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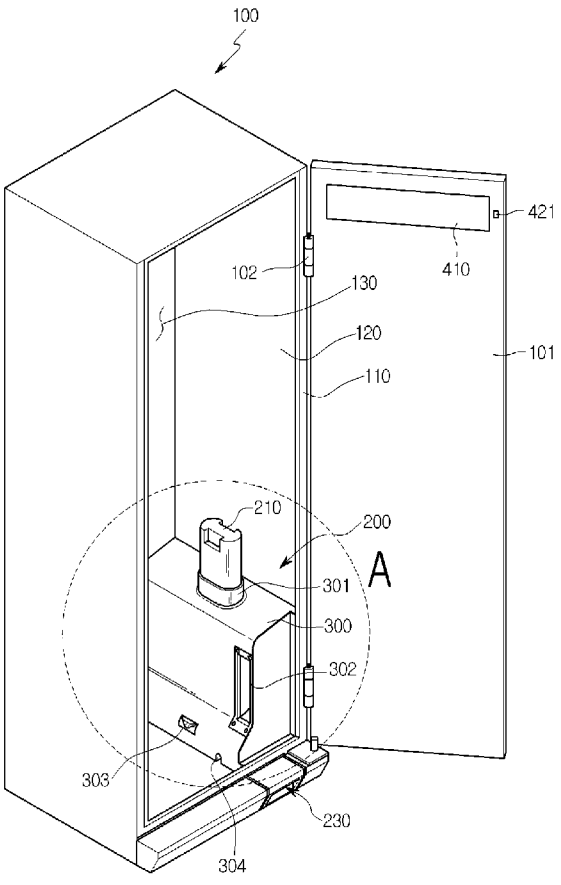
(54) Title: CLOTHES REFRESHING APPARATUS



(57) Abstract: A clothes refreshing apparatus is provided. The clothes refreshing apparatus includes a case, a clothes receiving compartment, a steam generator, a water tank, and a drain tank. The clothes receiving compartment is formed in the case and receives clothes. The steam generator supplies steam into the clothes in the clothes receiving compartment. The water tank supplies water into the steam generator. The drain tank collects remaining water in the steam generator.

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Description

CLOTHES REFRESHING APPARATUS

Technical Field

[1] The present invention relates to a clothes refreshing apparatus.

Background Art

[2] A clothes refreshing apparatus is an electric appliance that stores clothes therein and has a refreshing function for removing smells or wrinkles on the clothes.

[3] Specifically, the clothes refreshing apparatus eliminates wrinkles and/or smells on the clothes stored therein by using steam and hot air. Since odor particles and wrinkles, which make the clothes dirty, are removed by using the refreshing function, the clothes in the clothes refreshing apparatus may look as if they are freshly ironed.

[4] Additionally, the clothes refreshing apparatus may use a condensing method or a discharging method according to the refreshing function. Specifically, the condensing method circulates steam inside the clothes refreshing apparatus to refresh the clothes. The discharging method refreshes the clothes by using steam and then discharges the steam.

[5] The clothes refreshing apparatus includes an inner case for forming a clothes receiving compartment, and a steam generator for generating steam. The steam generator includes a heater. An additional water supplying line or a water tank is connected to the steam generator for supplying water. The supplied water is heated by the heater and then is changed into steam. The steam is supplied into the clothes receiving compartment to remove smell particles or wrinkles of the clothes therein.

Disclosure of Invention

Technical Problem

[6] Accordingly, the present invention is directed to a clothes refreshing apparatus that substantially obviate one or more problems due to limitations and disadvantages of the related art.

[7] An object of the present invention is to provide a clothes refreshing apparatus with an improved the layout for each part in order to manufacture a compact product and provide a space for long articles of clothing.

[8] Another object of the present invention is to provide a clothes refreshing apparatus including a slim external appearance.

[9] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be

realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

Technical Solution

[10] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, there is provided a clothes refreshing apparatus including a case, a clothes receiving compartment formed in the case and receiving clothes, a steam generator supplying steam into the clothes in the clothes receiving compartment, a water tank supplying water into the steam generator, and a drain tank collecting remaining water in the steam generator.

[11] In another aspect of the present invention, there is provided a clothes refreshing apparatus including an inner case and an external case, a clothes receiving compartment formed in the internal case and receiving clothes, a steam generator supplying steam to the clothes received in the clothes receiving compartment, a water tank supplying water to the steam generator; a condenser disposed between the internal and external cases which are a flowing passage of the steam discharged from the steam generator, and a drain tank collecting condensed water formed passing through the condenser.

Advantageous Effects

[12] According to the clothes refreshing apparatus of the present invention, the size of the clothes refreshing apparatus is manufactured to be compact and its clothes receiving efficiency is improved.

[13] According to a clothes refreshing apparatus and a method for controlling the same, a condensed water can be prevented, which is formed on the inner circumference of a clothes receiving space or the inner circumference of a door in the clothes refreshing apparatus during a clothes refreshing process.

[14] Additionally, condensed water is not generated on an inner circumference of a clothes receiving space and an inner circumference of a door in a clothes refreshing process during a clothes refreshing process.

[15] Additionally, since condensed water does not occur in a clothes receiving space, dry efficiency for clothes improves and a major cause for bacteria propagation can be removed.

[16] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

Brief Description of the Drawings

[17] FIG. 1 is a front perspective view of a clothes refreshing apparatus according to the present invention;

[18] FIG. 2 is a cutaway perspective view of a rear structure of a clothes refreshing apparatus according to the present invention;

[19] FIG. 3 is a schematic vertical sectional view of a condenser and a steam discharge port;

[20] FIG. 4 is a partial perspective view illustrating a refreshing unit is mounted on a clothes refreshing apparatus according to the present invention;

[21] FIG. 5 is an exploded perspective view of a refreshing unit;

[22] FIG. 6 is a block diagram of flows of water and steam in a refreshing unit according to the present invention;

[23] FIG. 7 is a perspective view of an assembly of a steam generator of a clothes refreshing apparatus according to another embodiment of the present invention; and

[24] FIG. 8 is a perspective view of an assembly of a steam generator of a clothes refreshing apparatus according to further another embodiment of the present invention.

Mode for the Invention

[25] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[26] A specific embodiment of the present invention will be described based on a condensing type, but the present invention is not limited to a condensing type and may be applied to a discharging type.

[27] FIG. 1 is a front perspective view of a clothes refreshing apparatus according to the present invention.

[28] Referring to FIG. 1, a clothes refreshing apparatus 100 includes a main body providing a clothes receiving compartment therein, a door 101 mounted on the front of the main body for rotation by using a hinge 102, and a refreshing unit 200 disposed on one side of the main body to provide steam and hot air. Specifically, the main body includes an external case 110 forming an external appearance and an internal case 120 disposed inside the external case 110. The external case 110 and the internal case 120 are combined, being spaced a predetermined interval apart from each other. A heat insulator 140 of FIG. 2 may be inserted in the space between the external case 110 and the internal case 120 to minimize heat exchange between the clothes receiving compartment 130 and the outside.

[29] On the other hand, the refreshing unit 200 in the clothes refreshing apparatus 100 is disposed on the side bottom of the main body. Specifically, a portion of the side of the inner case 120 is recessed toward the clothes receiving compartment 130, and thus a mechanical room 300 is formed being spaced apart from the external case 110. The

refreshing unit 200 is received in the mechanical room 300. The water tank 210 is disposed on the side of the inner case 120 forming the mechanical room 300. A discharge port 302 for discharging dry air, a steam discharge port 303 for discharging steam, and a drain hole 304 for draining a condensed water falling down to the bottom of the clothes receiving compartment 130 are disposed on the side of the inner case 120 forming the mechanical room 300. The water tank 210 is inserted into a support sleeve 301 that protrudes in a cylindrical shape from the inner case 120. A drain tank 230 is provided on the bottom of the mechanical room 300 to collect the condensed water. The front of the drain tank 230 can be seen on the front bottom of the clothes refreshing apparatus 100. Accordingly, a user can withdraw the drain tank 230 toward the front.

[30] Additionally, the door 101 is attached to one side edge of the main body to be rotatable by using a hinge 102.

[31] Specifically, heaters such as preferably plate-type heaters 400 and 410 are mounted on the side of the inner case 120 and the inner surface of the door 101. Temperature sensors 420 and 421 are mounted around the plate-type heaters 400 and 410. An upper space of the inner case 120 with the heater is a place where a portion of supplied steam is easily condensed. The heater is installed to remove the condensation phenomenon. More specifically, the temperature sensors 420 and 421 sense temperature around a place with the heater, and controls of turning on or off the heater.

[32] Additionally, a condenser 122 of FIG. 2 is provided at the rear of the main body. The condenser 122 condenses flowing steam supplied into the clothes receiving compartment 130. Description for this will be described with reference to the drawings.

[33] FIG. 2 is a cutaway perspective view of a rear structure of a clothes refreshing apparatus according to the present invention. FIG. 3 is a perpendicular sectional view of a condenser and a steam discharge port.

[34] Referring to FIGS. 2 and 3, a structure for condensing steam is provided at the rear of the main body in the clothes refreshing apparatus 100. Specifically, a condenser 122, where steam and air are falling, is formed between the rear of the external case 110 and the rear of the internal case 120. A steam discharge port 123 is formed at an upper rear of the inner case 120 to discharge steam supplied to the clothes receiving compartment.

[35] More specifically, the upper rear of the inner case 120 having the steam discharge port 123 is slanted toward the bottom with a predetermined angle such that the discharged steam smoothly flows into the condenser 122.

[36] Here, the steam is in a vapor state and easily ascends toward the top. Therefore, the steam discharge port 123 may be formed on the top of the clothes refreshing apparatus 100.

[37] On the other hand, a partition wall 125 is horizontally formed on the top of the inner case 120, and prevents the steam discharged into the steam discharge port 123 from flowing toward the front of the main body.

[38] Moreover, a guide rib 126 is formed long from the both ends of the partition wall 125 to the rear of the inner case 120. Specifically, the guide rib 126 guides the steam discharged into the steam discharge port 123 to smoothly fall toward the bottom of the condenser 122. The top of the partition wall 125 and the guide rib 126 closely contacts with the external case 110, thereby preventing the steam from being leaked into the outside.

[39] Additionally, the condenser 122 is space where the steam discharged through the steam discharge port 123 falls and is condensed.

[40] The steam flowing into the condenser 122 through the steam discharge unit 123 falls from the top to the bottom of the condenser 122 and is condensed. Since the steam is in a high temperature of a vapor state, the steam exchanges heat between external air and the steam by using heat conductivity through the external case 110. To improve heat conductivity efficiency, a plurality of condensation pins 111 are arranged in the inner circumference of the external case 110. The condensation pins 111 may be formed, when a corresponding portion of the external case 110 is recessed toward the inside, or the outer circumference of the external case 110 is flat and its inner circumference protrudes through a forming process. The size of heat exchange area increase due to the condensation pins 111 and also a condensation passage lengthens.

[41] That is, the condensation pins 111 are formed slanted toward the bottom, and arranged alternately on the left and right of the external case 110. Since a passage through which the steam descends has a zigzag shape, a condensation passage becomes longer compared to a straight line shape. Since the condensation passage becomes longer, a heat exchange occurs longer time.

[42] Additionally, a condensation pin 121 identical to the condensation pin 111 of the external case 110 is formed on the inner case 120 such that the flow of the discharged steam can be guided.

[43] On the other hand, the condenser 122 has a shape in which the steam is concentrated to one point in the bottom due to the guide rib 126.

[44] Specifically, the bottom of the guide rib 126 is formed curved toward the edge of one side of the internal case 120. Two guide ribs 126 extends from the both ends of the partition wall 125 toward the bottom and meets each other at the edge of the inner case 120. A condensed water discharge port 251 is formed at the point where the guide ribs 126 meet each other. The condensed water discharge port 251 is connected to the drain tank 230 through a hose. A guide duct 250 is provided around the point where the two guide ribs 126 meet to guide the descending steam toward a drying duct 240 con-

stituting the refreshing unit 200. A suction port 244 of the drying duct 240 is connected to the guide duct 250 such that a portion of the steam flows into the drying duct 240 during a steam supplying process. The suction port 244 is a passage where dry air circulates during a drying process. Structures and functions of the drying duct 240 and the guide duct 250 will be described in more detail with reference to drawings.

[45] FIG. 4 is a partial perspective view of when a refreshing unit is mounted on a clothes refreshing apparatus according to the present invention. FIG. 5 is an exploded perspective view of a refreshing unit.

[46] Referring to FIGS. 4 and 5, the refreshing unit 200 of the present invention includes a water tank 210 supplying water for generating steam, a steam generator 220 generating steam with the water from the water tank 210, a drain tank 230 collecting remaining water in the water tank 210 and the steam generator 220 and condensed water generated during a steam supplying process, and a drying duct 240 supplying hot air during a drying process. The refreshing unit 200 is received in the mechanical room 300.

[47] Specifically, the water tank 210 stores a predetermined amount of water therein and supplies the water to the steam generator 220. The water tank 210 is received in a support sleeve 301 to be removable. Accordingly, when the water stored in the water tank 210 is depleted, the water tank 210 can be easily separated for re-supplying.

[48] Moreover, the steam generator 220 receives the water from the water tank 210 to generate steam. Specifically, the steam generator 220 includes a heater 221 to changes the water into the steam by using the heat generated from the heater 221. The water is supplied from the water tank 210 to the steam generator 220 through a predetermined supply passage, i.e., a hose. Additionally, a water supply port 223 connected to the water tank 210 through the hose, a steam discharge port 222 for discharging the steam, and a drain port 224 for draining the remaining water are formed on one side of the steam generator 220, respectively. Here, the water supply port 223 and the steam discharge port 222 are provided on the top of the steam generator 220. The drain port 224 is provided on the bottom of the steam generator 220.

[49] Additionally, the drain tank 230 is a place where the remaining water in the steam generator 220, condensed water in the condenser 122, and the condensed water falling into the bottom of the clothes refreshing compartment 130 are concentrated. The condensed water is collected in the drain tank 230 along the drain passage such as a hose connected to each of drain tanks 230.

[50] Specifically, a first connection port 233 connected to the drain port 224 of the steam generator 220, a second connection port 234 connected to a drain hole 304 in the bottom of the clothes refreshing compartment 130, and a third connection port 235 connected to a condensed water discharge port 251 provided to the lower portion of the

condenser 122 are formed on one side of the drain tank 230, respectively. In other methods, a cluster is separately provided to collect the water drained through the steam generator 220 and the drain hole 304, and the cluster is connected to the drain tank 230 through the hose. An additional connection port that directly connecting the water tank 210 and the drain tank 230 may be further formed on one side of the drain tank 230 or the clusters.

[51] On the other hand, bacterial proliferation occurs when water remains stagnant long period of time in a storage chamber 231 of the drain tank 230. Furthermore, a portion of the polluted water in the drain tank 230 is vaporized and then may be delivered into the clothes in the clothes receiving compartment 130. Accordingly, the drain tank 230 may be emptied after a predetermined time or periodically.

[52] To satisfy these needs, the drain tank 230 may be mounted on the main body bottom of the clothes refreshing apparatus 100 in a drawer type. Then, the drain tank 230 can be easily detached such that the drain tank 230 is easily emptied. A grip groove 232 is formed on the front of the drain tank 230 such that the drain tank 230 can be easily withdrawn.

[53] Additionally, the drying duct 240 heats and circulates air inside the clothes refreshing compartment 130. Specifically, the drying duct 240 includes a fan installation unit 241 for providing a drying fan, a heater installation unit 242 having a drying heater 245, and a discharge unit 243 discharging hot air. The discharge unit 243 is connected to the discharge port 302 formed on the side of the inner case 120 constituting the mechanical room 300. A suction port 244 is formed on the front of the fan installation unit 241, and the suction port 244 is connected to the guide duct 250.

[54] According to the above structure, when the drying fan and the drying heater 245 in the drying duct 240 operate, air in the clothes refreshing apparatus 130 is discharged through a steam discharge port 123 formed on the top of the inner case 120. The discharged air ascends along the condenser 122 and flows into the guide duct 250. The air flowing into the drying duct 240 is suctioned into the drying duct 240 thorough the suction port 244 of the drying duct 240. The suctioned air is heated to a high temperature by using the drying heater 245. Then, an air circulating process is repeated, so that the heated air is discharged into the clothes receiving compartment 130 again through the discharge unit 243 and the discharge port 302.

[55] On the other hand, the water tank 210, the steam generator 220, and the drain tank 230 are sequentially stacked. Due to this stacked structure, space that the mechanical room 300 occupies reduces such that available space in the clothes receiving compartment 130 increases.

[56] Additionally, according to above-stacked structure, the flow of water in the refreshing unit 200 falls naturally by means of gravity. Accordingly, an additional

device is not required for generating the flow of water in the refreshing unit 200. Furthermore, the overall size of the refreshing unit 200 decreases.

[57] FIG. 6 is a block diagram of flows of water and steam in a refreshing unit according to the present invention.

[58] According to an embodiment of the present invention, the remaining water in the water tank 210 is collected into the drain tank 230 through the steam generator 220. This will be described in more detail.

[59] Referring to FIG. 6, the water is supplied from a water supplying source to the water tank 210, and the supplied water is supplied to the steam generator 220. A control valve is mounted between the water tank 210 and the steam generator 220. A water level sensor 225 is installed inside the steam generator 220 such an appropriate amount of water can be supplied to the steam generator 220. Although not illustrated, the control valve may be installed on a passage connecting the water supplying source and the water tank 210, and the water level sensor may be mounted inside the water tank 210. Additionally, a temperature sensor 226 is mounted inside the steam generator 220 thereby preventing the steam generator 220 from being overheated when a heater continuously operates without sufficient water. The drain port 224 of the steam generator 220 and the first connection port 223 of the drain tank 230 are connected to each other through a hose.

[60] According to the above structure, the water stored in the water tank 210 is supplied to the steam generator 220 through the water supply port 223. The supplied water is heated and the steam is generated by an operation of the heater 221 inserted in the steam generator 220. The generated steam is sprear out the clothes receiving compartment 130 through the steam discharge ports 222 and 303.

[61] Moreover, once the steam supplying process is completed, the remaining water in the steam generator 220 is discharged through the drain port 224. The drained water is stored in the storage chamber 231 through the first connection port 233 of the drain tank 230.

[62] On the other hand, condensed water is discharged through the condensed water discharge port 251 during a steam supplying process. The condensed water is formed when a portion of the steam falls along the condenser 122. The discharged condensed water is collected in the storage chamber 231 through the third connection port 235 of the drain tank 230. Then, a user can withdraw the drain tank 230 for disposal of water.

[63] FIG. 7 is a perspective view of an assembly of a steam generator of a clothes refreshing apparatus according to another embodiment of the present invention.

[64] Referring to FIG. 7, the water tank 210 is connected to the drain tank 230 through the connection part 240. The connection part 240 may be bent up or down, and a groove 272 can be formed on a plane surface of the connection part 240. The groove 272

prevents the connection part 240 from slipping through a user's fingers when the user grasps the connection part 240.

[65] A steam generator 220 may be interposed between the water tank 210 and the drain tank 230. The connection part 270 may separate the water tank 210 and the drain tank 230 from the steam generator 220.

[66] Additionally, since the user holds and pushes the connection part 270, the water tank 210 and the drain tank 230 can combine with the steam generator 220.

[67] Since the water tank 210 and the drain tank 230 are handled together using the connection part 270, the connection part 270, it is unnecessary to handle the water tank 210 and the drain tank 230 separately.

[68] FIG. 8 is a perspective view of an assembly of a steam generator of a clothes refreshing apparatus according to further another embodiment of the present invention.

[69] Referring to FIG. 8, the water tank 211 and the drain tank 230 can be manufactured as one body. When manufacturing the water tank 211 and the rain tank 230 as one body, the water tank 211 is disposed below the drain tank 230. At this point, the water tank 211 includes a pump 280 to supply water in the water tank 211 into the steam generator 220.

[70] Since the water tank 211 and the drain tank 230 are manufactured in one body, they can be handled together and the size of the clothes refreshing apparatus can be reduced.

[71] Hereinafter, processes of the clothes refreshing apparatus will be described. Here, the processes include a first drying process, a steam supplying process, and re-drying process. Theses processes are exemplary and various processes can be possible.

[72] First, clothes are received in the clothes receiving compartment 130.

[73] During the first drying process, power is applied to the drying duct 240 and external air flows into the drying duct 240. After the flowing air is heated in the drying duct 240 and changes into hot air, the hot air is discharged into the discharge port 302. The discharged hot air is applied to the clothes in the clothes receiving compartment 130.

[74] During the steam supplying process, the water in the water tank 211 is supplied to the steam generator 220. The supplied water is heated by the heater 211 of the steam generator 220 and changes into a high temperature of steam. This steam is applied to the clothes in the clothes receiving compartment through a predetermined nozzle.

[75] The steam passing through the clothes flows into the condenser 122 through the steam discharge port 123. The flowing steam passes through the condenser 122 and exchanges heat with external air using the rear of the external case 110 as a heat exchanging layer. Then, the steam is condensed and changes into condensed water.

[76] The condensed water is guided by the condensation pins 111 and 121, and flows along walls of the inner case 120 and the external case 110, the walls constituting the

condenser 122. The flowing condensed water flows into the drain tank 230 along a predetermined passage. On the other hand, after the steam supplying process is completed, the remaining water in the steam generator 220 flows into the drain tank 230 along a predetermined passage. The user empties the drain tank 230 such that the water in the drain tank 230 can be easily removed from the clothes refreshing apparatus 100.

[77] During the re-drying process, the external air inflows through the drying duct 240 through the drying duct 240 and changes into hot air. Then the hot air is applied to the clothes in the clothes receiving compartment 130.

[78] Through the above processes, dirt and wrinkles in the clothes are removed such that the clothes may look as if they are freshly ironed.

[79] According to the clothes refreshing apparatus of the present invention, the size of the clothes refreshing apparatus is compact and its clothes receiving efficiency can be improved.

[80] Additionally, condensed water is not generated on an inner circumference of a clothes receiving space and an inner circumference of a door in a clothes refreshing process during a clothes refreshing process.

[81] Additionally, since condensed water does not occur in a clothes receiving space, dry efficiency for clothes improves and a major cause for bacteria propagation can be removed.

[82] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Industrial Applicability

[83] According to the clothes refreshing apparatus of the present invention, the size of the clothes refreshing apparatus is manufactured to be compact and its clothes receiving efficiency is improved.

[84]

Claims

[1] A clothes refreshing apparatus comprising:
a case;
a clothes receiving compartment formed in the case and receiving clothes;
a steam generator supplying steam into the clothes in the clothes receiving compartment;
a water tank supplying water into the steam generator; and
a drain tank collecting remaining water in the steam generator.

[2] The clothes refreshing apparatus according to claim 1, wherein the water tank, the steam generator, and the drain tank are stacked in a length direction of the case.

[3] The clothes refreshing apparatus according to claim 1, wherein the water tank is disposed on the steam generator and the steam generator is disposed on the drain tank.

[4] The clothes refreshing apparatus according to claim 1, wherein the water tank, the steam generator, and the drain tank are disposed on one side of the case.

[5] The clothes refreshing apparatus according to claim 1, further comprising a condenser disposed on a rear of the case and collecting and condensing steam ascending through the clothes.

[6] The clothes refreshing apparatus according to claim 5, wherein the drain tank receives condensed water condensed in the condenser.

[7] The clothes refreshing apparatus according to claim 1, wherein the water tank is connected to the drain tank through a connection part.

[8] The clothes refreshing apparatus according to claim 1, wherein the water tank and the drain tank are integrally formed.

[9] The clothes refreshing apparatus according to claim 8, wherein the water tank comprises a pump to supply water into the steam generator.

[10] The clothes refreshing apparatus according to claim 1, wherein the water tank is detachable from the case.

[11] The clothes refreshing apparatus according to claim 10, further comprising a grip hole disposed on a front of the drain tank for easy detachment.

[12] The clothes refreshing apparatus according to claim 1, further comprising a drying duct interposed between the water tank and the steam generator to supply hot air during a drying process.

[13] A clothes refreshing apparatus comprising:
an inner case and an external case;
a clothes receiving compartment formed in the internal case and receiving

clothes;
a steam generator supplying steam to the clothes received in the clothes receiving compartment;
a water tank supplying water to the steam generator;
a condenser disposed between the internal and external cases serving as a flowing passage of the steam discharged from the steam generator; and
a drain tank collecting condensed water formed while it passes through the condenser.

[14] The clothes refreshing apparatus according to claim 13, wherein the condenser comprises a plurality of condensation pins.

[15] The clothes refreshing apparatus according to claim 13, wherein the water tank is disposed on the steam generator and the steam generator is disposed on the drain tank.

[16] The clothes refreshing apparatus according to claim 13, further comprising a drain passage allowing the condensed water condensed in the condenser to be received in the drain tank.

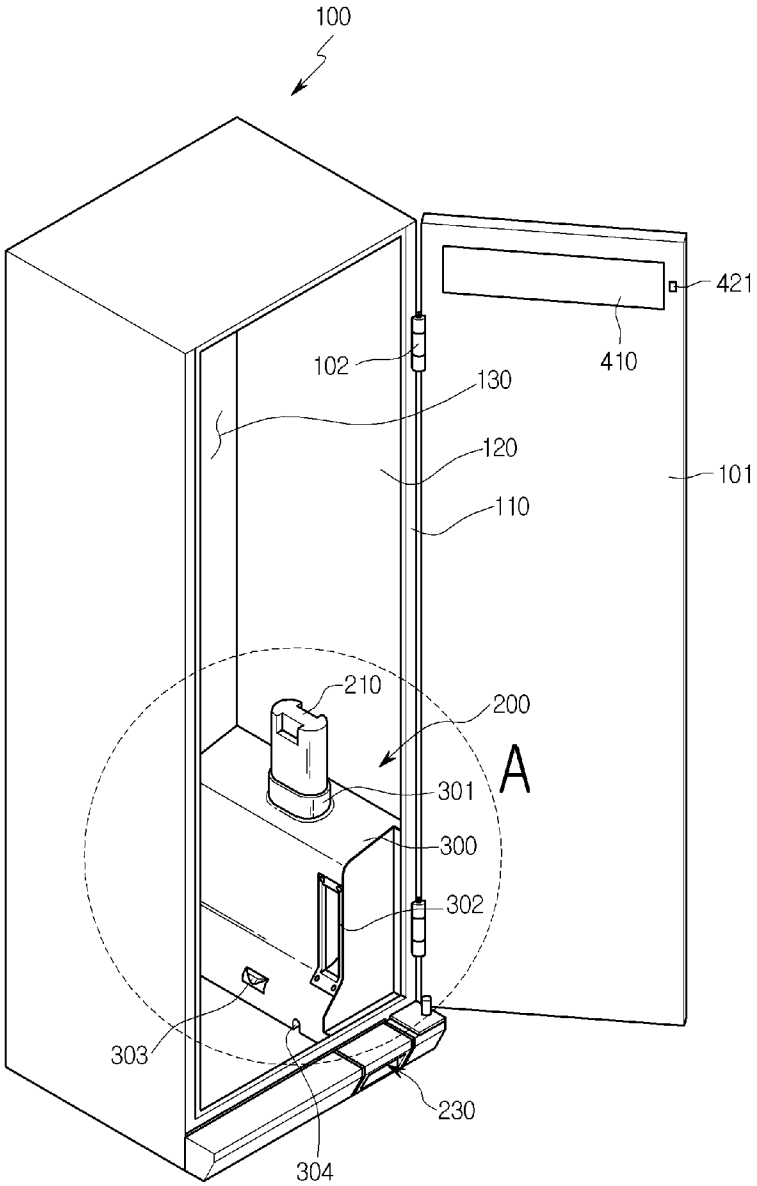
[17] The clothes refreshing apparatus according to claim 13, wherein the water tank is connected to the drain tank through a connection part.

[18] The clothes refreshing apparatus according to claim 13, wherein the water tank and the drain tank are integrally formed.

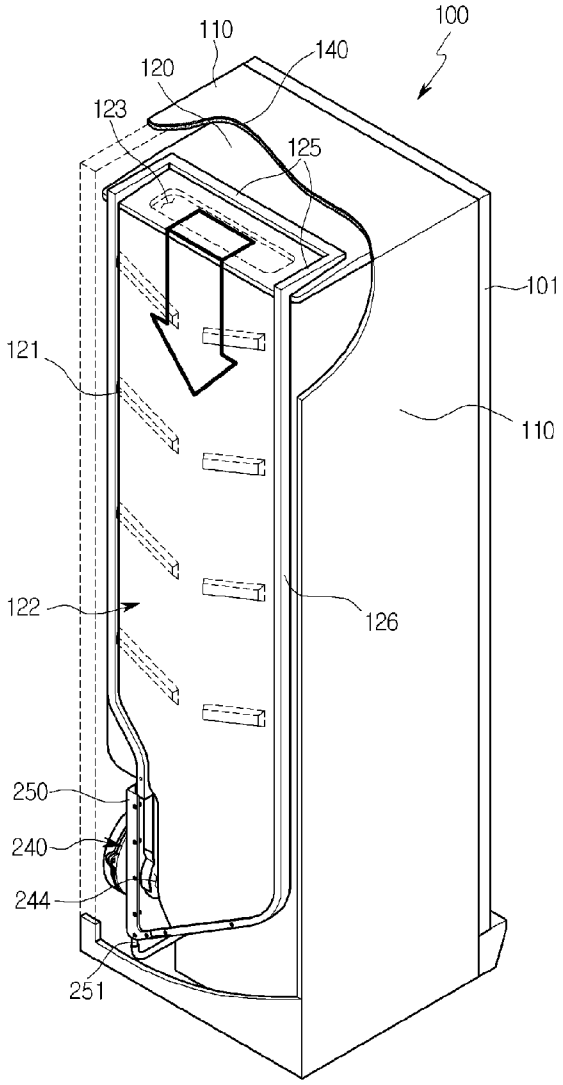
[19] The clothes refreshing apparatus according to claim 18, wherein the water tank comprises a pump to supply water into the steam generator.

[20] The clothes refreshing apparatus according to claim 13, further comprising a drying duct interposed between the water tank and the steam generator to supply hot air during a drying process.

[Fig. 1]



[Fig. 2]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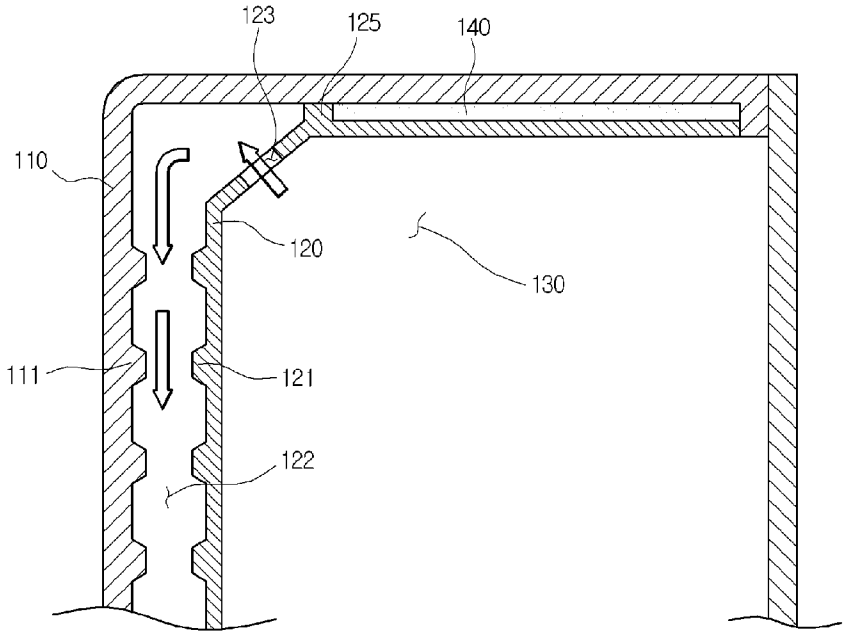
[Fig. 3]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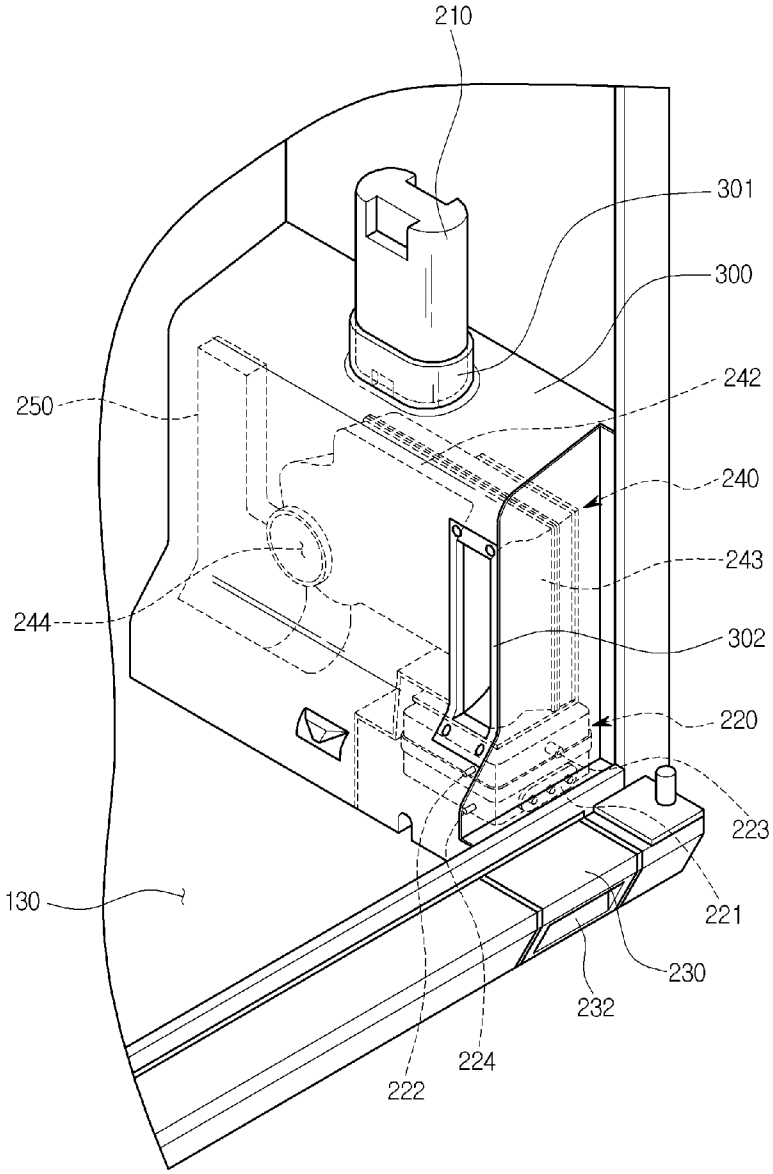
[Fig. 4]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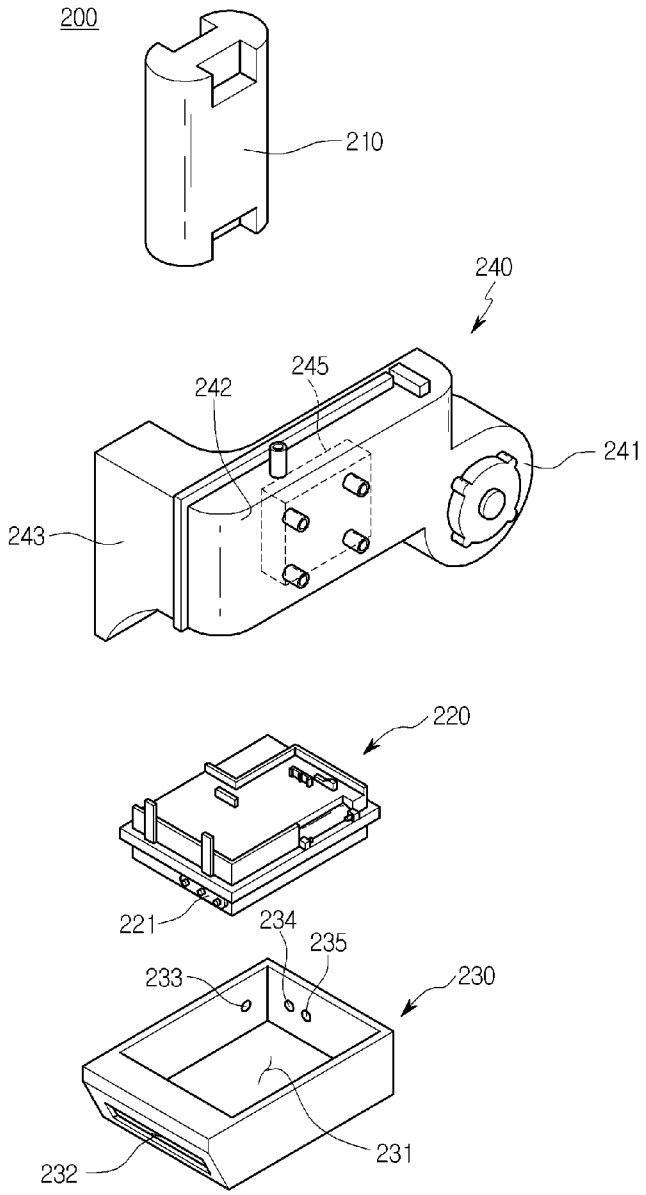
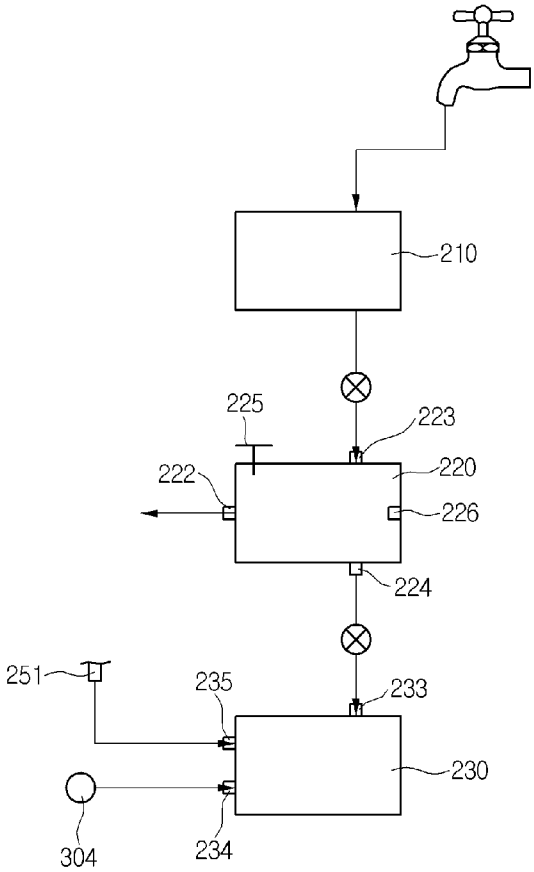
[Fig. 5]



[Fig. 6]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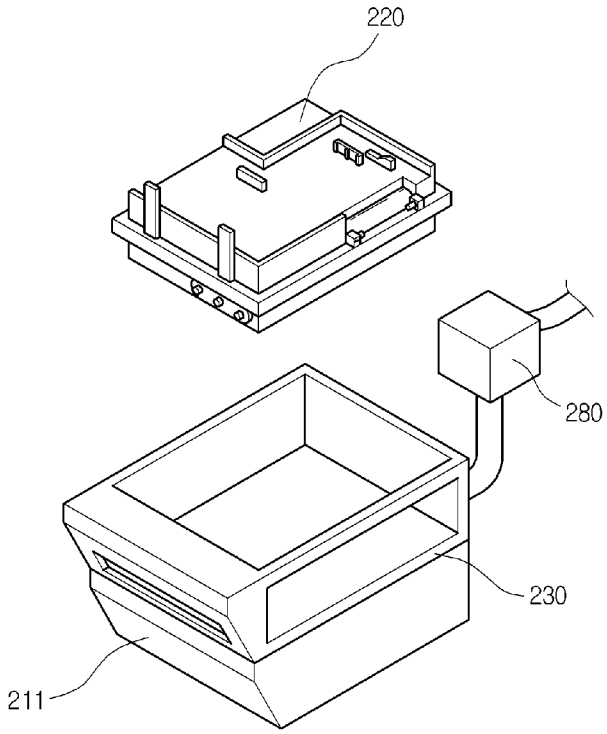
[Fig. 7]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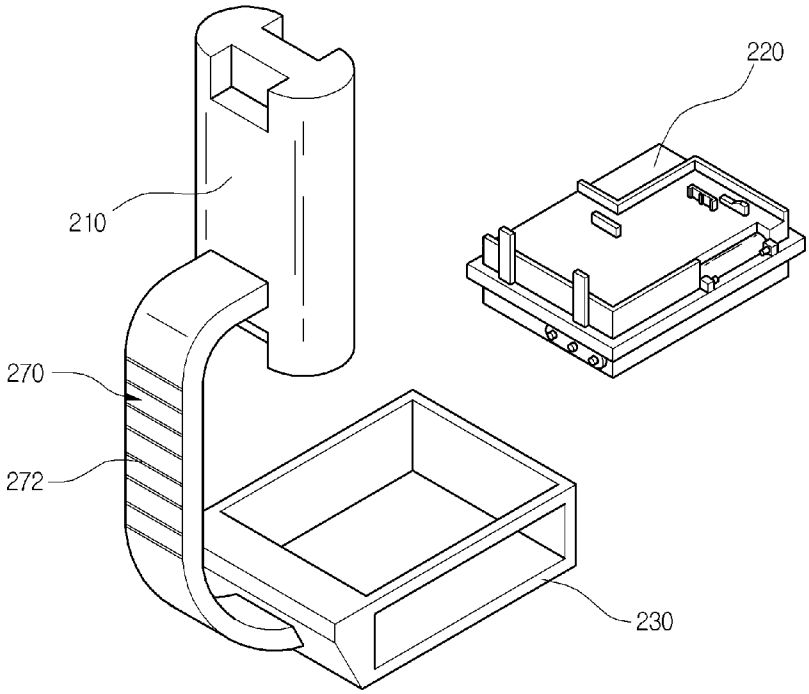
[Fig. 8]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2007/001860

A. CLASSIFICATION OF SUBJECT MATTER

D06F 73/00(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)

IPC8 D06F 58/10, D06F 73/00, D06F 73/02, D06C 29/00, A61L 2/04

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)

eKIPASS (KIPO internal) & keywords: "ease, generator, heater, tank, steam, clothes, refreshing, and similar terms"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 04-144598 A (MATSUSHITA ELECTRIC IND. CO., LTD.) 19 May 1992 See the abstract, claim 1, and figures 1-4.	1-20
A	WO 2005-001191 A1 (ELECTROLUX HOME PRODUCTS CORPORATION N.V.) 06 January 2005 See the abstract, claim 1, and figure 3.	1-20
A	JP 11-189968 A (MIYATA YUKIO) 13 July 1999 See the abstract, claim 1, and figures 1-4.	1, 13
A	US 5433919 A (HANS BALTES) 18 July 1995 See column 3, lines 14-24, and figures 1-3.	1, 13

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 JULY 2007 (23.07.2007)	**23 JULY 2007 (23.07.2007)**

Name and mailing address of the ISA/KR	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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