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(54) **A REFRIGERATOR COMPRISING AN ICE MAKING UNIT**

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RÉFRIGÉRATEUR COMPRENANT UNE UNITÉ DE FABRICATION DE GLACE

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Description

[0001] The present invention relates to a refrigerator comprising an ice making unit.

[0002] The ice making units used in refrigerators are generally disposed in the interior volume of the freezing compartment. This situation causes the space of the freezing compartment not to be used effectively. The position of the ice making unit cannot be changed according to the user needs. Another problem encountered is the outer surface of the ice cubes becoming dull due to contact with air while taking out the ice cubes. In order to obtain transparent ice, the ice cubes should be kept inside the ice making unit until usage by being isolated from the outside environment.

[0003] In the state of the art International Patent Application No. WO2005010447, a refrigerator is defined, comprising an ice maker which ensures the ice trays to be completely filled with water without the need to move them from their places and which enables the user to obtain ice in a quick and practical way by providing hygienic conditions. EP2532997 (A2) discloses a refrigerator apparatus, comprising at least one insulated enclosure, at least one container that is housed in said enclosure and at least one support member fixed to the enclosure. DE19631372 (A1), discloses a storage device for storing bottles items, such as a refrigerator. EP2381195 (A2) discloses a refrigerator having a drawer to be pushed into or pulled out of a storage compartment. An ice-making unit is integrally mounted in the drawer so as to be pushed into or pulled out of the drawer through an opening perforated in a front wall of the drawer. DE8909401 (U1) discloses a domestic refrigerating appliance. The freezer compartment provided with at least one intermediate shelf for storing frozen goods is also suitable for the production of ice cubes in ice trays introduced therein. DE202004016966 (U1) discloses a cooler and/or freezer container, especially for ice cubes, comprises a holder with means to removably attach it to an intermediate shelf of the appliance. JP2001021252 (A) discloses a refrigerator is formed such that an ice making device with a proper amount of ice making water being supplied in an ice making tray and a cover body being covered is installed on rails.

[0004] The aim of the present invention is the realization of a refrigerator which comprises an ice making unit providing ease of utilization.

[0005] The present invention is disclosed in the independent claim 1. Further embodiments are disclosed in the dependent claims.

[0006] In an embodiment of the present invention, the refrigerator comprises a stopper that is mounted on the front side of the shelf and that limits the forward movement of the supporter on the shelf. The stopper limits the movement of the supporter and prevents the ice making unit from being detached from the shelf and from breaking by falling down.

[0007] In an embodiment of the present invention, the

ice making unit comprises a handle that can be attached to/detached from the casing and that enables the casing to be carried to the outside environment. By means of the handle, the portable ice making unit can be easily carried to the outside environment.

[0008] In an embodiment of the present invention, the ice making unit has a double walled casing. Insulation material or cooling liquid, for example liquid nitrogen, is filled between the walls, thus enabling the ice cubes to be stored outside without melting for a longer period of time.

[0009] In an embodiment of the present invention, the wall of the ice tray is convex. By means of the convex shape of the ice tray, the ice cubes can be easily transferred into the container to be used without scattering.

[0010] In an embodiment of the present invention, the ice making unit comprises at least one cut-out that is arranged on the casing and that enables cold air to flow into the ice cube container. By means of the cut-out, the water inside the ice cube container is cooled effectively.

[0011] In an embodiment of the present invention, the refrigerator comprises an opening which enables the ice cube container to be placed into the housing and a lid which covers the opening and which is in a form matching the form of the twisting knob. The lid prevents odors from entering the ice making unit by covering the opening and improves its appearance.

[0012] By means of the present invention, an ice making unit is realized, the position of which is changed for providing flexibility of usage. The interior volume of the refrigerator is enabled to be used more efficiently by means of the ice making unit moving slidably on the shelf. Moreover, a portable ice making unit is realized, that can be detached from the shelf and used both inside the refrigerator and outside the refrigerator. The process of taking out ice cubes is realized at the place where ice cubes are to be used by means of the ice making unit having an almost entirely closed configuration. Thus, the ice cubes can be used without the surfaces getting dull.

[0013] A refrigerator realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the partial view of a refrigerator.

Figure 2 - is the exploded view of an ice making unit.

Figure 3 - is the exploded view of the ice making unit, the shelf and the supporter related to an embodiment of the present invention.

[0014] The elements illustrated in the figures are numbered as follows:

1. Refrigerator
2. Shelf
3. Ice cube container
4. Twisting knob
5. Ice tray
6. Housing

- 7. Casing
- 8. Ice making unit
- 9. Supporter
- 10. Hole
- 11. Shaft
- 12. Guide
- 13. Stopper
- 14. Opening
- 15. Lid
- 16. Cut-out
- 17. Freezing compartment
- 18. Handle

[0015] The refrigerator (1) comprises a freezing compartment (17), a shelf (2) that is disposed in the freezing compartment (17) and whereon the foodstuffs to be frozen are placed; and an ice making unit (8) that has at least one ice cube container (3) wherein water is filled for making ice cubes, a twisting knob (4) that is connected to the ice cube container (3) and that enables the ice cubes in the ice cube container (3) to fall out by being twisted, an ice tray (5) that is disposed under the ice cube container (3) and wherein the ice cubes fall, a housing (6) whereon the ice cube container (3) and the twisting knob (4) are situated and that houses the ice cube container (3) and a casing (7) wherein the housing (6) and the ice tray (5) are detachably mounted and that holds the housing (6) and the ice tray (5) together.

[0016] The refrigerator (1) of the present invention comprises the ice making unit (8) having the detachable and portable casing (7) that is disposed to the shelf (2) to move thereon slidably in the horizontal direction. By means of the portable ice making unit (8), it is possible to perform the process of taking the ice cubes outside the refrigerator (1) without dismounting the ice tray (5). The closed volume of the ice making unit (8) enables the surface of the ice cubes to remain transparent by shortening the time period the ice cubes are subjected to the atmosphere. The ice making unit (8) moving in two directions (in two axes) forwards-backwards and to right and left on the shelf (2) provides flexibility of utilization. The ice making unit (8) is stored outside the refrigerator (1) by being detached when not in use. Thus, the space inside the refrigerator (1) is used effectively. The user can arrange the foodstuffs as desired by sliding the ice making unit (8) on the shelf (2) inside the freezing compartment (17).

[0017] In an embodiment of the present invention, the ice making unit (8) is mounted to the shelf (2) so as to remain below the shelf (2). Thus, the foodstuffs to be frozen are placed over the shelf (2) while the ice making process continues and the unused areas under the shelf (2) are put to good use.

[0018] In an embodiment of the present invention, the refrigerator (1) comprises two supporters (9) attached to two opposite sides of the shelf (2), at least two holes (10) arranged oppositely on the side walls of the casing (7), and at least one shaft (11) that is fixed to the supporters

(9) so as to extend between the supporters (9) and that enables the casing (7) to suspend from the shelf (2) by passing through the holes (10) and to move between the two supporters (9) by sliding. More than one casing (7) can be mounted on the shaft (11) thus ice making capacity can be increased by using more than one ice making unit (8). The position of the ice making unit (8) can be arranged as per user preference by means of the movement of the casing (7) on the shaft (11).

[0019] In an embodiment of the present invention, the refrigerator (1) comprises two guides (12) that are disposed on the opposite supporters (9) and that enable the supporters (9) to be moved by sliding between the front side and the rear side of the shelf (2). The supporters (9) slide over the sides of the shelf (2) by means of the guides (12), thus the ice making unit (8) changes position from the front towards the rear side of the shelf (2) or from the rear towards the front side by sliding. The ice making unit (8) moves forwards - backwards together with the supporters (9) which move on the shelf (2) by means of the guides (12) and moves to right and left on the shaft (11) between the supporters (9).

[0020] In an embodiment of the present invention, the refrigerator (1) comprises a stopper (13) that is mounted to the front side of the shelf (2) and that limits the forward movement of the supporters (9) on the shelf (2). The stopper (13) stops the ice making unit (8) from moving towards the front of the shelf (2) by limiting the movement of the supporter (9). The stopper (13) enables the casing (7) to move controllably on the shelf (2).

[0021] In an embodiment of the present invention, the ice making unit (8) comprises a handle (18) that can be attached to/detached from the casing (7) and that enables the casing (7) to be carried to the outside environment. By means of the handle (18), the ice making unit (8) can be easily carried to the outside environment.

[0022] In an embodiment of the present invention, the ice making unit (8) has a double walled casing (7). By means of the insulation material or cooling material filled between the two walls, the ice cubes are enabled to be kept in the outside environment for a longer period of time without melting.

[0023] In an embodiment of the present invention, the ice making unit (8) has the ice tray (5) with the convex rear wall. By means of the convex shape of the ice tray (5), the ice cubes can be easily transferred into the container to be used without scattering.

[0024] In an embodiment of the present invention, the ice making unit (8) comprises at least one cut-out (16) that is arranged on the casing (7) and that enables the cold air inside the freezing compartment (17) to be circulated inside the casing (7). By means of the cut-out (16), heat transfer between the ice cube container (3) and the freezing compartment (2) is realized.

[0025] In an embodiment of the present invention, the refrigerator (1) comprises an opening (14) enabling the ice cube container (3) to be placed into the housing (6) and a lid (15) that covers the opening (14) and that is in

a form matching the form of the twisting knob (4).

[0026] In an embodiment of the present invention, the casing (7) is shaped like a rectangular prism. By placing both the ice tray (5) and the ice cube container (3) into the rectangular prism-shaped casing (7), a more compact structure is obtained.

[0027] By means of the present invention, a portable ice making unit (8) is realized, of which the position inside the refrigerator (1) can be determined according to the user preference and that can be used both inside the refrigerator (1) and outside the refrigerator (1). The process of taking out the ice cubes is realized at the place where the ice cubes are to be used by means of the ice making unit (8) having an almost entirely closed configuration. Thus, the ice cubes can be used without the surfaces getting dull.

Claims

1. A refrigerator (1) comprising a freezing compartment (17), a shelf (2) disposed in the freezing compartment (17) and whereon the foodstuffs to be frozen are placed and an ice making unit (8) that has

- at least one ice cube container (3) wherein water is filled for making ice cubes,
- a twisting knob (4) that is connected to the ice cube container (3) and that enables the ice cubes in the ice cube container (3) to fall out by being twisted,
- an ice tray (5) that is disposed under the ice cube container (3) and wherein the ice cubes fall,
- a housing (6) whereon the ice cube container (3) and the twisting knob (4) are situated, and that houses the ice cube container (3),
- a casing (7) wherein the housing (6) and the ice tray (5) are detachably mounted and that holds the housing (6) and the ice tray (5) together,
- the detachable and portable casing (7) that is disposed to the shelf (2) so as to move thereon slidingly in the horizontal direction, with the ice making unit (8) being mounted to the shelf (2) so as to remain below the shelf (2)

and **characterized by**

- two supporters (9) attached to opposite sides of the shelf (2), at least two holes (10) arranged oppositely on the side walls of the casing (7), and at least one shaft (11) that is fixed to the supporters (9) so as to extend between the supporters (9) and that enables the casing (7) to suspend from the shelf (2) by passing through the holes (10) and to move between the two supporters (9) by sliding and

- two guides (12) that are disposed on the opposite supporters (9) and that enable the supporters (9) to be moved by sliding between the front side and the rear side of the shelf (2).

2. A refrigerator (1) as in Claim 1, **characterized by** a stopper (13) that is mounted to the front side of the shelf (2) and that limits the forward movement of the supporters (9) on the shelf (2).
3. A refrigerator (1) as in any one of the above claims, **characterized by** the ice making unit (8) comprising a handle (18) that can be attached to/detached from the casing (7) and that enables the casing (7) to be carried to the outside environment.
4. A refrigerator (1) as in any one of the above claims, **characterized by** the ice making unit (8) comprising the double walled casing (7) between the walls of which cooling material is filled.
5. A refrigerator (1) as in any one of the above claims, **characterized by** the ice making unit (8) having an ice tray (5) with one convex wall.
6. A refrigerator (1) as in any one of the above claims, **characterized by** the ice making unit (8) comprising at least one cut-out (16) that is arranged on the casing (7) and that enables the cold air inside the freezing compartment (17) to be circulated inside the casing (7).
7. A refrigerator (1) as in any one of the above claims, **characterized by** an opening (14) enabling the ice cube container (3) to be placed into the housing (6) and a lid (15) that covers the opening (14) and that is in a form matching the form of the twisting knob (4).
8. A refrigerator (1) as in any one of the above claims, **characterized by** the rectangular prism-shaped casing (7).

Patentansprüche

1. Ein Kühlschrank (1) umfasst ein Gefrierfach (17), ein Regal (2), das in dem Gefrierfach (17) angeordnet ist und auf dem die zu gefrierenden Lebensmittel angeordnet sind, sowie eine Eisherstellungseinheit (8), umfassend

- mindestens einen Eiswürfelbehälter (3), in den Wasser für die Herstellung von Eiswürfeln gefüllt ist,
- einen Drehknopf (4), der mit dem Eiswürfelbehälter (3) verbunden ist und es ermöglicht, dass die Eiswürfel im Eiswürfelbehälter (3) durch Verdrehen herausfallen,

- eine Eisschale (5), die unter dem Eiskwürfelbehälter (3) angeordnet ist und in die die Eiskwürfel fallen,
- ein Gehäuse (6), auf dem sich der Eiskwürfelbehälter (3) und der Drehknopf (4) befinden und das den Eiskwürfelbehälter (3) umfasst,
- eine Verschalung (7), in dem das Gehäuse (6) und die Eisschale (5) abnehmbar montiert sind und das Gehäuse (6) und die Eisschale (5) zusammenhält,
- das abnehmbare und tragbare Gehäuse (7), das in der Art zum Regal (2) angeordnet ist, dass es sich darauf in horizontaler Richtung gleitend bewegen kann, wobei die Eisherstellungseinheit (8) so am Regal (2) montiert ist, dass sie unter dem Regal (2) verbleibt,

gekennzeichnet ist es durch

- zwei Träger (9), die an gegenüberliegenden Seiten des Regals (2) angebracht sind, mindestens zwei Löcher (10), die gegenüberliegend an den Seitenwänden des Gehäuses (7) angeordnet sind und mindestens einen Schaft (11), die an den Trägern (9) befestigt ist, um sich zwischen den Trägern (9) zu erstrecken und ermöglichen, dass das Gehäuse (7) sich durch Durchlaufen der Löcher (10) am Regal (2) aufhängt und sich durch Schieben zwischen den beiden Trägern (9) bewegt, und
 - zwei Führungen (12), die an den gegenüberliegenden Trägern (9) angeordnet sind und es ermöglichen, die Träger (9) durch Schieben zwischen der Vorderseite und der Rückseite des Regals (2) zu bewegen.
2. Ein Kühlschrank (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** ein Stopper (13) an der Vorderseite des Regals (2) angebracht ist und die Vorwärtsbewegung der Träger (9) auf dem Regal (2) begrenzt.
 3. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** die Eisherstellungseinheit (8) einen Griff (18) umfasst, der an der Hülle (7) angebracht / von dieser abgelöst werden kann und es ermöglicht, dass die Hülle (7) nach außen getragen werden kann.
 4. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** die Eisherstellungseinheit (8) das doppelwandige Gehäuse (7) umfasst, zwischen dessen Wänden Kühlmaterial gefüllt ist.
 5. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet,**

dass die Eisherstellungseinheit (8) eine Eisschale (5) mit einer konvexen Wand aufweist.

6. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** die Eisherstellungseinheit (8) mindestens einen Ausschnitt (16) aufweist, der an dem Gehäuse (7) angeordnet ist und es ermöglicht, die kalte Luft in dem Gefrierfach (17) innerhalb des Gehäuses (7) zu zirkulieren.
7. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** eine Öffnung (14) das Einsetzen des Eiskwürfelbehälters (3) in das Gehäuse (6) ermöglicht und durch einen Deckel (15), der die Öffnung (14) bedeckt und der in einer Form vorliegt, die der Form des Drehknopfs (4) entspricht.

8. Ein Kühlschrank (1), wie in den vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** das Gehäuse (7) eine rechteckige Prismenform aufweist.

Revendications

1. Un réfrigérateur (1) comprenant un compartiment de congélation (17), une clayette (2) disposée dans le compartiment de congélation (17) et sur laquelle sont placés les aliments à congeler et une unité de fabrication de glace (8) qui a
 - au moins un récipient à glaçons (3) dans lequel on remplit de l'eau pour la fabrication de glaçons,
 - un bouton rotatif (4) qui est relié au conteneur de glaçons (3) et qui permet aux glaçons du conteneur de glaçons (3) de tomber en étant retournés,
 - un bac à glaçons (5) qui est disposé sous le conteneur de glaçons (3) et dans lequel les glaçons tombent,
 - un logement (6) sur lequel se trouvent le bac à glaçons (3) et le bouton rotatif (4), et qui abrite le bac à glaçons (3),
 - un boîtier (7) dans lequel le logement (6) et le bac à glace (5) sont montés de manière amovible et qui maintient le logement (6) et le bac à glace (5) ensemble,
 - le boîtier (7) détachable et portable qui est disposé sur la clayette (2) de manière à pouvoir se déplacer sur celle-ci en glissant dans le sens horizontal, l'unité de fabrication de glace (8) étant montée sur la clayette (2) de manière à rester sous la clayette (2)

et est caractérisé en ce que

- deux supports (9) fixés sur des côtés opposés de la clayette (2), au moins deux trous (10) disposés de manière opposée sur les parois latérales du boîtier (7), et au moins un arbre (11) qui est fixé aux supports (9) de manière à s'étendre entre les supports (9) et qui permet au boîtier (7) de se suspendre à la clayette (2) en passant par les trous (10) et de se déplacer entre les deux supports (9) en coulissant et 5
 - deux guides (12) qui sont disposés sur les supports opposés (9) et qui permettent de déplacer les supports (9) par glissement entre la face avant et la face arrière de la clayette (2). 10
2. Un réfrigérateur (1) comme dans la déclaration 1, **est caractérisé en ce qu'un obturateur (13) est monté sur le côté avant de la clayette (2) et limitant le mouvement vers l'avant des supports (9) sur la clayette (2).** 15
20
 3. Un réfrigérateur (1) comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce que** l'unité de fabrication de glace (8) comprend une poignée (18) qui peut être fixée à/détachée du boîtier (7) et qui permet de transporter le boîtier (7) vers l'environnement extérieur. 25
 4. Un réfrigérateur (1) comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce que** l'unité de fabrication de glace (8) comprend le boîtier à double paroi (7) entre les parois duquel est rempli le matériau de refroidissement. 30
 5. Un réfrigérateur (1) comme dans l'une des déclarations ci-dessus, **est caractérisé en ce que** l'unité de fabrication de glace (8) comporte un bac à glace (5) avec une paroi convexe. 35
 6. Un réfrigérateur (1) comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce que** l'unité de fabrication de glace (8) comprend au moins une découpe (16) qui est disposée sur le boîtier (7) et qui permet à l'air froid à l'intérieur du compartiment de congélation (17) de circuler à l'intérieur du boîtier (7). 40
45
 7. Un réfrigérateur (1) comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce qu'une ouverture (14) permet de placer le conteneur de glaçons (3) dans le boîtier (6) et en ce qu'un couvercle (15) recouvre l'ouverture (14) et a une forme qui correspond à celle du bouton rotatif (4).** 50
 8. Un réfrigérateur (1) comme dans l'une des déclarations ci-dessus, **est caractérisé en ce qu'il a un boîtier rectangulaire en forme de prisme (7).** 55

Figure 1

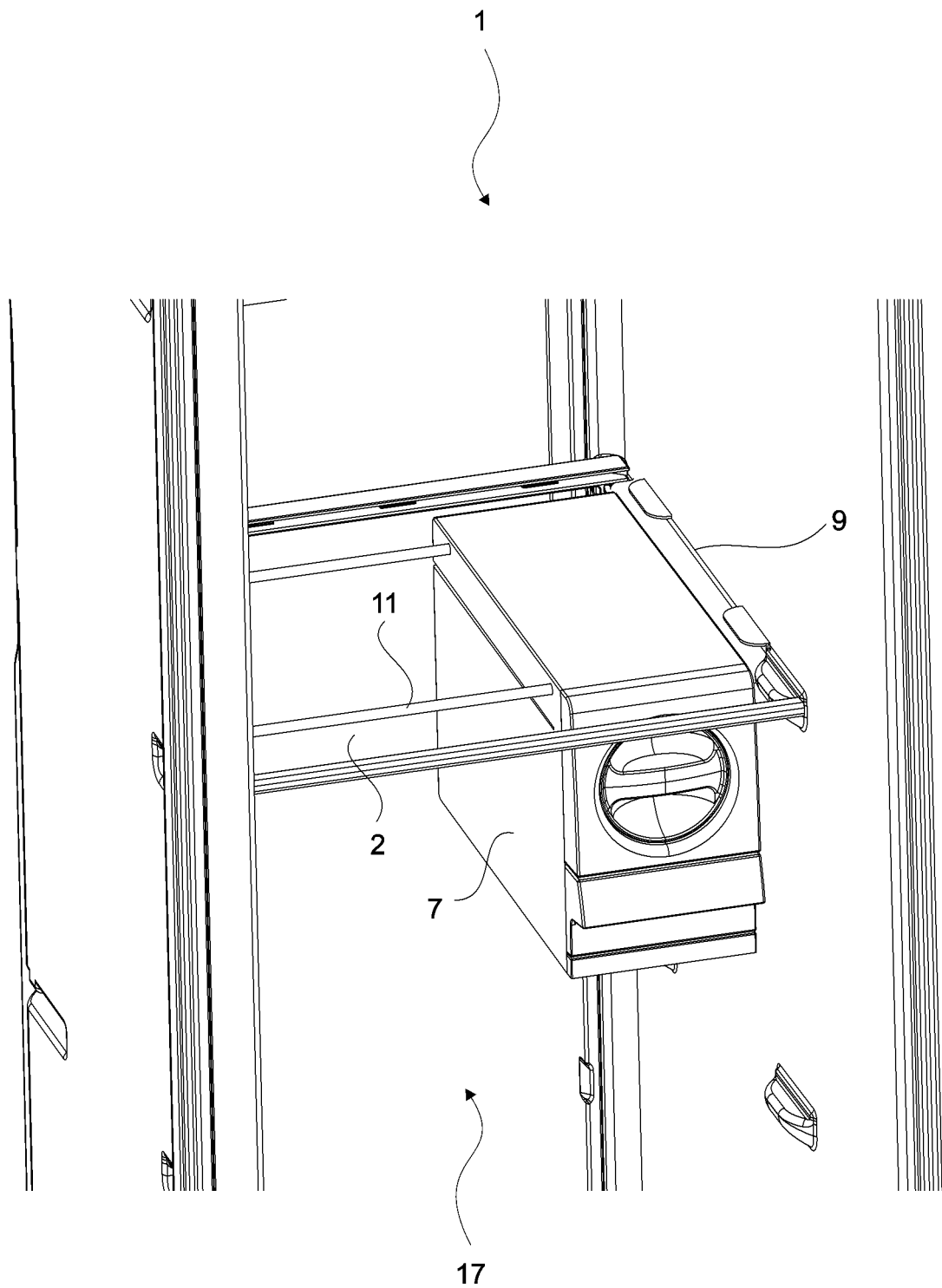


Figure 2

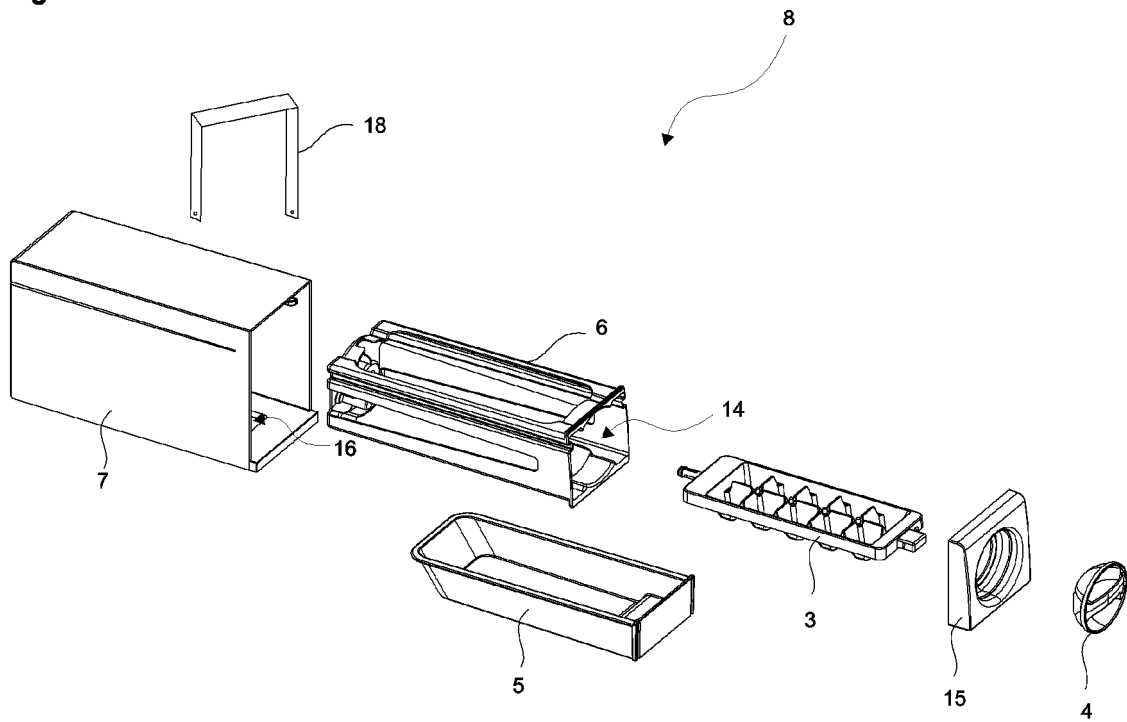
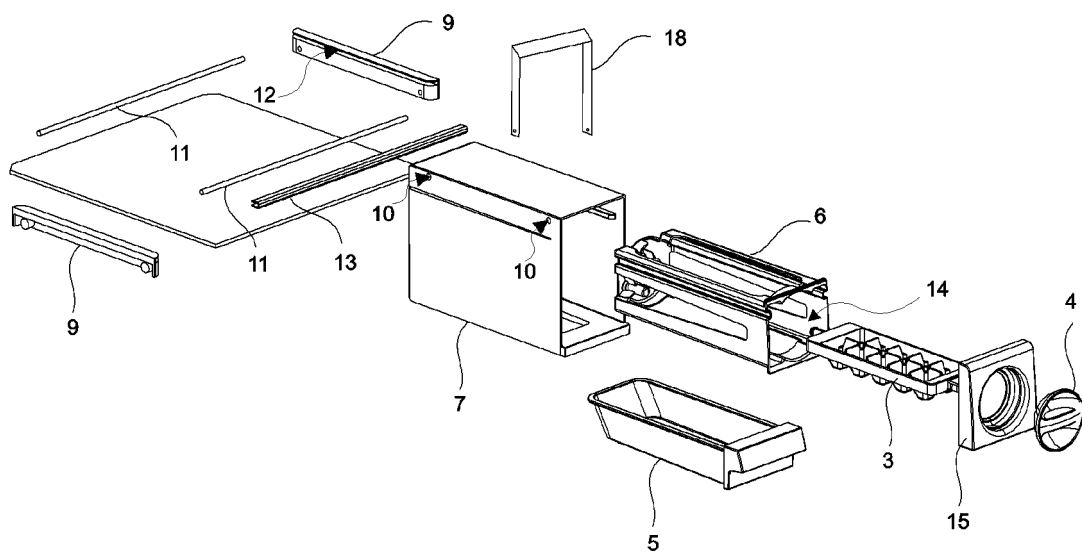


Figure 3



REFERENCES CITED IN THE DESCRIPTION

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