ABSTRACT

In certain embodiments of the present disclosure, an ice maker assembly for a refrigerator freezer compartment having a wall with a capturing element is described. The ice maker assembly has a body that includes an ice mold for receiving water and freezing water to ice. The ice mold has a first side surface, a second side surface, and a bottom surface interposed between the first side surface and the second side surface. The ice maker assembly further includes a mounting feature, the mounting feature being present on the body and being configured to be seated on the corresponding refrigerator freezer compartment capturing element. The ice maker assembly also includes a fastening feature and a fastener being located either generally planar with the ice mold or below the ice mold, the fastening feature and fastener being configured to attach the body to the wall.
ICE MAKER ASSEMBLY

FIELD OF THE INVENTION

[0001] The present disclosure relates to an ice maker assembly.

BACKGROUND OF THE INVENTION

[0002] A conventional automatic ice maker assembly in a residential refrigerator has three major subsystems: an ice maker, a bucket with an auger and an ice crusher, and a dispenser insert in the freezer door that allows the ice to be delivered from the bucket to a cup without opening the door.

[0003] The ice maker includes a body or ice tray including an ice mold for receiving water and freezing the water to ice. When the ice cubes are ready for removal, a motor drives a rake in an angular motion to push the cubes out of the ice tray. Mounting fasteners are provided on the ice tray for mounting the ice maker within a freezer compartment of the refrigerator. Mounting fasteners are typically located above the ice maker body.

[0004] Unfortunately, the use and location of mounting fasteners can be problematic. For instance, such mounting fasteners can fall into the ice maker body during manufacturing and/or use of the ice maker and result in malfunction of the ice maker by causing jams of the ice maker rake.

[0005] Accordingly, an ice maker assembly that includes a mounting system that overcomes the deficiencies of present mounting fasteners would be desirable. A refrigerator incorporating such an ice maker assembly would be particularly beneficial.

BRIEF DESCRIPTION OF THE INVENTION

[0006] Aspects and advantages of the disclosure will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the disclosure.

[0007] In certain embodiments of the present disclosure, an ice maker assembly for a refrigerator freezer compartment having a wall with a capturing element is described. The ice maker assembly has a body that includes an ice mold for receiving water and freezing water to ice. The ice mold has a first side surface, a second side surface, and a bottom surface interposed between the first side surface and the second side surface. The ice maker assembly further includes a mounting feature, the mounting feature being present on the body and being configured to be seated on the corresponding refrigerator freezer compartment capturing element. The ice maker assembly also includes a fastening feature and a fastener being located either generally planar with the ice mold or below the ice mold, the fastening feature and fastener attaching the body to the wall.

[0009] These and other features, aspects and advantages of the present disclosure will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] A full and enabling disclosure, including the best mode thereof, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to the appended figures, in which:

[0011] FIG. 1 is a front perspective view of an automatic icemaker and refrigerator wall in accordance with certain aspects of the present disclosure.

[0012] FIG. 2 is a cross-sectional view of ice maker shown in FIG. 1 in accordance with certain aspects of the present disclosure.

[0013] FIG. 3 is an exploded perspective view of the icemaker of FIG. 1 in accordance with certain aspects of the present disclosure.

[0014] FIG. 4 is a rear perspective view of an automatic icemaker in accordance with certain aspects of the present disclosure.

[0015] FIG. 5A is a front view of an ice maker attached to a refrigerator wall in accordance with certain aspects of the present disclosure.

[0016] FIG. 5B is a partial front view of the ice maker attached to a refrigerator wall shown in FIG. 5A in accordance with certain aspects of the present disclosure.

[0017] FIG. 6 is a front view of an automatic icemaker and refrigerator wall in accordance with certain aspects of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0018] The present disclosure relates to an ice maker assembly for a refrigerator. The ice maker assembly includes a mounting element that is configured to be seated on the corresponding refrigerator freezer compartment wall cleat. In this manner, the ice maker assembly of the present disclosure greatly reduces the chance that a fastener will fall into the ice maker assembly during manufacturing and/or use. Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims and their equivalents.

[0019] As illustrated in FIGS. 1-3, ice maker 100 in accordance with the present disclosure is illustrated. Specifically, FIG. 1 illustrates a perspective view of ice maker 100 adjacent to refrigerator compartment wall 204 prior to being installed in refrigerator compartment. FIG. 2 illustrates a cross-sec-
nitional view of ice maker 100 installed in refrigerator compartment 200, such as a freezer compartment, on wall 204. The ice maker 100 comprises a body or ice tray 102 including an ice mold or ice forming compartment 104 for receiving water and freezing the water to ice. As shown, the ice tray 102 includes seven substantially identical ice forming compartments; although, it should be appreciated that more or less than seven ice forming compartments can be provided. It should also be appreciated that while one exemplary type of ice maker is illustrated (a so-called crescent cube variety of ice maker), any suitable ice maker including a twist tray type, can be utilized in connection with the present disclosure. In the illustrated embodiment, each ice forming compartment 104 includes a first side surface 110, a second side surface 112, and an arcuate bottom surface 114 interposed between the first side surface and the second side surface. Partition walls 120 are disposed between each of the compartments, the partitions walls at least partially defining the first side surface and second side surface. The partition walls 120 extend transversely across the ice tray 102 to define the ice forming compartments 104 in which ice pieces (not shown) are formed. Each partition 120 wall includes a recessed upper edge portion 132 through which water flows successively through each ice forming compartment 104 to fill the ice tray 102 with water. A water filling operation of the ice tray may be based on a set time.

[0020] As shown in FIG. 3, a sheathed electrical resistance heating element or heater 150 is mounted to a lower portion 152 of the ice tray 102. The heater can be press-fit, staked, and/or clamped into the lower portion of the ice tray. The heater is configured to heat the ice mold when a harvest cycle is executed to slightly melt the ice 130 and release the ice from the ice forming compartments 104.

[0021] An ice ejector or rake 170 is rotatably connected to the ice tray 102. The ice ejector includes an axle or shaft 172 and a plurality of ejector members 174 located in a common plane tangent to the axle, one ejector member 174 for each ice forming compartment 104. The axle is concentric about the longitudinal axis of rotation of the ice ejector. To rotatably mount the ice ejector to the ice tray, a first end section 176 of the ice ejector is positioned adjacent an opening 180 located a first end portion 182 of the ice tray. A second end section 184 of the ice ejector is positioned in an arcuate recess 186 located on a second end portion 188 of the ice tray. In the illustrated embodiment, the ejector members 174 are triangular shaped projections 190 and are configured to extend from the axle 172 into the ice forming compartments 104 when the ice ejector is rotated. It is within the scope of the present disclosure for the ejector members to be fingers, shafts or other structures extending radially beyond the outer walls of the axle. The ice ejector 170 is rotatably relative to the ice tray from a closed first position to a second ice harvesting position and back to the closed position. Rotation of the ice ejector causes the ejector members 174 to advance into the ice forming compartment 104 whereby ice 130 located in each ice forming compartment is urged in an ejection path of movement out of the ice forming compartment.

[0022] Referring again to FIG. 1, mounting elements 206, 208 are joined to ice maker body 102 and assist to attach ice maker body 102 to wall 204. Mounting elements 206, 208 are provided on the ice maker body for mounting the ice maker 100 within a freezer compartment (not shown) of the refrigerator. In this regard, mounting elements 206, 208 can be seated on cleats 210, 212 of wall 204. Ice maker 100 can be attached to wall without the necessity for any separate anchoring. The weight of ice maker 100 can, in part, be supported by cleats 210, 212 through mounting elements 206, 208 to hold ice maker 100 in place on wall 204. Though two mounting elements and two cleats are illustrated, any suitable number of mounting elements and cleats can be utilized, such as one or more mounting elements and/or one or more corresponding cleats. As illustrated, cleats 210, 212 are hooks but any suitable cleat element can be utilized to seat mounting elements thereon. In addition, cleats 210, 212 can be of any suitable size so as to interface properly with mounting elements 206, 208.

[0023] Turning to FIG. 4, mounting elements 206, 208 are positioned planar with or above bottom surface 114 of ice forming compartment 104. Again, since no separate anchoring to attach ice maker 100 to wall 204 is present or necessary above ice forming compartment 104, there is less chance of foreign material falling into ice forming compartment and causing malfunction of the same. Mounting elements 206, 208 can be of any suitable shape or size to interface with cleats 210, 212. For instance, as illustrated in FIG. 4, mounting elements 206, 208 can each define openings 214, 216 that substantially surround a respective cleat when such mounting element is seated on the cleat.

[0024] Alternatively, it should be appreciated that other suitable mounting elements can be utilized that are within the scope and spirit of the present disclosure. For example, referring to FIG. 6, ice maker body can define one or more slots 300, 302 that can interface with one or more rails 304, 306 located on wall 204. In this manner, body can slide horizontally into a freezer compartment along rails. The body can also include one or more vertical ribs 308 that interface with one or more slots 310 on wall 204 to ensure proper alignment. One or more rails and slots are positioned planar with or above bottom surface 114 of ice forming compartment 104.

[0025] It is within the scope of the disclosure for other anchoring features to be present on the ice maker 100 and for those anchoring features to facilitate attachment of the ice maker into the refrigerator. However, such anchoring features can be present planar with or below ice forming compartment to reduce the likelihood of foreign material falling into ice forming compartment. For instance, referring to FIGS. 4 and 5A, an ice maker 100 is illustrated attached to wall 204 in refrigerator compartment 200. Although not visible, mounting elements 206, 208 are seated on cleats 210, 212 of wall 204. In addition, a tab 218 is present on the bottom portion of ice maker body 102. Tab 218 defines an opening 226 that can allow a fastener to pass therethrough and be attached into wall 204. For example, tab 218 can have a screw 220 pass through. In this manner, although ice maker 100 can be mounted to wall 204 by mounting elements 206, 208 seated on cleats 210, 212, tab 218 can ensure that ice maker 100 is permanently fixed in place. Any suitable fastener is contemplated by the present disclosure including a screw, pin, nail, rivet, or the like. In addition, tab 218 can be of any suitable shape or size and one or more tabs can be present. Similarly, FIG. 7 illustrates two tabs 312, 314 that define openings 316, 318 respectively. Tabs 312, 314, 218 can ensure that ice maker 100 is permanently fixed in place in the same manner as previously described with respect to tab 218 in FIG. 5A.

[0026] Turning to FIG. 8A, a close-up view of tab 218 on wall 204 is illustrated. Wall 204 can include one or more guide elements such as ribs 222 on the surface of wall 204. Wall can also define an opening 228 that can accommodate a fastener,
such as a threaded opening. Such ribs 222 can ensure that tab 218 is properly aligned with wall 204 opening 226 of tab and opening 228 of wall allowing a fastener to pass therethrough. In addition, ribs 222 can ensure that mounting elements 206, 208 of ice maker 100 are seated properly on cleats 210, 212.

This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

What is claimed is:

1. An ice maker assembly for a refrigerator freezer compartment having a wall with a capturing element, the ice maker assembly comprising:
   a body including an ice mold for receiving water and freezing water to ice, the ice mold having a first side surface, a second side surface, and a bottom surface interposed between the first side surface and the second side surface;
   a mounting feature, the mounting feature being present on the body and being configured to be seated on the corresponding refrigerator freezer compartment capturing element;
   and
   a fastening feature and a fastener being located either generally planar with the ice mold or below the ice mold, the fastening feature and fastener being configured to attach the body to the wall.

2. An ice maker assembly as in claim 1, wherein the mounting feature is located either generally planar with the ice mold or above the ice mold.

3. An ice maker assembly as in claim 1, wherein the capturing element comprises a hook and the mounting feature is configured to be seated on such hook.

4. An ice maker assembly as in claim 1, wherein the mounting feature defines an opening that substantially surrounds the capturing element.

5. An ice maker assembly as in claim 1, further comprising a second mounting feature present on the body and a second capturing element on the refrigerator freezer compartment wall, wherein the second mounting feature is configured to be seated on the corresponding refrigerator freezer compartment wall second capturing element.

6. An ice maker assembly as in claim 1, wherein the capturing element comprises a rail and the mounting feature comprises a groove defined by the body, the groove being configured to be seated on such rail.

7. An ice maker assembly as in claim 1, wherein the fastening feature defines an opening and the fastener comprises a screw.

8. An ice maker assembly as in claim 1, wherein the fastening feature defines an opening and the fastener comprises a rivet.

9. An ice maker assembly as in claim 1, wherein the fastening feature defines an opening.

10. An ice maker assembly as in claim 9, wherein the fastener comprises a screw, pin, nail, or rivet.

11. A refrigerator comprising:
   a freezer compartment having a wall with a capturing element; and
   an ice maker assembly comprising:
   a body including an ice mold for receiving water and freezing water to ice, the ice mold having a first side surface, a second side surface, and a bottom surface interposed between the first side surface and the second side surface;
   a mounting feature, the mounting feature being present on the body and being seated on the corresponding refrigerator freezer compartment capturing element; and
   a fastening feature and a fastener being located either generally planar with the ice mold or below the ice mold, the fastening feature and fastener attaching the body to the wall.

12. A refrigerator as in claim 11, wherein the mounting feature is located either generally planar with the ice mold or above the ice mold.

13. A refrigerator as in claim 11, wherein the capturing element comprises a hook and the mounting feature is seated on such hook.

14. A refrigerator as in claim 11, wherein the mounting feature defines an opening that substantially surrounds the capturing element.

15. A refrigerator as in claim 11, further comprising a second mounting feature present on the body and a second capturing element on the refrigerator freezer compartment wall, wherein the second mounting feature is seated on the corresponding refrigerator freezer compartment wall second capturing element.

16. A refrigerator as in claim 11, wherein the capturing element comprises a rail and the mounting feature comprises a groove defined by the body, the groove being seated on such rail.

17. A refrigerator as in claim 11, wherein the fastening feature defines an opening and the fastener comprises a screw.

18. A refrigerator as in claim 11, wherein the fastening feature defines an opening and the fastener comprises a rivet.

19. A refrigerator as in claim 11, wherein the fastening feature defines an opening.

20. A refrigerator as in claim 11, wherein the refrigerator freezer compartment wall defines guide ribs on either side of the fastening feature.

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