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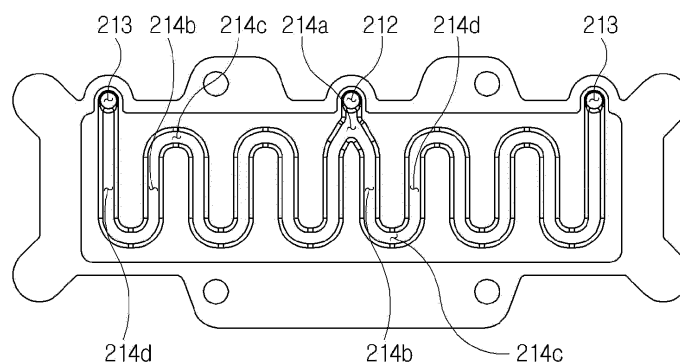
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(54) **WET MOP MODULE OF CLEANER**

(57) The present disclosure relates to a wet mop rag module of a cleaner. Disclosed is a wet mop rag module for a cleaner configured to clean by wiping debris on a floor surface, including: a module housing; a water tank coupled to the module housing and configured to store water inside; at least one or more rotary cleaning units disposed at a lower side of the module housing and to which a mop rag is couplable; a heating generator configured to heat water provided from the water tank; and a

water pump configured to supply water stored in the water tank to the heating generator, and the wet mop rag module for a cleaner has an effect of making an amount of water accommodated by the heating generator to be equal to an amount of water that the water pump supplies to the heating generator so that a certain amount of moisture at a certain temperature can be supplied to the mop rag.

[FIG. 12]



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Description

CROSS REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to Korea Patent Application No. 10-2022-0053800, filed on April 29, 2022, and No. PCT/KR2023/003948, filed on March 24, 2023, and, the entire contents of which are incorporated herein for all purposes by this reference.

[Technical Field]

[0002] The present disclosure relates to a cleaner, more specifically, to a wet mop rag module for a cleaner configured to discharge water to a mop rag such that the mop rag sucks in or wipes dust or debris present in a cleaning target area.

[Background Art]

[0003] A cleaner is a device that performs cleaning by suctioning or wiping dust or debris located in a cleaning target area.

[0004] Such cleaners may be classified into a manual cleaner that a user moves in person for cleaning and an automatic cleaner that automatically moves for cleaning.

[0005] In addition, manual cleaners may fall into, depending on the types, a canister cleaner, an upright cleaner, a handy cleaner, and a stick cleaner.

[0006] Methods of cleaning floors are broadly classified into a dry-cleaning method and a wet-cleaning method. The dry-cleaning method refers to a method of wiping up or sucking dust, and a vacuum cleaner in the related art uses the dry-cleaning method. The wet-cleaning method refers to a method of performing a cleaning operation by wiping up the dust with a wet mop rag.

[0007] In the related art, a dry-cleaning dedicated cleaner is used to perform the dry-cleaning method, and a wet-cleaning dedicated cleaner is used to perform the wet-cleaning method. However, a user is inconvenienced because the user needs to purchase the two types of cleaners to clean various types of floors. To solve the above-mentioned problem, research has been conducted on a cleaner including a single main body, a dry-cleaning module, and a wet-cleaning module and configured such that the dry-cleaning module is mounted on the main body to perform the dry-cleaning method and the wet-cleaning module (wet mop rag module) is mounted on the main body to perform the wet-cleaning method.

[0008] However, when conducting wet cleaning, if debris are stuck to the floor, the debris may still remain even if wiping the floor with a mop rag which absorbed water.

[0009] In addition, there is a limitation that a case in which the microorganism cannot be fully sterilized, even if wiping the floor up with a rotating mop rag which absorbed water, may occur.

[0010] To solve the above-mentioned problem, a method of heating water through a heater and supplying water or steam at a high temperature to the mop rag may be thought of.

5 **[0011]** At this time, the wet mop rag module includes a water tank configured to store water inside, a heater configured to generate water or steam at a high temperature by heating water, and a mop rag receiving the water or steam to wipe a floor up. Here, it is preferable that each
10 components are configured to be one assembly so as to ease replacement. For example, if the water tank or the heater is disposed in a main body, there is a problem that cleaning becomes inconvenient because of a weight of the water tank or the heater due to unnecessary parts
15 when conducting dry cleaning. Therefore, in terms of easing the cleaning operation, replacement of a module, or use of a space, it is preferable that the water tank or the heater is disposed in the wet mop rag module, not in the cleaner's main body.

20 **[0012]** The US patent No. 9420933B2 (2016.08.23) discloses a heater being used for a steam mop cleaner.

[0013] The steam mop cleaner has a configuration that receives water of a water tank, generates steam through a steam generator, and supplies the steam to a cleaning
25 pad.

[0014] The steam generator in this disclosure is configured to heat water through a heater in a state in which water is stored therein, and to discharge steam which is heated and flows upward through a discharge hole,
30 provided at an upper side of the steam generator, to a cleaning pad.

[0015] In addition, Korean Patent No. 1609444B1(2016.03.30) discloses a wet cleaner having a steam generator.

35 **[0016]** The wet cleaner has a configuration that a water supply hole and a steam discharge hole are both disposed at an upper side of the steam generator, and the water supply hole and the steam discharge hole are connected through a U-shaped pipe.

40 **[0017]** In such a conventional steam generator, a discharge hole configured to discharge steam is disposed at an upper side of the steam generator, in general.

[0018] In addition, it is configured that a volume of water held in the steam generator is filled by operating
45 the water pump for a plurality of times.

[0019] Therefore, there is a limitation that the water held in the steam generator is discharged before sufficiently being heated.

50 **[0020]** Further, there is a limitation that a time for the cleaning operation is short in a state in which the water held in the steam generator is heated due to a limited battery capacity.

[DISCLOSURE]

55 [Technical Problem]

[0021] The present disclosure is derived to solve pro-

blems of the a wet mop rag module of a conventional cleaner described above, and an object of the present disclosure is to provide a wet mop rag module of a cleaner which may improve effects of sterilization and removal of debris by supplying water at a high temperature to a mop rag.

[0022] In addition, an object of the present disclosure is to provide a wet mop rag module of a cleaner which may heat water introduced into the heating generator to a target temperature.

[0023] Moreover, an object of the present disclosure is to provide a wet mop rag module of a cleaner which may maintain an amount of water supplied to a pair of mop rags to be the same.

[Technical Solution]

[0024] One embodiment is a wet mop rag module for a cleaner configured to clean by wiping debris on a floor surface, including: a module housing; a water tank coupled to the module housing and configured to store water inside; at least one or more rotary cleaning units disposed at a lower side of the module housing and to which a mop rag is couplable; a heating generator configured to heat water provided from the water tank; and a water pump configured to supply water stored in the water tank to the heating generator.

[0025] In this case, an amount of water accommodated by the heating generator may be equal to an amount of water that the water pump supplies to the heating generator.

[0026] The heating generator may include: a heating chamber in which a flow path through which water flows is formed; a heater configured to supply heat to the heating chamber; a water inlet port formed in the heating chamber and into which water being introduced from the water tank; and a pair of moisture discharge ports formed in the heating chamber and through which heated moisture being discharged.

[0027] The flow path may communicate the water inlet port and the pair of moisture discharge ports to each other, and may be formed symmetrically with respect to the water inlet port.

[0028] In the heating chamber, a height of the water inlet port and a height of the moisture discharge port may be formed to be equal.

[0029] The heating generator may include: a heating chamber having a flow path in which moisture flows; a heater in contact with the heating chamber and configured to supply heat to the heating chamber; a lower cover disposed at a lower side of the heater and configured to cover the heater; a sealer disposed at an upper side of the heating chamber and configured to seal the upper side of the heating chamber; and an upper cover disposed at an upper side of the sealer and configured to cover the sealer.

[0030] The heating generator may further include an insulation member disposed between the heater and the

lower cover.

[0031] The water pump may supply water at a preset water supply interval.

[0032] The water pump may be operated for a preset water supply time, and an amount of water that the water pump supplies during the water supply time may be equal to a product of the water supply time and an amount of moisture discharged to the mop rag per unit time.

[0033] The water pump may be operated for a preset water supply time, and an amount of water that the heating generator accommodates may be equal to a product of the water supply time and an amount of moisture discharged to the mop rag per unit time.

15 [Advantageous Effect]

[0034] As explained above, according to a wet mop rag module of a cleaner according to the present disclosure, it is advantageous that effects of sterilization and removal of debris may be improved by supplying water or steam at a high temperature to a mop rag by using a heater.

[0035] Further, it is possible to heat a certain amount of moisture for a certain time by making an amount of the water held, by the heating generator be the same as an amount of water supplied by a water pump and supplying the water at a preset water supply interval. Therefore, there is an effect of supplying a constant amount of moisture at a constant temperature to the mop rag.

30 [Description of Drawings]

[0036]

FIG. 1 is a perspective view of a cleaner according to an embodiment of the present disclosure.

FIG. 2 is a perspective view of a wet mop rag module according to an embodiment of the present disclosure in a coupled state.

FIG. 3 is a perspective view of a wet mop rag module according to an embodiment of the present disclosure in a state in which an upper housing is removed from a wet mop rag module.

FIG. 4 is a plan view of FIG. 3.

FIG. 5 is a bottom view of FIG. 3.

FIG. 6 is a side view of FIG. 3.

FIG. 7 is a perspective view illustrating a heating generator in a wet mop rag module according to an embodiment of the present disclosure.

FIG. 8 is a view of an upper surface of a heating generator according to an embodiment of the present disclosure.

FIG. 9 is a view of a rear surface of a heating generator according to an embodiment of the present disclosure.

FIG. 10 is a view illustrating an angle at which a heating generator according to an embodiment of the present disclosure is coupled to a module housing.

FIG. 11 is an exploded perspective view of a heating generator in a wet mop rag module according to an embodiment of the present disclosure.

FIG. 12 is a plan view illustrating a flow path of a heating chamber of a heating generator according to an embodiment of the present disclosure.

FIG. 13 is a block diagram illustrating a control configuration of a wet mop rag module according to an embodiment of the present disclosure.

[Mode for Invention]

[0037] Hereinafter, an exemplary embodiment of the present disclosure is explained by referring to accompanying drawings.

[0038] The present invention may be modified variably and may have various embodiments, particular ones of which will be illustrated in drawings and described in detail. However, it should be understood that the following exemplifying description of the invention is not meant to restrict the invention to specific forms of the present invention but rather the present invention is meant to cover all modifications, similarities and alternatives which are included in the spirit and scope of the present invention.

[0039] FIG. 1 is a perspective view of a cleaner according to an embodiment of the present disclosure, FIG. 2 is a perspective view of a wet mop rag module according to an embodiment of the present disclosure in a coupled state, and FIGS. 3 to 6 are views for describing a wet mop rag module according to an embodiment of the present disclosure in a state in which an upper housing is removed from the wet mop rag module.

[0040] In the present disclosure, it is understood that "a floor surface" means not only a floor surface of a living room or a room, but also, a surface to clean up such as a carpet and the like.

[0041] Referring to FIGS. 1 to 6, the cleaner 1 according to an embodiment of the present disclosure may include a cleaner main body 400 having a suction motor configured to generate a suction force, a wet mop rag module 100 connected to the cleaner main body 400 and configured to suck in air and debris on a floor surface and to wipe up the floor surface to clean the floor surface, and an extension tube 300 connecting the cleaner main body 400 and the wet mop rag module 100 to each other.

[0042] The wet mop rag module according to an embodiment of the present disclosure may include a module housing 110, and a connection tube 180 which is movably connected to the module housing 110.

[0043] The wet mop rag module according to an embodiment of the present disclosure may be connected to a handy cleaner or a canister cleaner to be used.

[0044] That is, the wet mop rag module 100 may be removably connected to the cleaner main body 400 or the extension tube 300. Therefore, as the wet mop rag module 100 is connected to the cleaner main body 400 or the extension tube 300, the user may use the wet mop rag

module 100 to clean up the floor surface. At this instance, the cleaner main body 400 connected to the wet mop rag module 100 may separate dust contained in air from the air in a multi-cyclone method.

[0045] The wet mop rag module 100 may be operated by being supplied with electric power from the cleaner main body 400.

[0046] Because the cleaner main body 400 connected to the wet mop rag module 100 includes the suction motor (not illustrated), a suction force generated by the suction motor (not illustrated) may be applied to the wet mop rag module 100, and the wet mop rag module 100 may suck in debris and air on the floor surface.

[0047] Therefore, in the present embodiment, the wet mop rag module 100 may serve to suck debris and air on the floor surface and guide the debris and air to the cleaner main body 400.

[0048] The connection tube 180 may be connected to a central portion of a rear side of the module housing 110 and guide the introduced air to the cleaner 1. However, the present disclosure is not limited thereto.

[0049] The directions according to the present embodiment will be defined to assist in understanding the present disclosure. A portion of the wet mop rag module 100, which is connected to the connection tube 180, may be defined as a rear portion (rear side) of the wet mop rag module 100, and a portion of the wet mop rag module 100, which is opposite to the portion of the wet mop rag module 100 connected to the connection tube 180, may be defined as a front portion (front side) of the wet mop rag module 100. Further, a direction in which the front and rear sides are connected may be referred to as a forward/rearward direction.

[0050] In addition, based on a state in which an intake port 113a is viewed from the connection tube 180, a left side of a flow path forming part 113 may be defined as a left side of the wet mop rag module 100, and a right side of the flow path forming part 113 may be defined as a right side of the wet mop rag module 100. Further, a direction in which the left and right sides are connected may be referred to as a leftward/rightward direction. The leftward/rightward direction may mean a direction perpendicular to the forward/rearward direction on a horizontal plane.

[0051] In addition, based on a state in which the wet mop rag module 100 is placed on the floor surface, i.e., a state in which mop rags 150 are placed on the floor surface and may wipe the floor surface, a direction toward the floor surface may be defined as a lower or downward side, and a direction away from the floor surface may be defined as an upper or upward side.

[0052] The wet mop rag module 100 may further include rotary cleaning units 140 rotatably provided at a lower side of the module housing 110.

[0053] For example, a pair of rotary cleaning units 140 may be arranged in the leftward/rightward direction. In this case, the pair of rotary cleaning units 140 may be independently rotated. For example, the rotary cleaning units 140 may include a first rotary cleaning unit 141 and a

second rotary cleaning unit 142.

[0054] The rotary cleaning units 140 may be coupled to the mop rags 150. For example, the mop rag 150 may be formed in a circular plate shape. The mop rags 150 may include a first mop rag 151 and a second mop rag 152.

[0055] The mop rag 150 is brought into contact with the floor surface by a load of the wet mop rag module 100 in the state in which the mop rag 150 is placed on the floor surface, such that a frictional force between the mop rag 150 and the floor surface increases.

[0056] The module housing 110 may define an external shape of the wet mop rag module 100 and have the intake port 113a through which air is introduced. For example, the intake port 113a may be formed at a front end of the lower side of the module housing 110. The intake port 113a may extend from the module housing 110 in the leftward/rightward direction.

[0057] The module housing 110 may include a lower housing 111 and an upper housing 112 coupled to an upper side of the lower housing 111.

[0058] The rotary cleaning units 140 are mounted on the lower housing 111, and the lower housing 111 may define an external shape of the wet mop rag module 100.

[0059] The lower housing 111 may include a bottom surface to which the rotary cleaning unit 140 is coupled. In this case, in the state in which the wet mop rag module 100 is placed on the floor surface, a lower surface of the bottom surface is disposed to face the floor surface. A moisture supply unit, a heating generator 200, and drive motors 170 may be provided on an upper surface of the bottom surface.

[0060] The intake port 113a may be formed in the lower housing 111. Specifically, the intake port 113a may be formed in the bottom surface of the lower housing 111. The intake port 113a means a space into which air containing dust may be introduced. With this configuration, when the suction motor (not illustrated) of the cleaner main body 400 operates, dust and air existing around the floor surface may be sucked into a flow path of the wet mop rag module 100 through the intake port 113a.

[0061] Though not illustrated, the lower housing 111 may be equipped with a board installation part on which a printed circuit board configured to control the drive motors 170 is installed.

[0062] The board installation part may be disposed on the lower housing 111 and positioned at one side of the flow path forming part 113. However, the present disclosure is not limited thereto.

[0063] Nozzle holes (not illustrated), through which water discharged from a water discharge hole passes, may be formed in the lower housing 111. Water or steam (moisture vapor) having passed through the heating generator 200 may be supplied to the mop rags 150 through the nozzle holes (not illustrated).

[0064] The upper housing 112 may cover an upper side of the lower housing 111 and define an external shape of the wet mop rag module 100 according to the present disclosure.

[0065] In addition, the module housing 110 may further include the flow path forming part 113 configured to be communicated with the intake port 113a and to guide the air introduced from the intake port 113a to the cleaner main body 400.

[0066] The flow path forming part 113 may be coupled to a central portion of the upper side of the lower housing 111, and a rear end of the flow path forming part 113 may be connected to the connection tube 180.

[0067] Therefore, the intake port 113a may extend in the forward/rearward direction approximately rectilinearly as the flow path forming part 113 is arranged. Therefore, a length of the intake port 113a may be minimized, and a loss of the flow path in the wet mop rag module 100 may be minimized.

[0068] A front side of the flow path forming part 113 may cover an upper side of the intake port 113a. The flow path forming part 113 may be disposed such that the flow path forming part 113 is inclined upward in a direction from a front end to a rear side of the flow path forming part 113. That is, an upper surface of the flow path forming part 113 may be inclined at a predetermined angle with respect to the floor surface. In addition, the upper surface of the flow path forming part 113 may be inclined at a predetermined angle with respect to the bottom surface of the lower housing 111.

[0069] Therefore, a height of the front side of the flow path forming part 113 may be lower than a height of the rear side of the flow path forming part 113.

[0070] According to the present embodiment, the height of the front side of the flow path forming part 113 is low, which makes it possible to reduce a height of a front side of the wet mop rag module 100 based on an overall height of the wet mop rag module 100. The lower the height of the wet mop rag module 100, the higher the likelihood that the wet mop rag module 100 enters a narrow space below furniture or a chair and cleans the narrow space.

[0071] Meanwhile, in the present embodiment, the heating generator 200 may be disposed above the flow path forming part 113. With this configuration, the heating generator 200 may be stably supported in the state in which the heating generator 200 is disposed at a predetermined angle with respect to the floor surface.

[0072] A blocker 114 is disposed on a lower surface of the lower housing 111. The blocker 114 may block a front space in which the intake port 113a is disposed and a rear space in which the mop rags 150 are disposed, thereby preventing moisture discharged from the mop rags 150 from being diffused into the intake port 113a. For example, the blocker 114 may have an arc shape which surrounds the circular mop rag 150.

[0073] A plurality of rollers may be provided on the lower surface of the lower housing 111 and allow the wet mop rag module 100 to move smoothly.

[0074] For example, front rollers 115 may be disposed on the lower housing 111 and positioned at front sides of the mop rags 150. The front rollers 115 may include a first

roller 115a and a second roller 115b. The first roller 115a and the second roller 115b may be disposed to be spaced apart from each other in the leftward/rightward direction.

[0075] The first and second rollers 115a and 115b may be rotatably connected to shafts, respectively. The shaft may be fixed to the lower side of the lower housing 111 in a state in which the shaft extends in the leftward/rightward direction.

[0076] A distance between the shaft and a front end of the lower housing 111 may be longer than a minimum distance between the mop rag 150 and the front end of the lower housing 111.

[0077] For example, the rotary cleaning units 140 may be at least partially positioned between the shaft of the first roller 115a and the shaft of the second roller 115b.

[0078] With this arrangement, the rotary cleaning units 140 may be positioned maximally close to the intake port 113a, and an area of the floor surface, on which the wet mop rag module 100 is positioned and the rotary cleaning units 140 performs a cleaning operation, may be increased, such that the performance in cleaning the floor may be improved.

[0079] In the present embodiment, the first and second rollers 115a and 115b are coupled to the lower side of the lower housing 111, which makes it possible to improve mobility of the wet mop rag module 100.

[0080] A third roller 116 may be further provided on the lower housing 111. Therefore, the first and second rollers 115a and 115b and the third roller 116 may support the wet mop rag module 100 at three points. In this case, the third roller 116 may be positioned at rear sides of the mop rags 150 so as not to interfere with the mop rags 150.

[0081] The wet mop rag module 100 may further include a water tank 120 capable of supplying water to the mop rags 150.

[0082] The water tank 120 may be separably connected to the module housing 110. Specifically, the water tank 120 may be coupled to an upper side of the upper housing 112. For example, the water tank 120 may be mounted on a water container seating portion formed on an upper surface of the upper housing 112.

[0083] In addition, the water tank 120 may be disposed above the heating generator 200. Specifically, the water tank 120 is disposed above the heating generator 200 and spaced apart from the heating generator 200. That is, the water tank 120 may be disposed above the heating generator 200 with the upper housing 112 interposed therebetween.

[0084] The water tank 120 may define an external appearance of the wet mop rag module 100 in the state in which the water tank 120 is mounted on the module housing 110.

[0085] The entire upper side wall of the water tank 120 may substantially define an upper external appearance of the wet mop rag module 100. Therefore, the user may visually check whether the water tank 120 is mounted on the module housing 110.

[0086] The module housing 110 may further include a

water tank separating button configured to be manipulated by the user to separate the water tank 120 in the state in which the water tank 120 is mounted on the module housing 110. For example, the water tank separating button may be positioned on a central portion of the wet mop rag module 100. Therefore, the user may easily recognize the water tank separating button and manipulate the water tank separating button.

[0087] In the state in which the water tank 120 is mounted on the module housing 110, water in the water tank 120 may be supplied to the mop rags 150. Specifically, the water stored in the water tank 120 may be supplied to the mop rags 150 through the moisture supply unit.

[0088] Specifically, a space capable of storing water is formed in the water tank 120. The water stored in the water tank 120 may be supplied to the heating generator 200 through at least one pipe (hose). The water introduced into the heating generator 200 may be heated by the heating generator 200. The water or steam heated by the heating generator 200 may be supplied to the mop rags 150.

[0089] The water tank 120 includes a water supply port. The water supply port is a hole through which the water is introduced into the water tank 120. For example, the water supply port may be formed in a lateral surface of the water tank 120.

[0090] The water tank 120 includes a drain port. The drain port is a hole through which the water stored in the water tank 120 is discharged. The water discharged from the drain port may flow to the heating generator 200. The drain port may be formed in a lower surface of the water tank 120.

[0091] The water tank 120 includes an air hole. The air hole is a hole through which air may be introduced into the water tank 120. When the water stored in the water tank 120 is discharged to the outside, a pressure in the water tank 120 is lowered, and air may be introduced into the water tank 120 through the air hole to compensate for the lowered pressure. For example, the air hole may be formed at an upper end of the water tank 120.

[0092] The wet mop rag module 100 according to the present disclosure may include the moisture supply unit having a flow path through which the water introduced from the water tank 120 is supplied to the mop rags 150.

[0093] Specifically, the moisture supply unit may include a water tank connection part configured to introduce water in the water tank 120 into the module housing 110, a water inlet tube configured to supply the water, which is introduced into the water tank connection part, to a water pump 130, and water supply tubes configured to supply the water, which is discharged from the water pump 130, to the heating generator 200.

[0094] The water tank connection part may operate a valve in the water tank 120, and the water may flow in the water tank connection part.

[0095] The water tank connection part may be coupled to a lower side of the upper housing 112, and a part of the

water tank connection part may protrude upward while penetrating the upper housing 112.

[0096] The water tank connection part, which protrudes upward, may be retracted into the water tank 120 while penetrating a discharge port of the water tank 120 when the water tank 120 is seated on the upper housing 112.

[0097] The upper housing 112 may include a sealer to prevent the water discharged from the water tank 120 from leaking from a periphery of the water tank connection part. For example, the sealer may be made of rubber, coupled to the upper housing 112, and disposed at the upper side of the upper housing 112.

[0098] The water pump 130 may be installed on the upper housing 112 and control the discharge of the water from the water tank 120.

[0099] The water pump 130 may provide a flow force to water. The water pump 130 may include a first connection port connected to the water inlet tube, and a second connection port connected to the guide tube. In this case, based on the water pump 130, the first connection port may be an inlet, and the second connection port may be an outlet.

[0100] The water pump 130 is a pump in which a valve body operates to expand or contract the water and allow the first connection port and the second connection port to communicate with each other. Because the water pump 130 may be implemented by a publicly-known structure, a detailed description thereof will be omitted.

[0101] Therefore, the water stored in the water tank 120 passes through the water pump 130, and then, is supplied to the heating generator 200.

[0102] The heating generator 200 is a device configured to heat water. The heating generator 200 is disposed in the module housing 110. Specifically, the heating generator 200 is installed on an upper surface of the lower housing 111.

[0103] Meanwhile, in the present disclosure, the heating generator 200 is disposed to be inclined. Specifically, based on the state in which the module housing 110 is placed on the floor surface, a bottom surface of the heating generator 200 may be disposed at a predetermined angle α with respect to the floor surface.

[0104] A specific structure and effect of the heating generator 200 according to the present disclosure will be described below.

[0105] The rotary cleaning units 140 may rotate by receiving power from the drive motors 170. For example, the rotary cleaning unit 140 may be a rotary plate. The rotary cleaning unit 140 may have a circular plate shape, and the mop rag 150 may be attached to a lower surface of the rotary cleaning unit 140.

[0106] In this case, the rotary cleaning unit 140 having a circular plate shape may be disposed in parallel with the floor surface in the state in which the wet mop rag module 100 is placed on the floor surface. Alternatively, the rotary cleaning unit 140 having a circular plate shape may be disposed in parallel with the bottom surface of the lower

housing 111.

[0107] For example, the rotary cleaning units 140 may be disposed at the lower side of the module housing 110 and positioned rearward of the intake port 113a.

[0108] Therefore, when the wet mop rag module 100 performs the cleaning operation while moving forward, debris and air on the floor surface may be sucked into the intake port 113a, and then the floor surface may be wiped by the mop rags 150.

[0109] One or more rotary cleaning units 140 may be provided at the lower side of the module housing 110. For example, the rotary cleaning units 140 may include the first rotary cleaning unit 141 connected to a first drive motor 171 and having the first mop rag 151 attached thereto, and the second rotary cleaning unit 142 connected to a second drive motor 172 and having the second mop rag 152 attached thereto.

[0110] Specifically, the rotary cleaning unit 140 may include an outer body having a circular ring shape, an inner body positioned at a central region of the outer body and spaced apart from an inner peripheral surface of the outer body, and a plurality of connection ribs configured to connect an outer peripheral surface of the inner body to the inner peripheral surface of the outer body.

[0111] In addition, the rotary cleaning unit 140 may include a plurality of water passing holes formed in a circumferential direction to supply the mop rag 150 with the water discharged from the heating generator 200.

[0112] Meanwhile, the rotary cleaning unit 140 may include an attachment means to which the mop rag 150 is attached. For example, the attachment means may be a Velcro fastener.

[0113] The rotary cleaning unit 140 may be disposed at the lower side of the lower housing 111. That is, the rotary cleaning unit 140 may be disposed outside the module housing 110.

[0114] In addition, the rotary cleaning unit 140 may be connected to the drive motor 170 and receive power. For example, the rotary cleaning unit 140 may be connected to the drive motor 170 by means of at least one gear and rotated by the operation of the drive motor 170.

[0115] The rotary cleaning units 140 may include the first rotary cleaning unit 141 and the second rotary cleaning unit 142. For example, based on the intake port 113a in the state in which the wet mop rag module 100 is placed on the floor surface, the first rotary cleaning unit 141 may mean the rotary cleaning unit 140 disposed at the left side, and the second rotary cleaning unit 142 may mean the rotary cleaning unit 140 disposed at the right side. However, the present disclosure is not limited thereto, and the left and right sides may be changed.

[0116] In the present embodiment, a rotation center of the first rotary cleaning unit 141 and a rotation center of the second rotary cleaning unit 142 are spaced apart from each other in the leftward/rightward direction.

[0117] The rotation center of the rotary cleaning unit 140 may be positioned to be farther from a front end of the module housing 110 than is a central axis that bisects a

length of the module housing 110 based on the forward/rearward direction. This is to prevent the rotary cleaning unit 140 from clogging the intake port 113a.

[0118] A distance between the rotation center of the first rotary cleaning unit 141 and the rotation center of the second rotary cleaning unit 142 may be greater than a diameter of the mop rag 150. This is to reduce friction between the first and second mop rags 151 and 152 caused by interference between the first and second mop rags 151 and 152 while the first and second mop rags 151 and 152 rotate and to prevent a cleanable area from being reduced by a portion in which the first and second mop rags 151 and 152 interfere with each other.

[0119] The mop rags 150 may wipe the floor surface while rotating.

[0120] The mop rags 150 may be coupled to lower sides of the rotary cleaning units 140 and face the floor surface.

[0121] The mop rag 150 is configured such that a bottom surface of the mop rag 150 facing the floor has a predetermined area. The mop rag 150 has a flat shape. The mop rag 150 is configured such that a width (or diameter) of the mop rag 150 in a horizontal direction is sufficiently greater than a height of the mop rag 150 in a vertical direction. When the mop rag 150 is coupled to the lower housing 111, the bottom surface of the mop rag 150 may be disposed in parallel with the floor surface.

[0122] The bottom surface of the mop rag 150 may have an approximately circular shape, and the mop rag 150 may have a rotationally symmetrical shape as a whole. In addition, the mop rag 150 may be attached to or detached from the bottom surface of the rotary cleaning unit 140. The mop rag 150 may be coupled to the rotary cleaning unit 140 and rotated together with the rotary cleaning unit 140.

[0123] In the state in which the rotary cleaning unit 140 and the mop rag 150 are coupled to the lower side of the module housing 110, a part of the mop rag 150 protrudes outward from the wet mop rag module 100, such that the mop rag 150 cleans not only a portion of the floor surface positioned below the wet mop rag module 100 but also a portion of the floor surface positioned outward from the wet mop rag module 100.

[0124] For example, the mop rag 150 may not only protrude toward two opposite sides of the wet mop rag module 100 but also protrude rearward.

[0125] The mop rags 150 may include the first mop rag 151 coupled to the first rotary cleaning unit 141, and the second mop rag 152 coupled to the second rotary cleaning unit 142. Therefore, when the first rotary cleaning unit 141 rotates by receiving power from the first drive motor 171, the first mop rag 151 may also rotate. When the second rotary cleaning unit 142 rotates by receiving power from the second drive motor 172, the second mop rag 152 may also rotate.

[0126] Meanwhile, the wet mop rag module 100 may further include the drive motors 170 configured to provide power for rotating the mop rags 150 and the rotary

cleaning units 140.

[0127] Specifically, the drive motors 170 may include the first drive motor 171 configured to rotate the first rotary cleaning unit 141, and the second drive motor 172 configured to rotate the second rotary cleaning unit 142.

[0128] As described above, the first and second drive motors 171 and 172 operate independently. Therefore, even though any one of the first and second drive motors 171 and 172 is broken down, the rotary cleaning unit 140 may be rotated by the other of the first and second drive motors 171 and 172.

[0129] Meanwhile, the first and second drive motors 171 and 172 may be arranged on the module housing 110 and spaced apart from each other in the leftward/rightward direction. Further, the first and second drive motors 171 and 172 may be positioned rearward of the intake port 113a.

[0130] The drive motors 170 may be disposed in the module housing 110. For example, the drive motors 170 may be seated on the upper side of the lower housing 111 and covered by the upper housing 112. That is, the drive motors 170 may be positioned between the lower and upper housings 111 and 112.

[0131] Meanwhile, the wet mop rag module 100 includes the connection tube 180 coupled to the cleaner main body 400 or the extension tube 300.

[0132] The connection tube 180 may include a first connection tube connected to an end of the flow path forming part 113, a second connection tube rotatably connected to the first connection tube, and a guide tube configured to allow the internal spaces of the first and second connection tubes to communicate with each other.

[0133] The first connection tube has a tubular shape. One axial end of the first connection tube may be connected to an end of the flow path forming part 113, and the other axial end of the first connection tube may be rotatably coupled to the second connection tube. In this case, the first connection tube has a shape in which a part of an outer peripheral surface thereof is cut out. The first connection tube may be disposed so that the cut-out portion is directed upward toward the second connection tube. With this configuration, in the state in which the wet mop rag module 100 is placed on the ground surface, an angle of the second connection tube with respect to the ground surface may be changed by a motion of the user's arm. That is, the first and second connection tubes may serve as a kind of joint capable of adjusting an angle of the wet mop rag module 100 and an angle of the cleaner main body 400.

[0134] The second connection tube has a tubular shape. One axial end of the second connection tube is rotatably coupled to the first connection tube, and the other axial end of the second connection tube is detachably coupled as the cleaner main body 400 or the extension tube 300 is inserted into the other axial end of the second connection tube.

[0135] Meanwhile, electric wires may be embedded in the first and second connection tubes, respectively, and the electric wire embedded in the first connection tube and the electric wire embedded in the second connection tube may be electrically connected to each other.

[0136] Meanwhile, the guide tube may connect the internal space of the first connection tube and the internal space of the second connection tube. The guide tube may have a flow path formed therein so that the air sucked into the wet mop rag module 100 flows to the extension tube 300 and/or the cleaner main body 400. In this case, the guide tube may be deformed together with the first and second connection tubes when the first and second connection tubes rotate. For example, the guide tube may be provided in the form of a corrugated tube.

[0137] FIGS. 7 to 9 are perspective views for describing the heating generator in the wet mop rag module according to the embodiment of the present disclosure, FIG. 10 is a view illustrating an angle at which the heating generator according to the embodiment of the present disclosure is coupled to the module housing, FIG. 11 is an exploded perspective view of the heating generator in the wet mop rag module according to the embodiment of the present disclosure, and FIG. 12 is a plan view illustrating a heating chamber of the heating generator according to the embodiment of the present disclosure.

[0138] The heating generator 200 according to the embodiment of the present disclosure will be described with reference to FIGS. 7 to 12.

[0139] The heating generator 200 may produce high-temperature water or steam (moisture vapor) by heating water. The heating generator 200 may heat the water, which is supplied from the water tank 120, and supply the heated water to the mop rags 150.

[0140] The heating generator 200 is provided in the wet mop rag module 100 instead of the cleaner main body 400. This is to prevent the cleaning operation from becoming inconvenient because of a weight and a volume of the heating generator during the dry-cleaning operation in case that the heating generator is disposed in the cleaner main body.

[0141] The heating generator 200 may be coupled to an upper portion of the lower housing 111. For example, the heating generator 200 may be coupled to the upper surface of the flow path forming part 113. In this case, because the flow path forming part 113 is coupled to a central portion of the upper surface of the lower housing 111, the heating generator 200 may also be disposed on the central portion of the lower housing 111. With this configuration, when the heating generator 200 operates, a particular position may not be overheated by heat supplied from the heating generator 200, thereby preventing damage to the wet mop rag module 100. In addition, an overall volume of the wet mop rag module 100 may be minimized.

[0142] The heating generator 200 may include a heating chamber 210, a heater 220, an insulation member 230, a lower cover 240, a sealer 250, an upper cover 260,

and a temperature detector 270. In this case, the heater 220 may be disposed at a lower side of the heating chamber 210, the insulation member 230 may be disposed at a lower side of the heater 220, and the lower cover 240 may be disposed at a lower side of the insulation member 230 and cover a lower side of the heating generator 200. In addition, the sealer 250 may be disposed at an upper side of the heating chamber 210, the upper cover 260 may be disposed at an upper side of the sealer 250 and cover an upper side of the heating generator 200. Meanwhile, the temperature detector 270 may be disposed on an outer surface of the heating chamber 210.

[0143] A flow path, through which the moisture flows, may be formed in the heating chamber 210, and the heating chamber 210 may provide a space in which the moisture flowing through the flow path is heated by receiving heat generated from the heater 220.

[0144] Specifically, the heating chamber 210 includes a chamber main body 211, water inlet ports 212, moisture discharge ports 213, and a heating flow path 214.

[0145] The chamber main body 211 may define an external appearance of the heating chamber 210 and provide therein a space in which the moisture may flow. For example, the chamber main body 211 may be formed in a shape similar to a quadrangular block, and the heating flow path 214 may be formed inside the chamber main body 211. In addition, an upper side of the chamber main body 211 may have a shape, of which an upper side is opened to expose at least a portion of the heating flow path 214.

[0146] Meanwhile, the chamber main body 211 may have the water inlet ports 212 and the moisture discharge ports 213. Specifically, the water inlet ports 212 and the moisture discharge ports 213 may be formed in a bottom surface of the chamber main body 211. For example, a single water inlet ports 212 and a pair of moisture discharge ports 213 may be formed on the bottom surface of the chamber main body 211.

[0147] In this case, the water inlet ports 212 and the moisture discharge ports 213 may be disposed to be farthest in the forward/rearward direction of the wet mop rag module 100. This is to ensure a sufficient heating time by maximizing a distance that the water introduced into the water inlet port 212 flows until the water is discharged to the moisture discharge port 213.

[0148] For example, a rear end of the chamber main body 211 is disposed above a front end of the chamber main body 211. That is, the heating generator 200 is inclined in a rear upper direction. Therefore, the water may be heated while flowing from a rear upper side to a front lower side of the heating generator 200.

[0149] The water inlet ports 212 may be formed in the chamber main body 211, and the water may be introduced into the water inlet ports 212 from the water tank 120. The water inlet port 212 may be a hole formed at an inlet end of the chamber main body 211.

[0150] Specifically, the water supply tube of the water

supply unit may be connected to the water inlet port 212. For example, the water supply tube may be coupled to a lower side of the chamber main body 211, and the flow path in the water supply tube and the water inlet port 212 may communicate with each other. Therefore, when the water pump 130 operates, the water stored in the water tank 120 may flow through the water supply tube and then be introduced into the chamber main body 211 by a flow force generated by the water pump 130.

[0151] The moisture heated in the chamber main body 211 may be discharged through the moisture discharge port 213. The moisture discharge port 213 may be a hole formed at an outlet end of the chamber main body 211.

[0152] The moisture heated in the chamber main body 211 may be discharged through the moisture discharge port 213 to the mop rag 150. For example, the moisture discharge port 213 may be disposed at a position vertically upward of the nozzle hole (not illustrated) formed in the lower housing 111. Therefore, when the water pump 130 operates, by the flow force generated in the water pump 130, the moisture heated in the chamber main body 211 may pass through the nozzle hole and then, be supplied to the mop rag 150.

[0153] Meanwhile, the bottom surface of the heating generator is generally disposed in parallel with the floor surface of the installation location. Further, a pipe, through which the steam is discharged, is provided above the steam generator. Therefore, when the steam (moisture vapor) is produced as the steam generator operates, the hot steam flows upward and is discharged to the outside along the pipe.

[0154] However, in the case of the steam generator structured as described above, there is a high likelihood that the steam comes into contact with an inner wall of the steam generator or the pipe and drains while the steam flows upward. Therefore, it is necessary to reduce a loss of the amount of heat, which may occur while the steam flows, and to heat the draining steam again and supply the steam to the mop rag even though the steam drains.

[0155] In order to meet the necessity, the heating generator 200 according to the embodiment of the present disclosure is disposed to be inclined at a predetermined angle with respect to the floor surface.

[0156] Specifically, in the state in which the wet mop rag module 100 is placed on the floor surface (the state in which the mop rag 150 is placed on the floor surface and may wipe the floor surface), the bottom surface of the chamber main body 211 may be disposed to be inclined at the predetermined angle α with respect to the floor surface.

[0157] The bottom surface of the lower housing 111, which has the lower side to which the rotary cleaning unit 140 and the mop rag 150 are coupled, and the bottom surface of the chamber main body 211 may be disposed to be inclined at the predetermined angle α . That is, an imaginary extension surface of the bottom surface of the chamber main body 211 and an imaginary extension surface of the bottom surface of the lower housing 111

may intersect with each other.

[0158] In addition, a height from the floor surface to the water inlet port 212 may be equal to a height from the floor surface to the moisture discharge port 213. For example, in the present embodiment, both the water inlet port 212 and the moisture discharge port 213 may be formed at a rear side of the chamber main body 211.

[0159] In addition, the bottom surface of the chamber main body 211 may form an inclination at a predetermined angle α with an imaginary extension surface of the rotary cleaning unit 140 having a circular plate shape. That is, an imaginary extension line of the bottom surface of the chamber main body 211 and the imaginary extension surface of the rotary cleaning unit 140 may intersect with each other.

[0160] The heating flow path 214 may be formed in the heating chamber 210, and may be formed such that the water inlet port 212 and the moisture discharge port 213 communicate with each other and water can flow there-through.

[0161] In more detail, the heating flow path 214 may be a flow path formed in the chamber main body 211. In this case, the heating flow path 214 may be formed to be communicated with the water inlet port 212 and the moisture discharge port 213.

[0162] The heating flow path 214 may be formed symmetrically with respect to the water inlet port 212. For example, the heating flow path 214 may be formed symmetrically (linearsymmetrically) with respect to the water inlet port 212, and may communicate with the pair of moisture discharge ports 213 disposed at both sides of the water inlet port 212.

[0163] The heating flow path 214 provides a space through which water, having been introduced into the water inlet port 212, flows. In this case, the heating flow path 214 may have a long flow path so that water can be sufficiently heated in the course of flowing therethrough.

[0164] For example, the heating flow path 214 includes a branch flow path 214a, a descending flow path 214b, a switching flow path 214c, and an ascending flow path 214d.

[0165] The branch flow path 214a may be formed to communicate with the water inlet port 212, and may be formed symmetrically with respect to the water inlet port 212. For example, the branch flow path 214a may be formed to branch to both sides at the water inlet port 212. For example, the branch flow path 214a may be a Y-shaped flow path.

[0166] The descending flow path 214b is formed to communicate with the branch flow path 214a, or the switching flow path 214c. For example, the descending flow path 214b may have a shape of a linear groove. The descending flow path 214b may provide a space in which water, which has passed through the branch flow path 214a or the switching flow path 214c, flows downward by gravity.

[0167] The switching flow path 214c is formed to have one side communicating with the descending flow path

214b and the other side communicating with the ascending flow path 214d. That is, the switching flow path 214c may connect the descending flow path 214b and the ascending flow path 214d to each other.

[0168] For example, the switching flow path 214c may be a groove having an arc shape. Therefore, water flowing downward along the descending flow path 214b may be moved upward against gravity while passing through the switching flow path 214c. In addition, water flowing upward along the ascending flow path 214d may be moved downward by gravity while passing through the switching flow path 214c.

[0169] That is, water flowing in the chamber main body 211 may have its flow direction being switched by the switching flow path 214c.

[0170] The ascending flow path 214d is formed to communicate with the switching flow path 214c or the moisture discharge port 213. For example, the ascending flow path 214d may have a shape of a linear groove. The ascending flow path 214d may provide a space in which water, which has passed through the switching flow path 214c, flows upward against gravity.

[0171] Meanwhile, in the present embodiment, each of the branch flow path 214a, the descending flow path 214b, the switching flow path 214c, and the ascending flow path 214d may be disposed at least one or more in number. For example, one branching flow path 214a may be connected to the water inlet port 212 and a pair of descending flow paths 214b. In addition, each of the descending flow paths 214b connected to the branching flow path 214a may be connected to the switching flow path 214c. Further, one side of the switching flow path 214c is connected to the descending flow path 214b and the other side thereof may be connected to the ascending flow path 214d. Moreover, one side of the ascending flow path 214d is connected to the switching flow path 214c and the other side thereof may be connected to the switching flow path 214c again. In addition, the connection of the descending flow path 214b, the switching flow path 214c, the ascending flow path 214d and the switching flow path 214c as described above may be repeated. Finally, one side of the ascending flow path 214d is connected to the switching flow path 214c and the other side (an upper end) thereof may be communicated with the moisture discharge port 213.

[0172] With this configuration, even though the water introduced into the water inlet port 212 is heated and flows upward by convection, the water may be heated while flowing from an upper side to a lower side in the chamber main body 211 along the descending flow path 214b by gravity.

[0173] In addition, the water which has passed through the switching flow path 214c may flow against gravity by the flow force of the water pump 130, and may be heated while flowing from the lower side to the upper side in the chamber main body 211 along the ascending flow path 214d.

[0174] As a result, according to the present disclosure,

the water introduced through the water inlet port 212 may be heated for a sufficient period of time while repeating descending flow and ascending flow, and may be discharged through the moisture discharge port 213 after being heated to a target temperature.

[0175] The heater 220 may generate heat. The heater 220 refers to a device capable of converting electrical energy into thermal energy. Because the heater 220 may be implemented by a publicly-known structure, a detailed description thereof will be omitted.

[0176] The heater 220 may be disposed at the lower side of the heating chamber 210 and supply heat to the heating chamber 210. The heater may be in contact with at least one surface of the heating chamber 210. For example, the heater 220 may be in contact with the bottom surface of the heating chamber 210.

[0177] Therefore, when the heat is generated by the heater 220, the heating chamber 210 being in contact with the heater 220 may be heated by conduction. Therefore, the heater 220 may receive power from a battery (not illustrated) and heat the water flowing in the heating chamber 210.

[0178] Meanwhile, the heater 220 may adjust a temperature of the water in response to the user's input or a preset control command.

[0179] The insulation member 230 may be disposed between the heater 220 and the lower cover 240 and block heat transferred from the heater 220. The insulation member 230 may be formed to have a greater area than the heater 220. For example, the insulation member 230 may be formed in a flat plate shape and made of a material capable of blocking the heat transfer.

[0180] With this configuration, the heat generated by the heater 220 may be prevented from being discharged to the outside of the heating generator 200, thereby improving energy efficiency. In addition, it is possible to prevent the components accommodated in the module housing 110 from being damaged by the heat generated by the heater 220.

[0181] The lower cover 240 may be disposed below the heater 220 and cover the heater 220. For example, the lower cover 240 may be formed in a flat plate shape that may surround the heater 220. The lower cover 240 may be made of a material capable of blocking heat generated from the heater 220. With this configuration, the heat generated by the heater 220 may be prevented from being discharged to the outside of the heating generator 200, thereby improving energy efficiency. In addition, it is possible to prevent the components accommodated in the module housing 110 from being damaged by the heat generated by the heater 220. In particular, in the present embodiment, the heat generated by the heater 220 may be blocked doubly by the insulation member 230 and the lower cover 240, thereby maximizing the effect of improving energy efficiency and preventing damage to the component.

[0182] The sealer 250 may be disposed at the upper side of the heating chamber 210 and seal the upper side

of the heating chamber 210. Specifically, the sealer 250 may seal the opened upper side of the chamber main body 211. The sealer 250 may be made of a material capable of blocking the passage of the moisture. With this configuration, even though the moisture vapor generated in the heating chamber 210 flows upward, the moisture vapor may be blocked by the sealer 250 and prevented from leaking to the outside.

[0183] The upper cover 260 may be disposed above the sealer 250 and cover the sealer 250. For example, the upper cover 260 may be formed in a flat plate shape that may surround the sealer 250. The upper cover 260 may be made of a material capable of blocking heat transferred through the sealer 250. With this configuration, the heat generated by the heater 220 may be prevented from being discharged to the outside of the heating generator 200, thereby improving energy efficiency. In addition, it is possible to prevent the components accommodated in the module housing 110 from being damaged by the heat generated by the heater 220.

[0184] The temperature detector 270 may measure a temperature of the heating generator 200. For example, the temperature detector 270 may be a thermistor. In this case, the temperature detector 270 may transfer information on a measured temperature of the heating generator 200 to a wet mop rag module control unit 700. As another example, the temperature detector 270 may be a thermostat. In this case, the temperature detector 270 may block supply of electric power if the temperature of the heating generator 200 exceeds a preset target temperature, so that the temperature of the heating generator 200 can be maintained to be constant.

[0185] Meanwhile, the cleaner 1 according to the present disclosure may include the extension tube 300.

[0186] The extension tube 300 may be coupled to the cleaner main body 400 and the wet mop rag module 100.

[0187] For example, the extension tube 300 may be formed in a long cylindrical shape. Therefore, an internal space of the extension tube 300 may communicate with an internal space of the wet mop rag module 100. In addition, the extension tube 300 may communicate with a suction flow path formed in the cleaner main body 400.

[0188] When a suction force is generated by the suction motor (not illustrated), the suction force may be provided to the wet mop rag module 100 through a suction part and the extension tube 300. Therefore, outside dust and air may be introduced into the cleaner main body 400 through the wet mop rag module 100 and the extension tube 300. In addition, dust and air introduced through the wet mop rag module 100 may pass through the extension tube 300 and then be introduced into the cleaner main body 400.

[0189] Meanwhile, an electric wire may be embedded in the extension tube 300. Therefore, the cleaner main body 400 and the wet mop rag module 100 may be electrically connected to each other through the extension tube 300.

[0190] Meanwhile, the cleaner 1 according to the pre-

sent disclosure may include the cleaner main body 400.

[0191] The cleaner main body 400 may include the suction motor, a dust bin, and the battery. The cleaner main body 400 may operate the suction motor by receiving power from the battery, and the suction force may be generated by the operation of the suction motor.

[0192] The suction flow path may be formed in the cleaner main body 400, such that air and dust introduced from the wet mop rag module 100 may flow.

[0193] Further, the cleaner main body 400 may be equipped with at least one cyclone part that separates dust sucked into the cleaner main body 400 by applying a principle of a dust collector using a centrifugal force. Therefore, the dust may be separated as the air introduced through the suction flow path flows spirally.

[0194] Further, the cleaner main body 400 may be equipped with the dust bin, and the dust bin may store the dust separated from the sucked air by a cyclone flow.

[0195] In addition, the cleaner main body 400 may be equipped with an input part, such that the user may set whether to supply power, intensity of air suction, intensity of the rotation of the mop rag, the amount of water to be supplied, whether to heat water, and whether to supply steam.

[0196] FIG. 13 is a block diagram illustrating a control configuration of the wet mop rag module according to the embodiment of the present disclosure.

[0197] Referring to FIG. 13, the control configuration of the wet mop rag module 100 according to the embodiment of the present disclosure is described as below.

[0198] The wet mop rag module 100 according to the embodiment of the present disclosure may include the wet mop rag module control unit 700.

[0199] The wet mop rag module control unit 700 may include a memory (not illustrated) and a timer (not illustrated). The memory (not illustrated) may store preset information. The timer (not illustrated) may measure time.

[0200] Although not illustrated, the wet mop rag module control unit 700 may receive a control signal inputted through the cleaner main body 400, the wet mop rag module 100, or an external terminal (not illustrated). For example, the wet mop rag module control unit 700 may be connected to the cleaner main body 400, the wet mop rag module 100, or the external terminal (not illustrated) through wired communication or wireless communication.

[0201] The wet mop rag module control unit 700 may control the components included in the wet mop rag module 100.

[0202] The wet mop rag module control unit 700 may be connected to the temperature detector 270. The temperature detector 270 may measure the temperature of the heating generator 200 and transfer information on the temperature of the heating generator 200 to the wet mop rag module control unit 700.

[0203] The wet mop rag module control unit 700 may control the water pump 130.

[0204] The wet mop rag module control unit 700 may control the amount of moisture to be supplied from the water tank 120 to the mop rag 150 in response to a control signal inputted.

[0205] For example, the wet mop rag module control unit 700 may control an operating time of the water pump 130 in response to a control signal inputted. For example, the wet mop rag module control unit 700 may operate the water pump 130 for a preset water supply time T_w .

[0206] In addition, the wet mop rag module control unit 700 may supply water by operating the water pump 130 at a preset water supply interval C_w . At this time, the water supply interval C_w may be greater than the water supply time T_w . That is, the water pump 130 is operated for the water supply time T_w from a time point when the water pump 130 starts operating, the operation of the water pump 130 is stopped, and then, the water pump 130 may be operated again after the water supply interval C_w elapses from a time point when the water pump 130 starts operating.

[0207] Meanwhile, in the present disclosure, the water supply time T_w may be determined according to the output (that is, an amount of water discharged per unit time) of the water pump 130. In this case, a product of the water supply time T_w and an amount of water discharged by the water pump 130 per unit time is equal to an amount of water that the heating generator 200 can accommodate. In addition, a product of the water supply time T_w and the amount of water discharged by the water pump 130 per unit time is equal to a product of the water supply time T_w and an amount of water discharged to the mop rag 150 per unit time.

[0208] That is, in the present disclosure, an amount of water supplied to the heating generator 200 from the water tank 120 by operating the water pump 130 once is equal to an amount of water that the heating generator 200 can store therein, and is equal to an amount of moisture discharged from the heating generator 200 to the mop rag 150 for one water supply interval C_w .

[0209] Therefore, according to the present disclosure, there is an effect of supplying a constant amount of moisture at a constant temperature to the mop rag 150, because the constant amount of moisture can be heated for a constant period of time and then, can be supplied to the mop rag 150.

[0210] The wet mop rag module control unit 700 may control the heater 220. The wet mop rag module control unit 700 may control a temperature of moisture to be supplied to the mop rag 150 in response to a control signal inputted. For example, the wet mop rag module control unit 700 may control an operating time of the heater 220 and an amount of electric power applied from the heater 220 in response to a control signal inputted. In addition, in case that the temperature of the heating generator 200 measured by the temperature detector 270 is different from a preset target temperature, the wet mop rag module control unit 700 may change the operating time of the heater 220 and the amount of

electric power to be applied to the heater 220.

[0211] With this configuration, according to the present disclosure, the temperature of the water introduced into the heating generator 200 may be maintained, and the energy efficiency may be improved.

[0212] In addition, according to the embodiment, the wet mop rag module control unit 700 may control the drive motor 170. The wet mop rag module control unit 700 may control a revolution per minute (rpm) of the drive motor 170 according to the user's control input.

[0213] While the present disclosure has been described with reference to the specific embodiments, the specific embodiments are only for specifically explaining the present disclosure, and the present disclosure is not limited to the specific embodiments. It is apparent that the present disclosure may be modified or altered by those skilled in the art without departing from the technical spirit of the present disclosure.

[0214] All the simple modifications or alterations to the present disclosure fall within the scope of the present disclosure, and the specific protection scope of the present disclosure will be defined by the appended claims.

Claims

1. A wet mop rag module for a cleaner configured to clean by wiping debris on a floor surface, comprising:

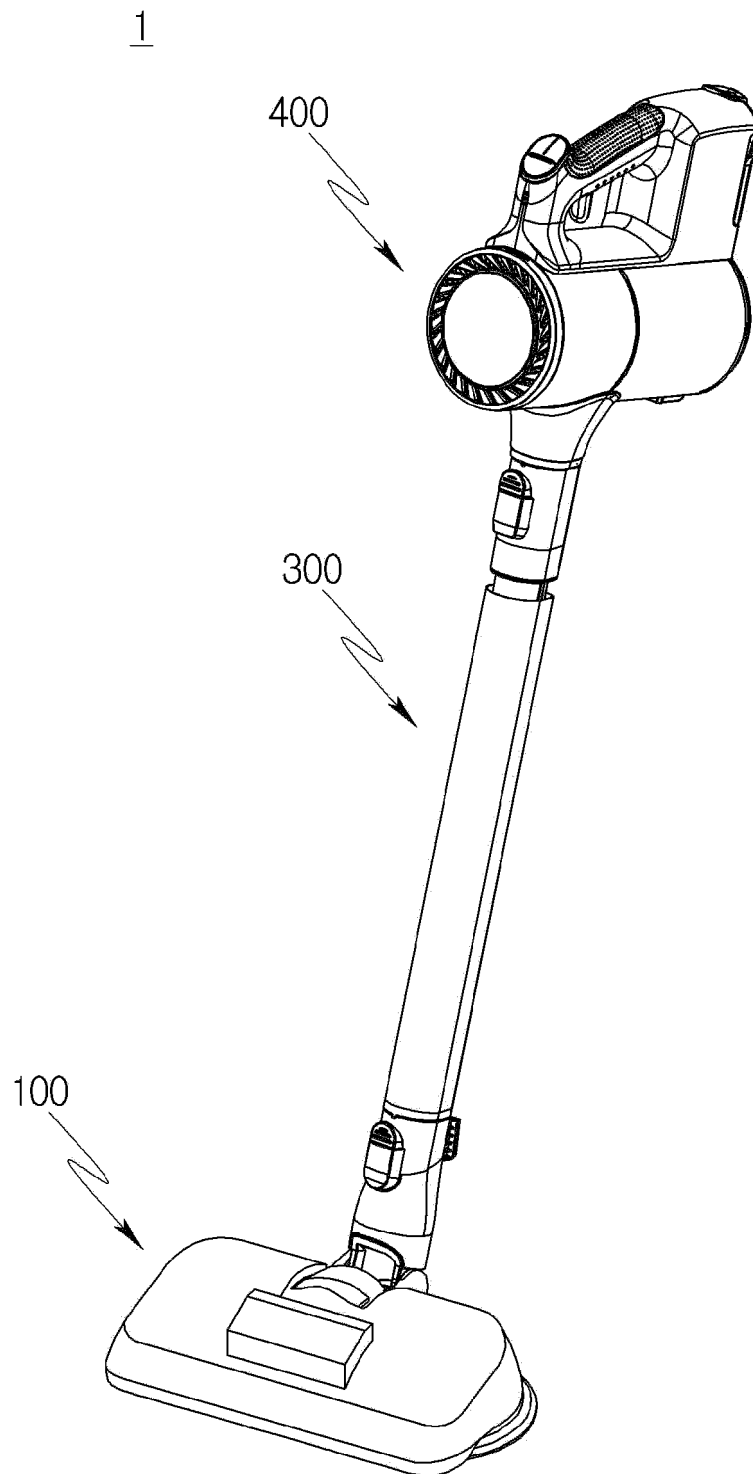
a module housing;
a water tank coupled to the module housing and configured to store water inside;
at least one or more rotary cleaning units disposed at a lower side of the module housing and to which a mop rag is couplable;
a heating generator configured to heat water provided from the water tank; and
a water pump configured to supply water stored in the water tank to the heating generator, wherein an amount of water accommodated by the heating generator is equal to an amount of water that the water pump supplies to the heating generator.

2. The wet mop rag module of claim 1, wherein the heating generator comprises:

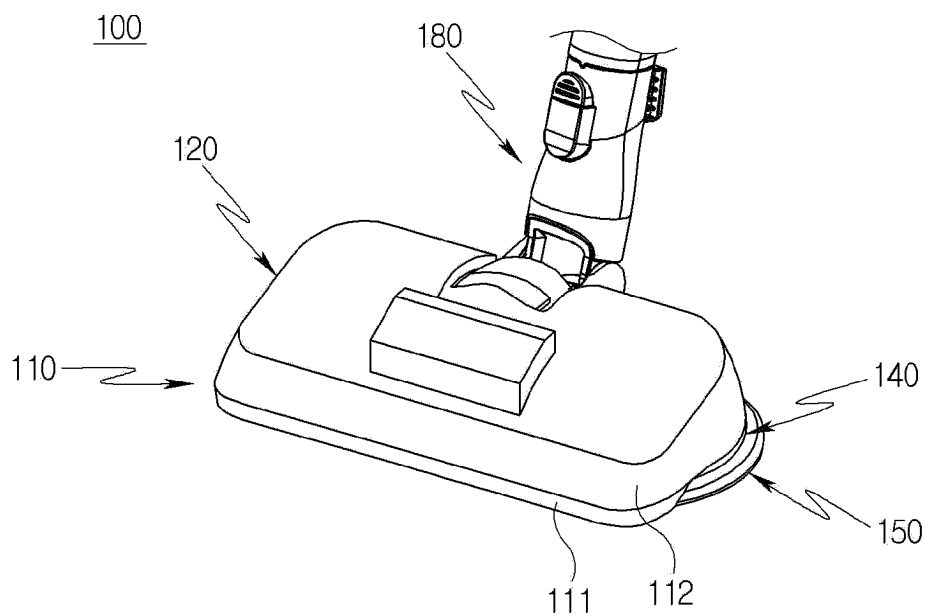
a heating chamber in which a flow path through which water flows is formed;
a heater configured to supply heat to the heating chamber;
a water inlet port formed in the heating chamber and into which water being introduced from the water tank; and
a pair of moisture discharge ports formed in the heating chamber and through which heated moisture being discharged.

3. The wet mop rag module of claim 2,
wherein the flow path communicates the water inlet
port and the pair of moisture discharge ports to each
other, and is formed symmetrically with respect to the
water inlet port. 5
4. The wet mop rag module of claim 2,
wherein in the heating chamber, a height of the water
inlet port and a height of the moisture discharge port
are formed to be equal. 10
5. The wet mop rag module of claim 1,
wherein the heating generator comprises:
- a heating chamber having a flow path in which 15
moisture flows;
 - a heater in contact with the heating chamber and
configured to supply heat to the heating cham-
ber;
 - a lower cover disposed at a lower side of the 20
heater and configured to cover the heater;
 - a sealer disposed at an upper side of the heating
chamber and configured to seal the upper side
of the heating chamber; and
 - an upper cover disposed at an upper side of the 25
sealer and configured to cover the sealer.
6. The wet mop rag module of claim 5,
wherein the heating generator further comprises an
insulation member disposed between the heater and 30
the lower cover.
7. The wet mop rag module of claim 1,
wherein the heating generator further comprises a
temperature detector configured to detect a tem- 35
perature of the heating chamber.
8. The wet mop rag module of claim 1,
wherein the heating generator further comprises a
temperature detector configured to detect a tem- 40
perature of the heating chamber.
9. The wet mop rag module of claim 8,
- wherein the water pump is operated for a preset 45
water supply time, and
 - wherein an amount of water that the water pump
supplies during the water supply time is equal to
a product of the water supply time and an 50
amount of moisture discharged to the mop rag
per unit time.
10. The wet mop rag module of claim 8,
- wherein the water pump is operated for a preset 55
water supply time, and
 - wherein an amount of water that the heating
generator accommodates is equal to a product
- of the water supply time and an amount of
moisture discharged to the mop rag per unit
time.

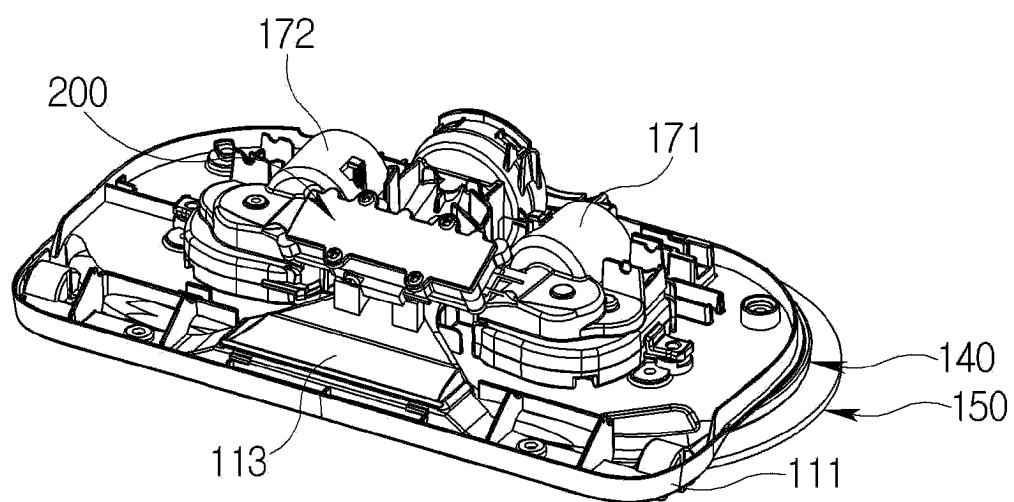
[FIG. 1]



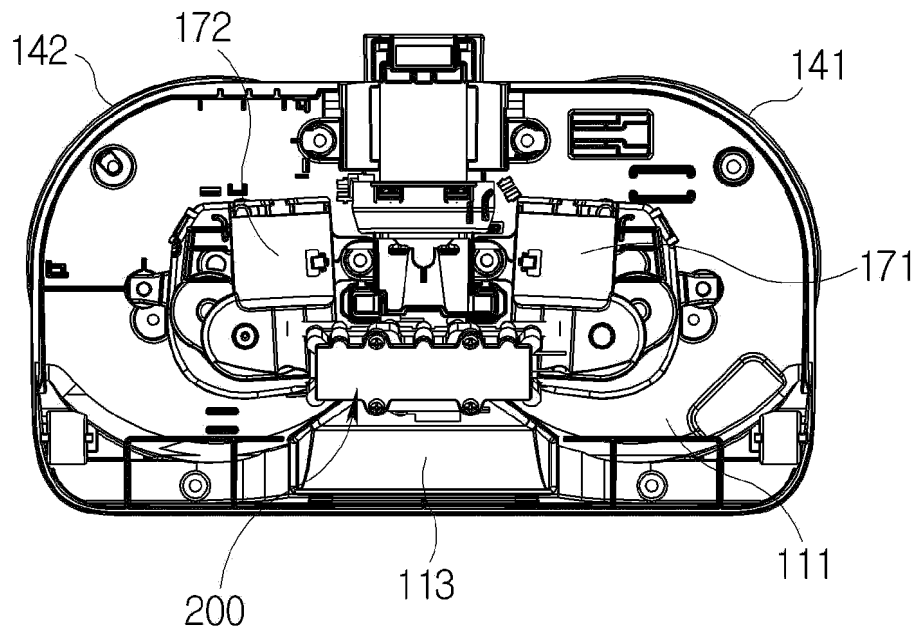
[FIG. 2]



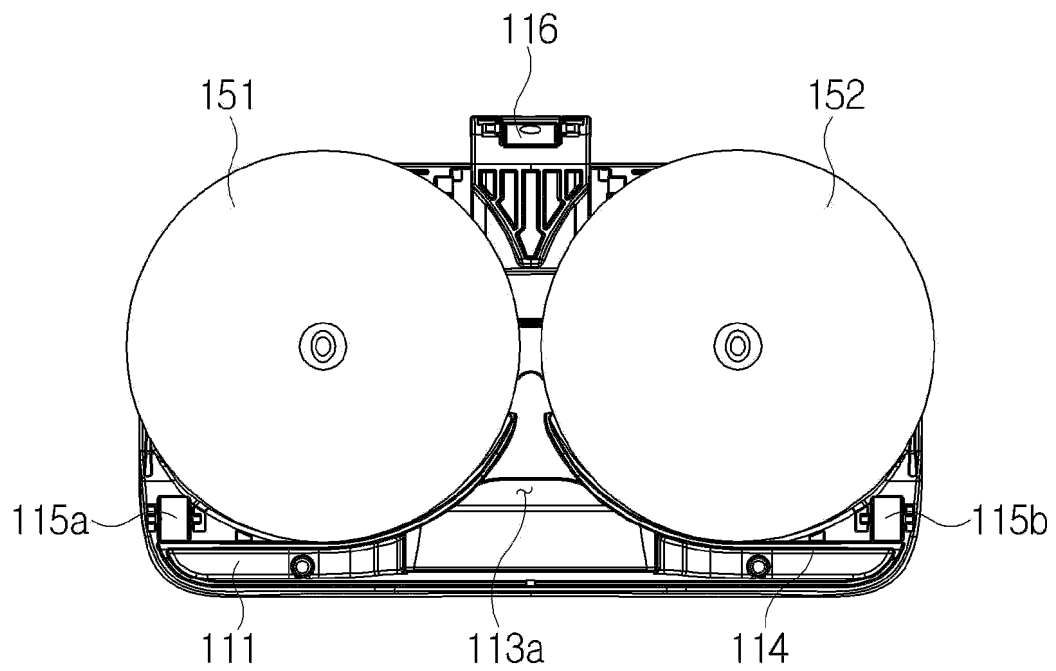
[FIG. 3]



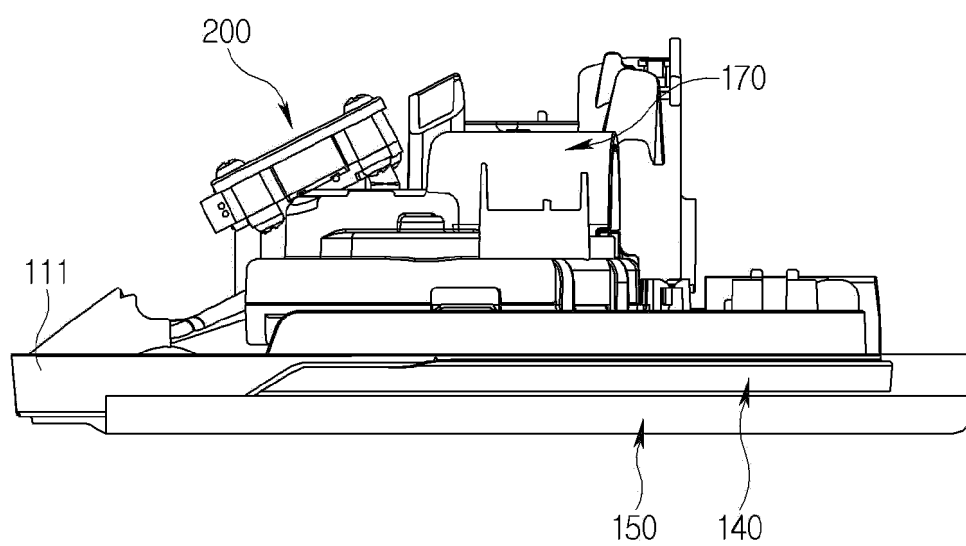
[FIG. 4]



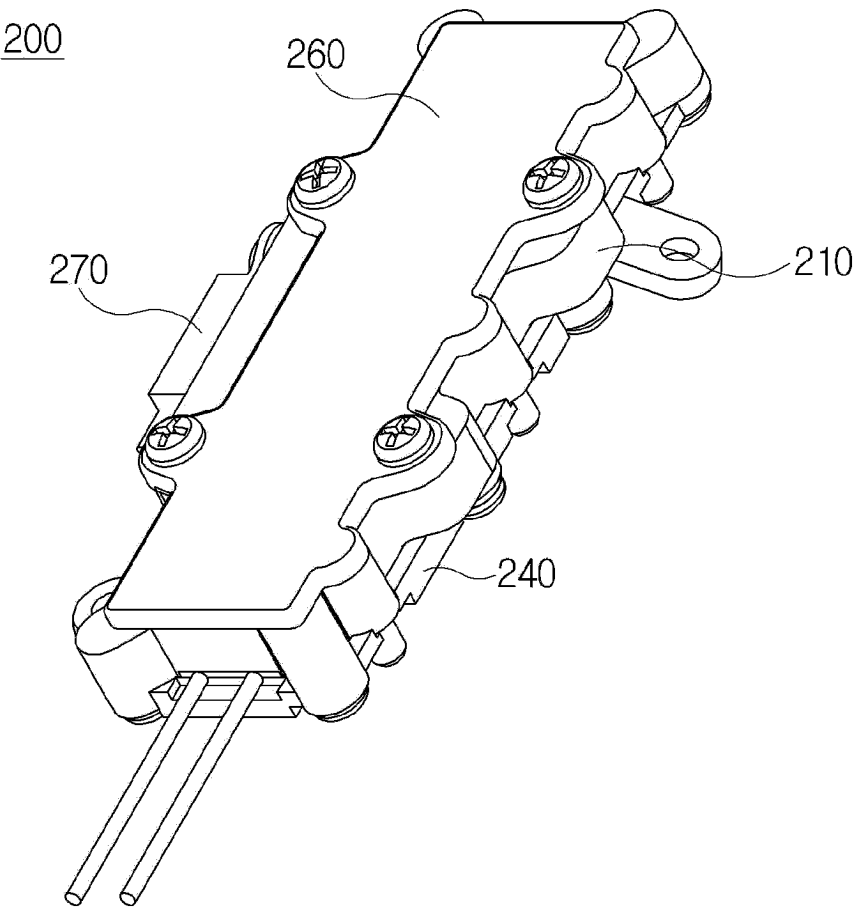
[FIG. 5]



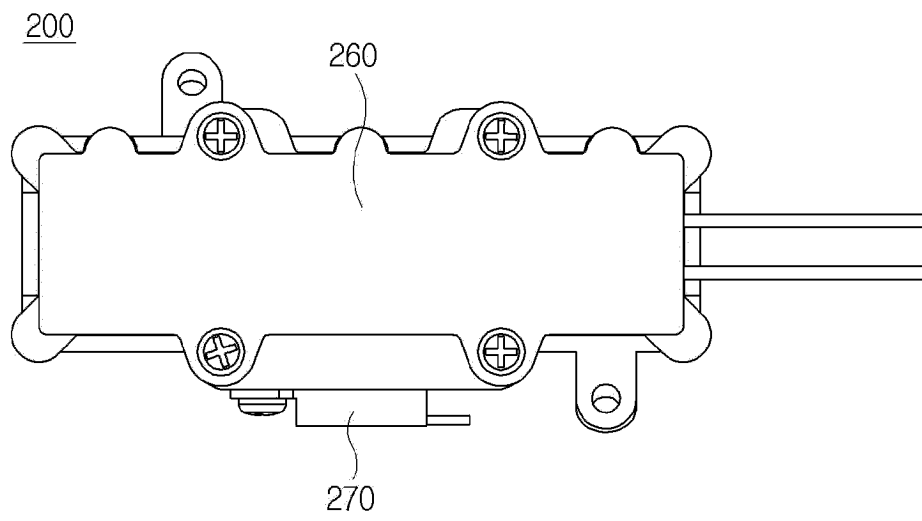
[FIG. 6]



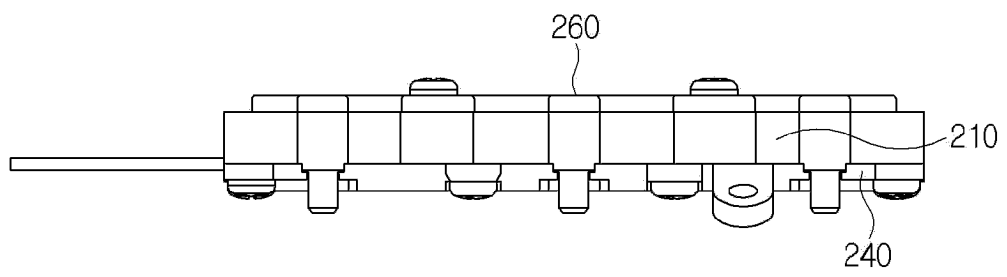
[FIG. 7]



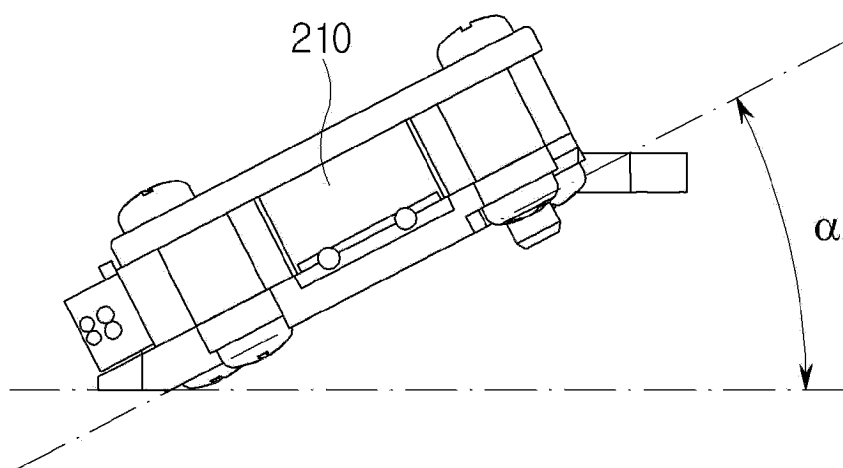
[FIG. 8]



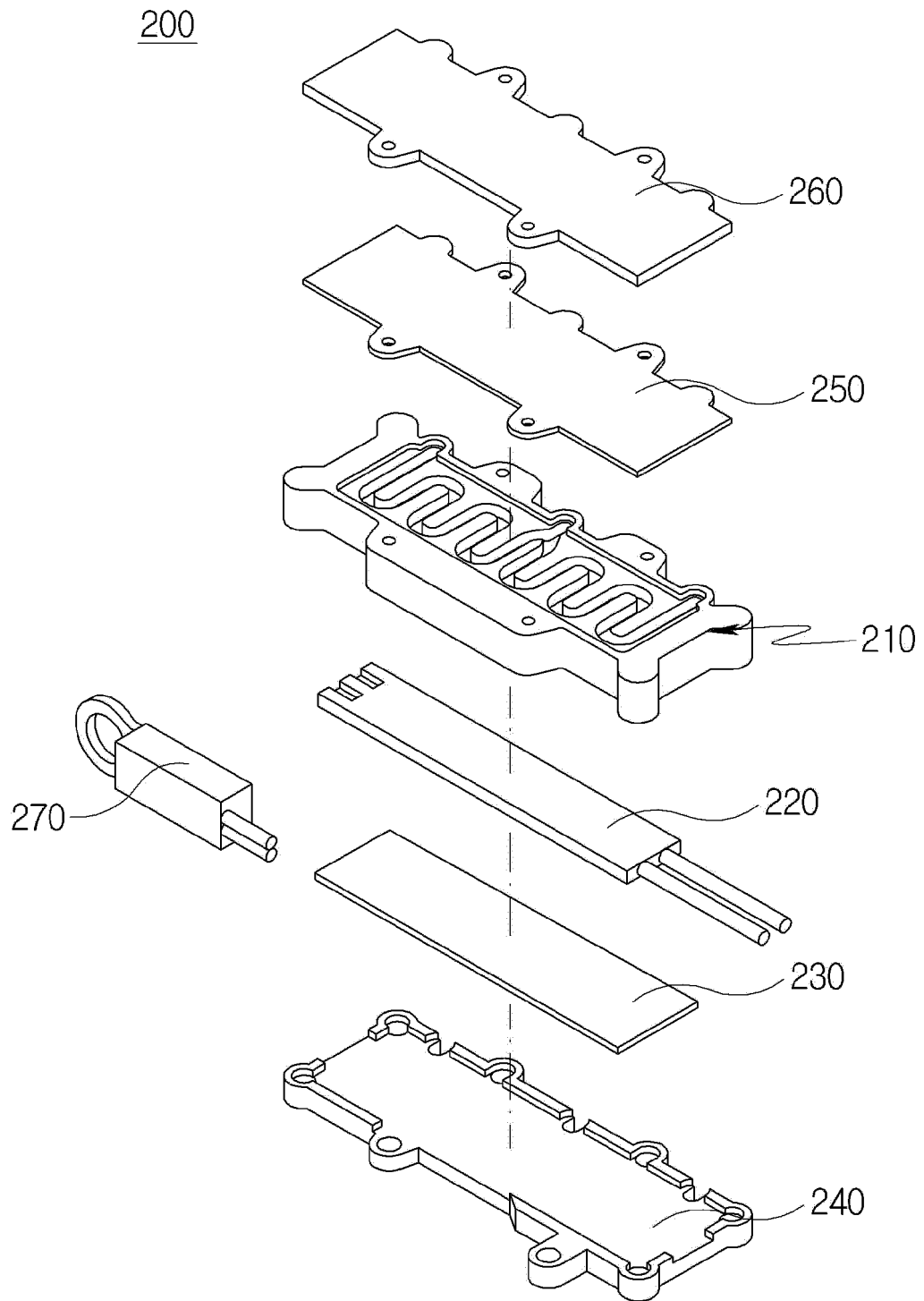
[FIG. 9]



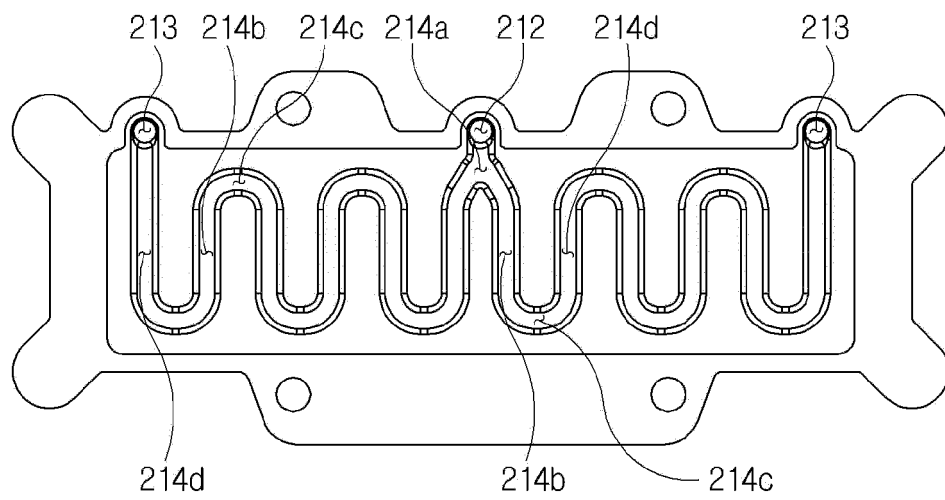
[FIG. 10]



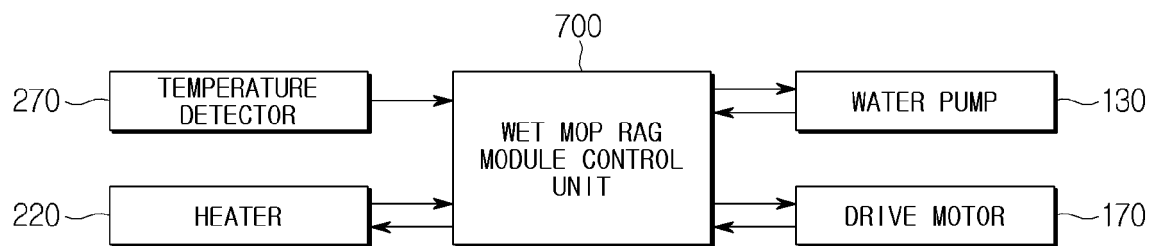
[FIG. 11]



[FIG. 12]



[FIG. 13]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2023/003948

5	A. CLASSIFICATION OF SUBJECT MATTER		
	A47L 11/40(2006.01)i		
	According to International Patent Classification (IPC) or to both national classification and IPC		
10	B. FIELDS SEARCHED		
	Minimum documentation searched (classification system followed by classification symbols) A47L 11/40(2006.01); A47L 11/20(2006.01); A47L 11/34(2006.01); A47L 7/00(2006.01)		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	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: 모듈 하우징 (module housing), 물탱크 (water tank), 회전 청소부 (rotating sweeper), 히팅 제너레이터 (heating generator), 워터 펌프 (water pump), 청소기 (vacuum cleaner), 물걸레 모듈 (wet mop module)		
20	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
25	X	KR 10-1342567 B1 (NOH, Seung Hwan) 17 December 2013 (2013-12-17) See paragraphs [0012]-[0018]; and figures 1-8.	1-6
	Y		7-10
	Y	KR 10-1408733 B1 (SAMSUNG ELECTRONICS CO., LTD.) 19 June 2014 (2014-06-19) See paragraph [0059]; and figures 1-2 and 8a-8b.	7-10
30	A	KR 10-1796646 B1 (SHIN IL INDUSTRIAL CO., LTD.) 10 November 2017 (2017-11-10) See paragraphs [0031]-[0066]; and figures 1-14.	1-10
	A	KR 20-2017-0002161 U (HONG, Ki Nam) 20 June 2017 (2017-06-20) See paragraphs [0024]-[0035]; and figures 1-4.	1-10
35	A	US 2004-0163199 A1 (HSU, Bill) 26 August 2004 (2004-08-26) See paragraphs [0036]-[0047]; and figures 1-14.	1-10
40	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
45	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
50	Date of the actual completion of the international search 28 June 2023		Date of mailing of the international search report 29 June 2023
55	Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon Building 4, 189 Cheongsaro, Seo-gu, Daejeon 35208 Facsimile No. +82-42-481-8578		Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2023/003948

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KR 20-2017-0002161 U	20 June 2017	KR 20-0485335 Y1	22 December 2017
US 2004-0163199 A1	26 August 2004	None	

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REFERENCES CITED IN THE DESCRIPTION

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