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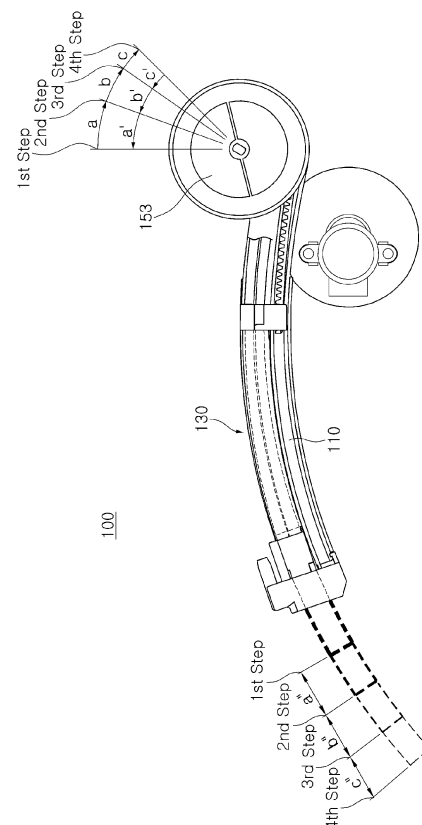
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(54) **NOZZLE ASSEMBLY FOR BIDET**

(57) The present invention provides a nozzle assembly for a bidet, the nozzle assembly comprising: a nozzle unit which moves along a curved line and comprises a water supply hose connected to a water supply source; and a driving unit having a winding member for rotating/driving such that the length of extension of the nozzle unit is adjusted, the driving unit guaranteeing that the nozzle unit moves along a curved line, where the length of extension of the nozzle unit is adjusted in multiple steps, and the withdrawing rotation angle, by which the winding member rotates in order to change the length of extension of the nozzle unit from one of the steps to the adjacent upper step, is different in each step. The length of extension of the nozzle unit can be adjusted such that the interval of water ejection positions is constant.

[Figure 8]



Description

[Technical Field]

[0001] The present invention relates to a nozzle assembly for a bidet, and more particularly, to a nozzle assembly for a bidet including a nozzle configured in such a manner that an ejection position thereof is adjustable at a predetermined interval and configured to make a curved movement.

[Background Art]

[0002] A nozzle assembly for a bidet is installed in a bidet unit in case of a bidet integrated with a toilet, and is installed in a bidet main body in case of a bidet toilet seat as a conventional bidet, and includes a nozzle movably provided therein to dispense water to private parts of a user to clean the same.

[0003] The nozzle provided in the nozzle assembly for a bidet is positioned within a nozzle housing in an idle state (when not in use), and when the user operates the bidet after passing a bowel movement, the nozzle is moved to a water ejection position to clean external areas.

[0004] The related art nozzle is provided to make a linear movement in a sloped state in the nozzle assembly for a bidet. Also, in the related art nozzle assembly, an injection-molded product as a water supply channel is assembled within a nozzle cylinder formed of a material such as stainless steel, or the like, and a water supply hole connected to the water supply channel is connected to a rear end using a connector.

[0005] Thus, since the nozzle is provided in the nozzle assembly for a bidet in such a manner that the nozzle makes a linear movement slantingly, a relatively large space is required for such a nozzle movement in a bidet unit in the case of the bidet integrated with a toilet or in the bidet main body in the case of the bidet toilet seat as a conventional bidet in which the nozzle assembly for a bidet is installed.

[0006] To this end, for example, in the bidet integrated with a toilet, a deep recess should be formed in a toilet bowl or a height of a part where the bidet is installed should be high, and in the bidet toilet seat as a conventional bidet, a height of the bidet main body should be high.

[0007] As a solution to the aforementioned problems, the applicant of this application has proposed a nozzle assembly for a bidet in which a nozzle is provided to make a curved movement in Korean Patent Laid-Open Publication No. 10-2010-0018165.

[0008] However, as illustrated in FIG. 1, in the related art nozzle assembly 10 for a bidet in which a nozzle that makes a linear movement, when a winding member 12 provided to move a nozzle 11 is rotated at the same rotation angle to move the nozzle 11, intervals A of water ejection positions of water dispensed from the nozzle 1

may be adjusted to be equal. In comparison, as illustrated in FIG. 2, in a nozzle assembly 20 for a bidet having a nozzle making a curved movement, when a winding member 22 is rotated at the same rotation angle, intervals B, B', B'', and B''' of water ejection positions of water dispensed from a nozzle 21 cannot be adjusted to be equal.

[Disclosure]

[Technical Problem]

[0009] An aspect of the present invention provides a nozzle assembly for a bidet in which intervals of water ejection positions are adjusted to be equal by differentiating angles at which a winding member is rotated to change a length of extension of a nozzle from one step to an adjacent higher step, in multiple steps.

[Technical Solution]

[0010] According to an aspect of the present invention, there is provided a nozzle assembly for a bidet, including: a nozzle unit making a curved movement and including a water supply hose connected to a water source; and a driving unit having a winding member rotatably driven to adjust a length of extension of the nozzle unit and driving the nozzle unit to make a curved movement, wherein the length of extension of the nozzle unit is adjusted by stages, and an exit-out rotation angle at which the winding member rotates to change the length of extension of the nozzle unit from any one step to an adjacent higher step may be different in each step.

[0011] In the nozzle assembly for a bidet according to the present disclosure, the nozzle unit may include a cylinder member having a curved shape with a hollow formed therein, and the water supply hose may be disposed in the hollow.

[0012] In the nozzle assembly for a bidet according to the present disclosure, the nozzle unit may be mounted on an upper portion of the movement guide member provided to correspond to a shape of the nozzle unit, and may make a curved movement.

[0013] In the nozzle assembly for a bidet according to the present disclosure, the movement guide member may have a curved shape.

[0014] In the nozzle assembly for a bidet according to the present disclosure, a length of extension of the nozzle unit may be increased from a lower step to a higher step.

[0015] In the nozzle assembly for a bidet according to the present disclosure, a lead-in rotation angle at which the winding member rotates to change the length of extension of the nozzle unit from the adjacent higher step to the any one step may be the opposite in direction to the exit-out rotation angle direction and may have the same value.

[0016] In the nozzle assembly for a bidet according to the present disclosure, the exit-out rotation angle may

be reduced in a direction toward a higher step.

[0017] In the nozzle assembly for a bidet according to the present disclosure, a decrease of the exit-out rotation angle may be reduced in a direction toward a higher step.

[0018] In the nozzle assembly for a bidet according to the present disclosure, the driving unit may include: a connection member having one side fixedly coupled to the nozzle unit and the other side connected to the winding member; and a driving motor connected to the winding member to provide rotational force to the winding member.

[0019] In the nozzle assembly for a bidet according to the present disclosure, the connection member may be provided as a belt gear having one side fixedly coupled to a lower end of a connector member.

[Advantageous Effects]

[0020] According to an embodiment of the present invention, intervals of water ejection positions may be adjusted to be equal by differentiating angles at which the winding member rotates to change a length of extension of the nozzle from one step to an adjacent higher step by stages.

[Description of Drawings]

[0021]

FIG. 1 is a conceptual view illustrating a method for adjusting a length of extension of a nozzle of a nozzle assembly for a bidet which makes a linear movement.

FIG. 2 is a conceptual view illustrating a method for adjusting a length of extension of a nozzle of a nozzle assembly for a bidet which makes a curved movement.

FIG. 3 is a perspective view illustrating a nozzle assembly for a bidet according to an embodiment of the present disclosure.

FIG. 4 is a side view illustrating a case in which a nozzle unit of the nozzle assembly for a bidet illustrated in FIG. 3 is in the original position.

FIG. 5 is a side cross-sectional view of the nozzle assembly for a bidet of FIG. 4.

FIG. 6 is a cross-sectional view taken along line X-X' of FIG. 4.

FIG. 7 is a perspective view illustrating a state in which a nozzle unit of the nozzle assembly for a bidet illustrated in FIG. 3 is drawn out.

FIG. 8 is a conceptual view illustrating a method for adjusting a length of extension of a nozzle unit according to an embodiment of the present disclosure.

[Best Mode]

[0022] Hereinafter, exemplary embodiments of the present disclosure will be described in detail with refer-

ence to the accompanying drawings. However, the ideas of the present invention are not limited thereto, and those skilled in the art who understand the ideas of the present invention may easily propose any other embodiment within the scope of the present invention and any other degenerative invention through addition, change, deletion, and the like, and those embodiments will also be within the scope of the present invention.

[0023] Like numbers refer to like elements throughout the specification within the scope of the present disclosure.

[0024] FIG. 3 is a perspective view illustrating a nozzle assembly for a bidet according to an embodiment of the present disclosure, FIG. 4 is a side view illustrating a case in which a nozzle unit of the nozzle assembly for a bidet illustrated in FIG. 3 is in the original position, FIG. 5 is a side cross-sectional view of the nozzle assembly for a bidet of FIG. 4, FIG. 6 is a cross-sectional view taken along line X-X' of FIG. 4, and FIG. 7 is a perspective view illustrating a state in which a nozzle unit of the nozzle assembly for a bidet illustrated in FIG. 3 is drawn out.

[0025] In a nozzle assembly 100 for a bidet according to an embodiment of the present disclosure, a nozzle unit 130 is configured to make a curved movement so that a space occupied by the nozzle assembly 100 for a bidet in a bidet main body is reduced.

[0026] Referring to FIGS. 3 through 7, the nozzle assembly 100 for a bidet according to an embodiment of the present disclosure may include a movement guide member 110, the nozzle unit 130, and a driving unit 150.

[0027] The movement guide member 110 may be provided to correspond to a shape of the nozzle unit 130, and, preferably, has a curved shape. Thus, as described hereinafter, the nozzle unit 130 may be guided to make a curved movement along the movement guide member 110.

[0028] The nozzle unit 130 may make a curved movement along the movement guide member 110, and may include a cylinder member 131 in which a water supply hose 133 connected to a water source (not shown) is installed.

[0029] That is, as in the illustrated embodiment, the nozzle unit 130 may be mounted on the movement guide member 110 and installed to be movable in a forward/backward direction along the movement guide member 110. Here, since the movement guide member 110 has a curved shape, the nozzle unit 130 may make a curved movement in the forward/backward direction.

[0030] Here, in a case in which the movement guide member 110 does not have a curved shape, the nozzle unit 130 may be provided to have a curved shape to make a curved movement.

[0031] The cylinder member 131 may be formed of generally used stainless steel, but a material of the cylinder member 131 is not limited thereto, and various modifications may be made.

[0032] The nozzle unit 130 may include the cylinder member 131 with a hollow formed therein and the water

supply hose 133 disposed in the hollow of the cylinder member 131. The water supply hose 133 may be connected to a water source and may supply cleaning water to the nozzle unit 130.

[0033] Here, the water supply hose 133 may be formed as a flexible pipe, and in this case, a rubber hose, a fabric hose, or a silicon hose may be formed of a synthetic resin pipe. However, a material of the water supply hose 133 is not limited thereto, and may be variously modified.

[0034] The driving unit 150 may be connected to the nozzle unit 130 and provide power for the nozzle unit 130 to move along the movement guide member 110.

[0035] Here, there are no limitations in a structure or type of the driving unit 150, and various types of driving units may be applied as long as they may be able to move the nozzle unit 130 in the forward/backward direction along the movement guide member 110.

[0036] In this manner, in the nozzle assembly 100 for a bidet according to an embodiment of the present disclosure, since the movement guide member 110 is provided to form a curved line or the nozzle unit 130 is provided to have a curved shape, the nozzle unit 130 may make a curved movement, and thus, the nozzle unit 130 may move even in a small space. Thus, in a case of a bidet integrated with a toilet, a shallow recess may be formed in a toilet unit to install a bidet unit therein, and in case of a bidet toilet seat as a conventional bidet, a height of a bidet main body may be lowered.

[0037] The cylinder member 131 of the nozzle unit 130 may have a curved shape corresponding to the movement guide member 110.

[0038] When the nozzle unit 130 has a curved shape corresponding to the movement guide member 110, the nozzle unit 130 may smoothly make a curved movement along the movement guide member 110. Also, since the nozzle unit 130 has the curved shape, an area occupied by the bidet unit may be reduced.

[0039] However, the shape of the cylinder member 131 is not limited to the illustrated embodiment, and the cylinder member 131 may be modified to various shapes as long as the nozzle unit 130 makes a curved movement.

[0040] Meanwhile, since the water supply hose 133 is formed of a flexible material, the water supply hose 133 may be installed to be easily deformed according to a shape of the cylinder member 131 within the curved cylinder member 131.

[0041] Thus, even in a case in which the cylinder member 131 is formed to have a curved shape to make a curved movement, a flow channel in which cleaning water is supplied may be easily manufactured.

[0042] Meanwhile, as illustrated in FIGS. 5 and 7, the nozzle 130 may include a nozzle tip 135 connected to a front end of the cylinder member 131 and a connector 136 connected to the nozzle tip 135 in such a manner that the connector 136 communicates with an ejection hole 135a, and inserted within the cylinder member 131 in such a manner that one end of the water supply hose 133 is insert-coupled thereto.

[0043] That is, the nozzle tip 135 is provided at a front end of the cylinder member 131 to dispense cleaning water to private parts of a user. The ejection hole 135a may be formed to communicate with the connector 136 (to be described hereinafter) and dispense cleaning water supplied through the connector 136. Here, the nozzle tip 135 may be detachably connected to the cylinder member 131.

[0044] The connector 136 may be connected to the nozzle tip 135 in such a manner that the connector 136 communicates with the ejection hole 135a, and may be inserted within the cylinder member 131. The connector 136 may be insert-coupled to one end of the water supply hose 133. Thus, the connector 136 may be connected to the water supply hose 133 connected to a water supply pipe, and cleaning water supplied from the water supply pipe may move up to the ejection hole 135a.

[0045] In this manner, according to an embodiment of the present disclosure, the connector 135, to which the water supply hose 133 is connected, is provided at a front end of the cylinder member 131, and the water supply hose 133 may be connected to the interior of the cylinder member 131.

[0046] Meanwhile, the connector 136 may be provided in plurality, and the water supply hose 133 may be provided in plurality within the cylinder member 131 to form a plurality of flow channels.

[0047] That is, in forming a cleaning water flow channel within the cylinder member 131 in the nozzle unit 130, the water supply hose 133 connected to the water source, not a plastic injection-molded product, is directly installed within the cylinder member 131 to form a cleaning water flow channel, whereby the water supply hose 133 may be easily installed within the cylinder member 131 manufactured to have a curved shape, and a plurality of water supply hoses 133 may be easily installed within the cylinder member 131.

[0048] In this manner, since a plurality of cleaning water flow channels are formed within the cylinder member 131 by the plurality of water supply hoses 133, the nozzle unit 130 may form various water streams. That is, since a plurality of cleaning water flow channels are formed, a wide water stream, a linear water stream, and a water stream for nozzle cleaning may be formed according to each of connection holes and a size of the water supply hose 133 connected to each of the connection holes, and a velocity of water supplied to the water supply hose 133.

[0049] The nozzle unit 130 may include a connector member 137 having a through hole member 137b coupled to the other end of the cylinder member 131 and allowing the water supply hose 133 to pass therethrough, to fix the water supply hose 133.

[0050] That is, as illustrated in FIGS. 5 through 7, the connector member 137 may be insert-coupled to the other end of the cylinder member 131 and have the through hole member 137b. Here, the through hole member 137b may serve to fix the water supply hose 133 when the water supply hose 133 passes therethrough.

[0051] Also, the connector member 137 may have a guide protrusion 137c formed to be inserted into a guide groove 111 of the movement guide member 110, prevent release of the cylinder member 131, and guide movement of the cylinder member 131.

[0052] In the movement guide member 110, the guide groove 111 may be formed in a direction in which the nozzle unit 130 moves, and, as in the illustrated embodiment, the guide groove 111 may be formed in plurality. The guide protrusion 137c of the connector member 137 may be installed to be inserted into a position corresponding to the guide groove 111 to guide a slidable movement of the cylinder member 131 when the cylinder member 131 moves in a forward/backward direction and prevent release of the cylinder member 131 from the movement guide member 110.

[0053] However, the formation and the number of the guide protrusions 137c and the guide groove 111 are not limited to the illustrated case, and may be variously modified.

[0054] Meanwhile, the nozzle assembly 100 for a bidet according to an embodiment of the present disclosure may further include a nozzle duct unit 170 fixedly installed at a front end of the movement guide member 110 to protect the nozzle unit 130 and allowing the nozzle unit 130 to pass therethrough to guide movement of the nozzle unit 130.

[0055] That is, the nozzle duct unit 170 may be fixedly installed at a front end of the movement guide member 110 and include a through hole allowing the cylinder member 131 to pass therethrough. Thus, referring to FIGS. 3 through 5, when the nozzle unit 130 is in the original position, the nozzle duct unit 170 may cover the nozzle tip 135 to protect the nozzle tip 135, and as illustrated in FIG. 7, when the nozzle unit 130 is drawn out, the nozzle duct unit 170 may guide slidable movement of the nozzle unit 130.

[0056] Also, the nozzle duct unit 170 may serve as a stopper fixedly installed at the front end of the movement guide member 110 to allow the connector member 137 connected to the other end of the cylinder member 131 to be caught thereby, thus limiting movement of the cylinder member 131.

[0057] The nozzle duct unit 170 may include a self-cleaning member 171 having a cleaning water inlet 172 to dispense cleaning water to the nozzle tip 135 provided in the nozzle unit 130 when the nozzle unit 130 is in the original position.

[0058] That is, when the nozzle unit 130 is in the original position, the cleaning water inlet 172 may be connected to communicate with an upper portion of the nozzle tip 135, and the cleaning water inlet 172 may be connected to the water source. Thus, the self-cleaning member 171 may remove fecal matter from the nozzle tip 135.

[0059] The driving unit 150 may include a connection member 151 having one side fixedly coupled to the nozzle unit 130, a winding member 153 connected to the other side of the connection member 151 and allowing

the connection member 151 to be wound therearound or drawn out according to rotation, and a driving motor 155 connected to the winding member 153 and providing rotational force to the winding member 153.

[0060] Here, the connection member 151 may be provided as a belt gear 151 having one side fixedly coupled to a lower end of the connector member 137. Hereinafter, the connection member and the belt gear will be denoted by the same reference numeral 151 for the purposes of description.

[0061] As an installation protrusion 151 formed at one end of the belt gear 151 is insertedly installed in the through hole member 137b formed at a lower portion of the connector member 137, one end of the belt gear 151 and the connector member 137 may be fixedly coupled.

[0062] The other side of the connection member 151 provided as the belt gear 151 may be wound around the winding member. The winding member 153 may include a spur gear 154, and the spur gear 154 and the belt gear 151 may be engaged with each other.

[0063] The spur gear 154 may be connected to the driving motor 155, and may be forwardly or backwardly rotated according to an operation of the driving motor 155 to wind or draw out the belt gear 151, and as the belt gear 151 is wound or drawn out, a length of extension of the nozzle unit 130 may be adjusted.

[0064] FIG. 8 is a conceptual view illustrating a method for adjusting a length of extension of the nozzle unit 130 according to an embodiment of the present disclosure.

[0065] The nozzle assembly 100 for a bidet according to an embodiment of the present disclosure may be adjusted by multiple steps in such a manner that a length of extension of the nozzle unit 130 is lengthened from a lower step to a higher step, and as an example, FIG. 8 illustrates adjustment of a length of extension of the nozzle unit 130 by four steps including first to fourth steps.

[0066] Referring to FIG. 8, a first exit-out rotation angle a at which the winding member 153 rotates to change a length of extension of the nozzle unit 130 from the first step to the second step, a second exit-out rotation angle b for changing a length of extension of the nozzle unit 130 from the second step to the third step, and a third exit-out rotation angle c for changing a length of extension of the nozzle unit 130 from the third step to the fourth step may be different. In other words, the exit-out rotation angles a, b, and c at which the winding member 153 rotates to change a length of extension of the nozzle unit 130 from any one step to an adjacent higher step may be different by stages.

[0067] Meanwhile, a first lead-in rotation angle a' for changing a length of extension of the nozzle unit 130 from the second step to the first step, a second lead-in rotation angle b' for changing a length of extension of the nozzle unit 130 from the third step to the second step, and a third lead-in rotation angle c' for changing a length of extension of the nozzle unit 130 from the fourth step to the third step may be the opposite in direction and the same in values with respect to the first exit-out rotation

angle a, the second exit-out rotation angle b, and the third exit-out rotation angle c.

[0068] Conversely, the first exit-out rotation angle a may be greater than the second exit-out rotation angle b, and the second exit-out rotation angle b may be greater than the third exit-out rotation angle c. That is, the exit-out rotation angle may be reduced toward a higher step.

[0069] In addition, a difference between the first exit-out rotation angle a and the second exit-out rotation angle b may be greater than a difference between the second exit-out rotation angle b and the third exit-out rotation angle c. In other words, a decrease of the exit-out rotation angle may be reduced toward a higher step.

[0070] Accordingly, intervals a", b", and c" between ejection positions of the nozzle by stages may be uniform.

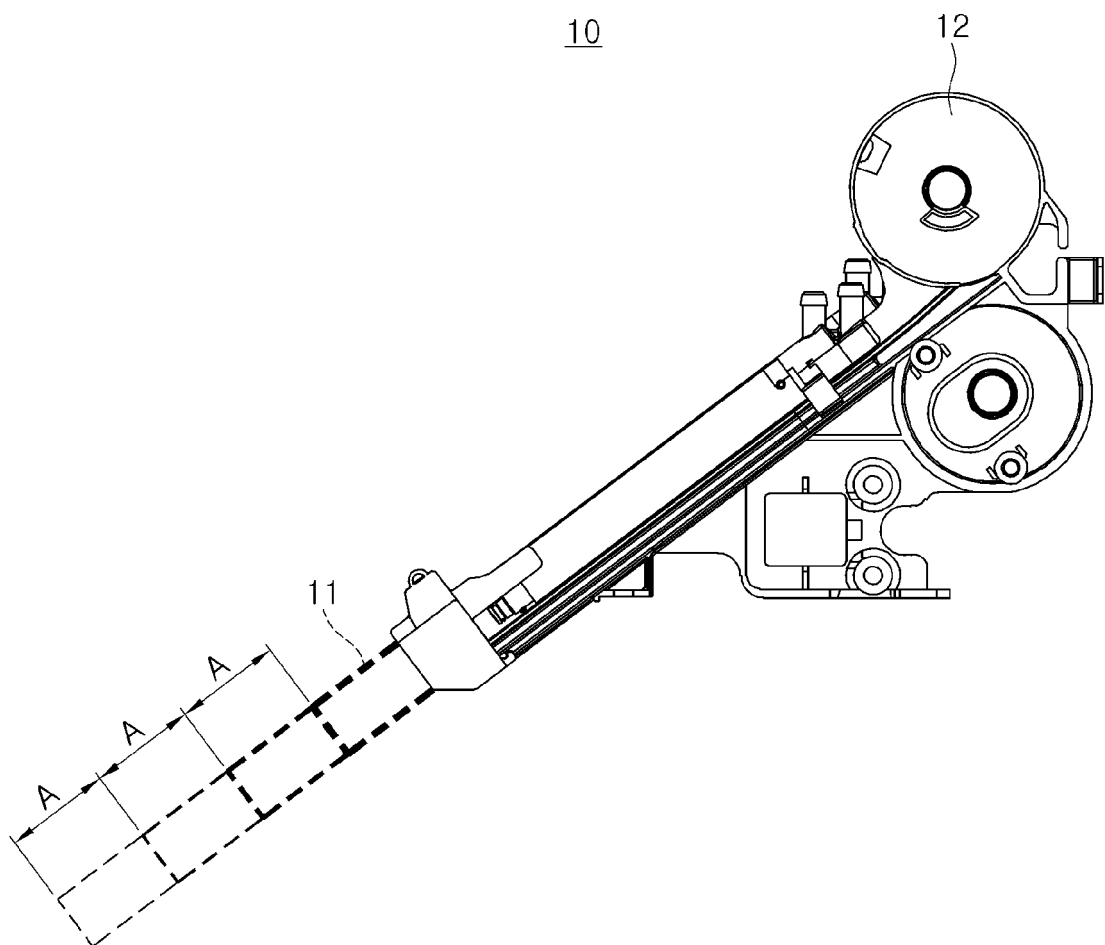
Claims

1. A nozzle assembly for a bidet, the nozzle assembly comprising:
 - a nozzle unit making a curved movement and including a water supply hose connected to a water source; and
 - a driving unit having a winding member rotatably driven to adjust a length of extension of the nozzle unit and driving the nozzle unit to make a curved movement, wherein the length of extension of the nozzle unit is adjusted by stages, and
 - a exit-out rotation angle at which the winding member rotates to change the length of extension of the nozzle unit from any one step to an adjacent higher step is different in each step.
2. The nozzle assembly of claim 1, wherein the nozzle unit includes a cylinder member having a curved shape with a hollow formed therein, and the water supply hose is disposed in the hollow.
3. The nozzle assembly of claim 1, wherein the nozzle unit is mounted on an upper portion of the movement guide member provided to correspond to a shape of the nozzle unit, and makes a curved movement.
4. The nozzle assembly of claim 3, wherein the movement guide member has a curved shape.
5. The nozzle assembly of claim 1, wherein a length of extension of the nozzle unit is increased from a lower step to a higher step.
6. The nozzle assembly of claim 1, wherein a lead-in rotation angle at which the winding member rotates to change the length of extension of the nozzle unit from the adjacent higher step to the any one step is the opposite in direction to the exit-out rotation angle

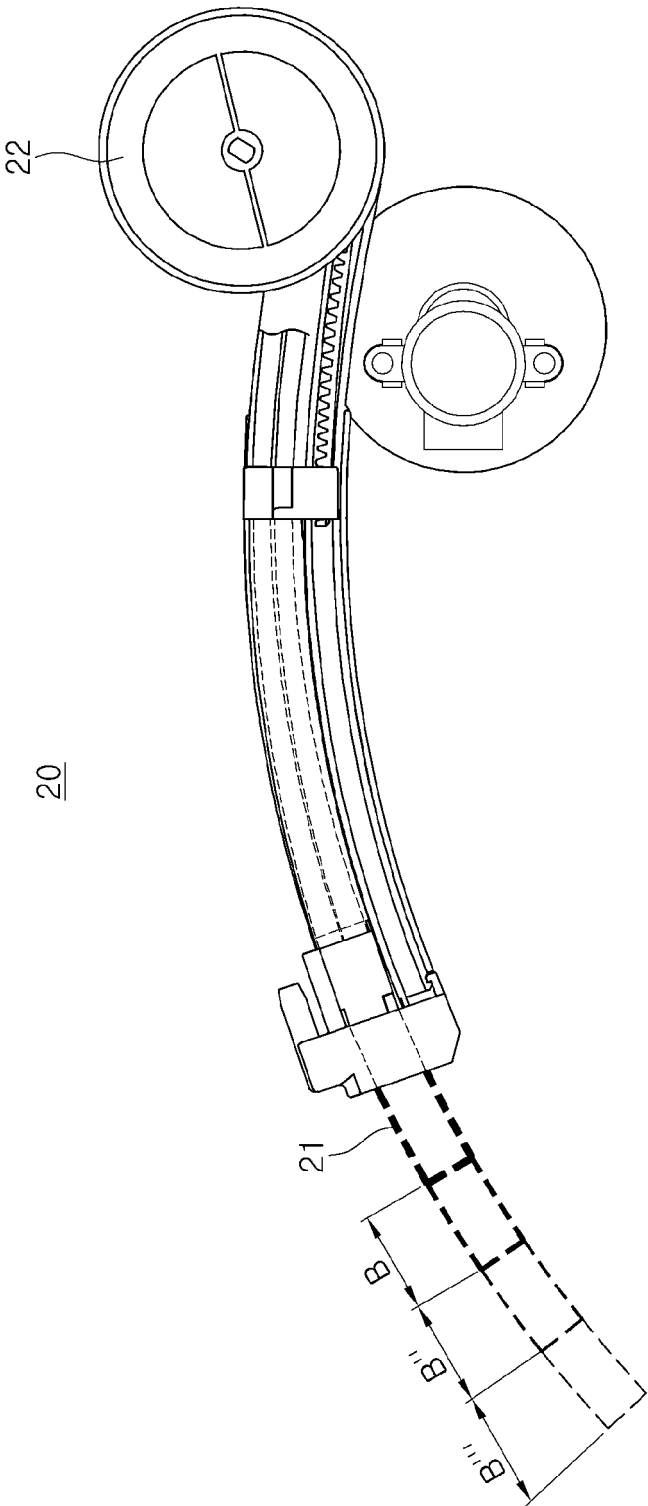
direction and has the same value.

7. The nozzle assembly of claim 1, wherein the exit-out rotation angle is reduced in a direction toward a higher step.
8. The nozzle assembly of claim 7, wherein a decrease of the exit-out rotation angle is reduced in a direction toward a higher step.
9. The nozzle assembly of any one of claims 1 to 8, wherein the driving unit includes:
 - a connection member having one side fixedly coupled to the nozzle unit and the other side connected to the winding member; and
 - a driving motor connected to the winding member to provide rotational force to the winding member.
10. The nozzle assembly of claim 9, wherein the connection member is provided as a belt gear having one side fixedly coupled to a lower end of the nozzle unit.

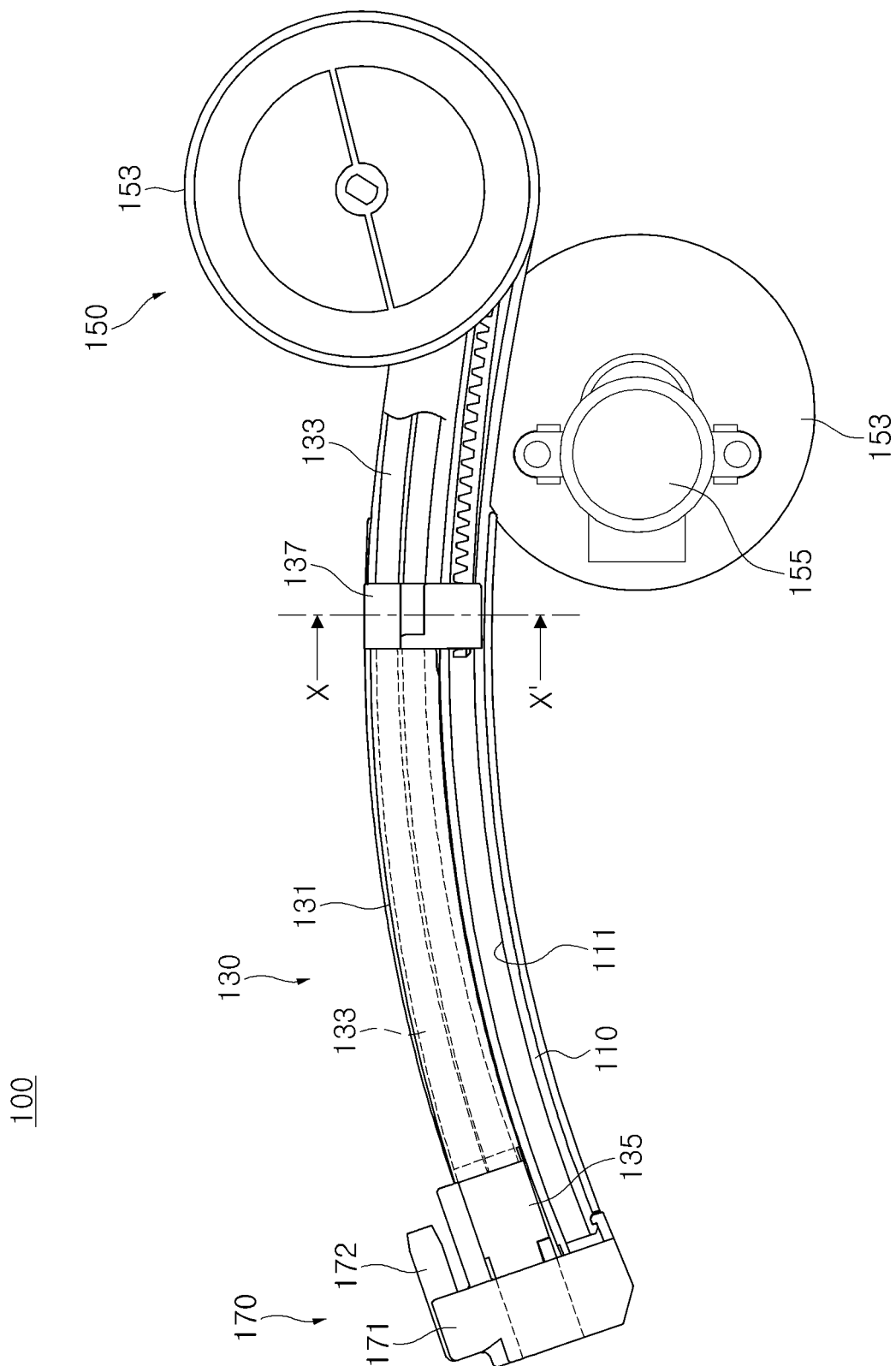
【Figure 1】



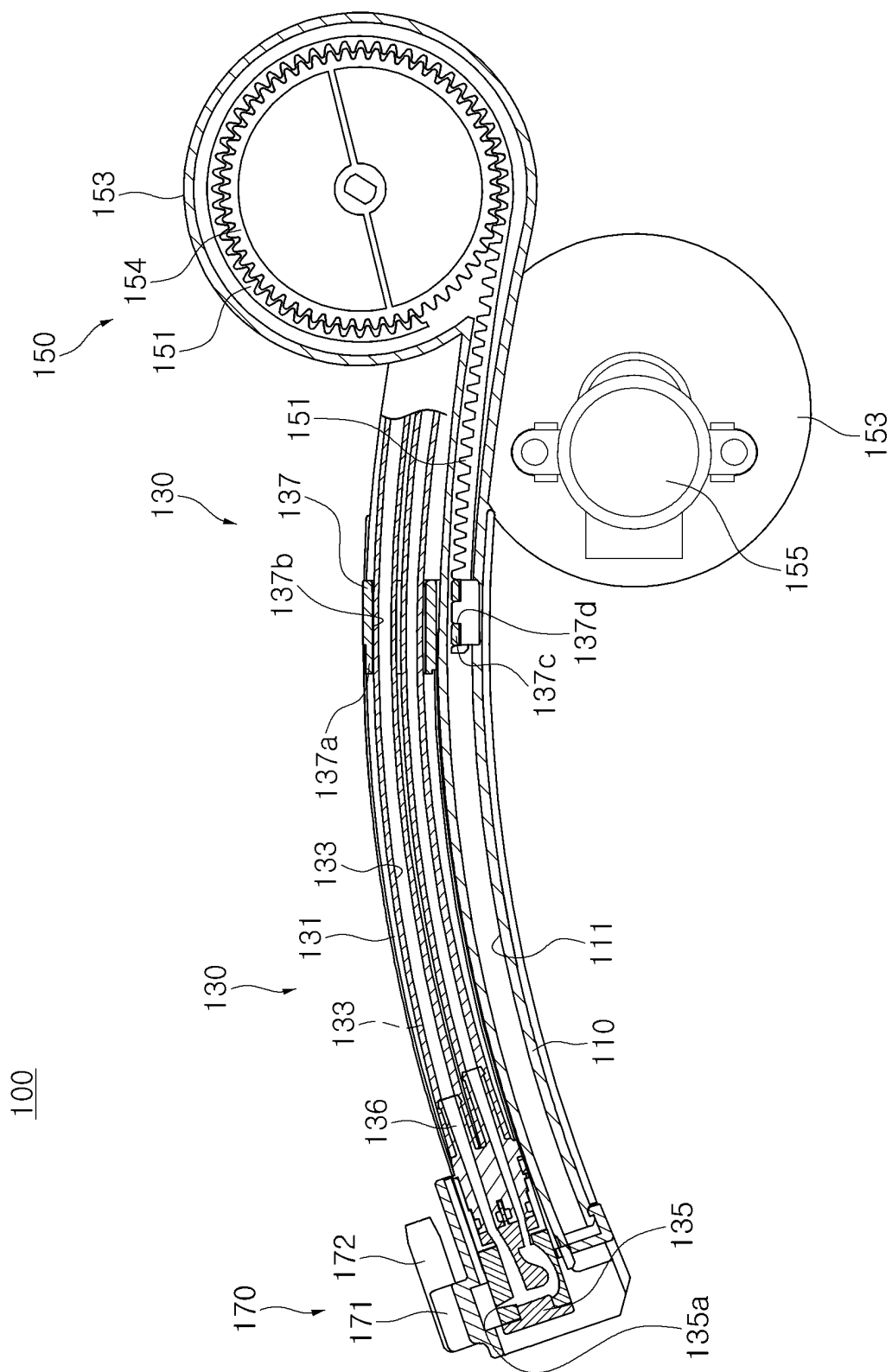
【Figure 2】



【Figure 4】

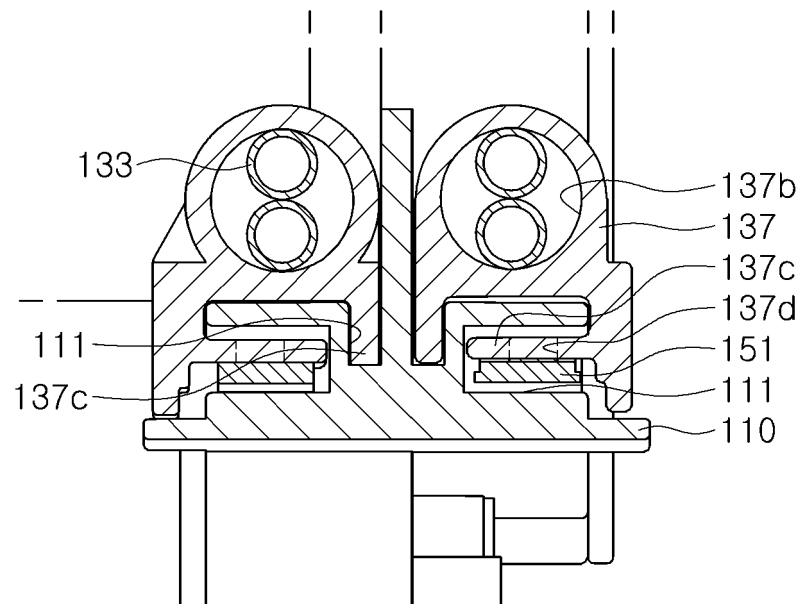


【Figure 5】



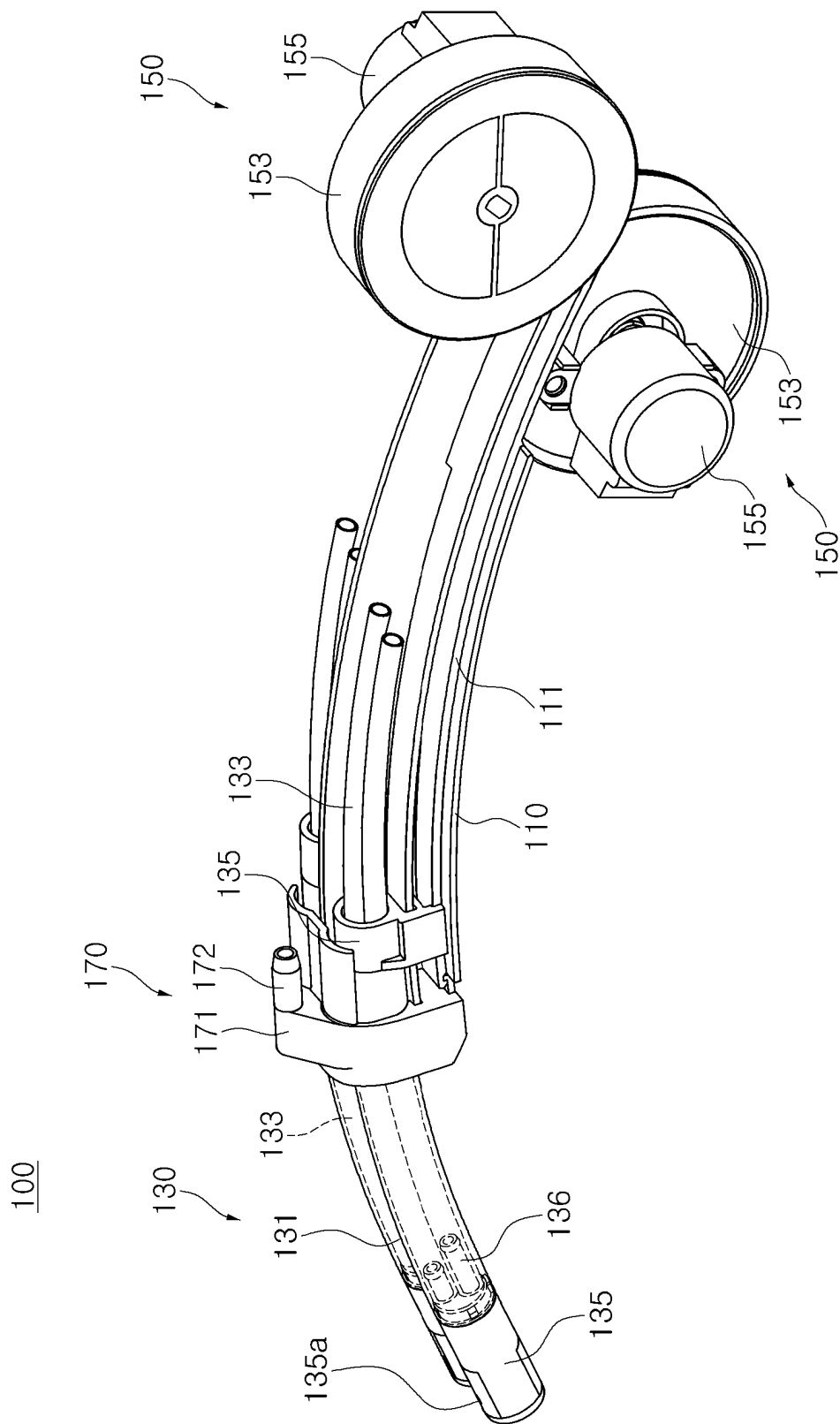
【Figure 6】

100

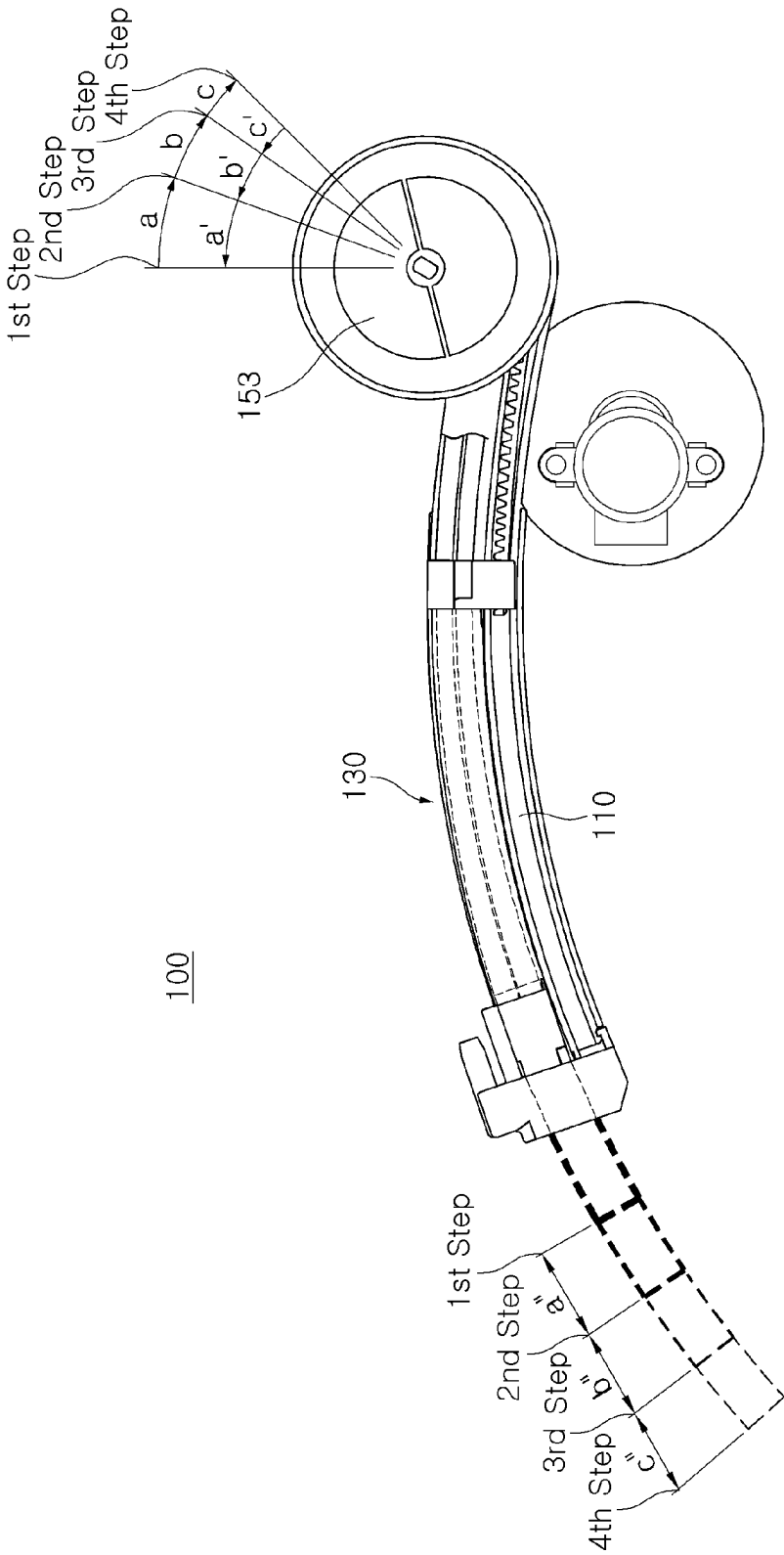


X-X'

【Figure 7】



【Figure 8】



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2014/007734

A. CLASSIFICATION OF SUBJECT MATTER

E03D 9/08(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E03D 9/08; E03D 9/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 Korean Utility models and applications for Utility models: IPC as above
 Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: bidet, nozzle, winding, wire, motor, rotation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2007-162463 A (TOTO) 28 June 2007 See page 12, paragraphs 73-78 and figures 8-10.	1-10
Y	KR 10-2011-0098515 A (COWAY CO., LTD.) 01 September 2011 See claims 1-3 and figures 1-5.	1-10
A	KR 10-2005-0082178 A (C&S CO.,LTD.) 23 August 2005 See claims 1-13 and figures 6-7.	1-10
A	KR 20-0411529 Y1 (LIM, Sam Kyun) 15 March 2006 See claims 1-2 and figures 2a-4.	1-10

☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

27 NOVEMBER 2014 (27.11.2014)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2014/007734

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