between them is electrolyzed to thereby generate Brown's gas.

[0049] At this time, the electrolyte filled within the electrolytic cell must maintain a water level higher than the

uppermost portion of the flat-type pole plate, i.e., the lower portion of the middle fixing plate 32.

[0050] According to the related art, in that case, a voltage is applied due to the conductive electrolyte between the flat-type pole plates having no relation to the generation of Brown's gas so that a current flows through them. As a result, an electric loss is incurred. Accordingly, the conventional Brown's gas generator has a disadvantage that degrades the efficiency of gas generation considering the voltage applied from an exterior.

[0051] In order to overcome the disadvantage of the related art, the electrolytic cell 12 of the present invention makes the electrolyte not flow to the flat-type pole plates 20, which do not correspond to the insulating plates coupled to the middle fixing plate 32 at the same intervals as the flat-type pole plates 20, even when the electrolyte maintains the water level higher than the uppermost portion of the flat-type pole plate 20.

[0052] Here, the middle fixing plate 32 has holes between the flat-type pole plates 20 and the insulating plates 18, which are coupled at regular intervals, so that the electrolyte flows up and down the middle fixing plate 32 between the flat-type pole plates 20 and the insulating plates 18, which are coupled in pair.

[0053] In other words, the electrolyte flows only in the independent structure in which the flat-type pole plate/insulating plate is coupled in pair with another flat-type pole plate/insulating plate, which is in interfacial contact with the flat-type pole/insulating plate, and the electrolyte does not flow in the flat-type pole plates that do not correspond to the insulating plates.

[0054] Accordingly, due to the applied voltage, the corresponding flat-type pole plates 20 electrolyze the electrolyte existing between them without any electric loss, thereby efficiently generating Brown's gas.

[0055] Additionally, considering that the water level of the electrolyte rises due to increases in volume and pressure of the electrolyte heated by the electrolysis, the insulating plate 18 is manufactured high enough.

[0056] As is well known, when generating Brown's gas, the optimal temperature of the electrolyte contained in the electrolytic cell 12 is about 50° to 60°. However, since the electrolytic cell 12 generates a high-temperature heat during the electrolysis, if the electrolytic cell 12 is not refrigerated, the generation amount of Brown's gas is rapidly reduced due to the rising temperature.

[0057] Accordingly, in the Brown's gas generator of the present invention, the refrigerating unit 14 is installed in an outside of the electrolytic cell 12. Also, the electrolyte contained in the electrolytic cell 12 is circulated through the heat exchanger 28 so that the heat exchanger 28 is refrigerated. As a result, since the temperature of the electrolyte is lowered, the temperature of the electrolytic cell 12 can be always maintained to a constant state.

[0058] The electrolyte adjustment unit 16 performing the above function includes the circulation pump 24 for circulating the electrolyte contained in the electrolytic cell 12, the quantitative pump 26 for supplying water, and the heat exchanger 28 for performing a heat exchange after the

electrolyte introduced into the refrigerating unit **14** is cooled and circulating the electrolyte to the electrolytic cell **12**.

[0059] Additionally, the supply and circulation of the electrolyte contained in the electrolytic cell **12** is independently performed between the flat-type pole plates **20** and the insulating plates **18**, which form the respective units. The electrolyte can be introduced into the insulating plates **18** forming the units or discharged to the flat-panel plates **20**. Alternatively, the electrolyte can be introduced into the flat-panel pole plates **20** or discharged to the insulating plates **18**.

[0060] FIG. 4 is a view of the demister installed in an upper portion of the electrolytic cell of the Brown's gas generator in accordance with the present invention.

[0061] Hereinafter, the demister installed in the upper portion of the electrolytic cell will be described with reference to FIG. 4. In the related art, the demisters **30** are installed in the respective electrolytic cells **12**. As shown in FIG. 4, however, according to the present invention, the demister **30** that can collect all Brown's gases generated in the electrolytic cell **12** in one place is installed in an upper portion of the electrolytic cell **12**.

[0062] If Brown's gas collected by the demister **30** contains water, a property of Brown's gas is badly influenced. Therefore, as shown in FIG. 3, the multi-layered water prevention screen **14** for preventing a splash of water is formed between the demister **30** and the upper portion of the electrolytic cell **12**.

[0063] A plurality of holes are formed in the water prevention screen **14**, and Brown's gas is discharged to the demister through the holes. Positions of the holes formed in the respective water prevention screen **44** are not overlapped with those formed in the water prevention screen **44** facing each other upward and downward. Therefore, water is not splashed at any place. If the water prevention screen **44** is formed in more layers, the splash of water can be minimized. However, if the water prevention screen **44** is formed in too many layers, the passage of Brown's gas is obstructed so that it is difficult to collect Brown's gas. Therefore, the water prevention screen **44** should be manufactured in consideration for that.

[0064] Further, since the demister **30** has a multi-stage structure and also has a structure for refrigerating Brown's gas therewithin, moisture contained in Brown's gas is removed so that pure Brown's gas is collected. Since Brown's gas exhausted from the gas exhaust hole **46** finally passes through the refrigerating unit, pure Brown's gas can be obtained.

[0065] Furthermore, an evaporation steam cooled at the demister **30** flows backward to the electrolytic cell **12**, thereby preventing an increase in the temperature of the electrolyte contained in the electrolytic cell **12**.

[0066] FIG. 5 is a sectional view of the inside of the electrolytic cell including the water level sensor installed in the Brown's gas generator of FIG. 2, taken along the line B-B'.

[0067] Here, although FIG. 5 is a sectional view of a predetermined portion of the electrolytic cell shown in FIG. 2, taken along the line A-A', the demister that is not shown in FIG. 2 is illustrated in FIG. 5.

[0068] The inner structure of the electrolytic cell having the water level sensor will be described with reference to FIG. 5.

[0069] In the conventional Brown's gas generator, a water gauge passing through a portion of the electrolytic cell case to maintain the same water level as the inside of the electrolytic cell is installed on the outside of the electrolytic cell case, and the water level sensor is attached to the inside of the water gauge.

[0070] However, due to a temporary pressure variation in the inside of the electrolytic cell, there occurs the case that the pressure in the inside of the electrolytic cell may not accord with that of the externally installed water gauge for a short time. As a result, the water level sensor installed so as to maintain the water level of the electrolyte beyond the uppermost portion of the flat-type pole plate does not sufficiently perform its own function.

[0071] On the contrary, in the Brown's gas generator of the present invention, the same space as the inside of the electrolytic cell **12** is maintained by providing a predetermined space inside the electrolytic cell case **42**, and the water level sensor **36** is attached to the predetermined space.

[0072] The predetermined space is a space provided inside the electrolytic cell case **42**, where the uppermost portion of the flat-type pole plate **20** is the lowest point and a predetermined height of the insulating plate **18** is the highest point.

[0073] Because the space where the water level sensor **36** is attached and the inside of the electrolytic cell **12** shares the same space and their pressures are equal to each other, the water level sensor **36** can always correctly determine the water level of the inside of the electrolytic cell **12**.

[0074] Further, since the electrolytic cell case **42** is formed of an insulator, the voltage or current of the inside of the electrolytic cell **12** does not influence the outside of the electrolytic cell **12**.

[0075] The pressure sensor **38** determines the internal pressure of the electrolytic cell **12**. If the internal pressure of the electrolytic cell **12** is greater than a predetermined pressure, the electricity supplied to the electrolytic cell **12** is cut off by applying a signal to a gas control unit **50**. Meanwhile if the internal pressure of the electrolytic cell **12** is less than the predetermined pressure, the electricity is again supplied to the electrolytic cell **12** to thereby generate Brown's gas.

[0076] As described above, the Brown's gas generator of the present invention has a structure in which the flat-type pole plate/insulating plate is coupled in pair with another flat-type pole plate/insulating plate, which is in interfacial contact with the flat-type pole plate/insulating plate, to thereby independently generate Brown's gas. In other words, since flat-type pole plates and corresponding insulating plates form one unit to independently generate Brown's gas without being influenced by other units, Brown's gas can be efficiently generated without any electric loss.

[0077] Additionally, since the electrolyte is independently supplied and circulated to the respective units, it is possible to maintain the optimal temperature for the generation of Brown's gas.

[0078] Further, since moisture contained in Brown's gas is removed by cooling Brown's gas collected by the water prevention screen and the multi-stage demister, it is possible to obtain pure Brown's gas.

[0079] Furthermore, since the water level sensor is provided in the same space as the inside of the electrolytic cell, it is possible to correctly determine the variation of the water level according to the temporary pressure change in the inside of the electrolytic cell.

[0080] While the present invention has been described and illustrated herein with reference to the preferred embodiments thereof, it will be apparent to those skilled in the art that various modifications and variations can be made therein without departing from the spirit and scope of the invention. Thus, it is intended that the present invention covers the modifications and variations of this invention that come within the scope of the appended claims and their equivalents.

1. A Brown's gas generator comprising:

an electrolytic cell having a structure in which flat-type pole plates/insulating plates are coupled in pair with another flat-type pole plates/insulating plates, which are in interfacial contact with the flat-type pole plates/insulating plates, to thereby independently generate Brown's gas, the flat-type pole plates and the insulating plates being fixed at the same positions upward and downward around a middle fixing plate, the flat-type pole plates and the insulating plates being coupled at a regular interval by the middle fixing plate;

an electrolyte adjustment means for circulating an electrolyte contained in the electrolytic cell to exchange heat of the electrolyte, and for replenishing a lack of the electrolyte;

a refrigerating means for adjusting a temperature of the electrolyte by refrigerating a heat exchanger of the electrolyte adjustment means to a predetermined temperature when the heat of the electrolyte is exchanged; and

a multi-stage demister installed in an upper portion of the electrolytic cell, for collecting Brown's gas in one place.

2. The Brown's gas generator according to claim 1, wherein the flat-type pole plates facing each other are alternately set to a positive (+) and a negative pole (-) due to a voltage applied to an electricity lead-in unit passing through a lateral side of the electrolytic cell, and the electrolyte filled between the flat-type pole plates is electrolyzed to thereby generate the Brown's gas.

3. The Brown's gas generator according to claim 1, further comprising a water level sensor disposed at a predetermined space of an inside of an electrolytic cell case.

4. The Brown's gas generator according to claim 1, wherein the electrolytic cell case is formed of an insulator and the predetermined space has an area where the uppermost portion of the flat-type pole plate is the lowest point and a predetermined height of the insulating plate is the highest point.

5. The Brown's gas generator according to claim 1, further comprising a water prevention screen installed

between an upper portion of the electrolytic cell and the demister, the water prevention screen including a plurality of holes for preventing the electrolyte filled up to a lower portion of the electrolytic cell from being splashed to the demister while collecting the Brown's gas.

6. The Brown's gas generator according to claim 1, wherein the electrolyte adjustment means supplies the electrolyte independently to the structure in which the flat-type pole plates/insulating plates are coupled in pair with another flat-type pole plates/insulating plates, which are in interfacial contact with the flat-type pole plates/insulating plates to thereby generate the Brown's gas independently.

7. The Brown's gas generator according to claim 1, wherein the multi-stage demister includes a structure for cooling the Brown's gas.

8. The Brown's gas generator according to claim 5, wherein the water prevention screen is formed with multi-layers, and holes formed in the water prevention screen are arranged alternately with respect to positions of holes formed in upper or lower layers to thereby minimize a splash of the electrolyte.

9. A Brown's gas generator, the Brown's gas generator including an electrolytic cell, an electrolyte adjustment means for adjusting a water level of the electrolytic cell, a refrigerating means for lowering a temperature of the electrolyte, and a demister, wherein the electrolytic cell includes:

flat-type pole plates and insulating plates being installed at regular intervals, each pair of interfacial-contacted flat-type pole plates and insulating plates generating Brown's gas independently; and

a middle fixing plate for fixing the flat-type pole plates and the insulating plates at the same position upward and downward.

10. A Brown's gas generator comprising:

an electrolytic cell having flat-type pole plates and insulating plates, one flat-type pole plate and one insulating plate forming one unit for generating Brown's gas;

an electrolyte adjustment means for circulating the electrolyte contained in the electrolytic cell to exchange a heat of the electrolyte, and for replenishing a lack of the electrolyte; and

a refrigerating means for automatically lowering a temperature of the electrolyte contained in the electrolytic cell.

11. The Brown's gas generator according to claim 10, wherein the flat-type pole plates and the insulating plates are coupled at regular intervals by a middle fixing plate, and one unit consisting of the flat-type pole plate and the insulating plate generates Brown's gas without being influenced by another unit consisting of the flat-type pole plate and the insulating plate.

12. The Brown's gas generator according to claim 10, wherein the electrolyte contained in the electrolytic cell is independently supplied and circulated to the respective units consisting of the flat-type pole plates and the insulating plates.