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(54) **Ice bucket for unlaying ice curdling**

Eiseimer zum Aufdrehen von Eisgerinnung

Seau à glace pour déposer le caillage de glace

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This specification relates to an ice bucket having a function of unlaying ice curdling, and particularly, to an ice bucket having a function of unlaying ice curdling, capable of facilitating ice cubes to be drawn out by unlaying ice cubes, which are frozen in a curdled state due to being left for a long time at an upper portion within the ice bucket of an ice dispensing apparatus, which is disposed in a refrigerator or a water purifier having an ice maker to allow ice cubes to be ejected piece by piece.

2. Background of the Invention

[0002] In general, an ice maker is an apparatus installed in a refrigerator or a water purifier for self-producing ice pieces (cubes). In recent time, as consumer tastes for refrigerating machines, such as the refrigerator or the water purifier, are apt to become various and sophisticated, products that the ice maker is installed in the refrigerating machine are widely introduced.

[0003] The refrigerating machine further includes an ice dispensing (ejecting) apparatus which allows a user to pick up ice made in the ice maker without opening a door. The ice dispensing apparatus is configured to eject a predetermined quantity of ice cubes of a lot of ice cubes stored in an ice bucket as a storage chamber when the user selects ice ejection.

[0004] However, in the related art ice dispensing apparatus, a problem may occur that ice pieces or cubes stored in the ice bucket are not properly ejected. Especially, the ice dispensing apparatus also has a function of storing ice cubes at normal times, so it is maintained at a sub-zero temperature. Accordingly, when ice cubes located above blades disposed for ejecting the ice cubes are left for a long time, they are frozen in a curdled state.

[0005] Consequently, when the blades rotate to eject ice cubes, the blades may not reach the ice cubes located above it. This makes the blades make an idle rotation, causing the ice ejection to be impossible.

[0006] Hereinafter, an exemplary ice bucket installed in a refrigerator will be described with reference to FIGS. 1 to 3.

[0007] FIG. 1 shows a refrigerator having an ice maker and an ice dispensing apparatus according to the related art, and FIGS. 2 and 3 are perspective views each showing an ice bucket disposed in the ice dispensing apparatus.

[0008] In general, a refrigerator, which is a machine for keeping foods fresh in a refrigerating or frozen state, includes a refrigerator main body having a cooling chamber therein, and a refrigeration cycle system for providing cold air into the cooling chamber.

[0009] The refrigerating cycle system is implemented

as a vapor compression type refrigeration cycle system, which typically includes a compressor for compressing a refrigerant, a condenser for condensing the refrigerant, an expansion apparatus for decompressing and expanding the refrigerant, and an evaporator for evaporating the refrigerant with ambient heat adsorbed.

[0010] Referring to FIG. 1, the refrigerator includes a refrigerant main body 10 having a freezing chamber 20 and a refrigerating chamber 30, and a freezing chamber door 25 and a refrigerating chamber door 35 for opening and closing the freezing chamber 20 and the refrigerating chamber 30, respectively.

[0011] In the meantime, a dispenser 27 is disposed in a portion of the refrigerator for allowing a user to take water and/or ice without opening the door 25, and an ice maker 40 is installed in the freezing chamber for making a preset shape of ice cubes. An ice bucket 1 for storing the ice cubes made in the ice maker or dispensing the ice cubes to the outside may be disposed below the ice maker 40.

[0012] The dispenser 27 is installed at the freezing chamber door 25 such that ice cubes can be picked up from the outside without opening the freezing chamber 20. An inlet port 29 through which ice cubes discharged from the ice bucket 1 is introduced into the dispenser 27 is formed through an upper surface of the dispenser 27.

[0013] The ice bucket 1 according to the related art, as shown in FIGS. 2 and 3, includes a case main body 100 forming an internal ice storage space and having an ice discharge port formed at its lower portion for discharging of ice, and an ice ejecting member 200 rotatably installed in the case main body 100 for ejecting ice to a lower side. The case main body 100 includes an upper case 110 and a lower case 120. In general, the upper case 110 may be transparent or semi-transparent to allow a user to check how many ice cubes are left in the internal ice storage space, and the ice ejecting member 200 is disposed on one side within the lower case 120.

[0014] The ice ejecting member 200 includes a blade mounting shaft 240 protruding from an inner surface of a lower portion of the lower case 120, and a plurality of blades 230 disposed on an outer circumferential surface of the blade mounting shaft 240.

[0015] Referring to FIGS. 2 and 3, an inclined inner wall 125 is formed at an inner wall of an upper portion of the body 100 so as to guide each ice dropped from the upper ice maker 40 into the ice ejecting member 200.

[0016] Here, in the related art ice bucket 1 having the configuration, each ice cube made in the ice maker is stacked up to an upper portion of the ice storage space within the case main body 100. However, while the ice ejecting member 200 is driven to eject the ice cubes, the ice cubes are continuously guided downward to be stored on a lower portion of the case main body 100 where the ice ejecting member 200 is disposed. On the other hand, when the ice pieces are left in the stacked state for a long time while the ice ejecting member 200 is not driven, the ice pieces are wholly frozen in a curdled state due to the

inside of the ice bucket 1 remaining at a sub-zero temperature.

[0017] Accordingly, even if the ice ejecting member 200 is driven with the ice cubes being wholly frozen in the curdled state, the upper ice pieces, which were frozen with being curdled into one within the ice bucket, are still maintained in an arcuately frozen state. This makes the ice ejecting member 200 perform an idle rotation such that the ice cubes cannot be ejected to the outside, disabling an ice ejecting function to be realized.

[0018] Furthermore, the arcuately frozen ice pieces have to be broken into pieces by applying a separate external force for smoothly performing the ice ejecting function, causing a management problem.

[0019] US 5,273,219 A discloses an ice dispenser comprising a bin for storing ice cubes and having an exit, powered rotatable agitator means operable to cause movement of said ice cubes to said exit, a powered crusher, a transfer drum at said exit operable to receive ice cubes at said exit and deliver such ice cubes to said crusher, first drive means connecting said agitator and drum causing rotation of said drum at a speed substantially slower than the speed of rotation of said agitator to prevent overloading of said crusher, and second drive means connected to said crusher operating to rotate said crusher at a speed substantially greater than the speed of rotation of said drum.

[0020] WO 2009/054161 A2 discloses an ice making system for a refrigerator, comprising a base member; an icemaker mounted to a front surface of the base member for making ice pieces; a driving unit mounted to a rear surface of the base member such that a motor shaft thereof is in a horizontal state; an ice bank horizontally inserted into the base member in a detachable manner, for storing the ice pieces made by the icemaker; a detachable mounting unit for detachably mounting the ice bank to the base member; and an ice crusher assembly provided at the ice bank so as to be connected to or separated from the driving unit, for crushing the ice pieces.

[0021] WO 2008/054161 A2 discloses an ice dispenser comprising a case formed with an ice inlet and an ice outlet; a stirring guide for guiding ice from the case to the outlet while stirring the ice and a uniform-amount supplier for feeding the ice guided by the stirring guide to the outlet such that a substantially uniform amount of ice is discharged.

[0022] US 2009/293529 A1 discloses an ice supplying apparatus, being provided in a refrigerator, comprising: an ice maker unit, which is configured to supply ice pieces produced therein to an outside of a freezer room door; an ice storage unit, which is configured to store the ice pieces produced by said ice maker unit; an ice discharger unit, which is provided within said ice storage unit to discharge the ice pieces below; and a shrinking portion, which is provided in said ice storage unit and defines an interior space thereof as small as it goes down, through building up a lower surface, among interior surfaces defining that interior space of said ice storage unit, for sup-

porting the ice pieces stored therein from a lower portion thereof, by a surface inclining to a horizontal direction, wherein said ice discharger unit is disposed in a lower portion of said shrinking portion. US4942983 discloses an ice bucket according to the preamble of claim 1.

SUMMARY OF THE INVENTION

[0023] Therefore, to overcome the shortcomings of the related art, an aspect of the detailed description is to provide an ice bucket having a function of unlaying ice curdling. And the ice bucket is capable of allowing an ice ejecting member to eject ice cubes to outside by unlaying the ice cubes frozen in a curdled state into individual ice pieces by use of augers. And the augers are rotated within a storage space of the ice bucket to unlay the curdled ice cubes, upon ejecting the ice cubes from an ice dispensing apparatus installed in a refrigerator or a water purifier.

[0024] To achieve these and other advantages and in accordance with the purpose of this specification, as embodied and broadly described herein, there is provided an ice bucket having a function of unlaying ice curdling. And the ice bucket includes a case main body forming an ice storage space therein and having an ice discharge port formed at a lower portion thereof. And the ice bucket includes an ice ejecting member rotatably disposed at one side of the main body and having a motor rotation shaft, a blade mounting shaft, and a plurality of blades protruding from the blade mounting shaft in a radial direction and disposed in a circumferential direction with spaced distances. And the ice bucket includes an ice curdling unlaying member configured to prevent ice cubes located above the ice ejecting member from being frozen in a curdled state.

[0025] In another aspect of the present disclosure, the ice curdling unlaying member includes a rotational shaft rotatably installed at an upper portion of one side of the main body. And the ice curdling unlaying member includes an auger protruding from an upper portion within the main body in an axial direction of the rotational shaft to unlay the upper curdled ice cubes in response to rotation of the rotational shaft.

[0026] The auger is installed by being spaced apart from the rotational shaft and performs a circular motion in response to the rotation of the rotational shaft to prevent ice curdling at an upper portion with the main body, and provided in plurality.

[0027] The ice curdling unlaying member includes a rotational cam rotatable centering on the rotational shaft, and the auger may be installed in plurality on the rotational cam to be in parallel to the rotation shaft.

[0028] In another aspect of the present disclosure, the case main body may include an upper case formed of a transparent or semi-transparent material to allow a stored state of ice cubes to be viewed from outside, and a lower case having an ice ejecting member mounted onto one side therein and allowing the ice ejecting member to be

connected to an external driving motor.

[0029] Preferably, the ice discharge port may be formed at a lower portion of the lower case, and the ice curdling unlaying member may be formed on one side within the lower case.

[0030] In the present disclosure, the ice ejecting member and the ice curdling unlaying member receives a rotational force transferred by a driving force transfer unit. Here, the ice ejecting member includes a rotational cam rotatable by receiving the rotational force of an external driving motor, and the ice curdling unlaying member includes a rotational cam rotatable by receiving a rotational force transferred from the rotational cam of the ice ejecting member.

[0031] The driving force transfer unit has a gear-like structure that teeth formed on an outer circumferential surface of the rotational cam of the ice ejecting member and teeth formed on an outer circumferential surface of the rotational cam of the ice curdling unlaying member are engaged with each other. And the ice curdling unlaying member is rotatable by the rotational force of the ice ejecting member.

[0032] The case main body may include an ejecting member mounting portion formed through one side thereof for installation of the ice ejecting member thereon, and a curdling unlaying member mounting portion formed above the ejecting member mounting portion for installation of the ice curdling unlaying member thereon.

[0033] In another aspect of the present disclosure, not forming part of the invention, the driving force transfer unit may be implemented such that transfer of a rotational force between a pulley formed on the ice ejecting member and a pulley formed on the ice curdling unlaying member is enabled via belts.

[0034] To achieve these and other advantages and in accordance with the purpose of this specification, as embodied and broadly described herein, there is provided a refrigerator including a refrigerator main body having a cooling chamber therein, a door to open or close the cooling chamber, and an ice maker disposed in the cooling chamber. And the refrigerator includes an ice bucket disposed below the ice maker, and a dispenser connected to the ice bucket.

[0035] Here, the ice bucket may include a case main body forming an ice storage space therein and having an ice discharge port formed at a lower portion thereof, an ice ejecting member rotatably disposed on one side of the main body and having a plurality of blades. And the ice bucket includes an ice curdling unlaying member having a rotational shaft and an auger rotatable with performing a circular motion in response to rotation of the rotational shaft and configured to prevent ice cubes located above the ice ejecting member from being frozen in a curdled state.

[0036] The ice curdling unlaying member may include a rotational cam rotatable centering on the rotational shaft, and the auger may be provided in plurality disposed on the rotational cam to be in parallel to the rotational

shaft. Also, the ice ejecting member and the ice curdling unlaying member may receive a rotational force transferred by a driving force transfer unit.

[0037] The driving force transfer unit may have a gear-like structure that teeth formed on an outer circumferential surface of the ice ejecting member and teeth formed on an outer circumferential surface of the ice curdling unlaying member are engaged with each other, and the ice curdling unlaying member may be rotatable by the rotational force of the ice ejecting member.

[0038] As described above, the present disclosure may achieve the following effects by the aforementioned solution and configuration and coupling and operating relation to be explained later.

[0039] Upon ejecting ice cubes from an ice dispensing apparatus installed in a refrigerator, a water purifier and the like, ice cubes in a curdled state may be unlaied by augers, which are disposed within a storage space of an ice bucket for unlaying ice curdling, and the unlaied ice cubes can be ejected to outside by an ice ejecting member.

[0040] Also, when ice cubes are stored for a long time in the storage space of the ice bucket without being ejected out of an ice dispensing apparatus, even if the ice ejecting member is driven, ice cubes which are curdled into an arcuate shape still exist at an upper portion of the storage space of the ice bucket. To overcome this problem, the arcuately curdled ice cubes may be unlaied into pieces so as to prevent mis-operation of the ice ejecting member, resulting in enhancing convenience in use and economical efficiency.

[0041] Further scope of applicability of the present application will become more apparent from the detailed description given hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate exemplary embodiments and together with the description serve to explain the principles of the invention.

[0043] In the drawings:

FIG. 1 is a view showing a refrigerator having an ice maker and an ice dispensing apparatus according to the related art;

FIGS. 2 and 3 are perspective views each showing an ice bucket of the ice dispensing apparatus;

FIG. 4 is a perspective view of an ice bucket in accordance with the present disclosure; and

FIG. 5 is a sectional view of the ice bucket in accordance with the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0044] Description will now be given in detail of an ice

bucket having a function of unlaying ice curdling according to the exemplary embodiments, with reference to the accompanying drawings. For the sake of brief description with reference to the drawings, the same or equivalent components will be provided with the same reference numbers, and description thereof will not be repeated.

[0045] In general, an ice bucket is installed in a refrigerator and the like to store ice cubes made in an ice maker of the refrigerator, and keep the ice pieces upon non-use of a dispenser. Also, upon ejecting ice cubes via a dispenser, blades mounted in the ice bucket may rotate to push the stored ice cubes to outside of the ice bucket.

[0046] In accordance with the present disclosure, blades are rotated upon ejecting ice cubes. An ice curdling unlaying member is then rotated in response to reception of a rotational force of the blades to make an auger(s), which break(s) (unlay(s)) curdled ice cubes, perform a circular motion. Accordingly, the auger unlays the curdled ice cubes stored at an upper portion within the ice bucket such that each ice cube can be dropped down to an ice ejecting member.

[0047] Hereinafter, description will be given of an ice bucket having a function of unlaying ice curdling according to the present disclosure, with reference to FIGS. 4 and 5. FIG. 4 is a perspective view of an ice bucket in accordance with the present disclosure, and FIG. 5 is a sectional view of the ice bucket in accordance with the present disclosure.

[0048] An ice bucket 1 having a function of unlaying ice curdling may include a case main body 100 forming an internal ice storage space and having an ice discharge port 121 formed at its lower portion. And the ice bucket 1 includes an ice ejecting member 200 rotatably disposed on one side of the case main body 100. And the ice ejecting member 200 has a motor rotation shaft 220, a blade mounting shaft 240, and a plurality of blades 230 protruding from the blade mounting shaft 240 in a radial direction and disposed in a circumferential direction with spaced distances therebetween. And the ice bucket 1 includes an ice curdling unlaying member 300 for preventing ice cubes located above the ice ejecting member 200 from being frozen in a curdled state.

[0049] The case main body 100 and the ice ejecting member 200 have been fully explained in the related art, so the shapes and functions thereof will be briefly described hereinafter.

[0050] First, the case main body 100 may include an upper case 110 formed of a transparent or semi-transparent material for allowing a stored state of ice cubes to be viewed from outside. And the case main body 100 may include a lower case 120 having the ice ejecting member 200 mounted onto one side therein and allowing the ice ejecting member 200 to be connected to an external driving motor.

[0051] As shown in FIG. 4, the upper case 110 may be transparent or semi-transparent to be externally exposed, such that a user can check whether or not ice cubes are stored in the storage space of the ice bucket 10.

[0052] The lower case 120, as shown in FIG. 4, may form the lower portion of the body for mounting the ice ejecting member 200 thereon.

[0053] The ice discharge port 121 may be formed through the lower portion of the lower case 120 to communicate with a dispenser. The ice curdling unlaying member 300 may be formed at one side within the lower case 120. In particular, the ice curdling unlaying member 300, as shown in FIG. 4, may be mounted on one surface of the ice bucket 1 mounted on the refrigerator. And the other side of the ice bucket 1 may be viewed by a user through the transparent or semi-transparent upper case 110.

[0054] The ice ejecting member 200 may be rotatable in response to a rotational force transferred by an external driving motor installed in the refrigerator. The ice ejecting member 200 may include a motor rotation shaft 220 fixed onto a shaft of the external driving motor, and a motor rotational force transfer portion 260 for transferring the rotational force received from the external driving motor.

[0055] The ice ejecting member 200 may include a blade mounting shaft 240 integrally or fixedly connected to the motor rotation shaft 220 in a lengthwise direction to be inserted into the ice bucket 1. A plurality of blades 230 may be formed on an outer circumferential surface of the blade mounting shaft 240 so as to transfer ice cubes from an upper ice maker to a lower dispenser via the ice discharge port 121.

[0056] The ice curdling unlaying member 300 may include a rotational shaft rotatably installed on an upper portion of the case main body 100. And the ice curdling unlaying member 300 includes an auger 330 protruding from an upper portion within the case main body 100 in a lateral direction to unlay curdled ice cubes located at the upper portion in response to rotation of the rotational shaft 320.

[0057] Referring to FIGS. 4 and 5, the auger 330 may protrude in a lateral direction of the ice curdling unlaying member 300, and be provided in plurality. Also, the plurality of augers 330 may be installed in parallel to the rotational shaft 320, performing a circular motion within the ice bucket 1 in response to the rotation of the rotational shaft 320. Accordingly, the augers 330 may stir the curdled ice cubes located at the upper portion within the case main body 100, unlaying the curdled ice cubes.

[0058] In another exemplary embodiment, referring to FIG. 4, the ice curdling unlaying member 300 may include a rotational cam 310 rotatable centering on the rotational shaft 320, and the plurality of augers 330 may be installed on the rotational cam 310 in parallel to the rotational shaft 310.

[0059] The rotational cam 310, referring to FIG. 4, may be formed as a circular plate, which has a predetermined thickness and is rotatable based upon the rotational shaft 310, so as to be installed on one side of the lower case 120. The plurality of augers 330 may protrude from one surface of the rotational cam 310 in an axial direction to be in parallel to the rotational shaft 310.

[0060] With the configuration, as shown in FIG. 4, as the ice curdling unlaying member 300 is rotated, the plurality of augers 330 protruding into the case main body 100 in parallel to the rotational shaft 320 may unlay the curdled ice cubes. That is, with the rotational cam 310 being rotated, the augers 330 may perform a circular motion to break ice cubes located above the ice ejecting member 200 into individual pieces even when the ice cubes are frozen in the curdled state.

[0061] Here, the case main body 100 may include an ejecting member mounting portion 122 formed through one side thereof for installation of the ice ejecting member 200 thereat. And preferably a curdling unlaying member mounting portion 123 may be formed above the ejecting member mounting portion 122 for installation of the ice curdling unlaying member 300 thereat.

[0062] The ejecting member mounting portion 122, as shown in FIG. 4, may preferably be formed as a through hole in a circular shape because it should be connected to an external driving motor. Here, the curdling unlaying member mounting portion 123 should be formed through the case main body 100 to be connected to an external driving motor when the external driving motor is provided separately. However, as shown in the exemplary embodiment of the present disclosure, the curdling unlaying member mounting portion 123 may not have to be formed as a separate through hole when being rotated by receiving the rotational force of the ice ejecting member 200.

[0063] The ice curdling unlaying member 300 may perform a rotary motion based on the rotational shaft 320. This rotary motion may be performed by receiving an external rotational force. In this case, rotational forces may be applied to the ice ejecting member 200 and to the ice curdling unlaying member 300, respectively, allowing independent operations of the ice ejecting member 200 and the ice curdling unlaying member 300.

[0064] The present disclosure may simultaneously implement both functions of unlaying ice curdling and ejecting ice cubes by receiving a single rotational force. When a rotational force is applied only to the ice ejecting member 200, the ice curdling unlaying member 300 may simultaneously be rotated by receiving the rotational force of the ice ejecting member 200. On the other hand, when the rotational force is applied only to the ice curdling unlaying member 300, the ice ejecting member 200 may simultaneously be rotated. And the ice ejecting member 200 may be rotated by receiving the rotational force applied to the ice curdling unlaying member 300 without an external rotational force applied thereto.

[0065] When the present disclosure is implemented by use of a single rotational force, the ice ejecting member 200 and the ice curdling unlaying member 300 may receive a rotational force via a driving force transfer unit 400.

[0066] Preferably, as shown in FIG. 4, a motor rotational force transfer portion 260 for transferring a received rotational force directly to the blades 230 may be formed at the ice ejecting member 200. The motor rotational force

transfer portion 260 may be connected to a driving motor (not shown) at an outer wall of the lower case 120. The motor rotational force transfer portion 260 may be cylindrically installed on an outer circumference of the motor rotation shaft 220 of the ice ejecting member 200, receiving the rotational force of the motor.

[0067] Accordingly, the ice ejecting member 200 may include a rotational cam 210 rotatable by receiving a rotational force of an external driving motor via the motor rotational force transfer portion 260. And the ice curdling unlaying member 300 may include a rotational cam 310 rotatable by receiving a rotational force from the rotational cam 210 of the ice ejecting member 200.

[0068] The rotational cam 210 of the ice ejecting member 200 and the rotational cam 310 of the ice curdling unlaying member 300 may be allowed to mutually transfer their rotational forces by virtue of the driving force transfer unit 400. The driving force transfer unit 400 may be implemented by employing a variety of rotational force transfer elements, such as gears, pulleys and belts and the like.

[0069] Referring to FIG. 4, when a rotational force transfer element having a gear-like structure is employed as the driving force transfer unit 400, teeth 211 formed on an outer circumferential surface of the rotational cam 210 of the ice ejecting member 200. And the teeth 311 formed on an outer circumferential surface of the rotational cam 310 of the ice curdling unlaying member 300 may be engaged with each other in the gear-like structure.

[0070] The rotational cams 210 and 310 having the gear-like structure with the mutually engaged teeth 211 and 311 may allow the ice curdling unlaying member 300 to be rotatable in response to the rotational force transferred from the ice ejecting member 200.

[0071] Therefore, when the ice ejecting member 200 is driven, its upper ice curdling unlaying member 300 may operate simultaneously. Accordingly, ice cubes, which are arcuately frozen in the curdled state at the upper portion of the blades 330 due to being stored for a long time, may be unlayed into pieces. The individually unlayed ice cubes may be transferred downward, and ejected by the ice ejecting member 200 via the ice discharge port 121, thereby being provided to a dispenser.

[0072] Although not shown, the driving force transfer unit 400 may be implemented such that the transfer of a rotational force between a pulley formed at the ice ejecting member 200 and a pulley formed at the ice curdling unlaying member is enabled via belts.

[0073] Therefore, the rotational cams 210 and 310 of the ice ejecting member 200 and the ice curdling unlaying member 300 may preferably be formed as pulleys having belts mounted thereon.

[0074] Hereinafter, description will be given of a refrigerator having the ice bucket 1 according to another exemplary embodiment with reference to FIGS. 1 and 4. FIG. 1 shows the refrigerator having the ice bucket 1 according to the related art, but a refrigerator according

to the present disclosure may be fully described with reference to the ice bucket 1 having the ice curdling unlaying member 300 shown in FIG. 4.

[0075] A refrigerator according to the present disclosure may include doors 25 and 35 for opening and closing a cooling chamber, an ice maker 40 disposed in the cooling chamber, an ice bucket 1 disposed below the ice maker 40, and a dispenser 27 connected to the ice bucket 1. Here, the ice bucket 1 may include a case main body 100 forming an ice storage space therein and having an ice discharge port at a lower portion thereof. And an ice ejecting member 200 is rotatably disposed at one side of the case main body 100 and having a plurality of blades 330. Also the ice bucket 1 includes an ice curdling unlaying member 300 having a rotational shaft 320 and augers 330 performing a circular motion in response to rotation of the rotational shaft 320. And the ice curdling unlaying member 300 is configured to prevent ice cubes located above the ice ejecting member 200 from being frozen in a curdled state.

[0076] Also, the ice curdling unlaying member 300 may include a rotational cam 310 rotatable centering on the rotational shaft 320, and the plurality of augers 330 may be installed on the rotational cam 310 with being spaced apart from the rotational shaft 320 in parallel to each other.

[0077] The ice ejecting member 200 and the ice curdling unlaying member 300 may receive a rotational force transferred by a driving force transfer unit 400.

[0078] Preferably, the driving force transfer unit 400 may have a gear-like structure that teeth 211 formed on an outer circumferential surface of the rotational cam 210 of the ice ejecting member 200 and teeth 311 formed on an outer circumferential surface of the rotational cam 310 of the ice curdling unlaying member 300 are engaged with each other. Also, the ice curdling unlaying member 300 may be rotated in response to a rotational force transferred from the ice ejecting member 200.

[0079] Alternatively, the driving force transfer unit 400 may be implemented such that the rotational cam 210 of the ice ejecting member 200 and the rotational cam 310 of the ice curdling unlaying member 300 are formed as pulleys to transfer a rotational force by use of belts.

[0080] The foregoing embodiments and advantages are merely exemplary and are not to be construed as limiting the present disclosure. The present teachings can be readily applied to other types of apparatuses. This description is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art. The features, structures, methods, and other characteristics of the exemplary embodiments described herein may be combined in various ways to obtain additional and/or alternative exemplary embodiments.

[0081] As the present features may be embodied in several forms without departing from the characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details

of the foregoing description, unless otherwise specified, but rather should be construed broadly within its scope as defined in the appended claims.

Claims

1. An ice bucket having a function of unlaying ice curdling, and comprising:

- a case main body (100) forming an ice storage space therein and having an ice discharge port (121) formed at a lower portion thereof; and
- an ice ejecting member (200) rotatably disposed at one side of the case main body (100) and having a motor rotation shaft (220), a blade mounting shaft (240), and a plurality of blades (230) protruding from the blade mounting shaft (240) in a radial direction and disposed in a circumferential direction with spaced distances; and
- an ice curdling unlaying member (300) configured to prevent ice cubes transported toward the ice ejecting member (200) from being frozen in a curdled state;

wherein the ice curdling unlaying member (300) comprises:

- a rotational shaft (320) rotatably installed at an upper portion of one side of the main body (100);
- a rotational cam (310) rotatable centering on the rotational shaft (320); and
- at least one auger (330) protruding from an upper portion within the case main body (100) in an axial direction of the rotational shaft (320) to unlay the upper curdled ice cubes in response to rotation of the rotational shaft (320);
- wherein the auger (330) is installed in parallel to the rotational shaft (320) on the rotational cam (310), and performs a circular motion in response to the rotation of the rotational shaft (320) to prevent ice curdling at an upper portion with the main body (100);
- wherein the ice ejecting member (200) or the ice curdling unlaying member (300) receive a rotational force transferred by a driving force transfer unit (400);
- wherein the ice curdling unlaying member (300) is rotatable by the rotational force or the ice ejecting member (200);
- wherein the ice ejecting member (200) comprises a rotational cam (210) rotatable by receiving the rotational force of an external driving motor; **characterized in that** the driving force transfer unit (400) has a gear-like structure that teeth (211) formed on an outer circumferential surface of the rotational cam (210) of the ice

ejecting member (200) and teeth (311) formed on an outer circumferential surface of the rotational cam (310) of the ice curdling unlaying member (300) are engaged with each other.

2. The ice bucket of claim 1, wherein a plurality of augers (330) is provided.

3. The ice bucket of anyone of the preceding claims, wherein the case main body (100) comprises:

- an upper case (110) formed of a transparent or semi-transparent material to allow a stored state of ice cubes to be viewed from outside; and
- a lower case (120) having an ice ejecting member (200) mounted onto one side therein and allowing the ice ejecting member (200) to be connected to an external driving motor.

4. The ice bucket of claim 3, wherein the ice discharge port (121) is formed at a lower portion of the lower case (120), and wherein the ice curdling unlaying member (300) is formed on one side within the lower case (120).

5. The ice bucket of anyone of the preceding claims, wherein the case main body (100) comprises:

- an ejecting member mounting portion (122) formed through one side thereof for installation of the ice ejecting member (200) thereon; and
- a curdling unlaying member mounting portion (123) formed above the ejecting member (200) mounting portion for installation of the ice curdling unlaying member (300) thereon.

Patentansprüche

1. Eisbehälter, der eine Funktion zum Auflockern einer Eisverklumpung aufweist und der Folgendes umfasst:

- einen Gehäusehauptkörper (100), der einen Eisaufbewahrungsraum bildet und eine Eisausgabeöffnung (121) aufweist, die an einem unteren Abschnitt ausgebildet ist; und
- ein Eisauswurfelement (200), das an einer Seite des Gehäusehauptkörpers (100) drehbar angeordnet ist und eine drehbare Motorwelle (220), eine Klingenbefestigungswelle (240) und mehrere Klingen (230), die von der Klingenbefestigungswelle (240) in radialer Richtung vorstehen und in einer Umfangsrichtung mit verteilten Abständen angeordnet sind, umfasst; und
- ein Eisverklumpung-Auflockerungselement (300), das konfiguriert ist, zu verhindern, dass Eiskwürfel, die in Richtung des Eisauswurfelements

(200) transportiert werden, in einem verklumpten Zustand gefroren werden;

wobei das Eisverklumpung-Auflockerungselement (300) Folgendes umfasst:

- eine Drehwelle (320), die bei einem oberen Abschnitt einer Seite des Hauptkörpers (100) drehbar installiert ist;
- einen drehbaren Nocken (310), der sich drehbar auf der Drehwelle (320) zentriert; und
- wenigstens einen Bohrer (330), der von einem oberen Abschnitt in dem Gehäusehauptkörper (100) in axialer Richtung der Drehwelle (320) vorsteht, um die oberen verklumpten Eiskwürfel in Reaktion auf eine Drehung der Drehwelle (320) aufzulockern;
- wobei der Bohrer (330) parallel zu der Drehwelle (320) an dem drehbaren Nocken (310) installiert ist und eine kreisförmige Bewegung in Reaktion auf die Drehung der Drehwelle (320) ausführt, um ein Verklumpen von Eis bei einem oberen Abschnitt mit dem Hauptkörper (100) zu verhindern;
- wobei das Eisauswurfelement (200) oder das Eisverklumpung-Auflockerungselement (300) eine Drehkraft aufnimmt, die durch eine Antriebskraft-Übertragungseinheit (400) übertragen wird;
- wobei das Eisverklumpung-Auflockerungselement (300) durch die Drehkraft des Eisauswurfelements (200) gedreht werden kann;
- wobei das Eisauswurfelement (200) einen drehbaren Nocken (210) umfasst, der durch Aufnehmen der Drehkraft eines außen gelegenen Antriebsmotors gedreht werden kann; **dadurch gekennzeichnet, dass**
- die Antriebskraft-Übertragungseinheit (400) einen zahnradartigen Aufbau aufweist, derart, dass Zähne (211), die an einer Außenumfangsfläche des drehbaren Nockens (210) des Eisauswurfelements (200) ausgebildet sind, und Zähne (311), die an einer Außenumfangsfläche des drehbaren Nockens (310) des Eisverklumpung-Auflockerungselements (300) ausgebildet sind, miteinander in Eingriff gelangen.

2. Eisbehälter nach Anspruch 1, wobei mehrere Bohrer (330) vorgesehen sind.

3. Eisbehälter nach einem der vorhergehenden Ansprüche, wobei der Gehäusehauptkörper (100) Folgendes umfasst:

- ein oberes Gehäuse (110), das aus einem lichtdurchlässigen oder teilweise lichtdurchlässigen Material gebildet ist, damit ein Lagerzustand von Eiskwürfeln von außen zu sehen ist; und

- ein unteres Gehäuse (120), das ein Eisauswurfelement (200) aufweist, das auf einer Seite darin angebracht ist und zulässt, dass das Eisauswurfelement (200) mit einem außen liegenden Antriebsmotor verbunden wird. 5
- 4. Eisbehälter nach Anspruch 3, wobei die Eisausgabeöffnung (121) bei einem tieferen Abschnitt des unteren Gehäuses (120) ausgebildet ist, und wobei das Eisverklumpung-Auflockerungselement (300) an einer Seite in dem unteren Gehäuse (120) ausgebildet ist. 10
- 5. Eisbehälter nach einem der vorhergehenden Ansprüche, wobei der Behälterhauptkörper (100) Folgendes umfasst: 15
 - einen Auswurfelement-Befestigungsabschnitt (122), der so ausgebildet ist, dass an einer seiner Seiten das Eisauswurfelement (200) installiert werden kann; und 20
 - einen Befestigungsabschnitt (123) für ein Verklumpung-Auflockerungselement, der über dem Befestigungsabschnitt des Auswurfelements (200) so ausgebildet ist, dass an ihm das Eisverklumpung-Auflockerungselement (300) installiert werden kann. 25

Revendications 30

1. Seau à glace ayant une fonction de démoulage de glace givrée et comprenant: 35
 - un corps de compartiment principal (100) formant un espace de stockage de glace et ayant un port de déchargement de glace (121) formé au niveau d'une portion inférieure de celui-ci ; et 40
 - un élément d'éjection de glace (200) disposé rotativement sur un côté du corps de compartiment principal (100) et ayant un arbre de rotation de moteur (220), un arbre de montage de lame (240) et une pluralité de lames (230) dépassant de l'arbre de montage de lame (240) dans une direction radiale et disposé dans une direction circonférentielle avec des distances espacées; 45
 - et
 - un élément de démoulage de glace givrée (300) configuré pour empêcher que les cubes de glace transportés vers l'élément d'éjection de glace (200) soient congelés dans un état givré ; 50
- dans lequel l'élément de démoulage de glace givrée (300) comprend: 55
 - un arbre rotatif (320) installé rotativement au niveau d'une portion supérieure d'un côté du

corps principal (100) ;

- une came rotative (310) centrante de manière rotative l'arbre rotatif (320) ; et
- au moins une vis sans fin (330) dépassant d'une portion supérieure à l'intérieur du corps de compartiment principal (100) dans une direction axiale de l'arbre rotatif (320) pour démouler les cubes de glace givrée supérieurs en réponse à la rotation de l'arbre rotatif (320) ;
- dans lequel la vis sans fin (330) est installée en parallèle à l'arbre rotatif (320) sur la came rotative (310) et effectue un mouvement circulaire en réponse à la rotation de l'arbre rotatif (320) pour empêcher un givrage de glace au niveau d'une portion supérieure avec le corps principal (100) ;
- dans lequel l'élément d'éjection de glace (200) ou l'élément de démoulage de glace givrée (300) reçoit une force rotative transférée par une unité de transfert de force d'entraînement (400), l'élément de démoulage de glace givrée (300) est mis en rotation par la force rotative ou l'élément d'éjection de glace (200) ;

dans lequel l'élément d'éjection de glace (200) comprend une came rotative (210) mise en rotation en recevant la force rotative d'un moteur d'entraînement externe ;

caractérisé en ce que l'unité de transfert de force d'entraînement (400) a une structure de type engrenage où des dents (211) formées sur une surface circonférentielle extérieure de la came rotative (210) de l'élément d'éjection de glace (200) et des dents (311) formées sur une surface circonférentielle extérieure de la came rotative (310) de l'élément de démoulage de glace givrée (300) viennent en prise les unes avec les autres.

2. Seau à glace selon la revendication 1, dans lequel une pluralité de vis sans fin (330) est prévue. 40
3. Seau à glace selon une quelconque des revendications précédentes, dans lequel le corps de compartiment principal (100) comprend: 45
 - un compartiment supérieur (110) formé d'un matériau transparent ou semi transparent pour permettre la visualisation par l'extérieur des cubes de glace stockés ; et
 - un compartiment inférieur (120) ayant un élément d'éjection de glace (200) monté sur un côté et permettant à l'élément d'éjection de glace (200) d'être raccordé à un moteur d'entraînement externe. 50
4. Seau à glace selon la revendication 3, dans lequel le port de déchargement de glace (121) est formé au niveau d'une portion inférieure du compartiment 55

inférieur (120) et dans lequel l'élément de démoulage de glace givrée (300) est formée sur un côté à l'intérieur du compartiment inférieur (120).

5. Seau à glace selon une quelconque des revendications précédentes, dans lequel le corps de compartiment principal (100) comprend:

- une portion de montage d'élément d'éjection (122) formée à travers un côté de ce dernier pour l'installation de l'élément d'éjection de glace (200) sur ce dernier ; et
- une portion de montage d'élément de démoulage de givrage (123) formée au-dessus de la portion de montage d'élément d'éjection (200) en vue de l'installation de l'élément de démoulage de glace givrée (300) sur ce dernier.

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Figure 1

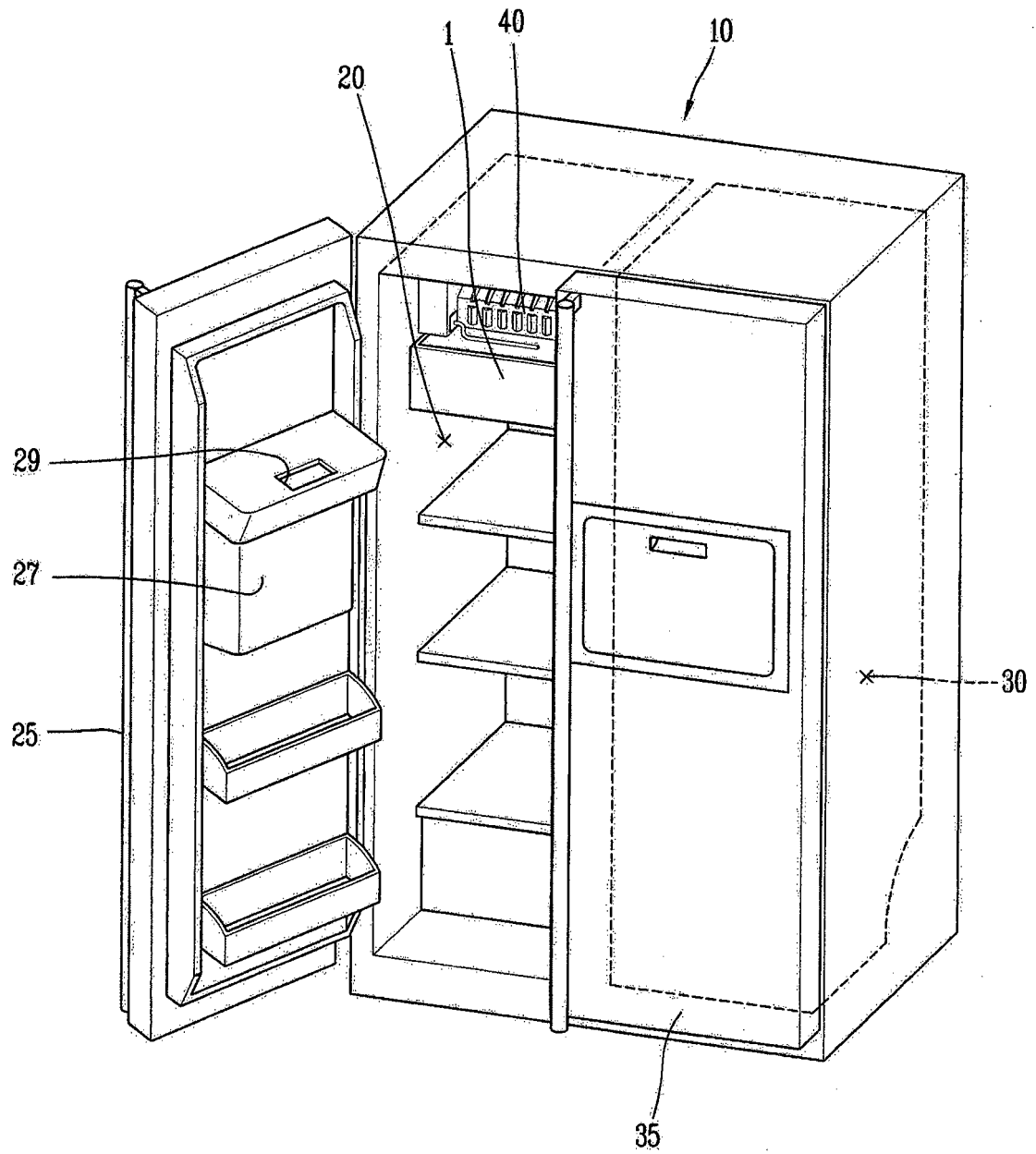


Figure 2

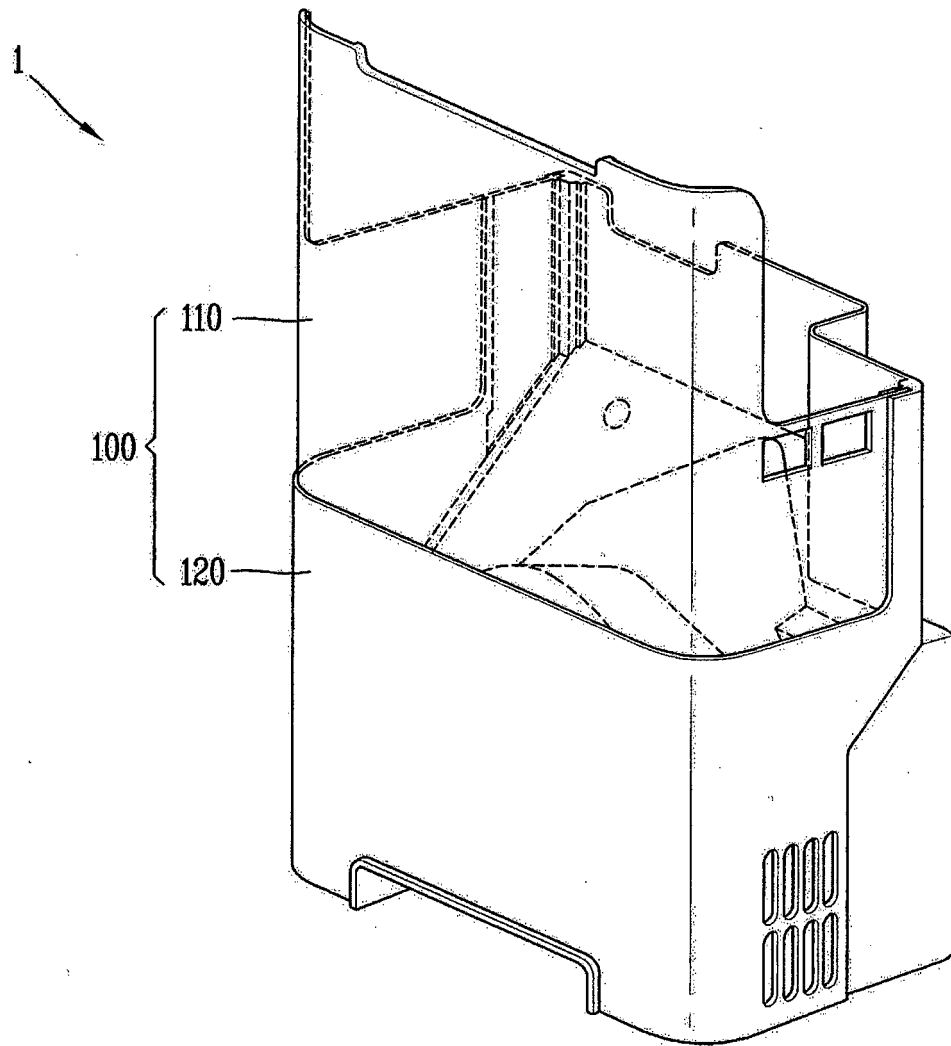


Figure 3

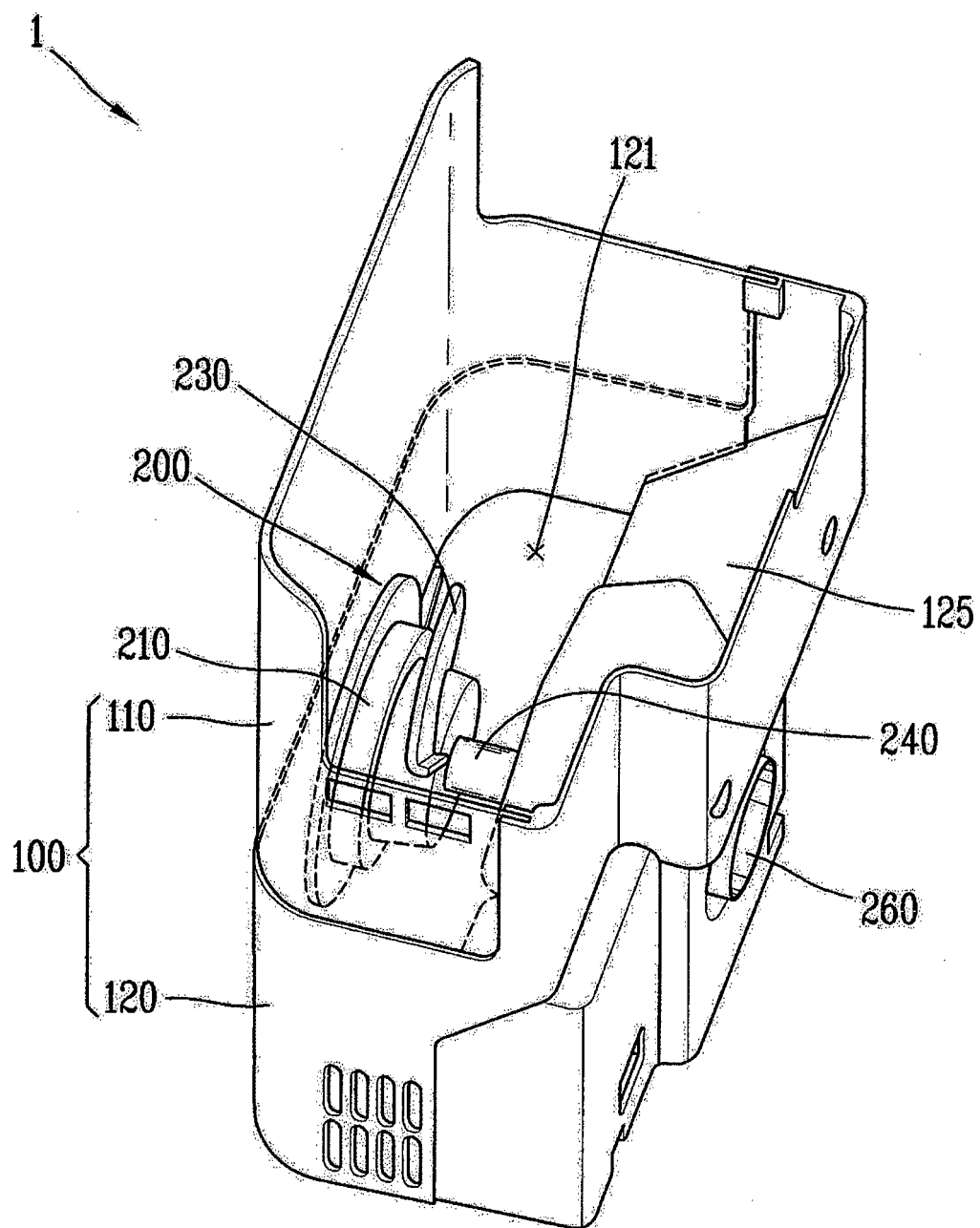


Figure 4

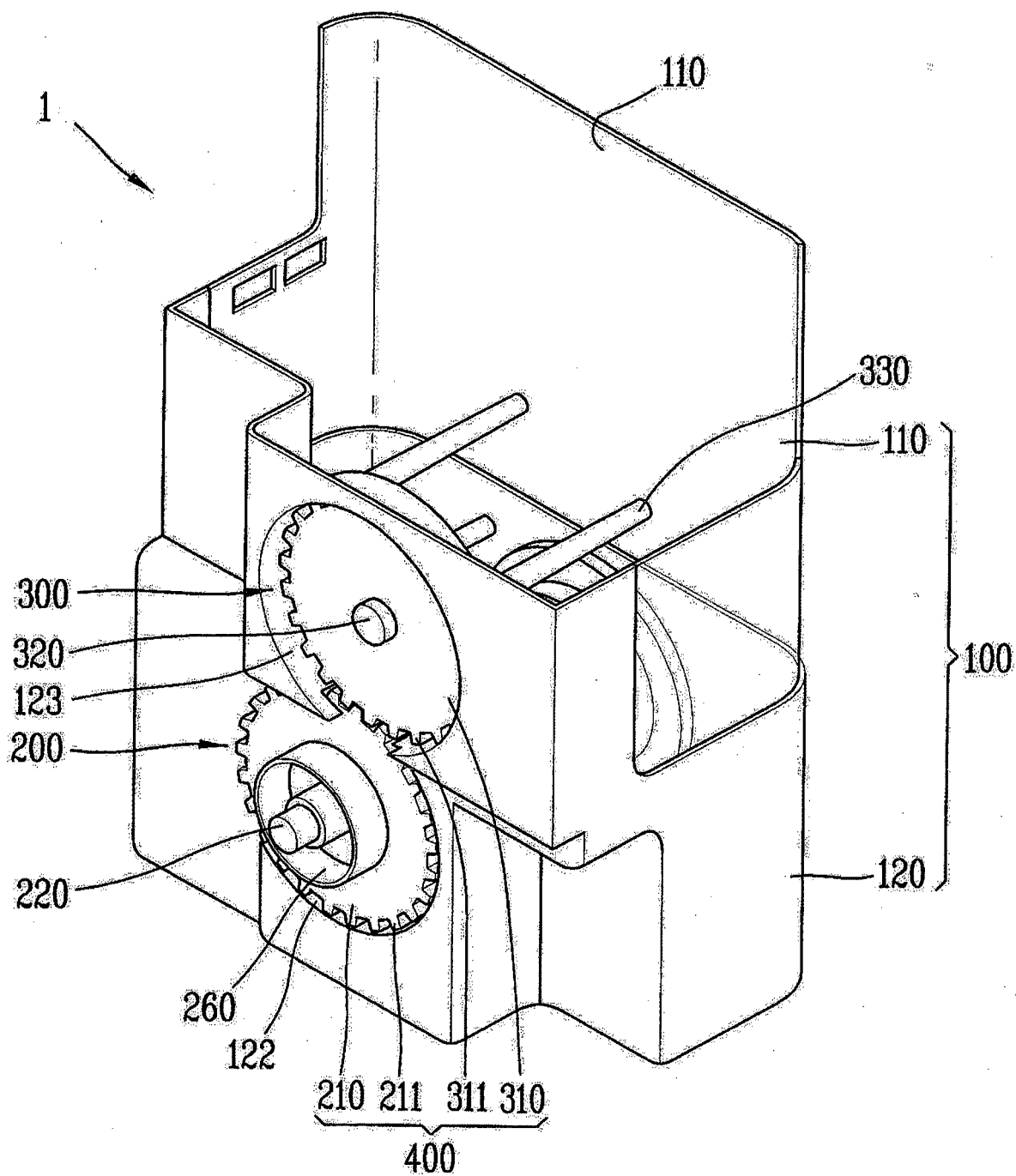
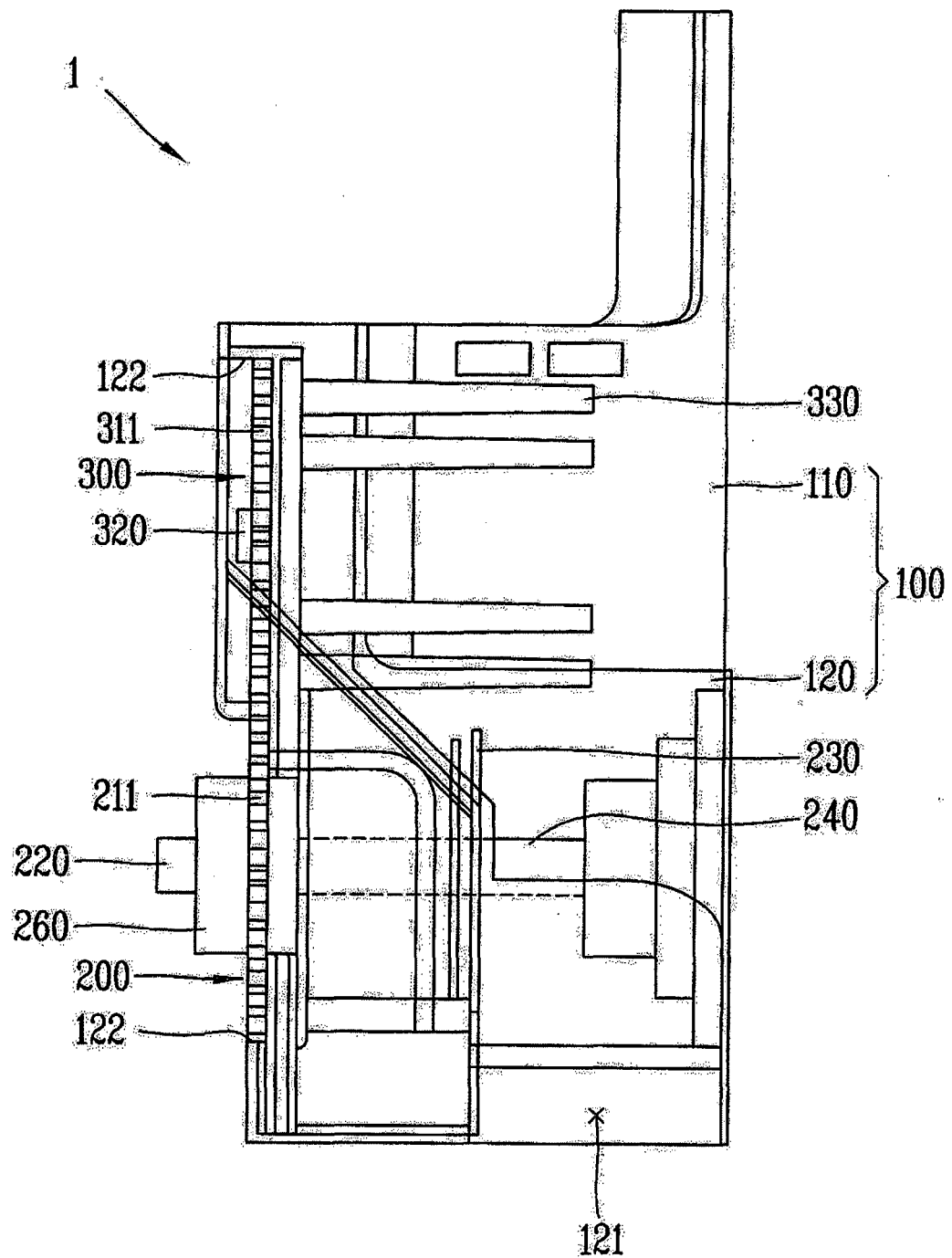


Figure 5



REFERENCES CITED IN THE DESCRIPTION

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