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REFRIGERATOR**(52) **U.S. Cl.**CPC *F25C 5/187* (2013.01); *F25C 5/005*
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(57)

ABSTRACT

An ice-making device for a refrigerator capable of detecting ice fullness in the ice storing unit and suspending ice production accordingly. The ice-making device includes a sensing unit configured to measure the amount of ice in the ice-storing unit based on detected positional information of the ice-storing unit. An accommodation unit is configured to accommodate the ice-making unit and the ice-storing unit. The sensing unit can sense relative movement of the ice storage unit with respect to the accommodation unit.

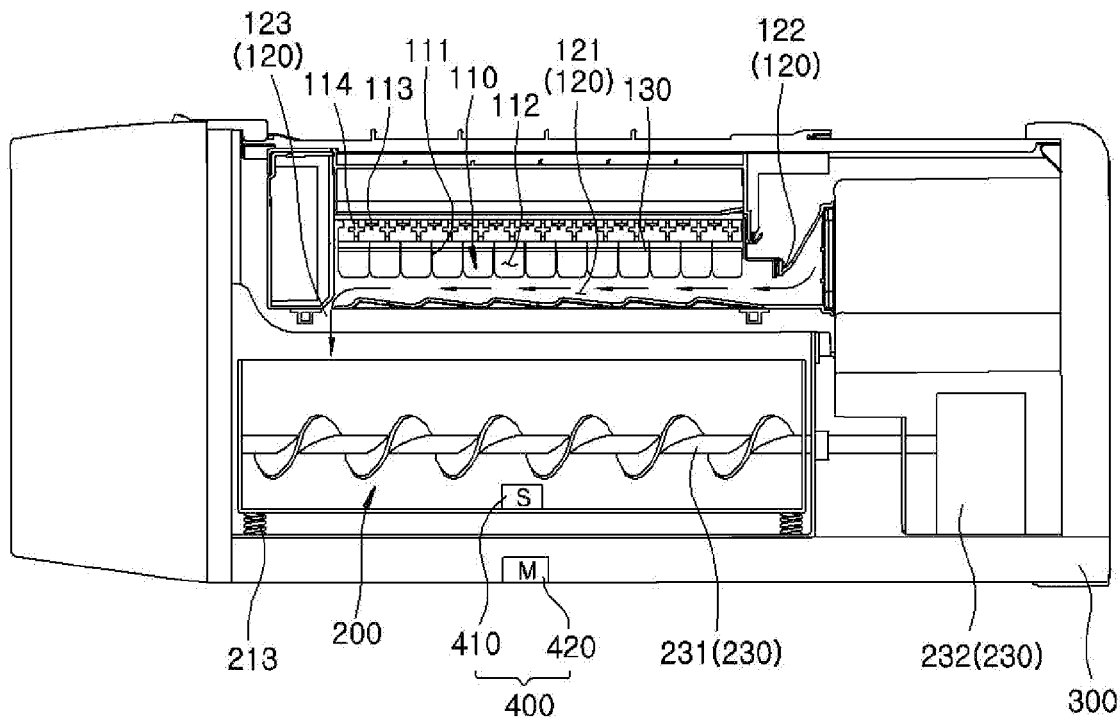


FIG. 1

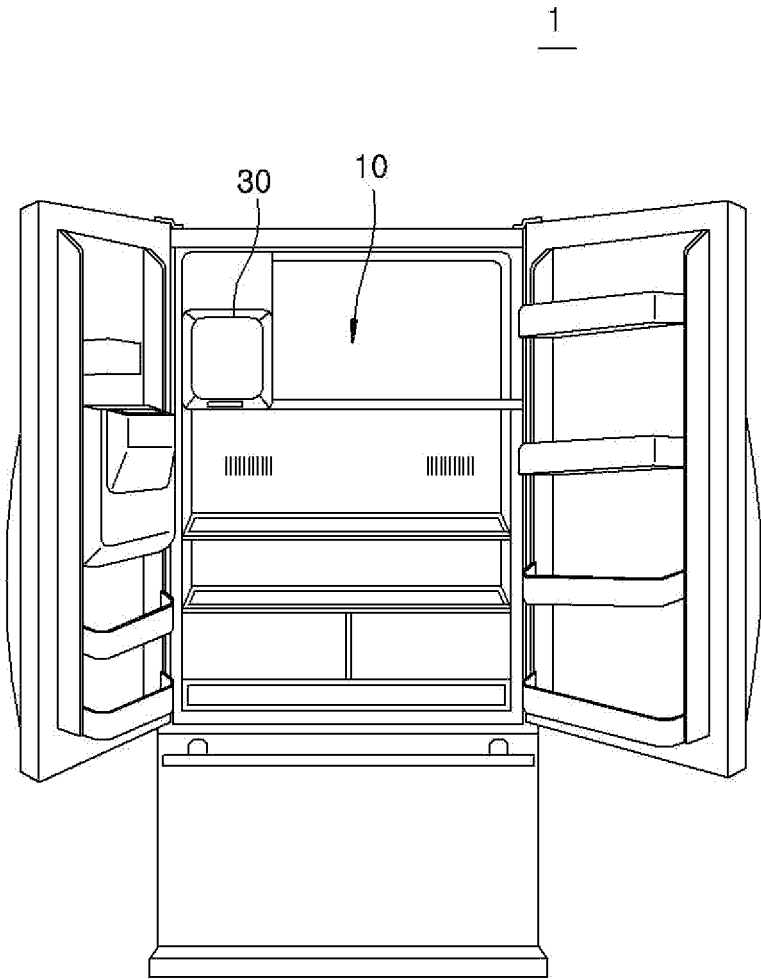


FIG. 2

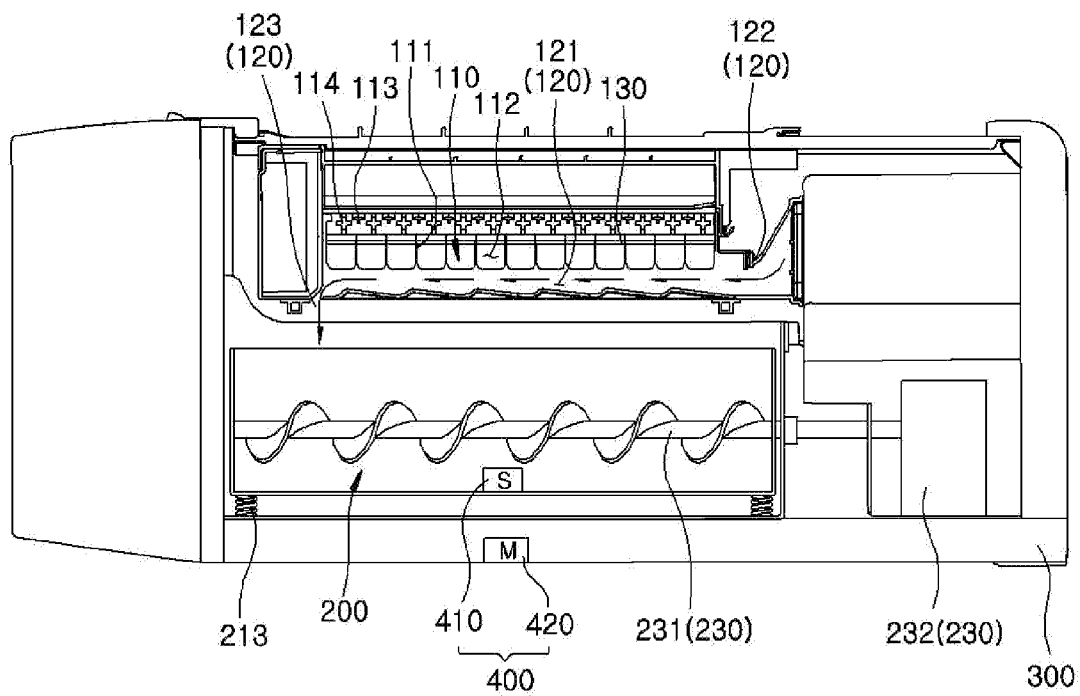


FIG. 4

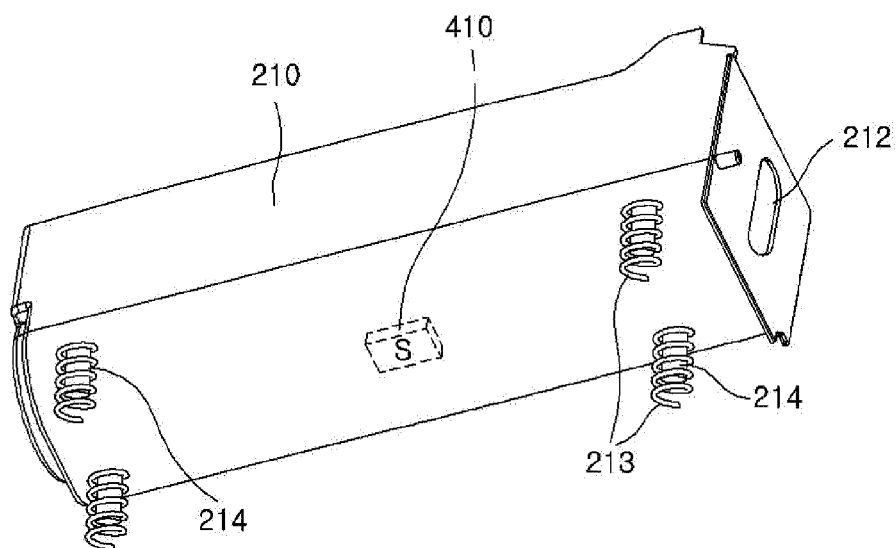


FIG. 5

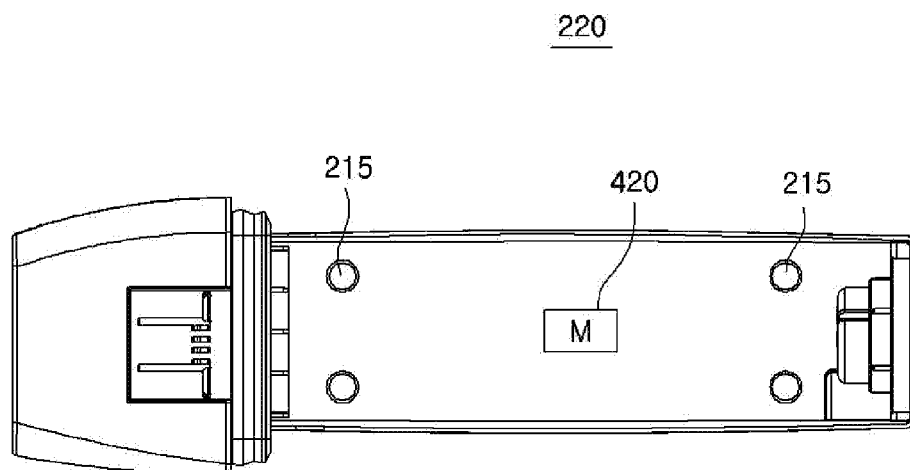


FIG. 6

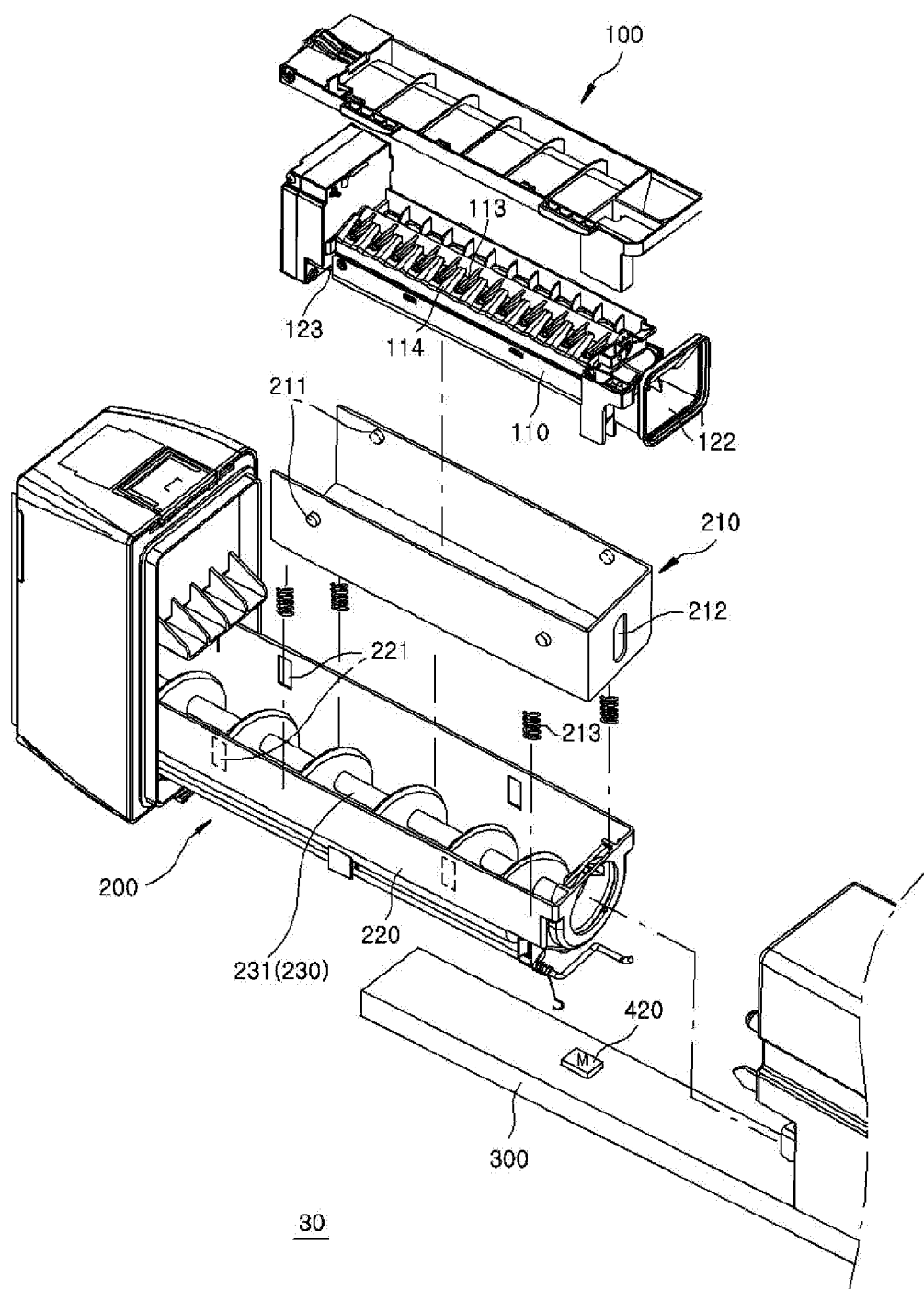


FIG. 7

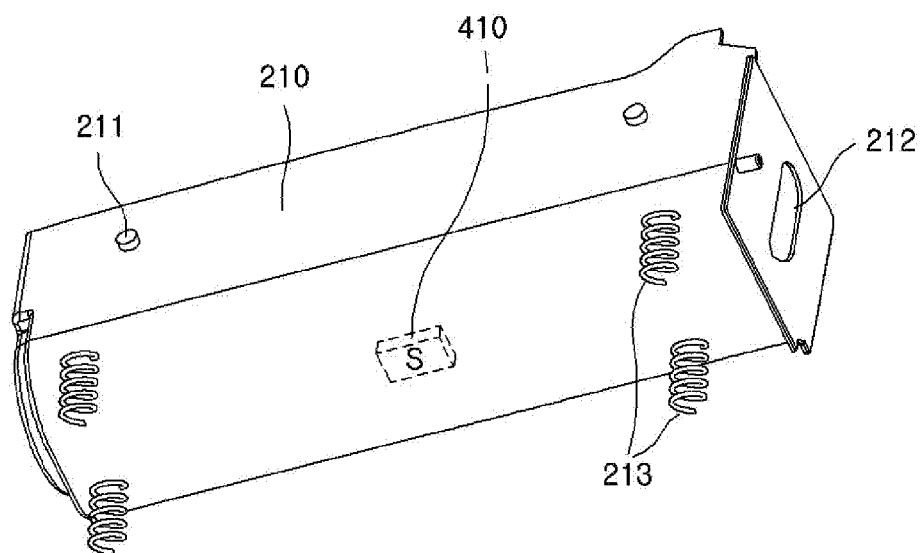
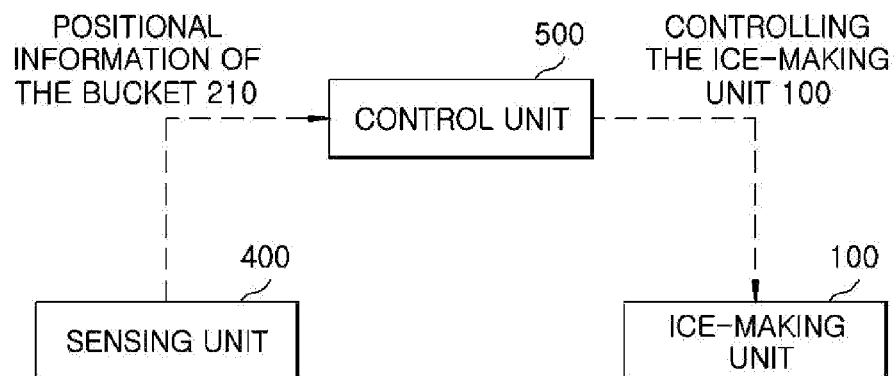


FIG. 8



ICE-MAKING DEVICE FOR REFRIGERATOR

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is based on and claims priority from Korean Patent Application No. 10-2016-0056216, filed on May 9, 2016, the disclosure of which is incorporated herein in its entirety by reference for all purposes.

TECHNICAL FIELD

[0002] The present disclosure relates to refrigerators, and more particularly, to ice making and dispensing mechanisms in refrigerators.

BACKGROUND

[0003] A refrigerator is an appliance for use in storing food at a low temperature and may be configured to store food (or other items) in a frozen state or a refrigerated state depending on the type of food to be stored. The inside of the refrigerator is cooled by circulating cold air that can be continuously generated through a heat exchange process by using a refrigerant. During operation, the refrigerant goes through repetitive cycles of compression, condensation, expansion and evaporation in a heat exchanger. The cold air supplied in the refrigerator is uniformly distributed by convection. Accordingly, the items placed in the refrigerator can be stored at a desired low temperature.

[0004] The heat exchanger is installed in one side of the refrigerator and is isolated from the storage spaces such as the refrigeration room (or the refrigeration compartment) and the freezer for storing food. For example, compression and condensation processes may be performed by a compressor and a condenser disposed within a machine room located at the lower side of a rear surface of the refrigerator. In an evaporation process, the refrigerant may evaporate and thereby absorb heat from ambient air. As a result, the ambient air is cooled down.

[0005] A main body of the refrigerator may have a rectangular parallel-piped shape with an open front surface. Typically, the main body encloses a refrigeration room and freezer, each with its own door. The refrigerator may include a plurality of drawers, shelves, vegetable compartments, etc., for sorting and storing different types of items.

[0006] Conventionally, top mount type refrigerators were popular, with a freezer located at an upper side and a refrigeration room located at a lower side. Recently, bottom freezer type refrigerators have been developed, where a freezer is located at the lower side. A bottom freezer type refrigerator provides the advantage that a user can conveniently access the refrigerator in general. However, a user often needs to lower down or bend down to access the freezer, e.g., for taking ice from it.

[0007] Some bottom freezer type refrigerators have an ice dispenser located at the refrigeration room compartment disposed at the upper side of the refrigerator. An ice-making device for making ice pieces may be disposed on the refrigeration room door or inside refrigeration room. The ice-making device may include an ice-making unit including an ice tray, and an ice storage part (ice bucket) for storing the ice pieces produced in the ice tray.

[0008] When a certain amount of ice or more is contained in the ice storage part of the ice-making device (e.g., when

ice storage part is full), it is desirable to detect the fullness status to pause ice making promptly.

SUMMARY

[0009] Embodiments of the present disclosure provide an ice-making device capable of suspending ice production based on a determination that an ice storage capacity of the ice-making device has been reached.

[0010] According to the embodiments of the present disclosure, an ice-making device can detect a fullness status of an ice storage unit and accordingly suspend ice production therein.

[0011] According to an embodiment of the present invention, an ice-making device for a refrigerator includes an ice-making unit configured to receive water and to produce ice pieces; an ice-storing unit configured to store the ice pieces produced in and fed from the ice-making unit; a sensing unit configured to measure an amount of the ice pieces filled in the ice-storing unit; and an accommodation unit configured to accommodate the ice-making unit and the ice-storing unit therein. The ice-storing unit includes: a bucket configured to store the ice pieces delivered from the ice-making unit; and a support part configured to movably support the bucket, the sensing unit being configured to sense relative movement of the bucket with respect to the accommodation unit.

[0012] Further, the sensing unit includes a magnetic sensor.

[0013] Further, the sensing unit includes: a target part disposed in the bucket; and a recognition part disposed in the accommodation unit, the recognition part being configured to sense relative movement of the target part with respect to the recognition part.

[0014] Further, the target part is disposed in a central region of a bottom surface of the bucket, and the recognition part is disposed in a corresponding relationship with the target part.

[0015] Further, elastic members configured to support the bucket are disposed between the bucket and the support part.

[0016] Further, the bucket includes bucket guides, and the support part includes support part guides configured to guide up-down movement of the bucket guides.

[0017] Further, the bucket is disposed with first elastic member guides configured to guide the elastic members at one side thereof, and the support part is disposed with second elastic member guides configured to guide the elastic members at the other side thereof.

[0018] Further, a slot extending in an up-down direction is formed in the bucket, and the ice-storing unit further includes a delivery member rotated to discharge the ice pieces existing within the bucket and disposed to pass through the slot.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is a front view illustrating the configuration of an exemplary refrigerator having an ice-making device according to one embodiment of the present disclosure.

[0020] FIG. 2 is a side view illustrating the configuration of an exemplary ice-making device for a refrigerator according to one embodiment of the present disclosure.

[0021] FIG. 3 is an exploded perspective view illustrating the configuration of the exemplary ice-making device in FIG. 2.

[0022] FIG. 4 is a bottom perspective view illustrating the configuration of an exemplary bucket in the ice-making device illustrated in FIG. 2.

[0023] FIG. 5 illustrates an exemplary method of controlling the ice-making device for a refrigerator.

[0024] FIG. 6 is an exploded perspective view of the exemplary ice-making device according to another embodiment of the present disclosure.

[0025] FIG. 7 is a bottom perspective view of an exemplary bucket in the ice-making device in FIG. 6.

[0026] FIG. 8 is a block diagram illustrating control logic of an exemplary control unit according to one embodiment of the present disclosure.

DETAILED DESCRIPTION

[0027] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof. The illustrative embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented here.

[0028] One or more exemplary embodiments of the present disclosure will be described more fully hereinafter with reference to the accompanying drawings, in which one or more exemplary embodiments of the disclosure can be easily determined by those skilled in the art. As those skilled in the art will realize, the described exemplary embodiments may be modified in various different ways, all without departing from the spirit or scope of the present disclosure, which is not limited to the exemplary embodiments described herein.

[0029] It is noted that the drawings are schematic and are not dimensionally illustrated. Relative sizes and proportions of parts in the drawings may be exaggerated or reduced in size, and a predetermined size is merely exemplary and not limiting. The same reference numerals designate the same structures, elements, or parts illustrated in two or more drawings in order to exhibit similar characteristics.

[0030] The exemplary drawings of the present disclosure illustrate ideal exemplary embodiments of the present disclosure in more detail. As a result, various modifications of the drawings are expected. Accordingly, the exemplary embodiments are not limited to a specific form of the illustrated region, and for example, include a modification of a form due to manufacturing.

[0031] The term “fullness of ice pieces” used herein is not limited to a situation that an ice storage part 200 is completely filled with ice pieces. Thus, in the present disclosure, the term “fullness of ice pieces” is intended to include a situation where an ice storage part 200 is filled with a predetermined amount or more of ice and ice production stops accordingly.

[0032] The configurations of an ice-making device for a refrigerator according to one embodiment of the present disclosure and a refrigerator including the same will now be described with reference to FIGS. 1 to 5.

[0033] FIG. 1 is a front view illustrating the configuration of an exemplary refrigerator having an ice-making device according to one embodiment of the present disclosure. FIG. 2 is a side view illustrating the configuration of an exemplary ice-making device for a refrigerator according to one embodiment of the present disclosure. FIG. 3 is an exploded perspective view illustrating the configuration of the exem-

plary ice-making device in FIG. 2. FIG. 4 is a bottom perspective view illustrating the configuration of an exemplary bucket in the ice-making device illustrated in FIG. 2. FIG. 5 illustrates an exemplary method of controlling the ice-making device for a refrigerator.

[0034] Referring to FIGS. 1 to 5, the refrigerator 1 according to one embodiment of the present disclosure may include a refrigerator storage room 10 and an ice-making device 30 for a refrigerator.

[0035] The refrigerator 1 may include a cooling system (not shown) configured to supply cold air to the refrigerator storage room 10. The cooling system may include, for example, an evaporator, a compressor and a condenser. A gaseous refrigerant at high temperature exchanges heat with ambient air through the evaporator and then flows to the compressor to be compressed. The compressed gaseous refrigerant dissipates heat while it passes through the condenser and becomes a liquid refrigerant. The liquid refrigerant passed through the condenser flows back to the evaporator. The liquid refrigerant in the evaporator is evaporated by absorbing heat from ambient air. Thus, in the evaporator, the liquid refrigerant receives heat from the ambient air and becomes a gaseous refrigerant. The gaseous refrigerant is separated from the liquid refrigerant and introduced into the compressor again.

[0036] Air cooled by the evaporator is supplied to circulate through the refrigerator storage room 10.

[0037] The ice-making device 30 for a refrigerator may include an ice-making unit 100, an ice-storing unit 200, an accommodation unit 300, a sensing unit 400 and a control unit 500. The ice-making unit 100, the ice-storing unit 200 and the sensing unit 400 may be disposed within the accommodation unit 300. The ice-making unit 100 may be disposed at the upper side and the ice-storing unit 200 may be disposed at the lower side of the ice-making unit 100. Hereinafter, the configuration of the ice-making unit 100 is described.

[0038] The ice-making unit 100 may include an ice tray 110, a cooling unit 120, a heating unit 130 and a water supply unit (not shown).

[0039] The ice tray 110 is configured to receive water from the water supply unit. Water in the ice tray 110 freezes into ice pieces by the cooling unit 120. The ice tray 110 may include: partition walls 111 configured to divide the ice pieces, ice cells 112 partitioned by the partition walls 111, an ice-releasing member 113 configured to discharge ice pieces out of the ice tray 110, and an ice-releasing member guide 114 configured to guide the ice-releasing member 113. The number and shape of the partition walls 111 may vary in different embodiments.

[0040] The ice-releasing member 113 may be configured to be rotated by a drive device such as a motor or the like. The ice tray 110 may include a heat transfer member made of metal or the like. The heat transfer member enhances the heat transfer efficiency between the cooling unit 120 and the water. The heat transfer member may be disposed outside the ice tray 110 and may have a shape conformal to the shape of the ice tray 110. However, the present disclosure is not limited thereto.

[0041] In the illustrated embodiment, the ice pieces of the ice tray 110 are discharged by the ice-releasing member 113. However, the present disclosure is not limited thereto. For example, the ice pieces of the ice tray 110 may be discharged by rotating and twisting the ice tray 110.

[0042] The cooling unit 120 may cool the ice tray 110 and freeze water therein. The cooling unit 120 may include a duct 121 disposed below the ice tray 110. The duct 121 may receive cold air from the cooling unit 120 through an inflow portion 122 of the duct 121. After cooling the ice tray 110, cold air is discharged through an outflow portion 123 of the duct 121 and then flow toward the ice-storing unit 200.

[0043] In the present embodiment, the cooling unit 120 uses the duct 121 for supplying the cold air. However, the present disclosure is not limited thereto. For example, the cooling unit 120 may be composed of a pipe through which refrigerant flows. The cooling unit 120 may receive the refrigerant from the condenser of the refrigerator cooling system and may contact the ice tray 110.

[0044] The heating unit 130 is configured to heat the ice tray 110. The surfaces of the ice pieces making contact with the ice tray 110 may be melted (e.g., partially) by heating of the heating unit 130. This enables the ice pieces to be easily released from the ice tray 110. The heating unit 130 may have a long strip shape. The heating unit 130 may be disposed around the ice tray 110. For example, the heating unit 130 may be disposed under the ice tray 110 to make contact with the ice tray 110. The heating unit 130 may include a pipe through which a heat medium flows. However, the present disclosure is not limited thereto. For example, the heating unit 130 may be an electric wire that generates heat from electric energy.

[0045] The ice-storing unit 200 may include a bucket 210, a support part 220 and an ice discharge part 230.

[0046] The bucket 210 is configured to receive ice pieces produced in the ice tray 110. Furthermore, the bucket 210 may receive cold air from the cooling unit 120. The bucket 210 may be, for example, a container with a top opening and a front side opening. Elastic members 213 may be disposed between the bucket 210 and the support part 220 to be described later. The bucket 210 may be supported by the elastic members 213 and can move up and down. For example, the elastic members 213 may support the lower portion of the bucket 210. The number of the elastic members 213 may be four for example. A slot 212 extending along an up-down direction may be formed in the bucket 210. A delivery member 231 to be described in greater detail below may penetrate the bucket 210 through the slot 212.

[0047] The support part 220 is configured to support the movable bucket 210. The support part 220 is configured so that the support part 220 can be removed from the accommodation unit 300 while supporting the bucket 210. The support part 220 may be, for example, a case capable of accommodating the bucket 210. The bucket 210 may move up and down while being supported by the support part 220.

[0048] Guides may be disposed in the bucket 210 and the support part 220 to guide the up-down movement of the bucket 210. For example, as illustrated in FIGS. 3 to 5, the bucket 210 may include first elastic member guides 214 and the support part 220 may include second elastic member guides 215. The first elastic member guides 214 are configured to guide the elastic members 213 at one side. The second elastic member guides 215 are configured to guide the elastic members 213 at the other side. For example, the first elastic member guides 214 may be disposed inside the elastic members 213. The second elastic member guides 215 may be disposed outside the elastic members 213. The first and second elastic member guides 214 and 215 may guide

the movement of the elastic members 213, thereby guiding the up-down movement of the bucket 210.

[0049] As another example of the guides, as illustrated in FIGS. 6 and 7, the bucket 210 may include the bucket guides 211 and the support part 220 may include the support part guides 221 corresponding to the bucket guides 211. The bucket guides 211 and the support part guides 221 facilitate the up-down motion the bucket. The bucket guides 211 may be projections protruding from the side surface of the bucket 210. The support part guides 221 may be slots formed on the side surface of the support part 220 and extend up and down. However, the present disclosure is not limited thereto.

[0050] The ice discharge part 230 may discharge ice pieces stored in the ice-storing unit 200 to the outside. The ice discharge part 230 may include a delivery member 231 and a drive device 232. The delivery member 231 may be disposed in the ice storage part 210 and may discharge the ice pieces stored in the ice storage part 210 to the outside. The delivery member 231 may be a rotary member including a central shaft and a blade. However, the present disclosure is not limited thereto.

[0051] The drive device 232 is coupled to the delivery member 231 and is configured to drive the delivery member 231. The drive device 232 may be disposed adjacent to the other end wall of the ice-making device 30. As the delivery member 231 is rotated by the drive device 232, the ice pieces around the delivery member 231 may be moved toward an exit of the ice-making device 30. The drive device 232 may include, for example, an electric motor and the like. However, the present disclosure is not limited thereto.

[0052] The accommodation unit 300 may surround the ice-making unit 100, the ice-storing unit 200 and the sensing unit 400. The accommodation unit 300 may include a heat insulation member. The accommodation unit 300 may be coupled to the inner wall of the refrigerator storage room 10. The sensing unit 400 to be described in greater detail later may be disposed in the accommodation unit 300.

[0053] The sensing unit 400 is configured to sense relative positional information (movement or the like) of the bucket 210 with respect to the accommodation unit 300. For example, the sensing unit 400 may include a target part 410 and a recognition part 420. The target part 410 may be disposed in the bucket 210. The recognition part 420 may be disposed in the accommodation unit 300.

[0054] The recognition part 420 may be a sensor configured to sense the relative positional information of the target part 410. For example, if the bucket 210 disposed with the target part 410 is moved downward by the weight of the ice therein, the recognition part 420 may sense a change in the distance between the recognition part 420 and the target part 410 and thereby may detect a movement of the target part 410.

[0055] For example, if the target part 410 is disposed in a central region of a bottom surface of the bucket 210, the recognition part 420 may be disposed in a central region of the bottom of the accommodation unit 300 to face the target part 410.

[0056] The target part 410 and the recognition part 420 may be spaced apart from each other. Since the bucket 210 disposed with the target part 410 may be separated from the accommodation unit 300 disposed with the recognition part 420, the target part 410 and the recognition part 420 can be separated from each other. In this way, the target part 410 and the recognition part 420 are spaced apart without direct

contact. Thus, when the bucket 210 is coupled with the accommodation unit 300 again, the operation of the sensing unit 400 would not be interrupted even if the target part 410 and the recognition part 420 are not electrically coupled to each other. In other words, the bucket 210 may be easily decoupled from or coupled with the accommodation unit 300 without having to electrically connect or disconnect the target part 410 and the recognition part 420. The target part 410 may be a magnetic material and the recognition part 420 may be a magnetic sensor capable of sensing movement of the magnetic material. However, the present disclosure is not limited thereto.

[0057] The control unit 500, as illustrated in FIG. 8, may receive positional information (related to movement and/or position) on the bucket 210 from the sensing unit 400. Accordingly, the control unit 500 may determine whether to suspend ice production. For example, if the distance between the target part 410 and the recognition part 420 falls within a predetermined range, the control unit 500 may determine that the bucket 210 is filled with a sufficient amount of ice and therefore instructs the ice-making unit 100 to suspend ice production. The control unit 500 may be implemented using a microprocessor or microcontroller.

[0058] Hereinafter, the operation and effect of the ice-making device 30 for a refrigerator configured as above are described. Once water is introduced into the ice tray 110 from the outside, water in the ice tray 110 can freeze into ice pieces by the cooling unit 120. The ice pieces existing in the ice-making unit 100 are fed to the bucket 210 of the ice-storing unit 200. At this time, the ice-releasing member 113 and the heating unit 130 may be driven. For example, the heating unit 130 may heat the ice tray 110 prior to releasing the ice pieces. Thereafter, the ice-releasing member 113 is driven to transfer the ice pieces in the ice tray 110 to the bucket 210.

[0059] When the bucket 210 is not full with ice pieces, the bucket 210 is supported by the elastic members 213 and the bucket 210 is not pressed downward. If bucket 210 is full, the bucket 210 is moved downward due to the weight of the ice pieces existing in the bucket 210. At this time, the elastic members 213 are compressed by the weight of the ice pieces. The sensing unit 400 may sense the downward movement of the bucket 210.

[0060] The ice-making operation in the ice-making unit 100 is repeatedly performed and the ice pieces accumulate in the bucket 210. As ice pieces are filled in the bucket 210, the elastic members 213 are further compressed and the bucket 210 is further moved downward. If the bucket 210 is full of ice, the bucket 210 is further moved downward. The sensing unit 400 senses such movement of the bucket 210. In other words, the sensing unit 400 senses that the bucket 210 is moved downward by a predetermined distance or more. The sensing unit 400 transmits the sensing result to the control unit 500. Accordingly, the control unit 500 determines that the bucket 210 is full of ice and controls the ice-making unit 100 to suspend ice production.

[0061] Although exemplary embodiments of the present disclosure are described above with reference to the accompanying drawings, those skilled in the art will understand that the present disclosure may be implemented in various ways without changing the necessary features or the spirit of the present disclosure.

[0062] Therefore, it should be understood that the exemplary embodiments described above are not limiting, but

only an example in all respects. The scope of the present disclosure is expressed by claims below, not the detailed description, and it should be construed that all changes and modifications achieved from the meanings and scope of claims and equivalent concepts are included in the scope of the present disclosure.

[0063] From the foregoing, it will be appreciated that various embodiments of the present disclosure have been described herein for purposes of illustration, and that various modifications may be made without departing from the scope and spirit of the present disclosure. The exemplary embodiments disclosed in the specification of the present disclosure do not limit the present disclosure. The scope of the present disclosure will be interpreted by the claims below, and it will be construed that all techniques within the scope equivalent thereto belong to the scope of the present disclosure.

What is claimed is:

1. An ice-making device for a refrigerator, the ice-making device comprising:
 - an ice-making unit configured to receive water, and to freeze water into ice;
 - an ice-storing unit configured to store ice supplied from the ice-making unit;
 - a sensing unit configured to sense an amount of ice contained in the ice-storing unit; and
 - an accommodation unit configured to accommodate the ice-making unit and the ice-storing unit therein, wherein the ice-storing unit comprises:
 - a bucket configured to store ice supplied from the ice-making unit; and
 - a support part configured to support the bucket, wherein the sensing unit is configured to sense movement of the bucket relative to the accommodation unit.
2. The ice-making device of claim 1, wherein the sensing unit comprises a magnetic sensor.
3. The ice-making device of claim 1, wherein the sensing unit comprises:
 - a target part disposed in the bucket; and
 - a recognition part disposed in the accommodation unit, wherein the recognition part is configured to sense movement of the target part relative to the recognition part.
4. The ice-making device of claim 3, wherein the target part is disposed in a central region of a bottom surface of the bucket, and wherein further the recognition part is disposed according to a predetermined relationship with the target part.
5. The ice-making device of claim 1 further comprising elastic members configured to support the bucket and disposed between the bucket and the support part.
6. The ice-making device of claim 5, wherein the bucket comprises bucket guides, and wherein the support part comprises support part guides configured to guide up-down movement of the bucket guides.
7. The ice-making device of claim 5, wherein the bucket comprises first elastic member guides configured to guide the elastic members at one side thereof, and wherein further the support part comprises second elastic member guides configured to guide the elastic members at another side thereof.
8. The ice-making device of claim 5, wherein the bucket comprises a slot extending in an up-down direction, and wherein further the ice-storing unit further comprises a

delivery member operable to be rotated to discharge ice from the bucket and passing through the slot.

9. An ice-making device for a refrigerator, the ice-making device comprising:

- an ice-making unit configured to receive and to freeze water into ice therein;
- an ice-storing unit configured to store ice supplied from the ice-making unit;
- a sensing unit configured to measure an amount of ice in the ice-storing unit; and
- an accommodation unit configured to accommodate the ice-making unit and the ice-storing unit therein, wherein the ice-storing unit comprises:
 - a bucket configured to store ice; and
 - a support part configured to support the bucket, and wherein further the sensing unit comprises:
 - a target part disposed in the bucket; and
 - a recognition part disposed in the accommodation unit.

10. The ice-making device of claim 9, wherein the recognition part comprises a magnetic sensor configured to sense movement of the target part with reference to the recognition part.

11. The ice-making device of claim 9 further comprising elastic members configured to support the bucket and disposed between the bucket and the support part.

12. The ice-making device of claim 11, wherein the bucket comprises bucket guides, and wherein the support part comprises support part guides configured to guide up-down movement of the bucket guides.

13. The ice-making device of claim 11, wherein the bucket comprises first elastic member guides configured to guide the elastic members at one side thereof, and wherein further the support part comprises second elastic member guides configured to guide the elastic members at another side thereof.

14. A refrigerator comprising:

- a main body comprising a storage space;
- an ice-making device disposed in the main body and comprising:
 - an ice-making unit configured to receive water and to freeze water into ice;

an ice-storing unit configured to store ice supplied from the ice-making unit;

a sensing unit configured to sense an amount of ice contained in the ice-storing unit; and

an accommodation unit configured to accommodate the ice-making unit and the ice-storing unit therein, wherein the ice-storing unit comprises:

a bucket configured to store ice supplied from the ice-making unit; and

a support part configured to support the bucket, wherein the sensing unit is configured to sense movement of the bucket relative to the accommodation unit.

15. The refrigerator of claim 14, wherein the sensing unit comprises a magnetic sensor.

16. The refrigerator claim 14, wherein the sensing unit comprises:

a target part disposed in the bucket; and

a recognition part disposed in the accommodation unit, wherein the recognition part is configured to sense movement of the target part relative to the recognition part.

17. The refrigerator claim 16, wherein the target part is disposed in a central region of a bottom surface of the bucket, and wherein further the recognition part is disposed according to a predetermined relationship with the target part.

18. The refrigerator claim 14 further comprising elastic members configured to support the bucket and disposed between the bucket and the support part.

19. The refrigerator claim 14, wherein the bucket comprises bucket guides, and wherein the support part comprises support part guides configured to guide up-down movement of the bucket guides.

20. The ice-making device of claim 18, wherein the bucket comprises first elastic member guides configured to guide the elastic members at one side thereof, and wherein further the support part comprises second elastic member guides configured to guide the elastic members at another side thereof.

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