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(54) **Toilet with a sterilizing water dispensing apparatus**

Toilette mit einer Sprühvorrichtung für sterilisiertes Wasser

WC avec un appareil de distribution d'eau de stérilisation

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Description**BACKGROUND OF THE INVENTION****Field of the Invention**

[0001] The present invention relates to a toilet comprising a bidet that comprises a nozzle assembly that dispenses water to the private parts of a user and a cleaning water dispensing apparatus for dispensing cleaning water to an inner wall of the toilet.

Description of the Related Art

[0002] A toilet (i.e., a toilet bowl, a chamber pot, etc.) is equipment allowing a user to be seated to have a bowel movement, and recently, a bidet-equipped toilet has been widely used for a sanitary purpose. A bidet is a device for dispensing water to cleanse the private parts of the user after the user relieves himself, having the advantage of keeping the private parts of the user clean through washing without the use of paper.

[0003] Commonly, a water tank, a bidet, and a control panel are mounted on the toilet. Upon completion of a bowel movement, when the user presses a lever, water within the toilet is flushed out, along with feces, and the toilet is refilled with water from that contained within the water tank. In addition, when the user operates the bidet by manipulating the control panel, a nozzle installed within a main body of the bidet apparatus moves to a front side of the main body of the bidet apparatus to dispense cleansing water to the private parts of the user.

[0004] With the toilet operating in this manner, if the feces within the toilet are not entirely flushed out, the feces may be fixedly attached to an inner wall of the toilet. In addition, because water is always present within the toilet, various microorganisms may inhabit it and multiply, which is undesirable in terms of sanitation. Thus, the user must periodically wash the toilet by applying a sterilization solution or cleaning solution to the interior of the toilet.

[0005] WO 03/102315 discloses a toilet having a bidet comprising a cleaning water dispensing apparatus for cleaning an inner wall of a toilet and a nozzle assembly for dispensing water to the private parts of a user. However, not all contaminants, such as feces, are generally removed from the inner wall of the toilet by the dispensing apparatus disclosed, which may cause microorganisms to inhabit the toilet and to multiply. The water dispensed from the cleaning water dispensing apparatus disclosed may further not reach all parts of the inner wall of the toilet so that not all parts can be cleaned.

[0006] US 2001/022006 A1 discloses a bidet and toilet seat comprising a nozzle pipe washer, and a water tank and changeover valve for supplying water to the nozzle pipe washer, which has an inlet for the water. Both spiral and straight bores are provided in the nozzle pipe washer to provide the water discharged from an ejecting outlet with a spiral component. However, the nozzle pipe washer of US 2001/022006 A1 is configured and arranged for cleaning one or more nozzle pipes of the bidet or toilet seat, which nozzle pipes are provided for cleaning private parts of a user. Some of the water may come into contact with the inner wall of a toilet, but the nozzle pipe washer is not intended for cleaning of an inner wall of a toilet onto which the bidet or toilet seat is provided. The water discharged from the ejecting outlet will predominantly be forwardly directed along the nozzle pipe washer towards the nozzle pipes to be cleaned.

[0007] GB 1 562 052 discloses a toilet provided with a rotor assembly forming a washing impeller. The impeller is fed with water, which is optionally provided with a disinfectant, and discharges radially-directed jets of water which wash the bowl. The water fed to the impeller also causes rotation of the impeller by virtue of a thrust imposed by a tangential component of the force of one or more of the jets. However, the impeller of GB 1 562 052 is rather complicated to allow rotation and to provide multiple jet outlets, and will therefore be large in size and bulky. It further will use a large amount of water to wash the toilet bowl.

[0008] EP 0 000 688 A2 discloses a nozzle for dispensing a fluid under pressure, such as hair spray, deodorant and odour remover. However, the nozzle receives water from the outlet in lengthwise direction such that it is not discharged in radial direction towards the wall of the surrounding nozzle wall forming the vortex production chamber.

SUMMARY OF THE INVENTION

[0009] The present invention provides a toilet comprising a sterilizing water dispensing apparatus capable of sterilizing the entire inner wall of a toilet with a small quantity of sterilizing water.

[0010] According to the invention, there is provided a toilet according to claim 1. The fine particles of sterilizing water do effectively reach all areas of the inner wall of the toilet for disinfecting purposes.

[0011] The sterilizing water in the vortex production chamber may be sprayed in the form of fine particles through the dispensing hole.

[0012] The guide groove is formed such that its width narrows toward the interior from the side wall.

- [0013] A plurality of guide grooves may be formed to be symmetrical about the center of the vortex production chamber.
- [0014] Sterilizing water may be dispensed through the dispensing hole at a dispensing angle of 100 degrees or greater.
- [0015] The vortex production chamber may have a height (A) ranging from 0.1 mm to 0.3mm.
- [0016] The dispensing hole may have a length (B) ranging from 0.1 mm to 0.3 mm.
- [0017] The dispensing hole may have a diameter (C) ranging from 0.1 mm to 1.5 mm.
- [0018] The guide groove may have a width (D) ranging from 0.1 mm to 0.7 mm.
- [0019] The dispensing hole may be smaller than the inlet.
- [0020] The pressure of sterilizing water within the vortex production chamber may range 1.2 kg/cm² to 5 kg/cm².
- [0021] The sterilizing water generating apparatus may generate sterilizing water by an electrode method.
- [0022] The toilet may further include a nozzle tip cleaning part that cleans a nozzle tip of the nozzle assembly, wherein the sterilizing water generating apparatus is connected to the sterilizing water dispensing apparatus and the nozzle tip cleaning part, and sterilizing water generated by the sterilizing water generating apparatus is supplied to the sterilizing water dispensing apparatus or to the nozzle tip cleaning part.
- [0023] The sterilizing water dispensing apparatus may be connected to a pump, and sterilizing water may be supplied by the pump.
- [0024] The pump may include an electric motor, a decelerating gear part connected with the electric motor and having a plurality of gears to decelerate a rotational speed, a plurality of link members having one side coupled with the decelerating gear part and making a joint movement, and a pumping unit connected with another side of the link members and reciprocally moving according to the joint movement of the link member, wherein the pumping unit may supply sterilizing water of the sterilizing water generating apparatus to the sterilizing water dispensing apparatus while making a reciprocal movement.
- [0025] A dispensing hole of the sterilizing water dispensing apparatus may be installed to be sloped from a directly downward side to a front side.
- [0026] The toilet may be provided with a toilet seat including the sterilizing water dispensing apparatus, and the sterilizing water generating apparatus that supplies sterilizing water to the sterilizing water dispensing apparatus.
- [0027] The sterilizing water generating apparatus may generate sterilizing water by a solution method.
- [0028] The sterilizing water dispensing apparatus may be installed at a rear side of the toilet seat, and a dispensing hole may be installed to be sloped from a directly downward side to a front side.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0029] The above and other aspects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:
- [0030] FIG. 1 is a perspective view of a toilet including a sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention;
- [0031] FIG. 2 is an exploded perspective view of the sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention;
- [0032] FIGs. 3a and 3b are side sectional views of the sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention;
- [0033] FIG. 4 is a bottom view of a body part of the sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention;
- [0034] FIG. 5 illustrates the configuration of a water supply system of the sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention;
- [0035] FIG. 6 illustrates a different type of pump according to an exemplary embodiment of the present invention; and
- [0036] FIG. 7 illustrates dispensing of sterilizing water to an inner wall of a toilet by the sterilizing water dispensing apparatus according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

- [0037] Exemplary embodiments of the present invention will now be described in detail with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. In the drawings, the shapes and dimensions may be exaggerated for clarity, and the same reference numerals will be used throughout to designate the same or like components.
- [0038] FIG. 1 is a perspective view of a toilet 10 including a sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention.
- [0039] With reference to FIG. 1, a bidet 20 is installed at an upper portion of the toilet 10. The bidet 20 includes a main

body 30 of the bidet apparatus, and a toilet seat 40 and a toilet cover 50 are hinge-coupled to the main body 30 of the bidet apparatus such that they are rotatable. The toilet seat 40 has an annular shape to allow a user to be seated to have a bowel movement, and a heater may be disposed within the toilet seat 40 to heat the toilet seat 40 to have a temperature comfortable for a user. The toilet cover 50 is formed to have a shape corresponding to the toilet seat 40 in order to close the exposed portion of the annular toilet seat 40 when the toilet 10 is not in use.

[0040] A nozzle assembly 60 and a drying apparatus 70 are installed at an inner side of the main body 30 of the bidet apparatus. The nozzle assembly 60 includes an anus cleaning nozzle and a for-women bidet nozzle. The cleaning nozzle and the bidet nozzle are installed to be movable in a forward direction from the main body 30 of the bidet apparatus. A nozzle tip having a discharge hole is mounted at a front end portion of each of the cleaning nozzle and the bidet nozzle to dispense flushing water.

[0041] The drying apparatus 70 includes a blow fan, a blow duct, and a heating unit, and discharges heated air in a forward direction from the main body 30 of the bidet apparatus.

[0042] A control panel 80 is installed at one side of the main body 30 of the bidet apparatus, so the user can control the operation of the bidet 20 by using the control panel 80. Namely, after having a bowel movement, the user may press a cleaning button or a bidet button. The cleaning nozzle or the bidet nozzle then moves forward to dispense water to the private parts of the user, and after cleaning, the user may press a drying button to dispense heated air to remove moisture from the private parts of the user.

[0043] The sterilizing water dispensing apparatus 100 is installed at a front portion of the main body 30 of the bidet apparatus. The sterilizing water dispensing apparatus 100 receives sterilizing water from a sterilizing water generating apparatus, and dispenses the sterilizing water to an inner wall of the toilet 10 to sterilize the inner wall of the toilet 10. The sterilizing water dispensing apparatus 100 is preferably mounted at the main body 30 of the bidet apparatus such that a dispensing hole is sloped from a direct downward direction toward a front side of the toilet 10. By making the dispensing hole positioned at a rear side of the toilet 10 point towards the front side, sterilizing water can be dispensed evenly on the entire inner wall of the toilet 10. In this respect, in consideration of the general size of the toilet 10 and mounting position of the sterilizing water dispensing apparatus 100, the dispensing hole is preferably installed to be sloped at more than 20 degrees in a forward direction. Alternatively, the sterilizing water dispensing apparatus 100 may be installed to be movable in a forward direction from the main body 30 of the bidet apparatus like the bidet nozzle, and in this case, the dispensing hole may not need to be installed to be sloped toward the front side. Meanwhile, the sterilizing water dispensing apparatus 100 may execute a dispensing operation by means of the control panel 80. Namely, a toilet sterilization button may be provided to the control panel 80, so that when the user presses the toilet sterilization button, the sterilizing water dispensing apparatus 100 can dispense sterilizing water.

[0044] FIG. 2 is an exploded perspective view of the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention, FIGs. 3a and 3b are side sectional views of the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention, and FIG. 4 is a bottom view of a body part of the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention.

[0045] With reference to FIGs. 2 to 4, the sterilizing water dispensing apparatus 100 includes a body part 120 and a nozzle part 140.

[0046] The body part 120 includes a hollow part 121 through which sterilizing water can flow, an inlet 122 formed at an upper end thereof, and an outlet 123 formed at a lower portion thereof. Sterilizing water which has introduced through the inlet 122 formed at the upper end of the body part 120 flows along the hollow part 121 and then is discharged through the outlet 123.

[0047] The hollow part 121 extends in a lengthwise direction from the upper portion of the body part 120 to the lower portion of the body part 120, and the outlet 123 extends in a radial direction from the lower portion of the body part 120 so as to be fluid-connected with the hollow part 121. Accordingly, the sterilizing water flows from the upper portion to the lower portion of the hollow part 121 and then is discharged in the radial direction. A plurality of outlets 123 may be formed along the lower circumference of the body part 120, and in the present exemplary embodiment illustrated in the drawings, two outlets 123 are disposed in a facing manner.

[0048] A protruding part 124 is formed at a lower side of the outlet 123, namely, at the lowermost portion of the body part 120. The protruding part 124 has a diameter larger than the part the outlet 123 is formed on. The protruding part 124 in a cylindrical shape has a recessed bottom surface to form a vortex production chamber 130 together with the nozzle part 140. A guide groove 125 is formed at a side wall of the protruding part 124 to allow sterilizing water which has been discharged through the outlet 123 to be introduced therein. The guide groove 125, starting from the side wall of the protruding part 124, extends to the interior of the protruding part 124, and is formed to point toward a position deviating from the center of the protruding part 124. This configuration aims to providing a rotational force to the sterilizing water introduced along the guide groove 125 to thus produce a vortex. The guide groove 125 is formed such that its width narrows toward the interior from the side wall. Accordingly, the sterilizing water introduced into the vortex production chamber 130 along the guide groove 125 can flow at a high pressure and at high speed to produce a strong vortex. A

plurality of guide grooves 125 may be formed, and in the present exemplary embodiment illustrated in the drawings, two guide grooves 125 are formed in a facing manner.

[0049] A bracket 126 is installed on the body part 120 and coupled to a front portion of the main body 30 of the bidet apparatus with a screw or the like.

[0050] The nozzle part 140, having a cylindrical shape, is a member coupled to the lower portion of the body part 120. A dispensing hole 141 is formed at the center of the bottom of the nozzle part 140. An inner side of the bottom of the nozzle part 140 forms the vortex production chamber 130 together with the recessed portion of the protruding part 124. An outer portion of the bottom of the nozzle part 140 may be formed to be tapered such that the thickness increases as it goes away from the dispensing hole 141. The reason for forming the tapered outer portion of bottom of the nozzle part 140 is due to the fact that the length (B) of the dispensing hole 141 needs to be short in order to increase a dispensing angle for dispensing sterilizing water (to be described) and, in this case, if the thickness of the entire bottom of the nozzle part 140 is as small as to be equal to the length (B) of the dispensing hole 141, the rigidity of the bottom of the nozzle part 140 weakens, so the length (B) of the dispensing hole 141 remains short while the thickness of the outer portion of the bottom of the nozzle part 140 increases toward the outer side.

[0051] The operation method of the sterilizing water dispensing apparatus 100 configured thusly will now be described.

[0052] Sterilizing water introduced through the inlet 122 at the upper end of the body part 120 passes along the hollow part 121 and is then discharged in the radial direction of the body part 120 through the outlet 123 provided at the lower portion of the body part 120. The sterilizing water which has been discharged through the outlet 123 is introduced into the vortex production chamber 130 along the guide grooves 125 of the protruding part 124 formed at the lowermost portion of the body part 120. The guide groove 125 is formed to extend in a direction other than towards the center of the vortex production chamber 130 from the side wall of the vortex production chamber 130, so the sterilizing water introduced along the guide groove 125 forms a rotating vortex centered on the center of the vortex production chamber 130. In particular, because the width of the guide groove 125 is reduced toward the inner side, the sterilizing water flowing along the guide grooves 125 can flow at a high pressure and at a high speed to form a strong vortex. In addition, because the plurality of guide grooves 125 are disposed to face each other, vortexes are produced from two places, complementing each other. The sterilizing water with the vortexes produced in the vortex production chamber 130 is externally discharged through the dispensing hole 141 disposed at the center of the bottom of the nozzle part 140. At this time, the externally discharged sterilizing water, namely, the vortex-formed sterilizing water, passes through the dispensing hole 141 at a high pressure, to become fine particles being sprayed to the outer side.

[0053] In this manner, when the sterilizing water is sprayed in the form of fine particles with a large surface area, the sterilizing water can be brought into contact with a larger area of the inner wall of the toilet, having the advantage of enhancing the sterilizing effect even with the small quantity of sterilizing water.

[0054] Meanwhile, in order to spray the sterilizing water to the entire surface of the inner wall of the toilet 10 by using the single sterilizing water dispensing apparatus 100, it is required to properly set a dispensing angle and a dispensing speed of the sterilizing water dispensed from the dispensing hole 141. Namely, as the dispensing angle widens and the dispensing speed becomes high, sterilizing water can be dispensed widely, and if the dispensing angle is small, the dispensing range is reduced to perform partial dispensing, while if the dispensing speed is low, the dispensed sterilizing water could not extend for a desirable distance (i.e., it could not reach sufficiently far).

[0055] Thus, the dispensing angle and dispensing speed of sterilizing water needs to be increased so that the sterilizing water can be dispensed to the entire surface of the inner wall of the toilet 10, for which the sterilizing water dispensing apparatus 100 must be thus optimally designed. The inventors of the present invention found through an experimentation that the height (A) of the vortex production chamber 130, the length (B) of the dispensing hole 141, the diameter (C) of the dispensing hole 141, and the width (D) of the guide groove 125 are parameters affecting the dispensing angle and the dispensing speed.

[0056] In order to discover the influence of these parameters on the dispensing angle and the dispensing speed, the inventors conducted CFD (Computational Fluid Dynamics) research with respect to diverse parameter values, the results of which are as follows.

Table

Case	A (mm)	B (mm)	C (mm)	D (mm)	Dispensing angle (degree)	Dispensing speed (m/s)
1	0.2	0.2	1	0.5	140	5.562
2	0.2	0.2	1.2	0.5	120	5.128
3	0.3	0.2	1	0.5	100	4.483
4	0.3	0.6	1	0.5	90	4.163
5	0.2	0.6	1.2	0.5	70	3.213

(continued)

Case	A (mm)	B (mm)	C (mm)	D (mm)	Dispensing angle (degree)	Dispensing speed (m/s)
6	0.2	0.6	1	0.5	-	2.110

[0057] With reference to the above table, the first case shows the largest dispensing angle and the highest dispensing speed. In the second case, when the diameter (C) of the dispensing hole 141 was increased, the dispensing angle was reduced and the dispensing speed was lowered. In the third case, when the height (A) of the vortex production chamber 130 was increased, the dispensing angle was reduced and the dispensing speed was lowered. In the fourth to sixth cases, when the length (B) of the dispensing hole 141 was increased, the dispensing angle was further reduced and the dispensing speed was further lowered. Consequently, it should be noted that as the parameters A, B, and C are reduced, the dispensing angle and the dispensing speed are increased, establishing inverse proportional relationships.

[0058] Based on the results that the dispensing angle and the dispensing speed are inverse-proportional to the parameter values, in order to determine the upper limits of the parameters with which the dispensing angle and the dispensing speed can be larger than a certain value (e.g., the dispensing angle of at least 100 degrees), the inventor of the present invention conducted actual experimentation, the results of which are shown in the table below:

Table

	A (mm)	B (mm)	C (mm)	D (mm)	Dispensing angle	Dispensing range
1	0.1	0.1	1	0.5	140 degrees or greater	99% or greater
2	0.2	0.2	1	0.5	100 degrees or greater	90% or greater
3	0.3	0.2	1	0.5	100 degrees or greater	90% or greater
4	0.5	0.2	1	0.5	20 degrees or smaller	Smaller than 10%
5	0.5	0.1	1.2	0.5	20 degrees or smaller	Smaller than 10%
6	0.2	0.3	1	0.5	100 degrees or greater	90% or greater
7	0.2	0.5	1	0.5	20 degrees or smaller	Smaller than 10%
8	0.2	1	1	0.5	Abnormal water stream	Smaller than 10%
9	0.5	1	1	0.5	Abnormal water stream	Smaller than 10%
10	0.2	1	1.2	0.5	Abnormal water stream	Smaller than 10%
11	0.5	1	1.2	0.5	20 degrees or smaller	Smaller than 10%
12	0.2	0.2	1.2	0.5	100 degrees or greater	90% or greater
13	0.2	0.2	1.5	0.5	100 degrees or greater	90% or greater
14	0.2	0.2	1.7	0.5	20 degrees or smaller	Smaller than 10%
15	0.2	0.2	1	0.7	100 degrees or greater	90% or greater
16	0.2	0.2	1	1	20 degrees or smaller	0%
17	0.2	0.2	1.2	1	20 degrees or smaller	Smaller than 10%
18	0.5	0.2	1	1	20 degrees or smaller	0%
19	0.5	0.1	1.2	1	20 degrees or smaller	Smaller than 10%
20	0.2	1	1.2	1	20 degrees or smaller	Smaller than 10%

[0059] With reference to the second to fourth cases in the above table, it is noted that, when B, C, and D are the same, the dispensing angle is 100 degrees or greater and the dispensing range is 90% or greater of the inner wall of the toilet, until when A is 0.3 mm or smaller, while if A is 0.5 mm, the dispensing angle is 20 degrees or lower and the dispensing range is smaller than 10%. Thus, in order to make the dispensing angle 100 degrees or greater and the dispensing range 90% or greater, A must be 0.3 mm or smaller.

[0060] With reference to the second, sixth to eighth cases in the above table, it is noted that, when A, C, and D are the same, the dispensing angle is 100 degrees or greater and the dispensing range is 90% or greater of the inner wall

of the toilet until when B is 0.3 mm or smaller, while if B is 0.5 mm or greater, the dispensing angle is 20 degrees or lower and the dispensing range is smaller than 10%. Thus, in order to make the dispensing angle 100 degrees or greater and the dispensing range 90% or greater, B must be 0.3 mm or smaller.

[0061] With reference to the second and 12th to 14th cases in the above table, it is noted that, when A, B, and D are the same, the dispensing angle is 100 degrees or greater and the dispensing range is 90% or greater of the inner wall of the toilet until when C is 1.5 mm or smaller, while if C is 1.7 mm, the dispensing angle is 20 degrees or lower and the dispensing range is smaller than 10%. Thus, in order to make the dispensing angle 100 degrees or greater and the dispensing range 90% or greater, C must be 1.5 mm or smaller.

[0062] With reference to the second, 15th and 16th cases in the above Table, it is noted that, when A, B, and C are the same, the dispensing angle is 100 degrees or greater and the dispensing range is 90% or greater of the inner wall of the toilet until when D is 0.7 mm or smaller, while if D is 1 mm, the dispensing angle is 20 degrees or lower and the dispensing range is smaller than 10%. Thus, in order to make the dispensing angle 100 degrees or greater and the dispensing range 90% or greater, D must be 0.7 mm or smaller.

[0063] With reference to the first case in the above table, it is noted that, when the parameters of A, B, C, and D are in the smallest range, the dispensing angle is 140 degrees or greater and the dispensing range is 99% of the inner wall of the toilet. However, in the fifth, ninth to 11th, and 17th to 20th cases, in which at least one of the parameters of A, B, C, and D exceeds the range, the dispensing angle is 20 degrees or smaller and the dispensing range is smaller than 10% of the inner wall of the toilet. For reference, the denotation of an abnormal water stream refers to a case that water is twisted to be dispensed, having a very small dispensing range.

[0064] When the above results are put together, in order to obtain the dispensing angle of 100 degrees or greater and the dispensing range of 90% or greater, the height (A) of the vortex production chamber 130 must be 0.3 mm or smaller, the length (B) of the dispensing hole 141 must be 0.3 mm or smaller, the diameter (C) of the dispensing hole 141 must be 1.5 mm or smaller, and the width (D) of the guide groove 125 must be 0.7 mm or smaller.

[0065] Meanwhile, the dispensing angle can be increased by reducing the parameters, but in consideration of molding limitations and costs, the fabrication of a dispensing hole with the parameters A, B, C, and D of 0.1 mm or smaller is not easy, and if realized, there is not a great deal of difference in its effects.

[0066] In addition, the above experimental results can be obtained when the pressure of sterilizing water within the vortex production chamber 130 is 1.2 kg/cm² or greater. That is, such large dispensing angle and dispensing range as in the experimental results cannot be obtained at a lower pressure. In order to maintain the pressure of the sterilizing water within the vortex production chamber 130 at a certain level or greater, preferably, the size of the dispensing hole 141 is designed to be smaller than the inlet 122. In this case, however, sterilizing water having an excessively high pressure would lead to damage to the components, so the pressure of the sterilizing water preferably does not exceed 5 kg/cm².

[0067] FIG. 5 illustrates the configuration of a water supply system of the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention.

[0068] With reference to FIG. 5, the water supply system is configured to distribute source water to each element through a flow path control apparatus 300. The source water may be supplied by a water pipe or a water supply tank 400.

[0069] When the user executes cleaning or the bidet function, the source water is supplied to the cleaning nozzle 62 or the bidet nozzle 64, and flush water is dispensed through the nozzle.

[0070] When the user executes a nozzle tip cleaning function, the source water is supplied to the sterilizing water generating apparatus 200, in which the source water becomes sterilizing water. The sterilizing water is supplied to a nozzle tip cleaning part 66. The sterilizing water of the nozzle tip cleaning part 66 is applied to the nozzle tip, and the nozzle tip is sterilized.

[0071] When the user executes a toilet cleaning function, the source water is supplied to the sterilizing water generating apparatus 200, in which the source water becomes sterilizing water. When a desired quantity of sterilized water is generated with the lapse of a certain period of time, a pump 240 connected with the sterilizing water generating apparatus 200 operates to allow the sterilizing water to be introduced into the sterilizing water dispensing apparatus 100. The sterilizing water introduced into the sterilizing water dispensing apparatus 100 is dispensed to the inner wall of the toilet 10, sterilizing the toilet 10. The process of dispensing the sterilizing water in the spray form by the sterilizing water dispensing apparatus 100 is as described above.

[0072] When the nozzle tip is to be cleaned, a small quantity of sterilizing water is simply allowed to flow to the nozzle tip under the pressure of the source water without using a pump, but when the toilet is to be sterilized, the sterilizing water must be sprayed across the entire inner wall of the toilet, so a pump is driven to spray the sterilizing water. In this case, however, as stated above, the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention sprays the sterilizing water in the form of fine particles, only a small quantity of sterilizing water (e.g., about 50 ml of sterilizing water) is required to sterilize the entire inner wall of the toilet. Thus, the use of a low capacity pump is sufficient and, for example, a low-noise high-lift diaphragm type pump may be employed.

[0073] FIG. 6 illustrates a different type of pump 240 according to an exemplary embodiment of the present invention.

With reference to FIG. 6, the pump 240 includes a deceleration gear part 242 coupled to an electric motor 241 and having a plurality of gears to decelerate a rotational speed of the electric motor 241, and a plurality of link members 243 having one side coupled to the deceleration gear part 242 and make a joint movement. The pump 240 further includes a pumping unit 244 provided at the other side of the link member 243 and making a reciprocal movement according to the joint movement of the link member 243. The pumping unit 244 instantly pumps sterilizing water from the sterilizing water generating apparatus 200 while making the reciprocal movement, and supplies it to the sterilizing water dispensing apparatus 100. In this manner, when the sterilizing water is supplied by instantly applying pressure to the sterilizing water dispensing apparatus 100, the sterilizing water which has passed through the sterilizing water dispensing apparatus 100 can be sprayed as particles in a fine size through the dispensing hole 141.

[0074] The sterilizing water generating apparatus 200 may use an electrode-type module that generates a sterilization material (mixed oxide: MO) from water itself by using an electric force and a ruthenium oxide catalyst electrode. The generation of sterilizing water according to the electrode method is a known art, so a detailed description thereof will be omitted.

[0075] A reactive material adding unit 220 may be connected to an inflow side of the sterilizing water generating apparatus 200. The reactive material adding unit 220 may add a reactive material to water introduced into the sterilizing water generating apparatus 200 to increase the amount of a sterilizing material generated in the sterilizing water generating apparatus 200. Solid NaCl may be used as the reactive material.

[0076] The reactive material is accommodated within the reactive material adding unit 220, mixed with water introduced to the interior of the reactive material adding unit 220, and then introduced to the sterilizing water generating apparatus 200. The sterilizing water generating apparatus 200 applies electricity to the NaCl-mixed water to generate HOCL⁻ or OCL⁻ ions, a sterilizing material. Besides NaCl, chlorine-based material, silver oxide, iodine-based material, and the like, may be introduced into the sterilizing water generating apparatus 200.

[0077] FIG. 7 illustrates the dispensing of sterilizing water to the inner wall of the toilet by the sterilizing water dispensing apparatus 100 according to an exemplary embodiment of the present invention. As shown in FIG. 7, the sterilizing water dispensing apparatus 100 attached to the front portion of the main body 30 of the bidet apparatus sprays sterilizing water at a wide dispensing angle to apply the sterilizing water to the entire surface of the inner wall of the toilet 10.

[0078] Meanwhile, in the exemplary embodiment as described above, the sterilizing water dispensing apparatus 100 and the sterilizing water generating apparatus 200 are installed at the bidet 20, but without being limited thereto, they may be installed at the toilet seat 40 and used. That is, the sterilizing water dispensing apparatus 100 and the sterilizing water generating apparatus 200 may be installed at a rear portion of the toilet seat 40, and likewise as in the case where they are installed at the bidet 20, preferably, the dispensing hole 141 is installed to be sloped forwardly at 20 degrees or greater from the direct downward direction. In addition, because electricity is not generally supplied to toilet seat 40, the sterilizing water generating apparatus 200 that generates sterilizing water according to a solution method.

[0079] A product manufactured by combining the sterilizing water dispensing apparatus to a toilet seat can be advantageously used for those users who want a toilet sterilization function although they do not use a bidet.

[0080] As set forth above, according to exemplary embodiments of the invention, because sterilizing water is dispensed in the form of fine particles with a relatively large surface area, the sterilizing water is brought into contact with a larger area of an inner wall of a toilet, so a sterilizing effect can be enhanced with a small quantity of sterilizing water.

[0081] In addition, because sterilizing water can be dispensed to the entire surface of the inner wall of the toilet with a single sterilizing water dispensing apparatus by increasing a dispensing angle and dispensing speed of sterilizing water, the configuration can be simple and the cost can be reduced.

Claims

1. A toilet (10) comprising a bidet (20) that comprises

- a cleaning water generating apparatus (200);
- a nozzle assembly (60) that dispenses water to the private parts of the user; and
- a cleaning water dispensing apparatus (100) for receiving cleaning water from the cleaning water generating apparatus (200), and for dispensing the cleaning water to an inner wall of the toilet (10) to clean the inner wall of the toilet (10), the cleaning water dispensing apparatus (100) comprising:
 - an inlet (122) through which cleaning water is introduced, the inlet being formed at an upper portion of a body part (120);
 - a hollow part (121) through which cleaning water can flow, the hollow part extending in a lengthwise direction from the upper portion to a lower portion of the body part (120);
 - an outlet (123) in fluid connection with the hollow part (121) at the lower portion and extending in a radial direction so as to discharge cleaning water in the radial direction;

characterized in that the cleaning water dispensing apparatus (100) further comprises:

- a nozzle part (140) having a cylindrical shape and coupled to a lowermost portion of the body part (120), the outlet (123) being arranged to discharge towards an inner cylindrical wall of the nozzle part;
- a protruding part (124) being formed at a lower side of the outlet (123) within the nozzle part (140), the protruding part (124) having a cylindrical shape with a diameter smaller than an internal diameter of the nozzle part (140);
- a cylindrical vortex production chamber (130) formed by a recessed bottom surface of the protruding part (124) together with an inner side of a bottom of the nozzle part (140);
- a guide groove (125) extending from a side wall of the vortex production chamber (130) to an interior of the vortex production chamber (130) toward a position deviating from a center of the vortex production chamber (130) to provide a rotational force to the cleaning water introduced from the outlet (123) in between the nozzle part (140) and the protruding part (124) and into and along the guide groove (125) into the vortex production chamber (130) to produce a vortex rotating about the center of the vortex production chamber (130), wherein the guide groove (125) is formed such that its width narrows from the side wall toward the interior to have the cleaning water flowing along the guide grooves (125) at a high pressure and a high speed to form a strong vortex ; and
- a dispensing hole (141) disposed at the center of the bottom of the vortex production chamber (130) for dispensing vortex-produced cleaning water of the vortex production chamber to an inner wall of the toilet (10), the cleaning water in the vortex production chamber being sprayed in the form of fine particles through the dispensing hole,

in that the cleaning water is sterilizing water so that the cleaning water generating apparatus forms a sterilizing water generating apparatus (200) and the cleaning water dispensing apparatus forms a sterilizing water dispensing apparatus (100), and

in that the bidet (20) further comprises a nozzle tip cleaning part (66) that cleans a nozzle tip of the nozzle assembly (60), wherein the sterilizing water generating apparatus (200) is connected to the sterilizing water dispensing apparatus (100) and the nozzle tip cleaning part (66), and sterilizing water generated by the sterilizing water generating apparatus is supplied to the sterilizing water dispensing apparatus (100) for to the nozzle tip cleaning part (66).

2. The toilet of claim 1, wherein a plurality of guide grooves (125) are formed to be symmetrical about the center of the vortex production chamber (130).
3. The toilet of claim 1, wherein sterilizing water is dispensed through the dispensing hole (141) at a dispensing angle of 100 degrees or greater.
4. The toilet of claim 1, wherein the vortex production chamber (130) has a height ranging from 0.1 mm to 0.3mm.
5. The toilet of claim 1, wherein the dispensing hole (141) has a length ranging from 0.1 mm to 0.3 mm.
6. The toilet of claim 1, wherein the dispensing hole (141) has a diameter ranging from 0.1 mm to 1.5 mm.
7. The toilet of claim 1, wherein the guide groove (125) has a width ranging from 0.1 mm to 0.7 mm.
8. The toilet of claim 1, wherein the dispensing hole (141) is smaller than the inlet (122)
9. The toilet of claim 8, wherein the pressure of sterilizing water within the vortex production chamber ranges 1.2 kg/cm² to 5 kg/cm².
10. The toilet of claim 1, wherein the sterilizing water generating apparatus (200) generates sterilizing water by an electrode method.
11. The toilet of claim 1, wherein the sterilizing water dispensing apparatus (100) is connected to a pump (240), and sterilizing water is supplied by the pump.
12. The toilet of claim 11, wherein the pump (240) comprises:
 - an electric motor (241);
 - a decelerating gear part (242) connected with the electric motor (241) and having a plurality of gears to

decelerate a rotational speed;

- a plurality of link members (243) having one side coupled with the decelerating gear part (242) and making a joint movement; and

- a pumping unit (242) connected with another side of the link members (243) and reciprocally moving according to the joint movement of the link member (243),

wherein the pumping unit (244) supplies sterilizing water of the sterilizing water generating apparatus (200) to the sterilizing water dispensing apparatus (100) while making a reciprocal movement.

13. The toilet of claim 1, wherein the dispensing hole (141) of the sterilizing water dispensing apparatus (100) is installed to be sloped from a directly downward side to a front side.

14. The toilet of claim 1, wherein the toilet comprises a toilet seat comprising:

- the sterilizing water dispensing apparatus (100); and

- the sterilizing water generating apparatus (200) that supplies sterilizing water to the sterilizing water dispensing apparatus.

15. The toilet of claim 14, wherein the sterilizing water generating apparatus (200) generates sterilizing water by a solution method.

16. The toilet of claim 14, wherein the sterilizing water dispensing apparatus (100) is installed at a rear side of the toilet seat, and the dispensing hole (141) is installed to be sloped from a directly downward side to a front side.

Patentansprüche

1. Toilette (10), umfassend ein Bidet (20), das umfasst

- eine reinigungswassererzeugende Vorrichtung (200);

- eine Düsenanordnung (60), die Wasser in den Intimbereich des Benutzers verteilt; und

- eine reinigungswasserverteilende Vorrichtung (100) zur Inempfangnahme von Reinigungswasser von der reinigungswassererzeugenden Vorrichtung (200), und zum Verteilen des Reinigungswassers zu einer inneren Wand der Toilette (10), um die innere Wand der Toilette (10) zu reinigen, wobei die reinigungswasserverteilende Vorrichtung (100) umfasst:

- einen Einlass (122), durch den Reinigungswasser eingeführt wird, wobei der Einlass an einem oberen Teil eines Körperteils (120) gebildet ist;

- einen Hohlraum (121), durch den Reinigungswasser fließen kann, wobei sich der Hohlraum in einer Längsrichtung von dem oberen Teil zu einem unteren Teil des Körperteils (120) erstreckt;

- einen Auslass (123) in Flussverbindung mit dem Hohlraum (121) an dem unteren Teil und sich in einer radialen Richtung erstreckend, um Reinigungswasser in die radiale Richtung zu entladen;

dadurch gekennzeichnet, dass die reinigungswasserverteilende Vorrichtung (100) ferner umfasst:

- einen Düsenteil (140), der eine zylindrische Form hat und der mit dem niedrigsten Teil des Körperteils (120) verbunden ist, wobei der Auslass (123) derart angeordnet ist, um zu der inneren zylindrischen Wand des Düsentails zu entladen;

- ein vorstehender Teil (124), der auf einer unteren Seite des Auslasses (123) innerhalb des Düsentails (140) gebildet ist, wobei der vorstehende Teil (124) eine zylindrische Form mit einem Durchmesser hat, der kleiner ist als der innere Durchmesser des Düsentails (140);

- eine zylindrische wirbelerzeugende Kammer (130), die durch eine vertiefte Bodenoberfläche des vorstehenden Teils (124) zusammen mit einer inneren Seite eines Bodens des Düsentails (140) gebildet wird;

- eine Führungsnut (125), die sich von einer Seitenwand der wirbelerzeugenden Kammer (130) zu einem Innenraum der wirbelerzeugenden Kammer (130) hin zu einer Position erstreckt, die von einem Zentrum der wirbelerzeugenden Kammer (130) abweicht, um eine Rotationskraft dem Reinigungswasser, das eingeführt wird, von dem Auslass (123) zwischen dem Düsenteil (140) und dem vorstehenden Teil (124) zur Verfügung zu stellen und in und entlang der Führungsnut (125) in die wirbelerzeugende Kammer (130) einen Wirbel zu erzeugen, der über dem Zentrum der wirbelerzeugenden Kammer (130) rotiert, wobei die Führungsnut (125)

derart gebildet ist, dass dessen Breite nahe der Seitenwand hin zu dem Innenraum ist, um das Reinigungswasser entlang der Führungsnut (125) mit einem hohen Druck und hoher Geschwindigkeit fließen zu lassen, um einen starken Wirbel zu erzeugen; und

- ein Ausgabeloch (141), das an dem Zentrum des Bodens der wirbelerzeugenden Kammer (130) angeordnet ist, um Wirbel-erzeugtes Reinigungswasser der wirbelerzeugenden Kammer zu einer inneren Wand der Toilette (10) auszugeben, wobei das Reinigungswasser in der wirbelerzeugenden Kammer in Form feiner Partikel durch das Ausgabeloch gesprüht wird,

dass das Reinigungswasser sterilisierendes Wasser ist, so dass die reinigungswassererzeugende Vorrichtung eine sterilisierendes-Wasser-erzeugende Vorrichtung (200) bildet und die reinigungswasserverteilende Vorrichtung eine sterilisierendes-Wasser-verteilende Vorrichtung (100) bildet, und

dass das Bidet (20) ferner einen düsen Spitzenreinigenden Teil (66) umfasst, der eine Düsen spitze der Düsenanordnung (60) reinigt, wobei die sterilisierendes-Wasser-erzeugende Vorrichtung (200) mit der sterilisierendes-Wasser-verteilenden Vorrichtung (100) und dem düsen spitzenreinigenden Teil (66) verbunden ist, und sterilisierendes Wasser, das durch die sterilisierendes-Wasser-erzeugende Vorrichtung erzeugt wird zu der sterilisierendes-Wasser-verteilenden Vorrichtung (100) oder zu dem düsen spitzenreinigenden Teil (66) geliefert wird.

2. Toilette nach Anspruch 1, wobei eine Vielzahl der Führungsnuten (125) derart ausgebildet ist, um symmetrisch über dem Zentrum der wirbelerzeugenden Kammer (130) zu sein.

3. Toilette nach Anspruch 1, wobei sterilisierendes Wasser durch das Ausgabeloch (141) in einem Ausgabewinkel von 100 Grad oder mehr verteilt wird.

4. Toilette nach Anspruch 1, wobei die wirbelerzeugende Kammer (130) eine Höhe in einem Bereich von 0,1 mm bis 0,3 mm hat.

5. Toilette nach Anspruch 1, wobei das Ausgabeloch (141) eine Länge in einem Bereich von 0,1 mm bis 0,3 mm hat.

6. Toilette nach Anspruch 1, wobei das Ausgabeloch (141) einen Durchmesser in einem Bereich von 0,1 mm bis 1,5 mm hat.

7. Toilette nach Anspruch 1, wobei die Führungsnut (125) eine Breite in einem Bereich von 0,1 mm bis 0,7 mm hat.

8. Toilette nach Anspruch 1, wobei das Ausgabeloch (141) kleiner als der Einlass (122) ist.

9. Toilette nach Anspruch 8, wobei der Druck des sterilisierenden Wassers innerhalb der wirbelerzeugenden Kammer in einem Bereich von 1,2 kg/cm² bis 5 kg/cm² ist.

10. Toilette nach Anspruch 1, wobei die sterilisierendes Wasser erzeugende Vorrichtung (200) sterilisierendes Wasser durch ein Elektrodenverfahren erzeugt.

11. Toilette nach Anspruch 1, wobei die sterilisierendes-Wasser-verteilende Vorrichtung (100) mit einer Pumpe (240) verbunden ist und sterilisierendes Wasser durch die Pumpe geliefert wird.

12. Toilette nach Anspruch 11, wobei die Pumpe (240) umfasst:

- einen elektrischen Motor (241);
- einen verlangsamen den Getriebeteil (242), der mit dem elektrischen Motor (241) verbunden ist und eine Vielzahl von Gängen hat, um die Rotationsgeschwindigkeit zu verlangsamen;
- eine Vielzahl von Verbindungsstücken (243), die einseitig mit dem verlangsamen den Getriebeteil (242) verbunden sind und eine gemeinsame Bewegung vollführen; und
- eine Pumpeinheit (244), die mit einer anderen Seite des Verbindungsstücks (243) verbunden ist und sich reziprok gemäß der gemeinsamen Bewegung des Verbindungsstücks (243) bewegt,

wobei die Pumpeinheit (244) sterilisierendes Wasser der sterilisierendes-Wasser-erzeugenden Einheit (200) zu der sterilisierendes-Wasser-verteilenden Vorrichtung (100) liefert, während eine reziproke Bewegung ausgeführt wird.

13. Toilette nach Anspruch 1, wobei das Ausgabeloch (141) der sterilisierendes-Wasser-verteilenden Vorrichtung (100)

angebracht ist, um schräg direkt nach unten zu einer Vorderseite zu sein.

14. Toilette nach Anspruch 1, wobei die Toilette einen Toilettensitz umfasst, der umfasst:

- die sterilisierendes-Wasser-verteilende Vorrichtung (100); und
- die sterilisierendes-Wasser-erzeugende Vorrichtung (200), die sterilisierendes Wasser zu der sterilisierendes-Wasser-verteilenden Vorrichtung liefert.

15. Toilette nach Anspruch 14, wobei die sterilisierendes-Wasser-erzeugende Vorrichtung (200) sterilisierendes Wasser durch ein Lösungsverfahren erzeugt.

16. Toilette nach Anspruch 14, wobei die sterilisierendes-Wasser-verteilende Vorrichtung (100) an einer Rückseite des Toilettensitzes angeordnet ist und das Ausgabeloch (141) so angeordnet ist, um schräg direkt nach unten zu einer Vorderseite zu sein.

Revendications

1. Toilette (10) comprenant un bidet (20) qui comprend un dispositif de génération d'eau de lavage (200) ; un ensemble de buse (60) qui distribue de l'eau vers les parties intimes de l'utilisateur ; et un dispositif de distribution d'eau de lavage (100) pour recevoir de l'eau de lavage depuis le dispositif de génération d'eau de lavage (200), et pour distribuer l'eau de lavage vers une paroi intérieure de la toilette (10) pour nettoyer la paroi intérieure de la toilette (10), le dispositif de distribution d'eau de lavage (100) comprenant :

un orifice d'entrée (122) à travers lequel de l'eau de lavage est introduite, l'orifice d'entrée étant formé en une partie supérieure d'une partie de corps (120) ;

une partie creuse (121) à travers laquelle de l'eau de lavage est introduite, la partie creuse s'étendant dans le sens de la longueur depuis la partie supérieure vers une partie inférieure de la partie de corps (120) ;

un orifice de sortie (123) en connexion fluide avec la partie creuse (121) au niveau de la partie inférieure et s'étendant dans une direction radiale de façon à décharger de l'eau de lavage dans la direction radiale ;

caractérisé en ce que le dispositif de distribution d'eau de lavage (100) comprend en outre :

une partie de buse (140) ayant une forme cylindrique et couplée à une partie la plus basse de la partie de corps (120), l'orifice de sortie (123) étant agencé pour décharger vers une paroi cylindrique intérieure de la partie de buse ;

une partie saillante (124) étant formée en un côté inférieur de l'orifice de sortie (123) dans la partie de buse (140), la partie saillante (124) ayant une forme cylindrique avec un diamètre plus petit qu'un diamètre intérieur de la partie de buse (140) ;

une chambre de production de tourbillon (130) cylindrique formée par une surface de fond en retrait de la partie saillante (124) conjointement avec un côté intérieur d'un fond de la partie de buse (140) ;

une rainure de guidage (125) s'étendant depuis une paroi latérale de la chambre de production de tourbillon (130) jusqu'à un intérieur de la chambre de production de tourbillon (130) vers une position déviant d'un centre de la chambre de production de tourbillon (130) pour fournir une force de rotation à l'eau de lavage introduite depuis l'orifice de sortie (123) dans entre la partie de buse (140) et la partie saillante (124) et dans et le long de la rainure de guidage (125) dans la chambre de production de tourbillon (130) pour produire un tourbillon tournant autour du centre de la chambre de production de tourbillon (130), dans laquelle la rainure de guidage (125) est formée de telle manière que sa largeur rétrécisse de la paroi latérale vers l'intérieur pour avoir l'eau de lavage s'écoulant le long des rainures de guidage (125) à une haute pression et a grande vitesse pour former un fort tourbillon ; et

un trou de distribution (141) disposé au centre du fond de la chambre de production de tourbillon (130) pour distribuer l'eau de lavage produite par le tourbillon de la chambre de production de tourbillon vers une paroi latérale de la toilette (10), l'eau de lavage dans la chambre de production de tourbillon étant pulvérisée sous la forme de particules fines à travers le trou de distribution,

en ce que l'eau de lavage est de l'eau de stérilisation de telle manière que le dispositif de génération d'eau de lavage forme un dispositif de génération d'eau de stérilisation (200) et le dispositif de distribution d'eau de lavage forme un dispositif de distribution d'eau de stérilisation (100), et

en ce que le bidet (20) comprend en outre une partie de nettoyage de pointe de buse (66) qui nettoie une

- pointe de buse de l'ensemble de buse (60), dans laquelle le dispositif de génération d'eau de stérilisation (200) est connecté au dispositif de distribution d'eau de stérilisation (100) et à la partie de nettoyage de pointe de buse (66), et l'eau de stérilisation générée par le dispositif de génération d'eau de stérilisation est fournie au dispositif de distribution d'eau de stérilisation (100) ou à la partie de nettoyage de pointe de buse (66).
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2. Toilette selon la revendication 1, dans laquelle une pluralité de rainures de guidage (125) sont formées pour être symétriques autour du centre de la chambre de production de tourbillon (130).
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3. Toilette selon la revendication 1, dans laquelle de l'eau de stérilisation est distribuée à travers le trou de distribution (141) à un angle de distribution de 100 degrés ou plus.
4. Toilette selon la revendication 1, dans laquelle la chambre de production de tourbillon (130) a une hauteur allant de 0,1 mm à 0,3 mm.
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5. Toilette selon la revendication 1, dans laquelle le trou de distribution (141) a une longueur allant de 0,1 mm à 0,3 mm.
6. Toilette selon la revendication 1, dans laquelle le trou de distribution (141) a un diamètre allant de 0,1 mm à 1,5 mm.
- 20
7. Toilette selon la revendication 1, dans laquelle la rainure de guidage (125) a une largeur allant de 0,1 mm à 0,7 mm.
8. Toilette selon la revendication 1, dans laquelle le trou de distribution (141) est plus petit que l'orifice d'entrée (122).
- 25
9. Toilette selon la revendication 8, dans laquelle la pression de l'eau de stérilisation dans la chambre de production de tourbillon va de 1,2 kg/cm² à 5 kg/cm².
10. Toilette selon la revendication 1, dans laquelle le dispositif de génération d'eau de stérilisation (200) génère de l'eau de stérilisation par un procédé à électrode.
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11. Toilette selon la revendication 1, dans laquelle le dispositif de distribution d'eau de stérilisation (100) est relié à une pompe (240), et l'eau de stérilisation est fournie par la pompe.
12. Toilette selon la revendication 11, dans laquelle la pompe (240) comprend :
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- un moteur électrique (241) ;
une partie d'engrenage de décélération (242) connectée au moteur électrique (241) et comportant une pluralité d'engrenages pour décélérer une vitesse de rotation ;
une pluralité d'éléments de bielle (243) ayant un côté couplé à la partie d'engrenage de décélération (242) et formant un mouvement joint ; et
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- une unité de pompage (242) connectée à un autre côté des éléments de bielle (243) et se déplaçant alternativement selon le mouvement joint de l'élément de bielle (243), dans lequel l'unité de pompage (244) fournit de l'eau de stérilisation du dispositif de génération d'eau de stérilisation (200) au dispositif de distribution d'eau de stérilisation (100) en effectuant un mouvement alternatif.
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13. Toilette selon la revendication 1, dans laquelle le trou de distribution (141) du dispositif de distribution d'eau de stérilisation (100) est installé pour être incliné depuis un côté directement en aval vers un côté avant.
14. Toilette selon la revendication 1, dans laquelle la toilette comprend un siège de toilette comprenant :
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- le dispositif de distribution d'eau de stérilisation (100) ; et
le dispositif de génération d'eau de stérilisation (200) qui fournit de l'eau de stérilisation au dispositif de distribution d'eau de stérilisation.
15. Toilette selon la revendication 14, dans laquelle le dispositif de génération d'eau de stérilisation (200) génère de l'eau de stérilisation par un procédé de solution.
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16. Toilette selon la revendication 14, dans laquelle le dispositif de distribution d'eau de stérilisation (100) est installé d'un côté arrière du siège de toilette, et le trou de distribution (141) est installé pour être incliné depuis un

un côté directement en aval vers un côté avant.

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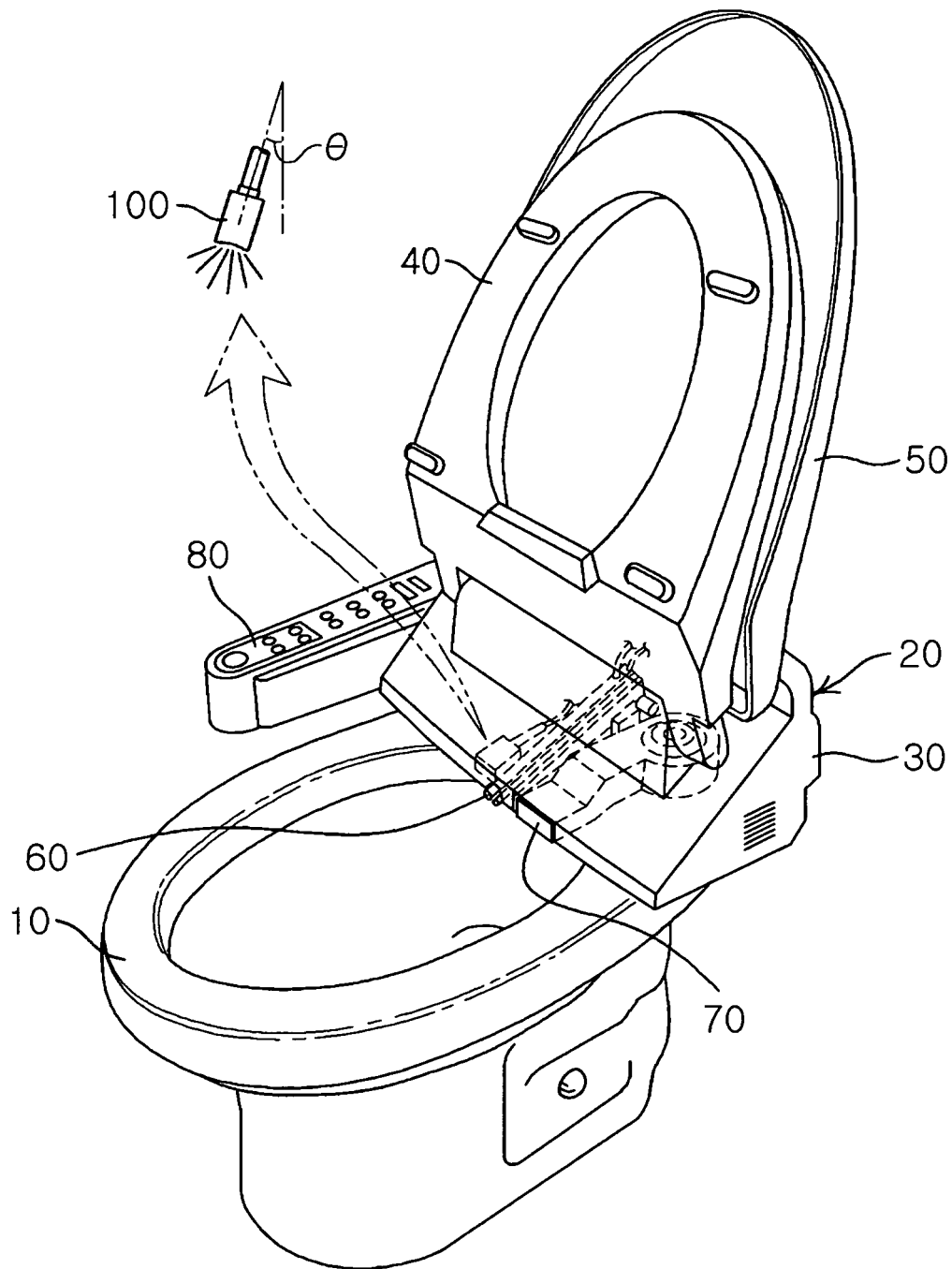


FIG. 1

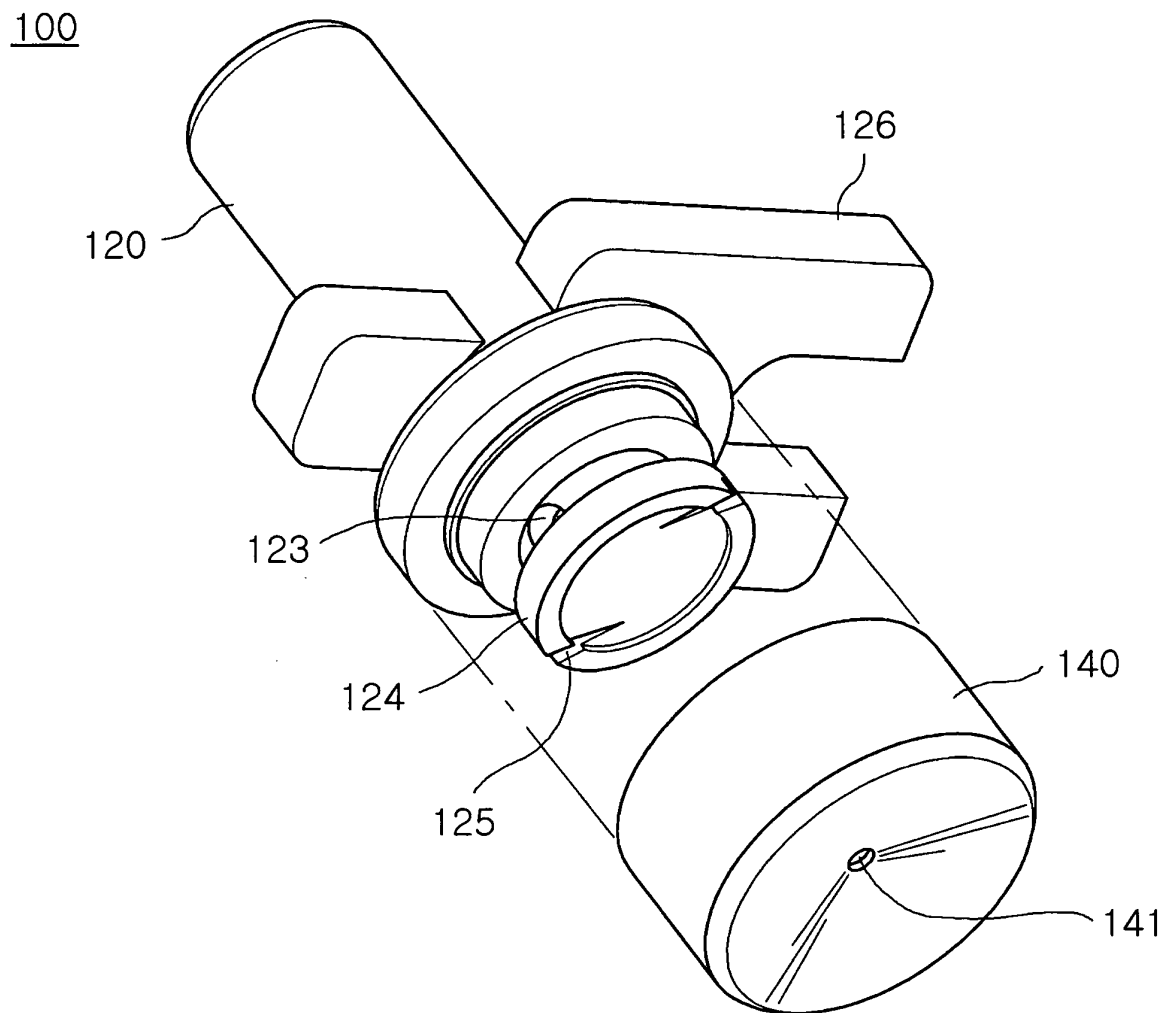


FIG. 2

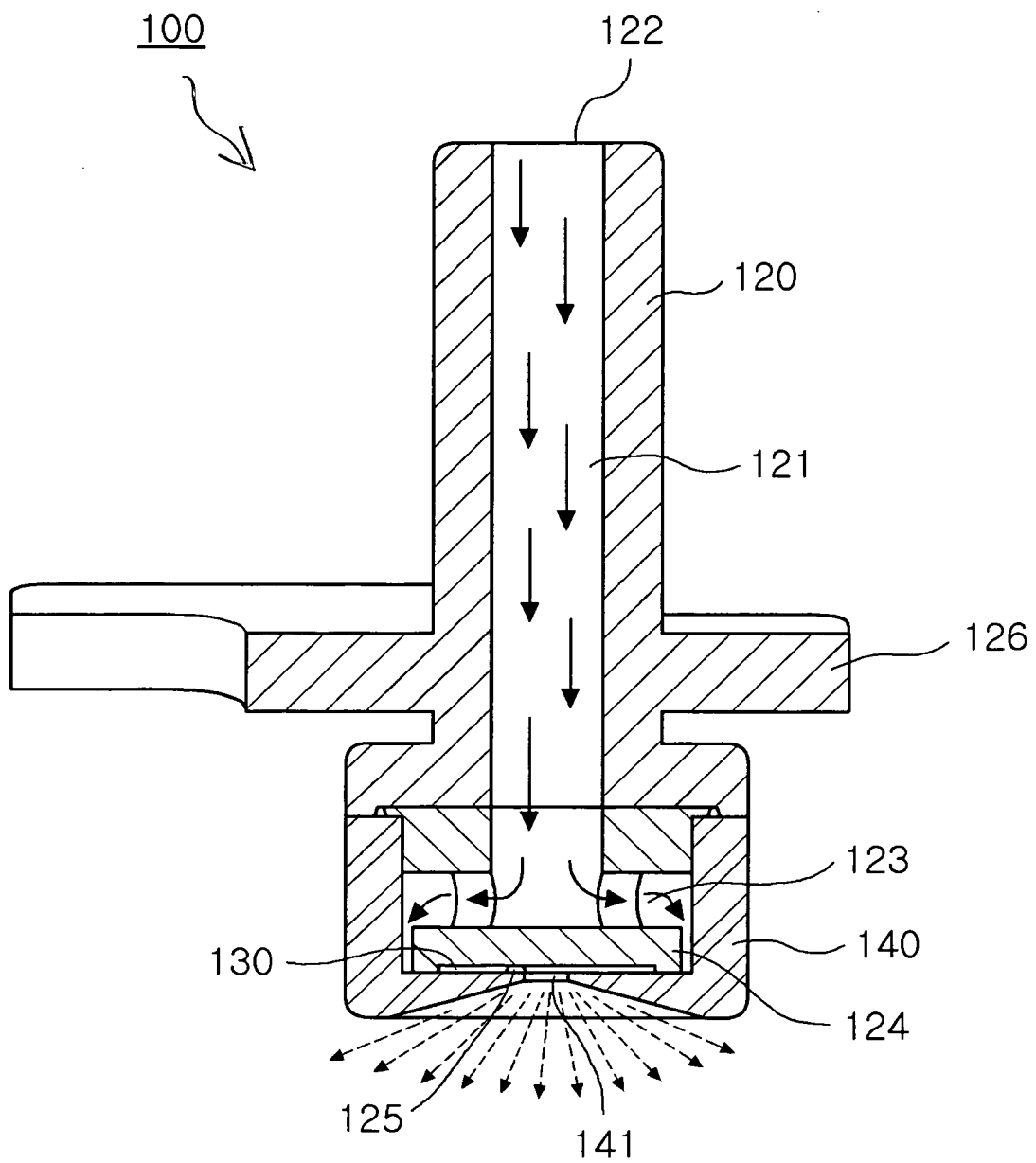


FIG. 3a

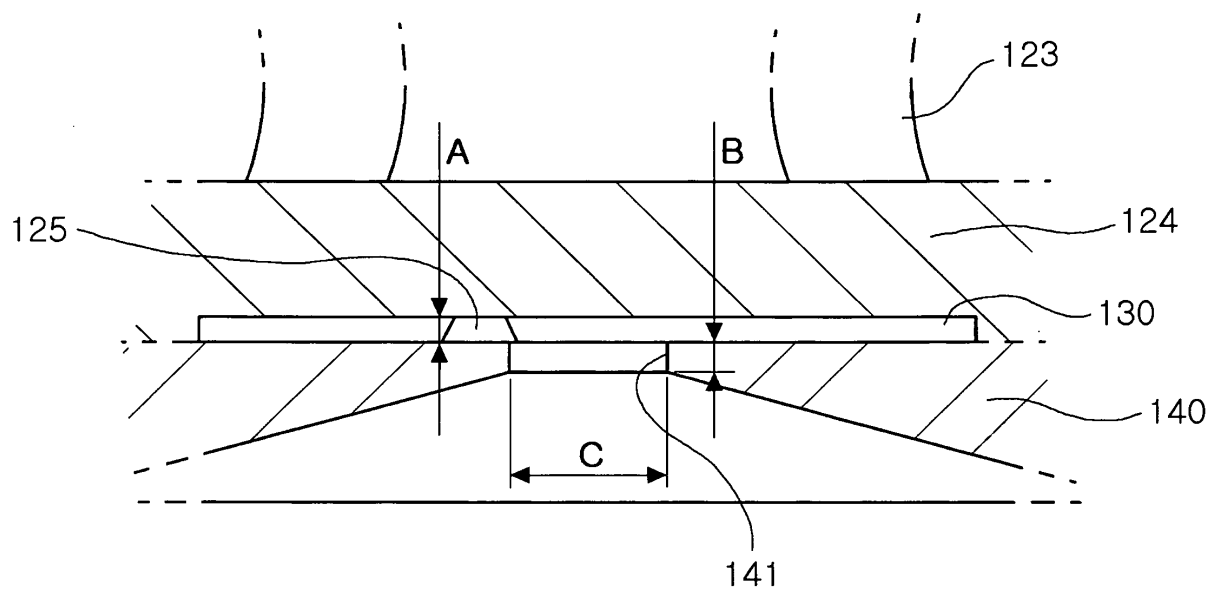


FIG. 3b

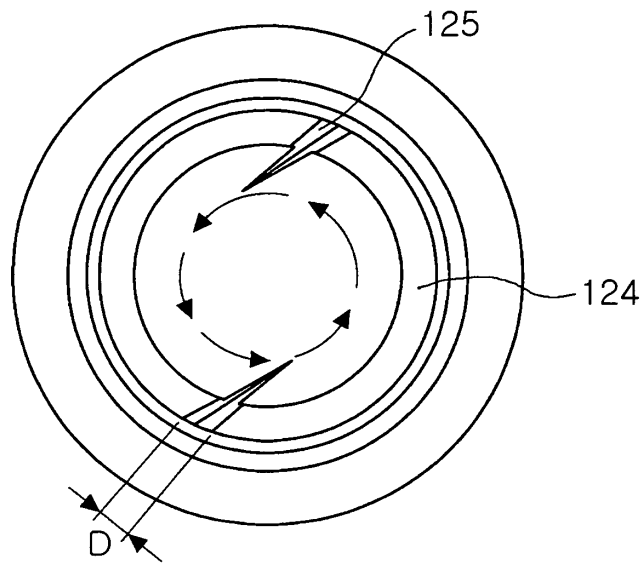


FIG. 4

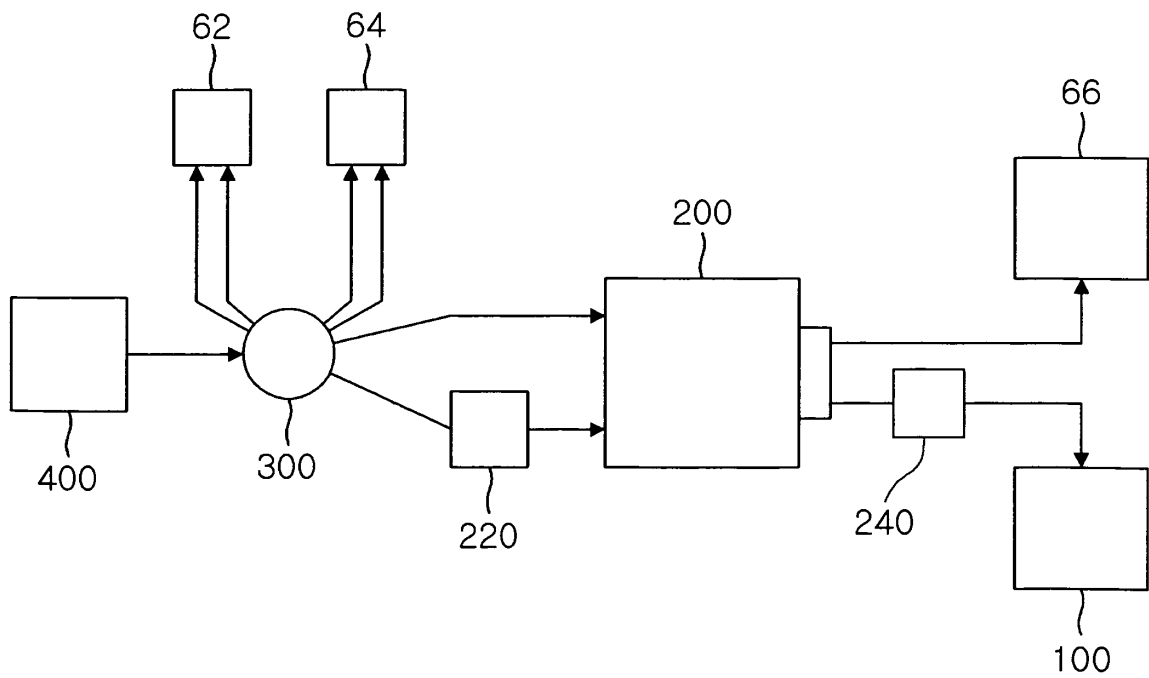


FIG. 5

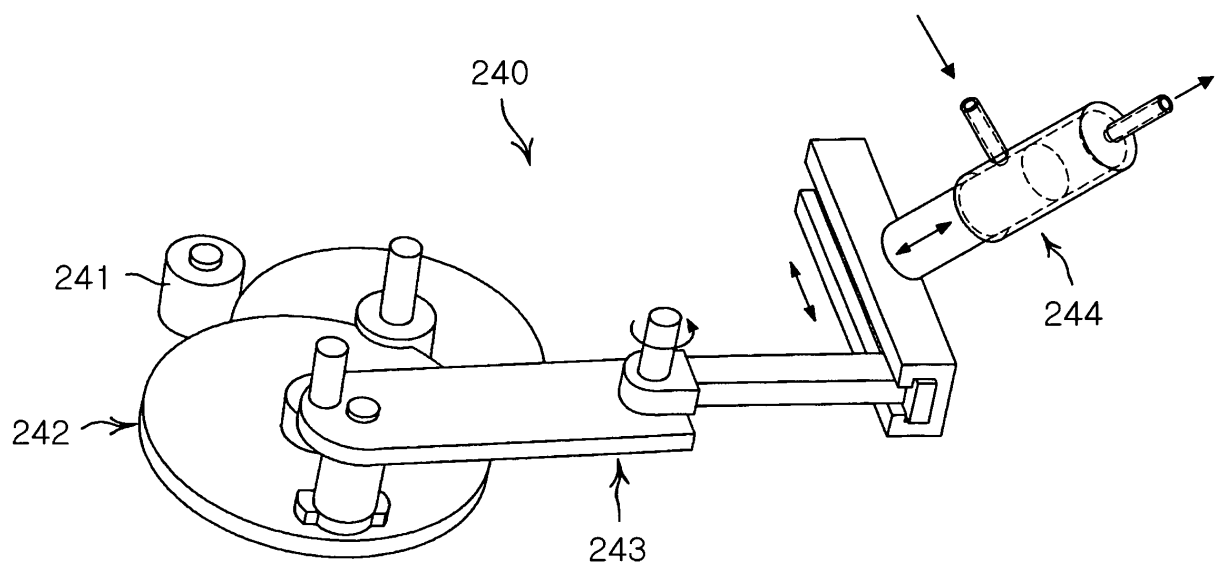


FIG. 6

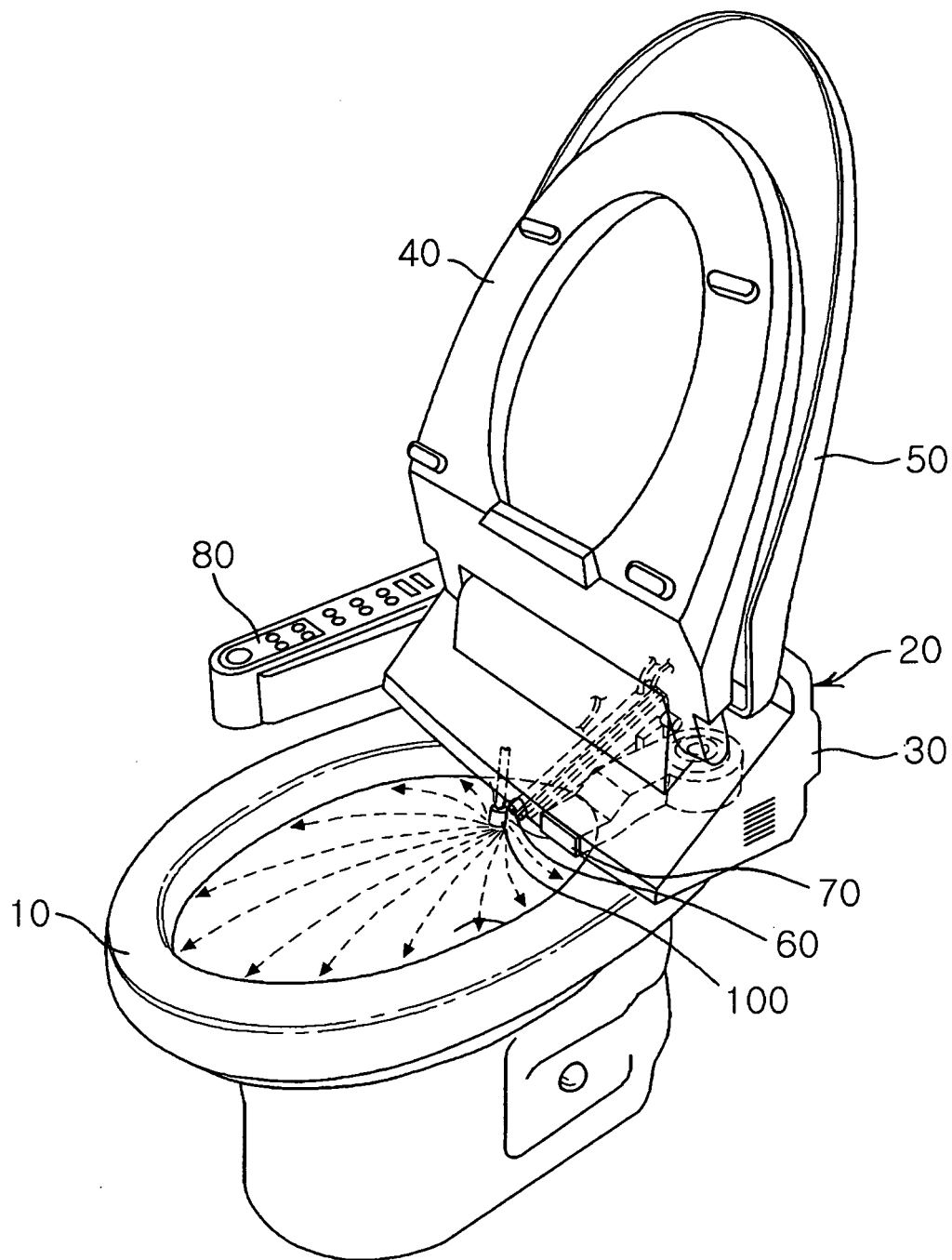


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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