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(71) Applicant and

(72) Inventor: KANG, Kyusuk [KR/KR]; Rasung Villa, Na Dong 202, 1045-4 Bisan 3 Dong, Dongan Ku, Anyang City 431-053 (KR).

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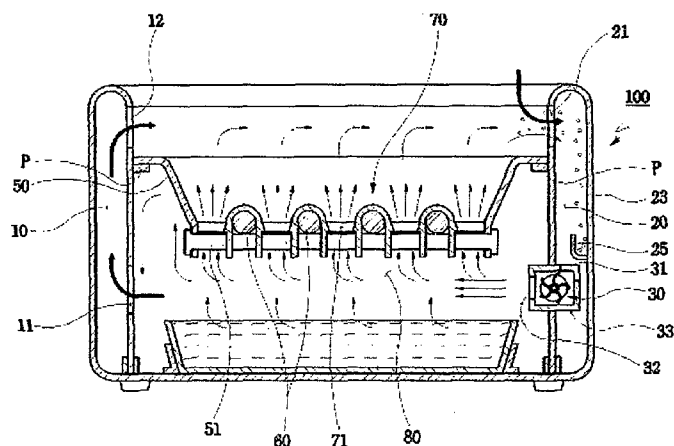
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(54) Title: THE RECYCLE SYSTEM OF AIR IN ROASTER



(57) Abstract: An air-circulating system of a roaster possible to produce uniform air-flowing cycles by operating a length fan, which is installed internally, thereby smoke can be burned out by a hot wind while it is restricted not to discharge out of the roaster as well as an additional effect to smoke meat being roasted can be achieved. The system can prevent smoke and smell, which are produced when roasting meat and fish, from going out of the roaster by making an air curtain with a flow of air only even when a lid of the roaster is opened. The system can prevent oil from flying over by making smoke circulated continuously inside of the roaster. And further, the present invention can prevent those who eat from smelling smoke or being suffered by smoke by burning out incompletely burned smoke by heat from the heater itself through the plurality of oil discharging holes. According to the system, smells of smoke is burned out by heated wind because hot wind by the heater itself is discharged through the plurality of oil discharging holes of roasting plate in accordance to the inhaling force of the motor as well as effect to smoke meat can also be achieved because meat is roasted along with the heated wind. According to the system, durability of the fan can be strengthened because the oil tray to filter oil contained in air by the flow of air is provided.



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Description

THE RECYCLE SYSTEM OF AIR IN ROASTER

Brief Description of the Drawings

[1] Cross-Reference to Related Patent Application

[2] 1. Field of the Invention

[3] The present invention relates to an air-circulating structure of an electric roaster, and more spaceicularly, to an air-circulating system of a roaster possible to produce uniform air-flowing cycles by operating a length fan, which is installed internally, thereby smoke can be burned out by a hot wind while it is restricted not to discharge out of the roaster as well as an additional effect to smoke meat being roasted can be achieved.

[4] 2. Description of the Related Art

[5] In general, an electric roaster is a device equipped with an electric heater installed in a certain housing, which a grill, a fry -pan or the like is seated above according to its purpose, and an oil tray installed in the lower portion of the housing to collect oil, which is produced when roasting meat, fishes, selfish, etc.

[6] However, there are problems of which oil can be spread over a room; it smells hot; it kills eyes; and so on, by oil and smoke which are discharged out of the roaster during meat is roasted,

[7]

[8] Summary of the Invention

[9] An object of the present invention is to provide an air-circulating system of a roaster possible to produce uniform air-flowing cycles by operating a lengthy fan, which is installed internally, thereby smoke can be burned out by hot wind, which is heated by a heater and flows through a plurality of oil discharging holes, while smoke is restricted not to discharge out of the roster as well as effect to smoke meat being roasted can be achieved.

[10] According to an aspect of the present invention, there is provided an air-circulating system of an electric roaster having a hot-wind burning-out cycle. The air-circulating system of a roaster includes;

[11] a first air-flowing space with a dual-plate structure deposed in a side of the roaster on which an auxiliary exhaust hole is provided in the lower portion;

[12] a second air-flowing space with a dual-plate structure on which an air-intake hole is provided;

[13] a fan bracket deposed in the bottom portion of the second air-flowing space on which an inlet and an outlet are provided;

[14] a lengthy fan installed inside the fan bracket;

- [15] a rotating motor disposed next to the fan bracket separately having an axis fixed to the axis of the fan;
- [16] a seating plate formed in a curved shape inside the roaster;
- [17] an electric heater fixed to the inner circumference of the seating plate by a supporting space; and
- [18] a roasting plate seated over the electric heater on which a plurality of oil-discharging holes are provided,
- [19] By the air-circulating system of the roaster according to the present invention, air is flowed into the second air-flowing space through the air intake hole in accordance with the rotation of the fan. The air is flowed into the inner space of the roaster passing through the inlet and the outlet of the fan bracket. The air of the inner space is discharged through the plurality of oil-discharging holes of the roasting plate. Finally, the discharged air is flowed into the second air-flowing space again.
- [20] It is preferable that a curved oil tray is provided on the internal wall of an outer plate of the second air-flowing space.
- [21] It is further preferable that an auxiliary discharging hole and a plurality of air-discharging holes are provided in lower portion and upper portion of a first air-flowing space, respectively;
- [22] It is still further preferable that a guiding plate for air disperse having a tapered bottom plate with a dispersing hole at the central space and edge portion brimmed along its outer circumference is provided.
- [23] According to another aspect of the present invention, there is provided of a roaster having a upper body; a lower body assembled to the lower portion of the upper body; a lengthy fan installed inside a fan bracket, which is installed inside the lower body; a rotating motor whose axis is fixed to the axis of the fan; a grill having inserting holes; an electric heater inserted into the inserting holes; an air disperse guiding plate provided in the bottom the electric heater; and a first side plate and a second side plate having air inlet holes and air outlet holes, respectively, the roaster is characterized in that
- [24] the first side plate and the second side plate are prepared at the both sides of the air disperse guiding plate so that the first side plate and the second side plate are separated along with the air disperse guiding plate when the roaster is disassembled; and the fan is inserted or separated at the bottom of the lower body.
- [25] It is preferable that the first side plate and the second side plate are formed at the both sides of the air disperse guiding plate 226 in one body.
- [26] It is preferable that the first side plate and the second side plate are bent upward and extended in the vertical direction at the both sides of the lengthy direction of the air disperse guiding plate.

[27] It is preferable that a detachable opening/closing door at the bottom of the lower body to open the bottom of the lower body in order to install or disassemble the fan.

[28] It is preferable that the roaster further includes a heater supporter to support the electric heater, wherein the heater supporter is made by bending a tube with a constant diameter in many times to form handles at the both sides and supporting bars at the both sides of the center portion so that its both sides are supported by the dir disperse guiding plate.

[29] Specific aspects and advantages of the present invention now will be more apparent by referring the description taken into the accompanied drawings.

[30]

[31] BRIEF DESCRIPTION OF THE DRAWINGS

[32] The above and other features and advantages of the present invention will become more apparent by describing in detail exemplary embodiments thereof with reference to the attached drawings in which:

[33] Fig. 1 shows a side sectional view of a roaster according to the present invention;

[34] Fig. 2 shows another side sectional view of the roaster according to the present invention;

[35] Fig. 3 shows a disassembled view of the roaster according to the present invention;

[36] Fig. 4 shows an enlarged view of a roasting plate of the roaster according to the present invention;

[37] Fig. 5 shows a structural view illustrating the connection of the roaster according to the present invention;

[38] Fig. 6 shows a sectional view illustrating a space of the roaster according to the present invention;

[39] Fig. 7 shows a sectional view illustrating the state in which a disperse guiding plate is assembled to the roaster according to the present invention;

[40] Fig. 8 shows an exploded perspective view illustrating an assemblage of a disperse guiding plate to the roaster according to the present invention;

[41] Fig. 9 shows a disassembled view of another embodiment of the present invention;

[42] Fig. 10 shows a spaceial disassembled perspective view illustrating a lower body and an opening/closing door shown in Fig. 9;

[43] Fig. 11 shows a side sectional view illustrating a main portion of the Fig. 9; and

[44] Fig. 12 shows a schemetical sectional view illustrating another section of Fig. 9.

[45] Brief description of the spaces

[46] 10; first air-flowing space 20; second air flowing space

[47] 21; air intake hole 30; fan

[48] 31; inlet 32; outlet

[49] 33; fan bracket 50; seating plate

- [50] 60; electric heater 70; roasting plate
- [51] 71; oil discharging hole 80; inner space
- [52] 11; auxiliary exhaust hole 90; guiding plate for air disperse
- [53] 91; bottom plate 93; dispersing hole
- [54] 93: edge portion

[55]

[56] DETAILED DESCRIPTION OF THE INVENTION

[57] The present invention will now be described more fully with reference to the accompanying drawings, in which exemplary embodiments of the invention are shown.

[58] Referring to Fig. 1 through Fig. 6, the air-circulating system of the roaster according to the present invention includes a first air-flowing space 10 with a dual-plate structure at a side of a roaster 100, a second air-flowing space 20 with a dual-plate structure on which an air-intake hole 21 is formed, a fan bracket 33 having an inlet 31 and an outlet 32 at the lower portion of the second air-flowing space 20 and a lengthy fan 30 installed inside the fan bracket 33.

[59] In addition, a rotating motor 40 deposited next to the fan bracket 33 separately, whose axis is fixed to the axis of the fan 30, and a seating plate 50 seated inside the roaster 100, which is configured in a curved shape, are provided.

[60] Further, an electric heater 60, which is fixed by a supporter 51 at the inner circumference of the seating plate 50, and a roasting plate 70 seated over the electric heater 60, which has a plurality of oil-discharging holes, are provided.

[61] The apparatus according to the present invention has a hot-wind burning cycle by heat of the electric heater 60 itself through the plurality of the oil-discharging holes 71.

[62] In detail, air is flowed into the second air-flowing space 20 through the air intake hole 21. The air is flowed into the inner space 80 of the roaster 100 passing through the inlet 31 and the outlet 32 of the fan bracket 33. The air of the inner space 80 is discharged through the plurality of oil-discharging holes 71 of the roasting plate 70. Finally, the discharged air is flowed into the second air-flowing space 20 again.

[63] Referring to Fig. 1, the fan 30 inhales air through the inlet 31 and discharge it through the outlet 32 to the left side when the fan 30 is rotated by the rotating motor 40.

[64] In other words, because the second air-flowing space 20 with dual-plate structure is provided over the fan bracket 33 and a plurality of air-intake holes 21 is formed at the top portion of the second air-flowing space 20, smoke produced by roasted meat and fresh air outside the roaster 100 are flowed into through the air-intake hole 21 as indicated by arrows in Fig. 1.

[65] Thus, smoke and air discharged through the outlet 32 of the fan bracket 33 are flowed into the inner space 80 of the roaster 100.

- [66] As smoke and air are flowed into, a difference in air density is generated between inside and outside the roaster 100.
- [67] Accordingly, smoke and air is discharged out of the roaster 100 since outside air density is less than inside air density. At this time, the plurality of oil-discharging holes 71 of the grill 70 serves as a passage.
- [68] That is, air and smoke are discharged toward the upper portion of the roaster 100 through the plurality of the oil-discharging holes 71 of the roasting plate 70.
- [69] In the meantime, meat or fishes remains roasted since the electric heater 60 of the roaster 100 heats continuously.
- [70] Accordingly, it can be achieved that smoke and hot-wind (i.e., flow of air), which are discharged through the plurality of the oil-discharging holes 71 smokes meat and fishes on the roasting plate 70.
- [71] The roaster 100 adopting the air-circulating system according to the present invention roasts meat with air circulated as described above. The present invention prevents smoke of burned meat from discharging out of the roaster 100. The present invention makes an air curtain to suppress discharge of smoke out of the roaster 100 and makes the air recycled continuously. Thus, smells and smoke are burned out by heat of the electric heater 60 itself through a plurality of oil-discharging holes 71 of the roasting plate 70 so that smells and smoke can be prevented from discharging out of the roaster 100.
- [72] Smoke discharged through the plurality of oil-discharging holes 71 of the roasting plate 70 is flowed into the second air-flowing space 20 again through the air-intake hole 20 again by the inhalation force of the fan 30.
- [73] The roaster 100 includes an oil tray 25 inside the second air-flowing space 20. The oil tray 25 is provided on the inner side of an outer plate 23 of the second air-flowing space 20.
- [74] Considerably large amount of oil may be contained in the smoke of roasted meat.
- [75] Since smoke is inhaled by force by the fan 30, smoke may be flowed into the second air-flowing space 20 at high speed.
- [76] At this time, oil contained in the smoke cooled into spaceicles by a wind (i.e., flow of air) flowed into from the outside and spaceicles of oil become oil-drops with certain mass.
- [77] If oil-drops with a mass are inhaled to be flowed into the second air-flowing space 20 by the inhalation force of the rotating motor 30, it collides to the outer plate 23 and flows down to the oil tray 25.
- [78] Meanwhile, air and smoke, which are flowed into with oil-drops together, are separated from the oil-drops by differences in mass, go downward and finally flow into the inner space 80 of the roaster 100 passing through the fan 30.

- [79] Thus the oil tray 25 serves an important role to prevent oil sticking to the fan 30 to deteriorate its durability.
- [80] Also, the oil tray 25 removes problems by oil stuck to the fan 30 for example, to shorten the life span of the fan 30, to cause troubles of the fan 30, to cause toxic and dirt environment in health, etc.
- [81] It is further preferable that an auxiliary outlet 11 and a plurality of outlets 12 are provided in the lower portion and in the upper portion of the first air-flowing space 10, respectively.
- [82] According to the present invention, smoke and air are circulated along the direction of cycle as described above. However, the plurality of oil-discharging holes 71 may be blocked by meat when lots of meat is roasted on the roasting plate 70.
- [83] If so, since the flow of air and smoke becomes blocked, recycling cannot be performed.
- [84] To prevent such a problem, the present invention provides the auxiliary outlet 11 and the air-discharging hole 12.
- [85] If most of the plurality of the oil-discharging holes 71 are blocked as lots of meat is roasted on the roasting plate 70, smoke and air are flowed into the auxiliary outlet 11 in the lower portion of the first air-flowing space 10 which is located in the opposite direction of the second air-flowing space 20.
- [86] Smoke and air flowed into the auxiliary outlet 11 are raised up and discharged through the air-discharging hole 12 in the upper portion to enter to the upper portion of the roaster 100 with a constant speed.
- [87] After then, smoke and air are flowed into the second air-flowing space 20 by an operation of the fan 30 and thus, air-circulating will be repeated as same as in the recycle direction of smoke and air as described above.
- [88] It is preferable that each shape of the plurality of the oil-discharging holes 71 of the roasting plate 70 is tapered with wide upper portion and narrow lower portion so that discharged smoke should be spread widely.
- [89] Smoke and air circulated by the fan 30 are projected through the plurality of the oil-discharging holes 71 and discharged to the upper portion of the roaster 100. Thus smoke and air can be discharged so as to be spread widely if the sectional shape of the plurality of the oil-discharging holes 71 each is wide in the upper portion and narrow in the lower portion.
- [90] Such a shape is helpful to burn out smoke and to produce more effective smoking.
- [91] Further, if the plurality of the oil-discharging holes 71 of the roasting plate 70 are shaped as the upper portion is wide while the lower portion is narrow, oil produced when roasting meat and fish is streamed down along the incline of plurality of oil-discharging hole 71 and thus, oil cannot spark fly.

- [92] Although Fig. 4 and 5 show an embodiment of the roasting plate 70 of the roaster 100, it should be understood that the roaster 100 cannot be limited to have such the roasting plate 70.
- [93] However, the assembling structure as shown in Fig. 5 and 6 is preferable to install that kind of the roasting plate 70.
- [94] Referring to Fig. 5 and 6, a supporting space 51 is assembled at the inner circumference of the seating plate 50 seated in the roaster 100.
- [95] Of course, the seating plate 50 can be seated on the seating protrusion P of the roaster 100 or fixed strongly to the roaster 100 by welding.
- [96] The electric heater 60 is placed over the supporting space 51.
- [97] Thus the electric heater 60 can be maintained by a supporting force of the supporting space 51.
- [98] An electric heater inserting groove 77 is provided in the bottom portion of the roasting plate 70 so that the roasting plate 70 should be connected tightly to the electric heater 60.
- [99] Further it is preferable that the inserting groove 77 is as deep as the body of the electric heater 60 can be inserted completely.
- [100] Also, as the body of the electric heater 60 is inserted completely, stick of oil to the electric heater 60 can be prevented in advance.
- [101] An inserting groove 78 corresponding to the inserting groove 77 is provided beneath the roasting plate 70 so that the supporting space 51, which supports the electric heater 60, is inserted thereto.
- [102] Although the seating plate 50 and the roasting plate 70 are formed separately as shown in Fig. 3 and 8, it is also possible that the seating plate 50 and the grill 70 are formed integrally in one body.
- [103] That is, both kinds are available in use.
- [104] The integrated one is advantageous in strength while the separated one is advantageous in cleaning inside because it is easy to disassemble.
- [105] Further, it is preferable that the plurality of oil-discharging holes 71 is provided in the roasting plate 70 as shown in Fig. 4.
- [106] However, it should be understood that the present invention may not be limited to the embodiment as shown in Fig. 4. Referring to Fig. 7 and 8, a guiding plate for air disperse 90 which has a tapered bottom plate 91 having a dispersing hole 92 in its center and an edge portion brimmed along its outer circumference, in the lower inner space of the roasting plate 70 would be provided.
- [107] The guiding plate for air disperse 90 introduces the wind by the fan 30 to discharge while circulating in its internal space. At this time, the auxiliary discharging hole 11 and the dispersing hole 92 of the guiding plate for air disperse 90, shown in Fig. 7 and

8, coordinates together.

- [108] It is assumed that an amount of the wind passing through the auxiliary discharging hole is A and that of the guiding plate for air disperse 90 is B, If the fan 30 is rotated to produce a wind and air is circulated by force, paths of air to go out are the auxiliary discharging hole 11 and the dispersing hole 92.
- [109] Thus, air with high temperature transmitted by force is flowed into the air discharging hole 12 passing through the auxiliary discharging hole 11 and the first air-flowing space 10 in order.
- [110] Further, the heated wind flowed into the second air-flowing space 20 through the air discharging hole 12 is recycled by the forced-circulation of the fan 30.
- [111] In addition, the heated wind by the fan 30 goes up along the another hole that is, the dispersing hole 92 to the oil-discharging hole 71 of the roasting plate 70, enters the second air-flowing space 20 through the air intake hole 21 and thus, recycled by the operation of the fan 30.
- [112] If an amount of the wind produced by the fan 30 is 10, the total of A through the auxiliary discharging hole 11 and B through the dispersing hole 92 may be less than 10.
- [113] The reason is that no substance can move without decrease of energy in the gravity field.
- [114] That is, frictions with each elements decrease energy.
- [115] Thus, $A + B$ results less than 10 that is, $10 \geq A + B$ although the amount of the wind from the fan 30 is 10.
- [116] Because the guiding plate for air disperse 90 has a tapered lower plate 91 and the dispersing hole 92 formed at the center of it, it performs a role that oil, which falls down to the oil discharging hole 71 of the roasting plate 70, can be streamed into an oil tray under it.
- [117] For this purpose, the lower plate 91 is tapered toward the dispersing hole 92.
- [118] Fig. 9 shows a disassembled view illustrating another embodiment of the air circulation system of the roster of the present invention, Fig. 10 shows a disassembled view illustrating a lower body and an opening/closing door shown in Fig. 9 and Fig. 11 shows a schematic sectional view illustrating a main portion shown in Fig. 1. By referring to Fig. 9 through 11, it can be known that another embodiment of the air circulation system of the roster of the present invention includes an upper body 221 where a brimmed portion 221a and a settling portion 221b are provided. The brimmed portion 221a is formed on the top of the upper body 221 along the circumstance of the upper body 221 and the upper portion of an air disperse guiding plate, which will be described later, is set thereto. The settling portion 21b is prepared along inner wall below the brimmed portion 21a.

- [119] A lower body 222 is assembled to the bottom of the upper body 221, an oil tray 230 is prepared inside of the lower body 222 and a lengthy fan 232 is prepared aside the oil tray 230. The lengthy fan 232 is installed into a fan bracket 231 and the fan bracket 231 has an inlet 231a and an outlet 231b.
- [120] A rotating motor 233 is prepared aside the fan 232 in the axial direction and the axis of the rotating motor 233 is fixed to that of the lengthy fan 232. A grill 223 is settled on the settling portion 221 of the upper body 221. A plurality of oil discharging holes are prepared and an inserting hole 223b, which an electric heater 224 is assembled thereto, are prepared at the grill 223.
- [121] In order to heat the grill 223, the electric heater 224 is installed to the inserting hole 223b of the grill 223.
- [122] An air disperse guiding plate 226, which has a tapered bottom plate 227, where an dispersing hole 227a is prepared at the center, is placed under the electric heater 224.
- [123] Further, a heater supporter 225 is disposed between the electric heater 224 the air disperse guiding plate 226. The heater supporter 225 is made by a tube with a constant diameter. The tube is bent in the horizontal and vertical direction to form handles 225a on its both sides and supporting bars 225b on both of the left portion and the right portion of the center line. The heater supporter 225 supports the bottom of the electric heater 224
- [124] Meanwhile, a first side plate 228 and a second side plate 229 are prepared at both sides of the air disperse guiding plate 226 integrally in the lengthy directions as shown in Fig. 9 and 12. A plurality of air intake holes 228a are prepared on the first side plate 228 and a plurality of air exhaust holes 229a are prepared on the second side plate 229.
- [125] The first side plate 228 and the second side plate 229 are formed to be bent and extended in the vertical direction at both lengthy sides of the air disperse guiding plate 226.
- [126] Flange portions 228b and 229b are prepared on the top of the first side plate 228 and the second side plate 229, respectively, such that the flange portions 228b and 229b are settled on the brimmed portion 221a of the upper body 221 in order to install the air disperse guiding plate 226 inside the upper body 221.
- [127] In order that the fan 232 is inserted in the lower body 222 by opening the bottom side of the lower body 222, shown in Fig. 11 and 12, a detachable opening/closing door 234 is prepared in the bottom of the lower body 222.
- [128] Therefore, the fan 232 is inserted to install inside the lower body 222 by opening the opening/closing door 234 at the bottom of the lower body 222.
- [129] If the fan 232 rotates when meat and/or fishes are grilled on the grill 223, the outside air and smoke are flown into the internal space of the fan 232 through the air intake holes 228a, which are prepared at the first side plate 228 of the air disperse

guiding plate 226, pass the inlet 231a and the outlet 231b of the fan bracket 231 and enter the internal central space of the lower body 222.

[130] A space of the air, which is flown into the internal central space of the lower body 222 from outside, goes up along the central dispersing hole 227a of the air disperse guiding plate 226 toward the plurality of the air discharging hole 223a of the grill 223 air disperse guiding plates 226. The remained air is exhausted to the air exhaust holes 229a of the second side plate 229 and enters the upper portion of the upper body 221 at the constant speed.

[131] And the air which is discharged through the plurality of the air discharging holes 223a of the grill 223 and the air exhaust holes 229a of the second side plate 229 is flown toward the air intake holes 228a of the first side plate 228 of the air disperse guiding plate 226 by the fan 232 forcibly, Such an air circulation is repeated.

[132] Because an air curtain, so called, is generated naturally over the upper body 221 by this air circulation, it is depressed that burned smoke and smell, which are generated when meat is grilled, are discharged outside the roster 220.

[133] According to the present invention, it is easy to assemble or disassemble the roster 200 and the fan 232.

[134] To wash off oil dirt inside the roster 200, the roster 200 should be disassembled entirely. The roster 200 of the present invention is possible to separate only with an operation to lift up the grill 223, the upper body 221, the electric heater 224, the heater supporter 225, the air disperse guiding plate 226, the oil tray 230, sequentially.

[135] Because the electric heater 224 is supported by the heater supporter 225, it is possible to separate the electric heater 224 and the heater supporter 225 together by lifting up or pushing aside the heater supporter 225 with both of the handles held.

[136] Because the first side plate 228 and the second side plate 229 are formed integrally at the both sides of the air disperse guiding plate 226, the first side plate 228 and the second side plate 229 are separated from the roster 200 by lifting up the air disperse guiding plate 226.

[137] The fan 232 sucks smoke and smell, which are generated when grilling meats. Because oil drops are sucked into with the air, oil dirt could be adhered around the fan 232, and thus, the fan 232 must be washed off more frequently than the other components. According to the present invention, it is possible to separate the fan 232 easily from the bottom of the lower body 222.

[138] Because the opening/closing door 234 is prepared in the bottom of the lower body 222 where the fan 232 is installed inside, it is possible to separate the fan 232 from the lower body 222 by opening the bottom side of the lower body 222.

[139] Thus, it becomes unnecessary to separate the other components in the upper portion of the fan 232 in order to wash off the fan 232, so that separation and/or assembly of

the fan 232 becomes very easy

[140] As described above, the present invention can prevent smoke and smell, which are produced when roasting meat and fish, from going out of the roaster by making an air curtain with a flow of air only even when a lid of the roaster is opened.

[141] Further the present invention can prevent oil from flying over by making smoke circulated continuously inside of the roaster.

[142] And further, the present invention can prevent those who eat from smelling smoke or being suffered by smoke by burning out incompletely burned smoke by heat from the heater itself through the plurality of oil discharging holes.

[143] According to the present invention, smells of smoke is burned out by heated wind because hot wind by the heater itself is discharged through the plurality of oil discharging holes of roasting plate in accordance to the inhaling force of the motor as well as effect to smoke meat can also be achieved because meat is roasted along with the heated wind.

[144] According to the present invention, durability of the fan can be strengthened because the oil tray to filter oil contained in air by the flow of air is provided.

[145] While the present invention has been spaceicularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without despaceing from the spirit and scope of the present invention as defined by the following claims.

[146] In the meantime, according to the another embodiment of the present invention, it is possible to separate the electric heater 224 and the heater supporter 225 together by lifting up or pushing aside the heater supporter 225 with both of the handles held.

[147] Because the first side plate and the second side plate are formed integrally at the both sides of the air disperse guiding plate, it is possible to separate and/or assemble quickly and simply only with an operation to lift up the grill, the upper body, the electric heater, the heater supporter, the air disperse guiding plate, the oil tray, sequentially.

[148] Because the opening/closing door 234 is prepared in the bottom of the lower body 222 where the fan is installed inside, it is possible to separate the fan from the lower body by opening the bottom side of the lower body without separating the other components above the fan.

[149]

Claims

[1]

What is claimed is:

1. An air-circulating system of an electric roaster comprising:
a first air-flowing space with a dual-plate structure deposited in a side of the roaster;
a second air-flowing space with a dual-plate structure on which an air-intake hole is provided;
a fan bracket deposited in the bottom portion of the second air-flowing space on which an inlet and an outlet are provided, respectively;
a lengthy fan installed inside the fan bracket;
a rotating motor deposited next to the fan bracket separately having an axis fixed to an axis of the fan;
a seating plate formed in a curved shape inside the roaster;
an electric heater fixed to the inner circumference of the seating plate by a supporting space; and
a roasting plate having at least an oil-discharging hole and an inserting groove to connect to the electric heater,
wherein, air, which is flowed into the second air-flowing space through the air intake hole in accordance with the rotation of the fan, is flowed into the inner space of the roaster passing through the inlet and the outlet of the fan bracket, the air of the inner space is discharged through the plurality of oil-discharging holes of the roasting plate and finally, the discharged air is flowed into the second air-flowing space again, a hot-wind burning-out cycle is provided.
2. The system of claim 1, wherein the second air-flowing space further comprising;
a curved oil tray on the internal side of an outer plate of the second air-flowing space.
3. The system of claim 1, wherein the first air-flowing space further comprising:
an auxiliary discharging hole and a plurality of air-discharging provided in lower portion and upper portion of a first air-flowing space, respectively.
4. The system of claim 1, wherein the oil-discharging hole of the roasting plate is tapered so that discharged smoke should be spread widely.
5. The system of claim 1, wherein the seating plate and the roasting plate are formed separately.
6. The system of claim 1, wherein the seating plate and the roasting plate are formed integrally in one body.
7. The system of claim 1, wherein the roasting plate comprises a plurality of oil-

discharging holes.

8. The system of claim 1, further comprising:

a guiding plate for air disperse having a tapered bottom plate with a dispersing hole formed in its center and an edge portion brimmed along its outer circumference,

9. A roaster includes an upper body; a lower body assembled to the lower portion of the upper body; a lengthy fan installed inside a fan bracket, which is installed inside the lower body; a rotating motor whose axis is fixed to the axis of the fan; a grill having inserting holes; an electric heater inserted into the inserting holes; an air disperse guiding plate provided in the bottom of the electric heater; and a first side plate and a second side plate having air inlet holes and air outlet holes, respectively, the roaster is characterized in that:

the first side plate 228 and the second side plate 229 are prepared at the both sides of the air disperse guiding plate 226 so that the first side plate 228 and the second side plate 229 are separated along with the air disperse guiding plate when the roaster 200 is disassembled; and the fan 232 is inserted or separated at the bottom of the lower body 222.

10. The roaster of claim 9,

the first side plate 228 and the second side plate are formed at the both sides of the air disperse guiding plate 226 in one body.

11. In the roaster of claim 10, wherein the first side plate 228 and the second side plate are bent upward and extended in the vertical direction at the both sides of the lengthy direction of the air disperse guiding plate 226.

12. The roaster of claim 9, further comprises

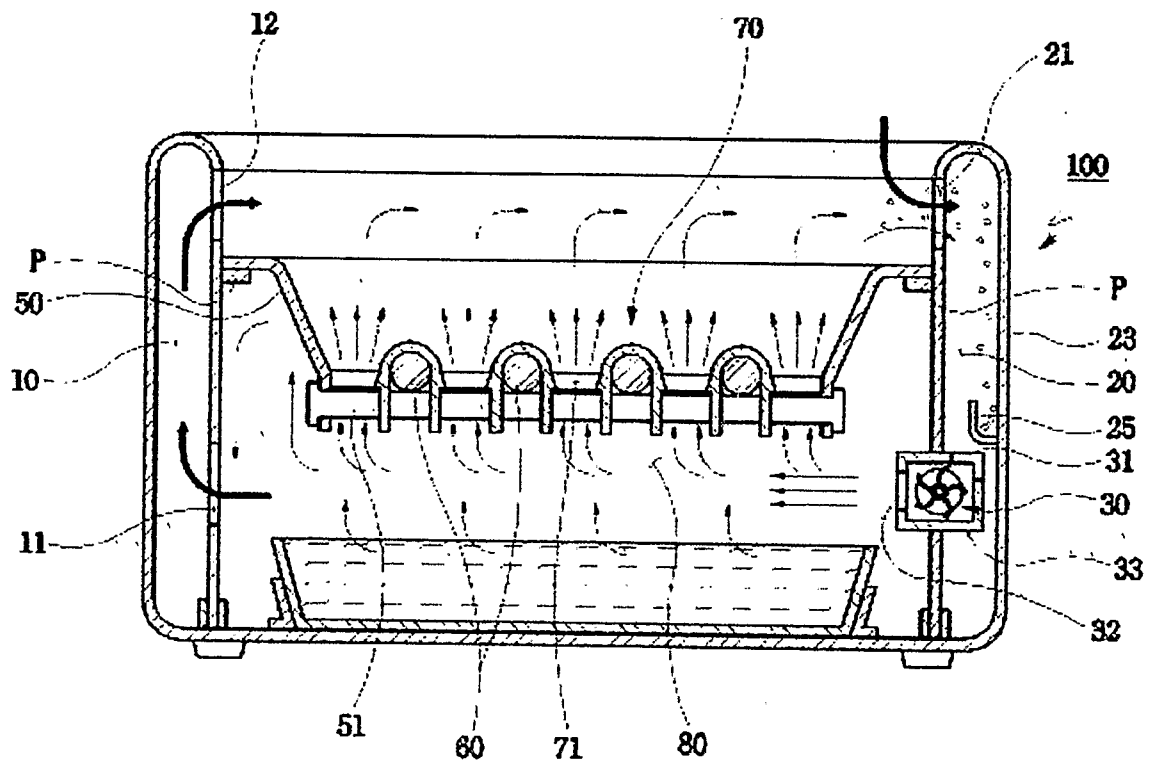
a detachable opening/closing door 234 at the bottom of the lower body 222 to open the bottom of the lower body 222 in order to install or disassemble the fan 232.

13. The roaster of claim 9,

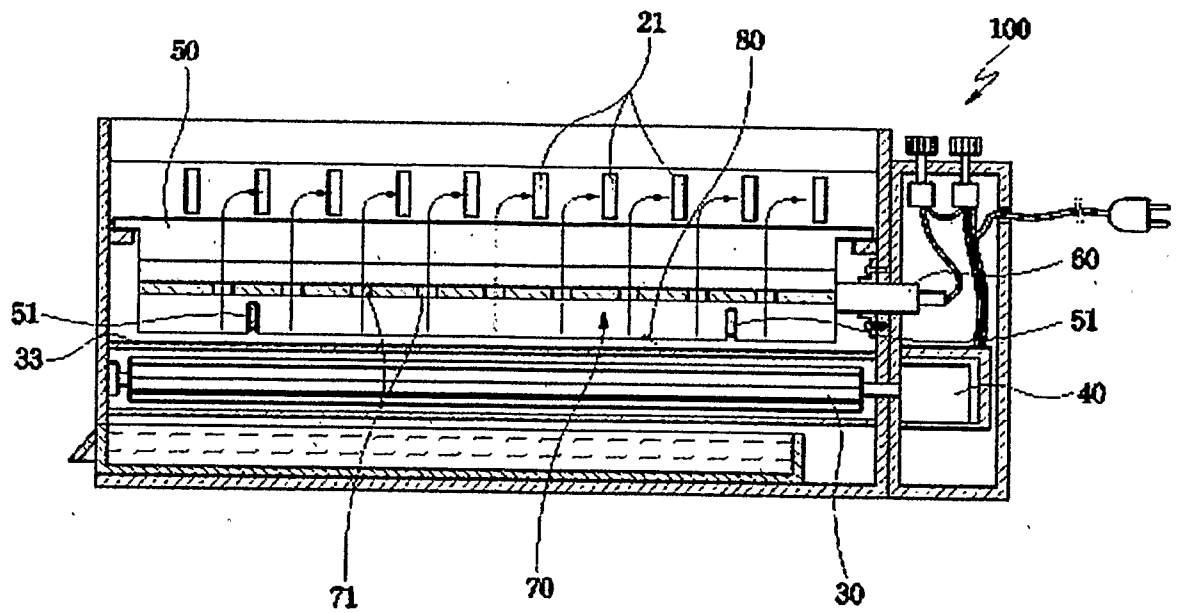
further comprises a heater supporter 225 to support the electric heater 224, wherein the heater supporter 225 is made by bending a tube with a constant diameter in many times to form handles 225a at the both sides and supporting bars at the both sides of the center portion so that its both sides are supported by the air disperse guiding plate.

DRAWINGS

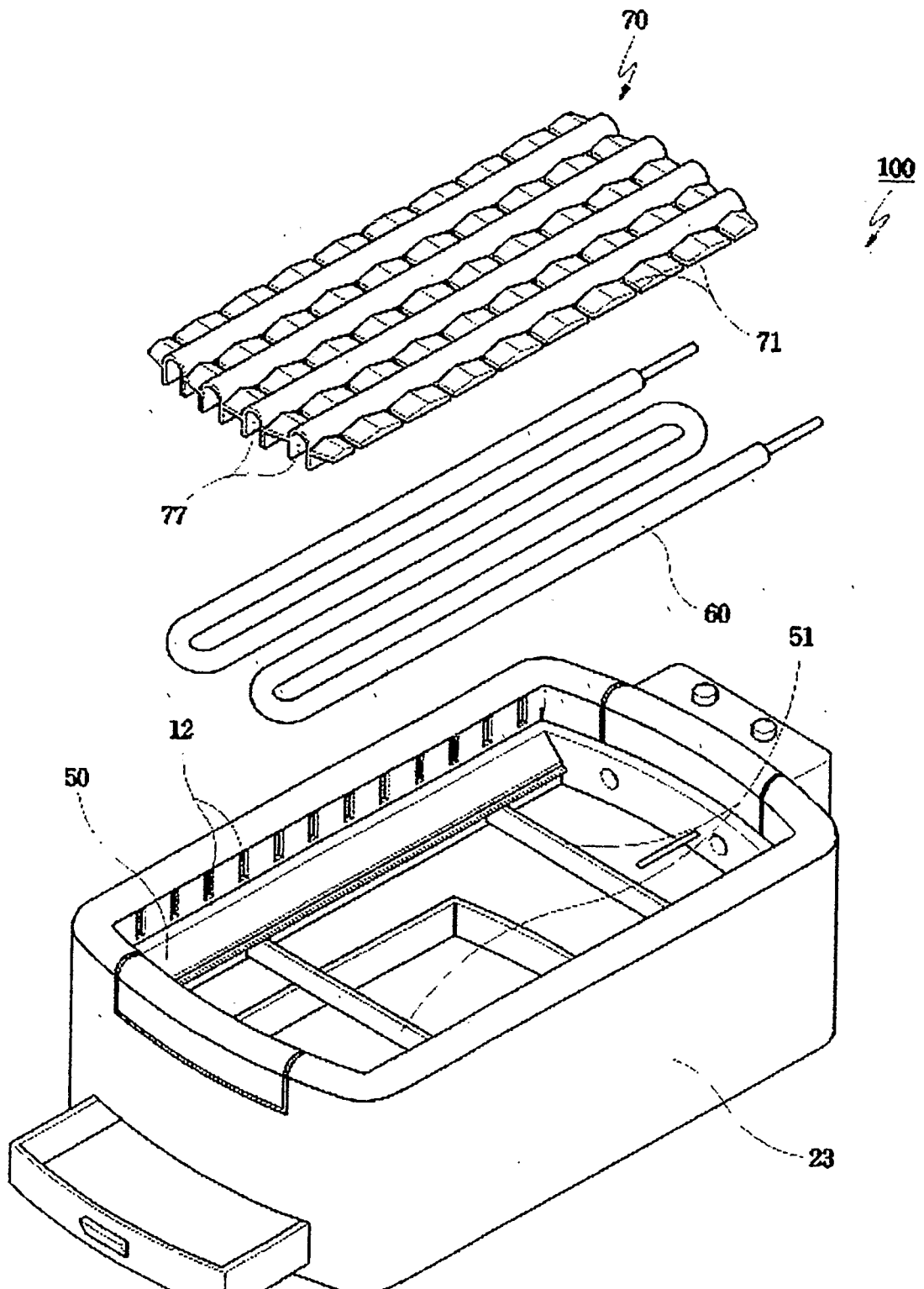
【Figure 1】



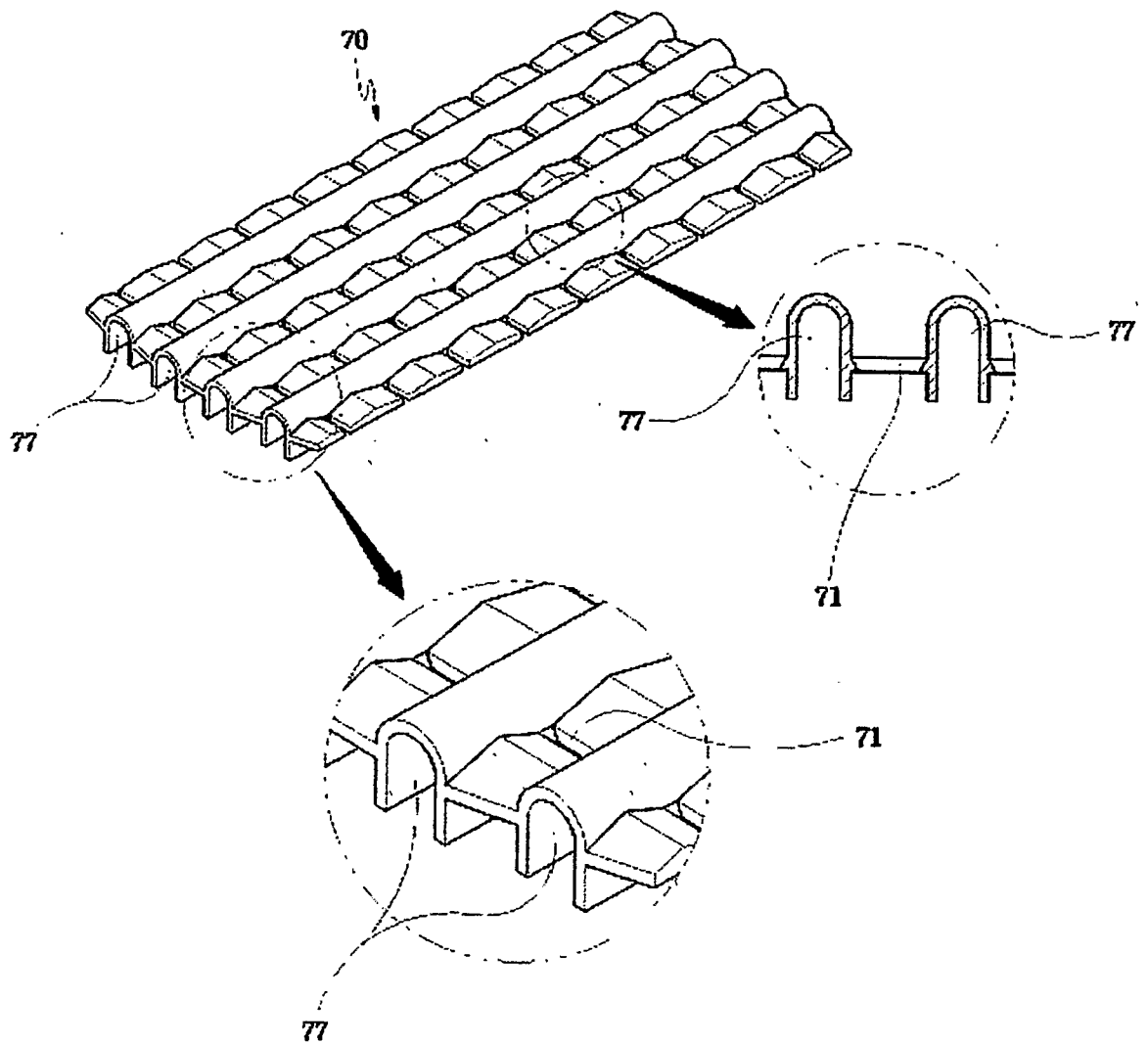
【Figure 2】



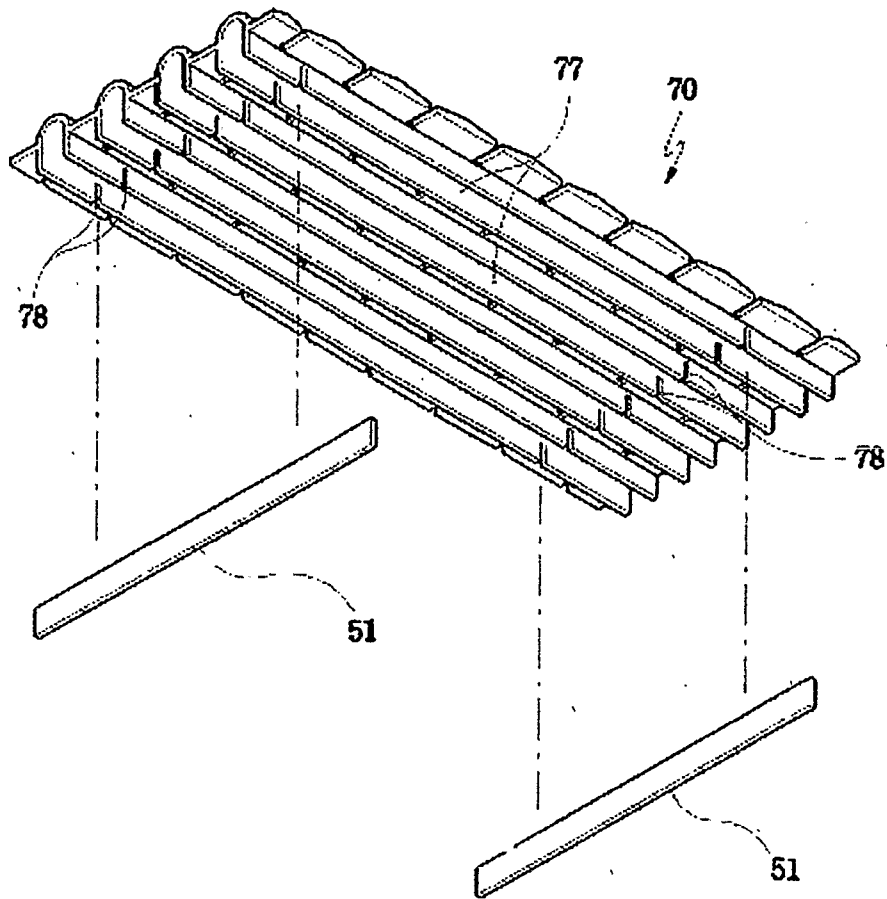
【Figure 3】



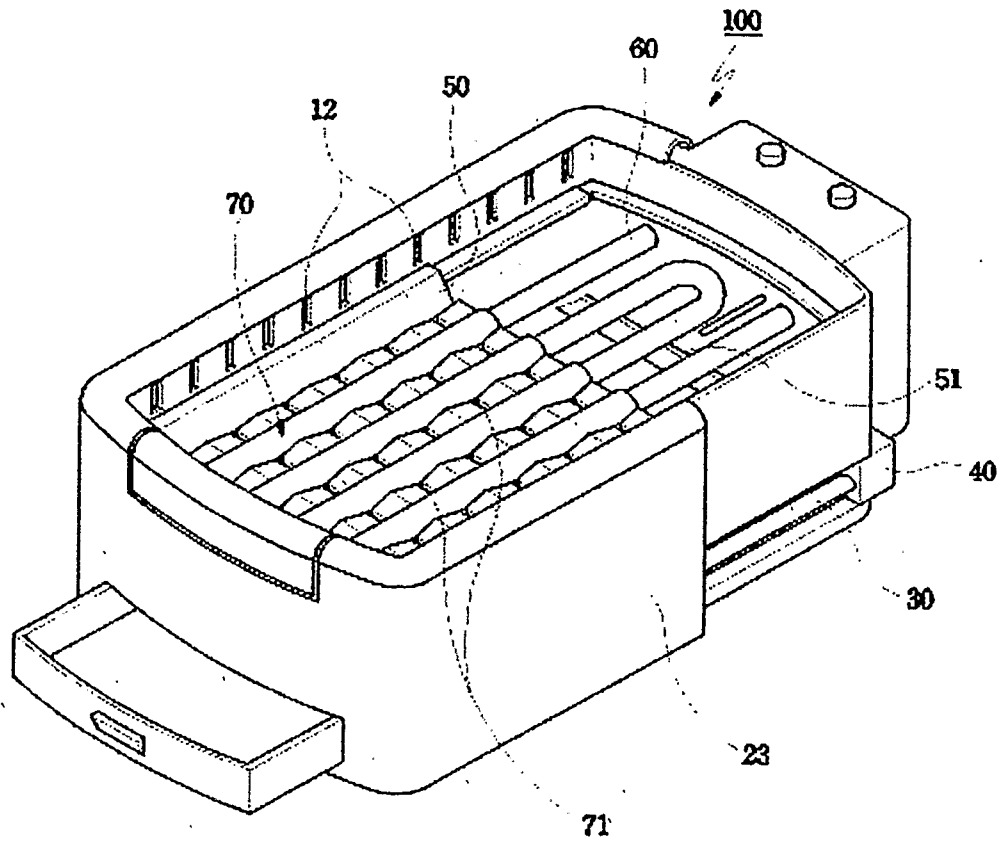
【Figure 4】



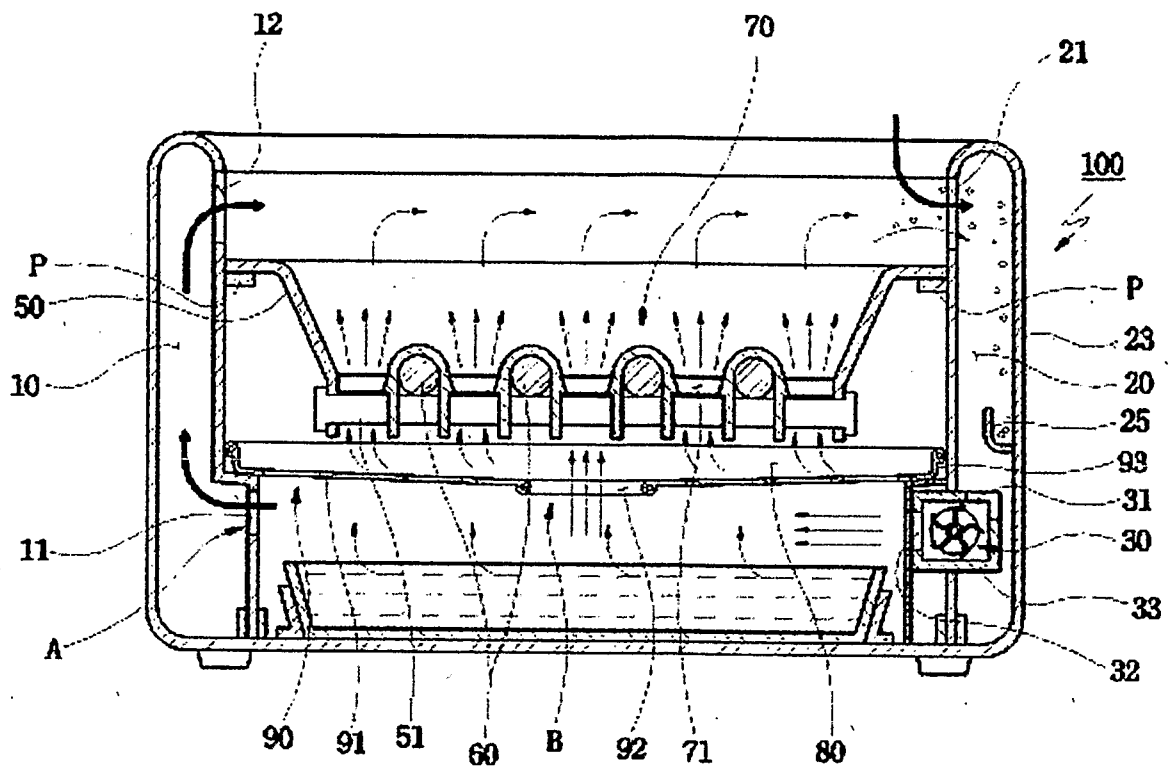
【Figure 5】



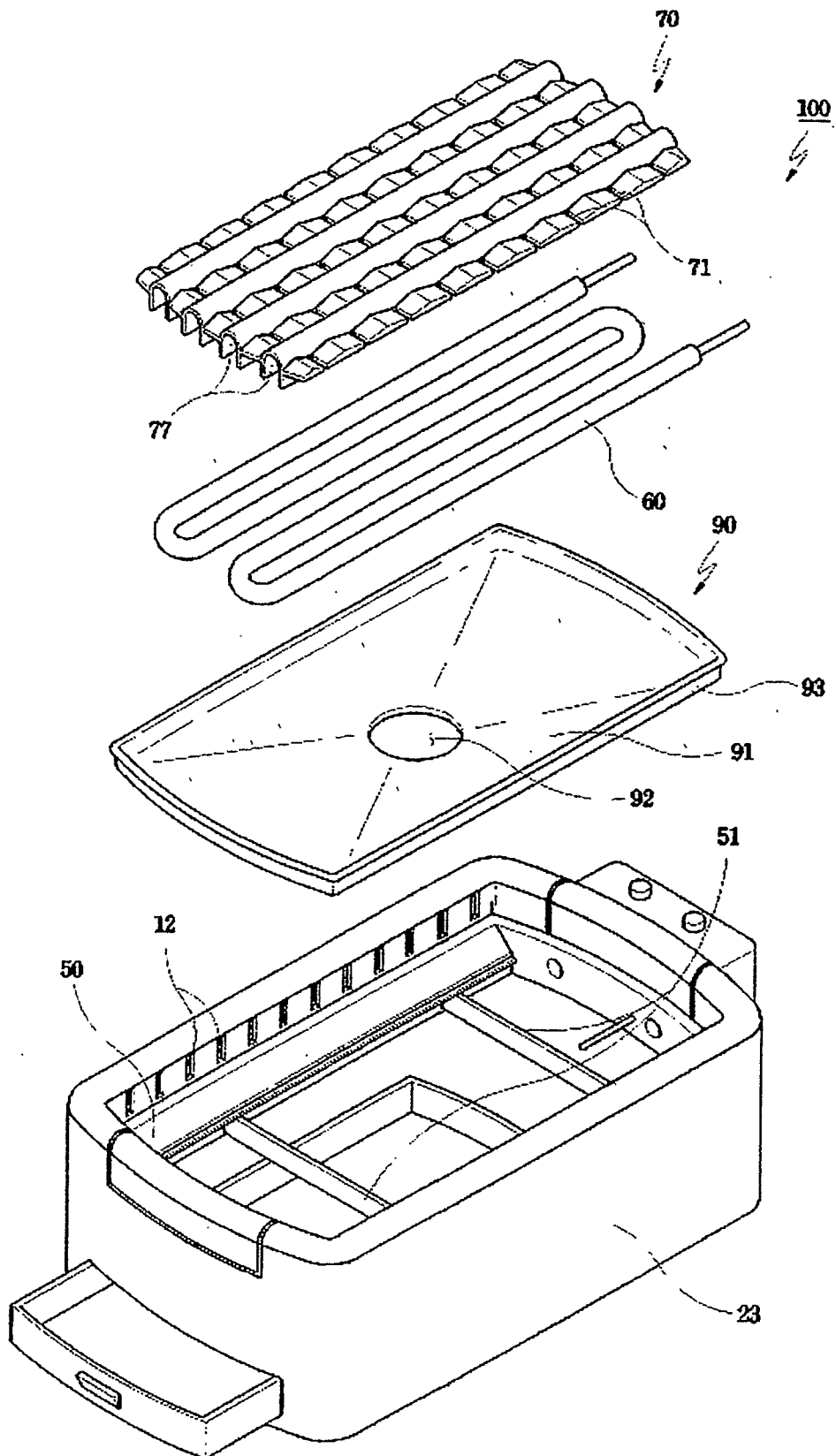
【Figure 6】



【Figure 7】

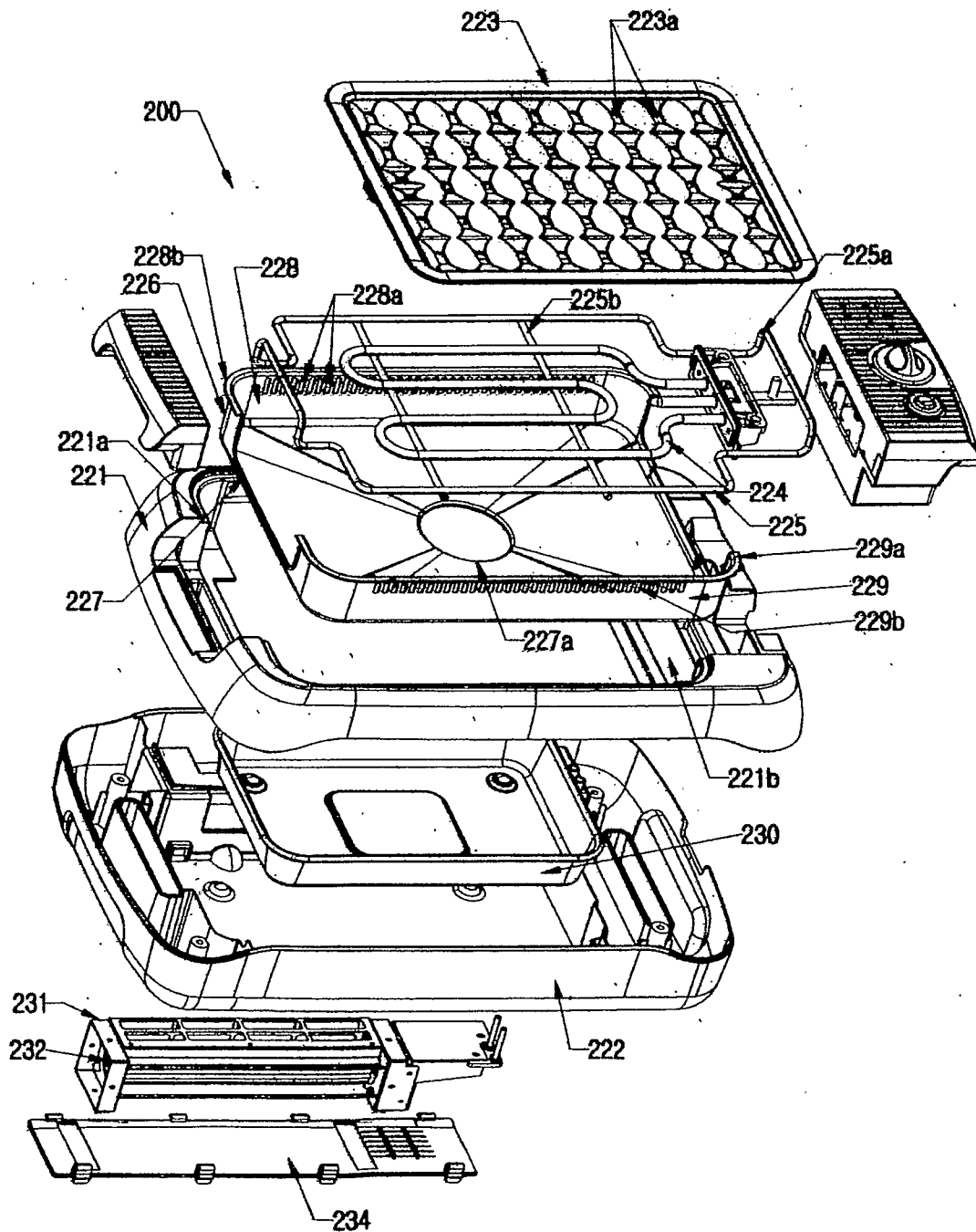


【Figure 8】

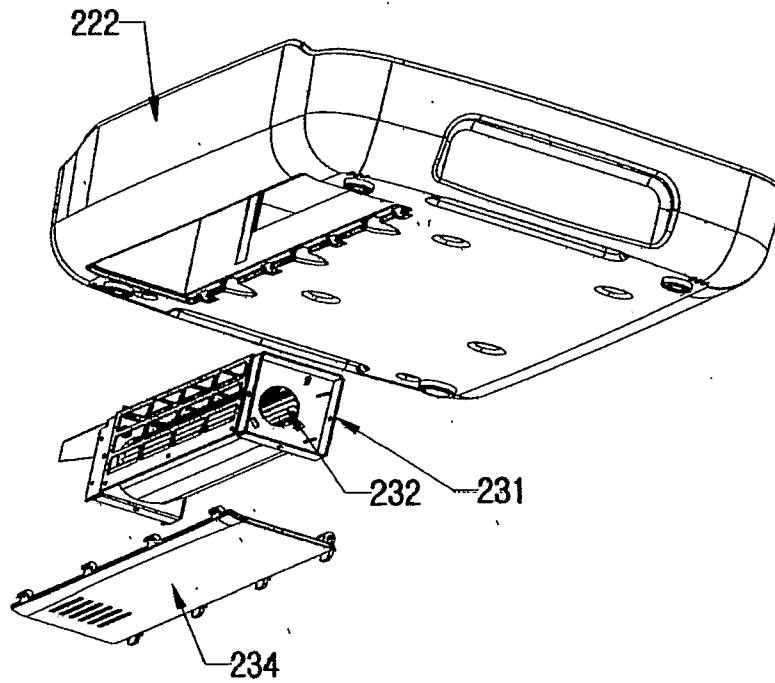


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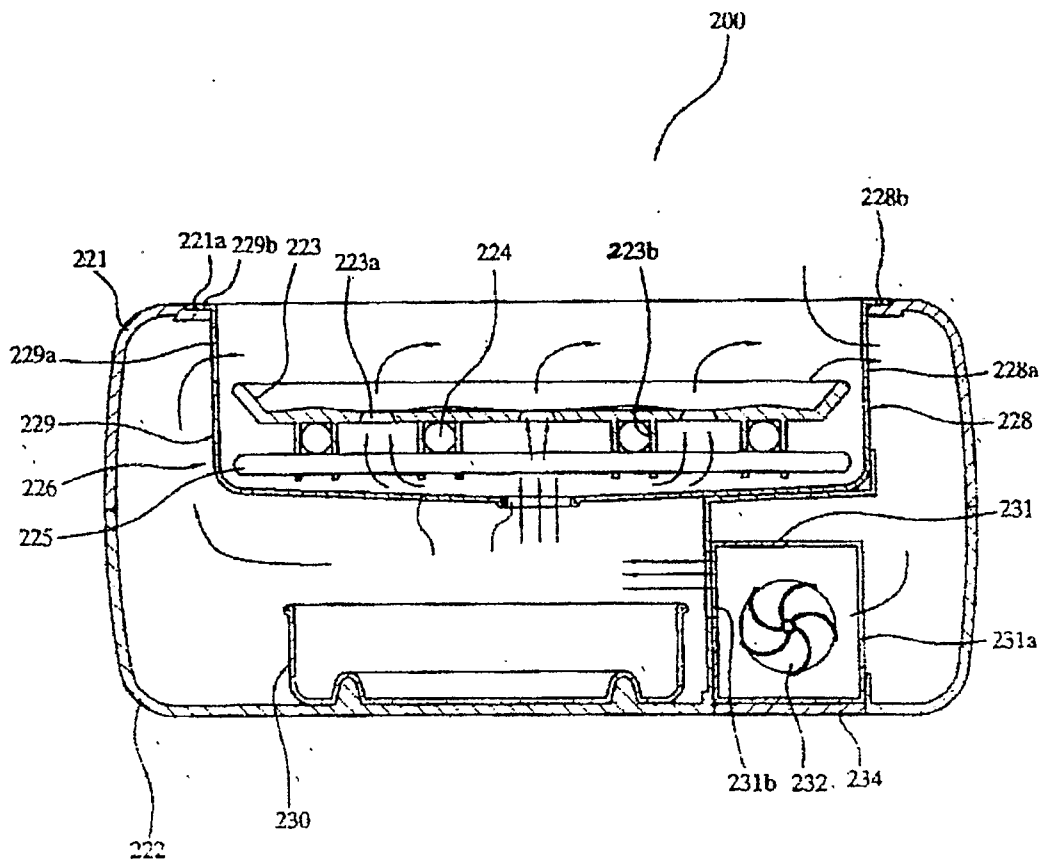
[Figure 9]



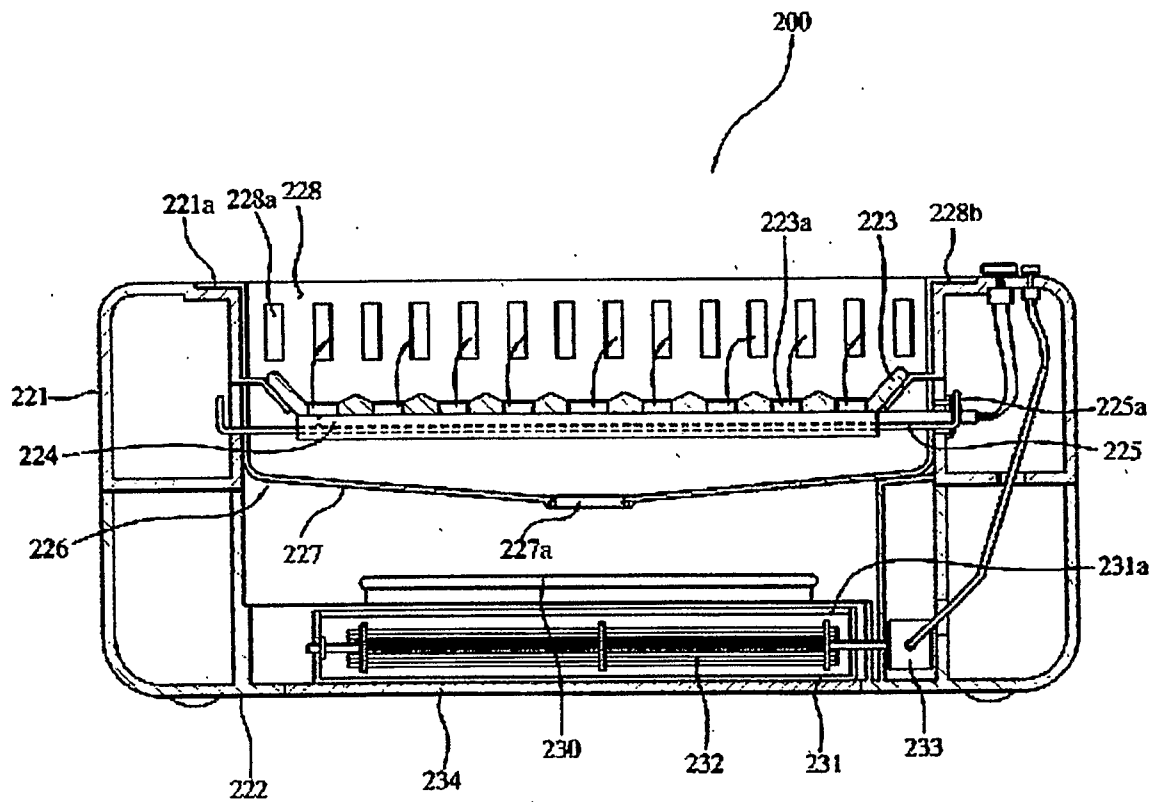
[Figure 10]



【Figure 11】



【Figure 12】



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2006/002000**A. CLASSIFICATION OF SUBJECT MATTER***A47J 37/00(2006.01);*

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)

IPC 8 A47J 37/06, F24C 1/04, A47J 37/00, F24C 15/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and Applications for patents since 1975

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

eKIPASS, PAJ, USPTO, IBM "air, circulating, roaster"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 2001079202 A (YUNCHANG Ltd.) 22 August, 2001 Abstract, Fig 1 - 3	1 - 13
A	JP 62080432 A (AZUMA KIYOHIRO) 13 April, 1987 Abstract, Fig1	1 - 13
A	US 6123014 (Jong-Yeon Jo) 26 September, 2000 Abstract, Fig 3	1 - 13
A	US 4884554 (Satoshi Yanagida) 5 December, 1989 Abstract, Fig 3 - 4	1 - 13
A	EP 0754921 (Wang, Ching-Hsiang) 22 January, 1997 Abstract, Fig 1 - 3	1 - 13

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

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Date of the actual completion of the international search

29 AUGUST 2006 (29.08.2006)

Date of mailing of the international search report

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920 Dunsan-dong, Seo-gu, Daejeon 302-701,
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2006/002000

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