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(54) ICE MAKING MOLD AND ICE MAKING BOX

(57) The present disclosure discloses an ice making mold and an ice making box, which relates to kitchen utensils. It solves the technical problem of difficult separation of an upper mold and a lower mold during deicing in existing technology. The ice making mold includes a first mold, a second mold, and at least one deformation-and-deicing mechanism. The deformation-and-deicing mechanism includes a first contact surface provided on the first mold and a second contact surface provided on the second mold. When the second mold is subjected to a force, the second contact surface drives the first contact surface to move to render the first mold deform. The ice making mold has the technical effect of deforming one of the molds to destroy a tension of ice cubes in the mold before opening molds, so as to easily open the molds.

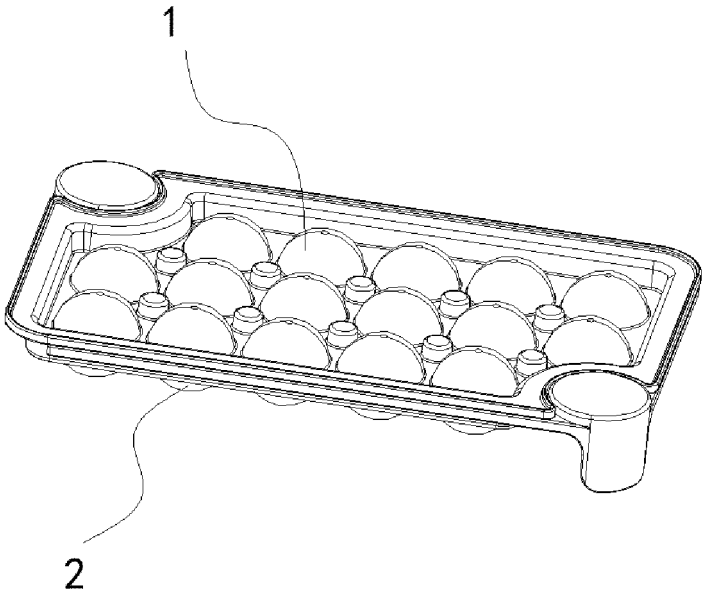

FIG. 1

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Application No. 2023226623713 filed on September 28, 2023, and Chinese Application No. 2023227670459 231013 filed on October 13, 2023, which are hereby incorporated by reference in entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of kitchen utensils technologies, and in particular, to an ice making mold and an ice making box. A Registered Design CN308224636S in China discloses a ball ice lattice, which includes a box body and an ice making mold. The ice making mold is formed by combining the first mold and the second mold. Both the first mold and the second mold are equipped with a plurality of semi ice making cavities. After the mold is combined, the corresponding semi ice making cavities form a complete ice making cavity.

BACKGROUND

[0003] The ice box is a commonly used ice making tool in the family. There is an ice making mold on the market, which is composed of a first mold and a second mold. Before use, one mold is filled with water, and then the other mold is installed to complete water injection. ice making mold after filing water is placed in a freezer compartment of a refrigerator to freeze the water in the mold into ice cubes.

[0004] However, the above technology at least has the following technical problems: during deicing, because of a tension between the ice cubes and the mold after forming, a user needs to spend more effort to separate the first mold and the second mold.

SUMMARY

[0005] By providing an ice making mold and an ice making box, the present application solves the technical problem that it is difficult to separate an upper mold and a lower mold and open the mold during deicing in the prior art. Before opening the upper and lower molds, one of the molds is deformed through a deformation-and-deicing structure to destroy a tension (mutual traction on a contact surface) between the ice cubes and the mold, so as to achieve easier demolding effect when opening the upper and lower molds.

[0006] The present application provides an ice making mold, which includes a first mold, a second mold, and at least one deformation-and-deicing mechanism, the deformation-and-deicing mechanism includes a first contact surface provided on the first mold and a second contact surface provided on the second mold; when the second mold is subjected to a force, the second contact surface drives the first contact surface to deform the first mold.

[0007] The ice making mold generally includes an upper mold and a lower mold. The first mold and the second mold in the present application do not specifically refer to the upper mold and the lower mold. The first mold can be either the upper mold or the lower mold. Accordingly, the second mold can be either the lower mold or the upper mold. The first mold and the second mold have two states of closing mold (as shown in FIGs. 1 and 14) and opening mold (as shown in FIGs. 2 and 16). When the mold is closed, an ice making chamber is formed between them. When the mold is opened, the two are separated from each other.

[0008] Through a structural design of a first contact surface and a second contact surface on a deformation-and-deicing mechanism, the first mold will be deformed before opening the mold, so that ice cubes in the ice chamber will be disconnected from an adhesive (i.e., tension) of the first mold. After the tension is destroyed, it will be easier to separate the first mold from the second mold.

[0009] In an embodiment of the present disclosure, when the second mold is subjected to a force, a deformation of the second mold can destroy the tension between formed ice cubes and the second mold. In this way, when the first mold is separated from the second mold, the ice cubes remain on the second mold. At this time, it is only necessary to hold the second mold to pour the ice cubes on the second mold into a container such as a bowl and an ice storage box. It is unnecessary to continue to apply a torque to the second mold to separate the ice cubes from the second mold, thus improving a deicing efficiency.

[0010] The force subjected on the second mold can be realized by a user holding the first mold with one hand and pulling the second mold away from the first mold with the other hand. The second mold can also be subjected to the force with a help of an external device.

[0011] In the above ice making mold, the deformation-and-deicing mechanism includes a bump provided on the first mold and a bayonet provided on the second mold and matched with the bump. When the first mold and the second mold are closed, the bump is located in the bayonet and an upper end face of the bump abuts against an inner wall of an upper end of the bayonet. An upper end face of the bump is the first contact surface, an inner wall of an upper end the bayonet is the second contact surface.

[0012] Through an action relationship between the bump and the bayonet, the force is transferred from the second contact surface to the first contact surface to complete a deformation of the first mole.

[0013] In the ice making mold, a lower end of the bump has a guide surface.

[0014] The guide surface is convenient for the bump clamping into the bayonet when the first mold and the

second mold are closed to realize a closing of the first mold and the second mold.

[0015] In the ice making mold, the deformation-and-deicing mechanism includes a first inclined surface provided on the first contact surface and a second inclined surface provided on the second contact surface that matches the first inclined surface, the first inclined surface and the second inclined surface are bonded and connected.

[0016] A part of the first contact surface can be designed as the first inclined surface, or an entire of the first contact surface can be designed as the first inclined surface, and the same applies to the second contact surface.

[0017] In the ice making mold, the deformation-and-deicing mechanism includes a hook provided on the first mold and a clamp groove provided on the second mold. The hook is clamping connection with the clamp groove. When the second mold is subjected to a force, the clamp groove drives the hook to deform the first mold.

[0018] In the ice making mold, a notch is formed in a middle of an outer wall of the clamp groove, which runs through from top to bottom, front to back, left to right.

[0019] In the ice making mold, a width of the notch is slightly smaller than a length of the hook, two ends of the hook abuts against side walls on two sides of the notch. An upper end face of the hook is the first contact surface, a lower end face of the clamp groove is the second contact surface.

[0020] In the ice making mold, the hook has a first guide surface, the hook extends into the clamp groove under a guidance of the first guide surface to be buckle connection with the clamp groove.

[0021] The first guide surface has a guiding function, rendering it easy for the hook to extend into the clamp groove and achieve the buckle connection.

[0022] In the ice making mold, side walls on two sides of the notch are respectively provided with a second guide surface.

[0023] In the ice making mold, the first mold and the second mold both includes an edge surface and an ice making area formed by a central depression, the ice making area is connected with the edge surface through a vertical surface provided vertically. When the first mold and the second mold are combined, respective edge surfaces, ice making areas and vertical surfaces on the first mold and the second mold are connected with each other. The ice making areas of the first mold and the second mold are both provided with a plurality of semi ice making chambers. When the first mold and the second mold are combined, the semi ice making chambers on the ice making areas of the first mold and the second mold form an ice making chamber mutually.

[0024] In the ice making mold, a third inclined surface is provided around a surrounding of an opening of the semi ice making chamber.

[0025] A design of the inclined surface reduces the tension between the ice cubes and the first mold, which is more conducive to deicing. The first mold and the second mold are both provided with the third inclined surface around the opening of the semi ice chamber, or only the first mold is provided with the third inclined surface around the opening of the semi ice chamber.

[0026] In the ice making mold, the bump and bayonet are respectively provided on the vertical surfaces of the first mold and the second mold.

[0027] In the ice making mold, the first inclined surface is provided on the edge surface of the first mold, an edge surface of the second mold extends in a direction towards the first mold to form an extension part, the extension part is provided with the second inclined surface.

[0028] In the ice making mold, the hooks and clamp groove are respectively located on the edge surfaces of the first mold and the second mold.

[0029] In the ice making mold, the deformation-and-deicing mechanism is provided with one deformation-and-deicing mechanism.

[0030] In the ice making mold, the deformation-and-deicing mechanism are provided with two deformation-and-deicing mechanisms, and the two deformation-and-deicing mechanisms are respectively provided at two diagonal corners of the ice making mold.

[0031] In the ice making mold, the first contact surfaces of the two deformation-and-deicing mechanism are respectively provided near two places with the farthest relative distance on the edge surface of the first mold.

[0032] The settings of two deformation-and-deicing mechanism at two farthest distance can make a deformation effect of the first mold better.

[0033] The ice making mold further includes a deicing piece, which is fixedly connected to the second mold, or the deicing piece and the second mold are integrated. The first mold is provided with an avoidance notch 142 matching a position and shape of the deicing piece 11. An external force is applied to the second mold through the deicing piece 11, so as to press the first contact surface and drive the first mold to deform.

[0034] The deicing piece is firmly connected to the second mold, but the deicing piece is not limited to the second mold, but can also be provided in other places, such as on the box body, which contacts the second mold to drive the second mold to move under force. The deicing piece is firmly connected to the second mold, which is convenient to apply force to the second mold, the structure and assembly is simple; in an implementation mode, the deicing piece and the second mold are an integrated structure, so that the deicing piece and the second mold are integrated, only one pair of molds needs to be developed instead of two independent molds, which reduces a manufacturing cost and also simplifies an installation process.

[0035] An ice making box includes a box body, a deicing piece and the ice making mold provided in the box body. The deicing piece is configured to subject a force to a second mold.

[0036] In the ice making box, the box body is provided

with a first support part and a second support part, a part of the first mold is supported by the first support part, a part of the second mold is supported by the second support part.

[0037] The first support part and the second support part can respectively support the first mold and the second mold, so that deformation can occur under being subjected by a force.

[0038] In the ice making box, the deicing piece is provided with two deicing piece and are respectively located at two opposite corners of the box body. Correspondingly, the deformation-and-deicing mechanism are provided with two deformation-and-deicing mechanisms and are respectively located at the same two opposite corners of the box body.

[0039] The deicing piece and the deformation-and-deicing mechanism are arranged close to each other, so that when the deicing piece bears the force on the second mold, the second contact surface can better exert the force on the first contact surface to facilitate the deformation of the first mold. The setting of the deformation-and-deicing mechanisms at the two diagonal corners can make the first mold produce more micro deformation variables, and the deicing effect is better. Providing with two deicing pieces is easy to operate and apply force with two hands.

[0040] In the ice making box, the first and second support parts are two groups, and are respectively located at the other two diagonal corners of the box body.

[0041] A setting of the first support part and the second support part provided at the other two diagonal corners in combination with the setting of the deicing piece and the deformation-and-deicing mechanism at two diagonal corners, so that the first mold and the second mold have a largest micro shape variable and best deicing effect.

[0042] In the ice making box, the first support part and the second support part are integrated structures.

[0043] The integrated structure has better firmness and is also integrated with the box body, only one production mold is required to reduce the production cost.

[0044] In the ice making box, an upper end of the box body is further provided with a box cover, the box cover is provided with a number of avoidance holes that are equal to the number of the deicing pieces and have a shape matching an upper end surface of the deicing piece.

[0045] A design of the avoidance hole makes it easy for fingers to press on the deicing piece.

[0046] In the ice making box, before closing mold and deicing, an upper surface of the box cover is flush with an upper end face of the deicing piece.

[0047] An upper surface of the box cover is flush with an upper end face of the deicing part, making the entire ice making box more aesthetical.

[0048] In the ice making box, one corner of the cover body near the deicing piece is concave downwards to form an avoidance groove, which is configured to accommodate fingers when pressing the deicing piece by hand.

[0049] The avoidance groove allows finger to easily operate and allows the finger to natural bent when pressing on the deicing piece, which is not tiring and convenient.

[0050] In the ice making box, a lower end of the box body is further provided with an ice storage chamber. Side walls around a lower end of the box body are inwardly concave to form an inwardly concave step surface, an inner wall of the upper end of the ice storage chamber is tightly matched with the inwardly concave step surface.

[0051] The ice storage chamber is configured to store produced ice cubes.

[0052] In the ice making box, the deicing piece is provided with one deciding piece, and located at one corner of the box body, a stop plate is provided at one corner opposite to the deicing piece of the box body.

[0053] The stop plate is configured to prevent an end far away from the deicing piece from warping when the first mold is deformed.

[0054] In the ice making box, an ice pouring port is provided on the box body, a cover is provided on the ice pouring port.

[0055] The one or more technical solutions provided in the embodiments of the present application have at least the following technical effects or advantages:

1. Due to the use of the deformation-and-deicing mechanism, the technical problem of separating the upper and lower molds during deicing in the prior art is effectively solved, and the technical effect of deforming one of the molds to destroy the tension of the ice cubes in the mold before opening the mold is realized, thus making the opening easier.
2. The integral structure of the deicing piece and the second mold only requires the development of one production mold instead of two separate molds, which reduces the production cost, simplifies the assembly process, and improves an assembly efficiency.
3. As the hook and clamp groove structure that forms the deformation-and-deicing structure, a buckle connection is more stable, so that the force on the first mold after the second mold is subjected to a force is more effectively transmitted and stably output, thus making the tension effect of deformation and deicing more stable and effective.

BRIEF DESCRIPTION OF DRAWINGS

[0056]

FIG. 1 is a structure diagram of a first mold and a second mold being closed.

FIG. 2 is a structural diagram of the first mold and the second mold being opened in Embodiment 1.

FIG. 3 is a structural diagram of the first mold in Embodiment 1.

FIG. 4 is a structural schematic diagram of the first

mold and the second mold being opened in Embodiment 2.

FIG. 5 is a structural diagram of an ice making box in Embodiment 4.

FIG. 6 is a structure diagram of a box body in Embodiment 4.

FIG. 7 is a top view of the ice making box after removing a cover in Embodiment 4.

FIG. 8 is a sectional view along D-D in FIG. 7.

FIG. 9 is an enlarged view at position A in FIG. 8.

FIG. 10 is a structural diagram of a deicing piece after pressing.

FIG. 11 is a structural diagram of the ice making box in Embodiment 4, which includes the ice making mold in Embodiment 2.

FIG. 12 is a sectional view along D-D in FIG. 11.

FIG. 13 is an enlarged view at position B in FIG. 12.

FIG. 14 is a structural diagram of the first mold and the second mold being closed in Embodiment 3.

FIG. 15 is an enlarged image at position A in FIG. 14.

FIG. 16 is a structural diagram of the first mold and the second mold after being opened in Embodiment 3.

FIG. 17 is a structure diagram of the first mold in Embodiment 3.

FIG. 18 is a structural diagram of the ice making box in Embodiment 5.

FIG. 19 is a structural diagram of the ice making box in Embodiment 5 after pressing the deicing piece.

FIG. 20 is a structure diagram of a box body in Embodiment 5.

[0057] Numeral reference: 1. Upper mold; 1a. Semi ice-making chamber; 1b, Third inclined surface; 2. Lower mold; 3. Bump; 31. Guide surface; 4. Bayonet; 5. First inclined surface; 6. Second inclined surface; 7. Edge surface; 8. Ice making area; 9. Vertical surface; 10. Box body; 101. Avoidance groove; 102. Ice pouring port; 11. Deicing piece; 12. First support part; 13. Second support part; 14. Box cover; 141. Avoidance hole; 142. Avoidance notch; 15. Ice storage chamber; 16. Hook; 16b. First guide surface; 17. Clamp groove; 17a, Notch; 17b, Second guide surface; 10c. Cover; 10d, concave step surface.

DESCRIPTION OF EMBODIMENTS

[0058] By providing an ice making mold and an ice making box, embodiments of the present application solve the technical problem in the prior art that it is difficult to separate an upper mold and a lower mold and open the mold during deicing. Before opening the upper and lower molds, one of the molds is deformed by a deformation-and-deicing structure to destroy a tension (mutual traction on a contact surface) between ice cubes and the mold, so that when the upper and lower molds are opened, it is easy to realize a demolding effect.

[0059] The technical solution in the embodiments of the present application aims to solve the problems of opening mold and deicing effect mentioned above. The overall idea is as follows:

The present application provides an ice making mold, which includes a first mold, a second mold, and at least one deformation-and-deicing mechanism. The deformation-and-deicing mechanism includes a first contact surface provided on the first mold and a second contact surface provided on the second mold. When the second mold is subjected to a force, the second contact surface drives the first contact surface to render the first mold deform.

[0060] The ice making mold generally includes an upper mold and a lower mold. The first mold and the second mold in the present application do not specifically refer to the upper mold and the lower mold. The first mold can be either the upper mold or the lower mold. Accordingly, the second mold can be either the lower mold or the upper mold. As shown in FIGs. 1-2, 14 and 16, the first mold and the second mold have two states of closing mold (as shown in FIGs. 1 and 14), and opening mold (as shown in FIGs. 2 and 16). When the mold is closed, an ice making chamber is formed between them, and when the mold is opened, they are separated from each other. Through a structural design of the first contact surface and the second contact surface on the deformation-and-deicing mechanism, the first mold is deformed before opening mold, so that all ice cubes in the ice making chamber are disconnected from the first mold first, and subsequent opening mold will be easier. At the same time, all ice cubes can be completely deiced after they are separated from the second mold, so as to achieve a better deicing effect.

[0061] In an implementation mode, when the second mold is subjected to a force, a deformation of the second mold can destroy a tension between formed ice cubes and the second mold, so that when the first mold is separated from the second mold, the ice cubes remain on the second mold. At this time, it is only necessary to hold the second mold to pour the ice cubes on the second mold into a bowl, an ice storage box and other containers. It is unnecessary to continue to apply a torque to the second mold to separate the ice cubes from the second mold, thus improving the deicing efficiency. In an implementation mode, when the second mold is pressed diagonally, the deformation is optimal, which is more conducive to breaking the tension between the formed ice cubes and the second mold.

[0062] The force on the second mold can be realized by an operator holding the first mold with one hand and pulling the second mold away from the first mold with the other hand; the second mold can also be subjected to the force with a help of an external device. The deformation-and-deicing mechanism can be provided with one, or two, or more than two, and in an implementation mode, two deformation-and-deicing mechanisms are generally used.

[0063] Of course, in order to render produced ice cubes

non-contact to ensure the ice cubes is clean, and to avoid such a laborious way of pulling the ice making mold by hand, an ice making box is further provided, including a box body 10, a deicing piece 11, and the ice making mold provided in the box body 10. The deicing piece 11 is configured to subject a force to the second mold. The second mold is subjected by the force through the deicing piece 11 applying a force, which is easy to operate and labor saving. The produced ice cubes will be in the box body 10 after deicing and can be poured out of the box body 10 when it is needed, thereby avoiding a contact of fingers on the ice and ensuring that the ice is free of contact and clean.

[0064] In order to better understand the above technical solution, the following will provide a detailed explanation of the above technical solution in combination with the drawings and specific embodiments.

Embodiment 1

[0065] This embodiment provides an ice making mold, as shown in FIGs. 1 and 2, which includes a first mold and a second mold, and further includes at least one deformation-and-deicing structure (mechanism). The deformation-and-deicing mechanism includes a first contact surface provided on the first mold and a second contact surface provided on the second mold. When the second mold is subjected to a force, the second contact surface drives the first contact surface to make the first mold deform. This embodiment takes the first mold as an upper mold 1 and the second mold as a lower mold 2 for example. In this embodiment, there are two deformation-and-deicing mechanisms. The first contact surfaces of the two deformation-and-deicing mechanisms are respectively provided near two places with the farthest relative distance on an edge surface 7 of the first mold. The two places with the farthest relative distance can render the deformation effect of the first mold better, it can also be provided at two diagonal corners of the ice making mold. The deformation-and-deicing mechanism are not limited to two, but can also be one or more. The deformation-and-deicing mechanism can be provided at any position on the ice making mold. As long as the deformation-and-deicing mechanism can deform the first mold, it can be regarded as an equivalent scheme of this scheme.

[0066] As shown in FIG. 2, both the upper mold 1 and lower mold 2 have edge surfaces 7 surrounding them and an ice making area 8 formed by a central depression. The ice making area 8 is connected to the edge surface 7 by a vertical surface 9 provided vertically. As shown in FIGs. 2 and 3, the deformation-and-deicing mechanism includes a bump 3 provided on the upper mold 1 and a bayonet 4 provided on the lower mold 2 and matched with the bump 3. The bump 3 and bayonet 4 are respectively provided on the vertical surface 9 of the upper mold 1 and the lower mold 2, a lower end of the bump 3 has a guide surface 31. When the upper mold 1 and lower mold 2 are combined, as shown in FIGs. 1, 8, and 9, the edge surfaces 7, ice making area 8, and vertical surface 9 of the upper mold 1 and lower mold 2 are connected to each other. The ice making areas 8 of the upper mold 1 and lower mold 2 are respectively provided with multiple semi ice-making chambers 1a, the semi ice-making chambers 1a on the ice making area 8 of the upper mold 1 and lower mold 2 form ice making chambers with each other. Under a guidance of a guide surface 31, the bump 3 is clamp to a bayonet 4, and an upper end face of the bump 3 abuts against an inner wall of an upper end of the bayonet 4. The upper end face of the bump 3 is the first contact surface, the inner wall of the upper end of the bayonet 4 is the second contact surface. By an interaction between the bump 3 and the bayonet 4, the force is transmitted from the second contact surface to the first contact surface to complete the deformation of the upper mold 1. The guide surface 31 has a guiding effect, allowing the bump 3 to clamp more smoothly into the bayonet 4. Furthermore, the semi ice-making chamber 1a of the upper mold 1 is provided with a third inclined surface around a surrounding of an opening of the chamber. A design of the third inclined surface reduces the tension between the ice cubes and the upper mold 1, which is more conducive to deicing. Of course, the semi ice-making chamber 1a of the lower mold 2 can also be surrounded by the third inclined surface.

[0067] The de-icing principle of this ice making mold is as follows:

After making ice, one hand grabs the upper mold 1, and the other hand pulls the lower mold 2 away from the upper mold 1, that is pulled downwards. The bayonet 4 on the lower mold 2 moves downwards and drives the bump to move downwards. At this time, the force is not significant, and the bump does not detach from the bayonet 4. Under the force, the bump moves downwards and drives the upper mold 1 to move downwards from its position at the bump, causing an overall deformation of the upper mold 1. All ice cubes detach from the semi ice-making chamber 1a of the upper mold 1, achieving a complete deicing of the ice cubes from the upper mold 1 before opening mold. Next, as a pulling force of the hand increases, the bump detaches from the bayonet 4, allowing the upper mold 1 and lower mold 2 to open the mold. Then, by holding the edge surfaces 7 on two sides of the lower mold 2 with hand, twist them left and right to deform the lower mold 2 and remove the ice cubes from the lower mold 2.

Embodiment 2

[0068] As shown in FIGs. 4, 11, 12, and 13, the difference between this embodiment and Embodiment 1 is that the deformation-and-deicing mechanism includes a first inclined surface 5 provided on the first contact surface and a second inclined surface 6 provided on the second contact surface that matches the first inclined surface 5. The first inclined surface 5 and the second inclined surface 6 are bonded and connected, the first inclined sur-

face 5 is provided on the edge surface 7 of the upper mold 1, the edge surface 7 of the lower mold 2 extends in a direction relative to a position of the first inclined surface 5 to form an extension part. The second inclined surface 6 is provided on the extension part, the first inclined surface 5 is located below the second inclined surface 6.

[0069] In this embodiment, a part of the first contact surface can be designed as the first inclined surface 5, or an entire of the first contact surface can be designed as the first inclined surface 5, and the same applies to the second contact surface. This embodiment is to design the entire contact surface of the first contact surface and the second contact surface as the first inclined surface 5 and the second inclined surface 6, respectively. This design ensures a stable stress and significant deformation change.

[0070] The deformation-and-deicing mechanism in this embodiment is two, and of course, in addition to two, it can also be provided with one or more. When deicing, hold the extension part of two second inclined surfaces 6 with both hands, and then press them down respectively. When second inclined surfaces 6 are compressed, they move downward to compress the first inclined surfaces 5. When the first inclined surfaces 5 are compressed, they move inward towards the ice making area 8. Two first inclined surfaces 5 cooperate with each other and move inward to cause a deformation of the upper mold 1, causing the ice cubes to deice from the upper mold 1. The design of the first inclined surface 5 and second inclined surface 6 makes the entire deformation-and-deicing structure simple, cost-effective, and achieves a stable deformation effect.

[0071] The other structures and principles are the same as those in Embodiment 1, and will not be repeated here.

[0072] In addition to the scheme in Embodiment 1 and Embodiment 2, the deformation-and-deicing structure can also be other structures, as long as it can realize that when the second mold is subjected to a force, the second contact surface can drive the first contact surface to make the first mold deform.

Embodiment 3

[0073] The difference between this embodiment and Embodiment 1 is that the deformation-and-deicing mechanism includes a hook 16 provided on the first mold and a clamp groove 17 provided on the second mold. The hook 16 is clamping connection with the clamp groove 17. When the second mold is subjected to a force, the clamp groove 17 drives the hook 16 to deform the first mold. The structural design of the hook 16 and the clamp groove 17 of the deformation-and-deicing mechanism makes the first mold deformed before opening mold, so that all ice cubes in the ice making chamber will be disconnected from the first mold first, and the subsequent opening mold will be easier. At the same time, all ice cubes can be completely deiced as long as they are separated from the second mold later, so as to achieve a better deicing effect.

[0074] As shown in FIGs. 14-17, the deformation-and-deicing mechanism includes a hook 16 provided on the upper mold 1 and a clamp groove 17 provided on the lower mold 2. The hook 16 has a first guide surface 16b, under a guidance of the first guide surface 16b, the hook 16 can smoothly and conveniently extend into the clamp groove 17 to achieve a clamp connection with the clamp groove 17, and the clamp connection is more stable, so that the force on the first mold will be more effectively transmitted and stably output after the second mold is subjected to the force, so as to render a tension effect of deformation and destruction of ice cubes more stable and effective.

[0075] In an implementation mode, a notch is formed in a middle of an outer wall of the clamp groove, which runs through from top to bottom, front to back, left and right. A width of the notch 17a is slightly smaller than a length of the hook 16. Two ends of hook 16 abuts against side walls on both sides of notch 17a. a second guide surface 17b is provided on side walls of two sides of the notch 17a. The design of these structures can to some extent allow the upper mold 1 and the lower mold 2 to deform more before they detach, resulting in better deformation effect.

[0076] After making the ice, the upper mold 1 is grasped with one hand and the lower mold 2 is pulled away from the upper mold 1 with the other hand, that is pulled downwards. The clamp groove 17 on the lower mold 2 moves downwards and drives the hook 16 to move downwards. At this time, the force is not significant, and the hook 16 does not detach from the clamp groove 17. Under the force, the clamp groove 17 moves downwards and drives the upper mold 1 to move downwards at the position of the hook 16, causing the overall deformation of the upper mold 1, all ice cubes are detached from the semi ice-making chamber 1a of the upper mold 1, achieving the complete detachment of ice cubes from the upper mold 1 before opening mold. In an implementation mode, the lower mold 2 also undergoes certain deformation, which can to some extent break the tension between the formed ice cubes and the lower mold 2. Next, as the pulling force of the hand increases, the hook 16 disengages from the clamp groove 17, allowing the upper mold 1 and lower mold 2 to open the mold. Then, by holding the edge surfaces 7 on two sides of the lower mold 2 with hand, twist them left and right to deform the lower mold 2 and completely remove the ice cubes from the lower mold 2.

Embodiment 4

[0077] This embodiment provides an ice making box, as shown in FIGs. 5 and 7, including a box body 10, a deicing piece 11 and the ice making mold provided in the box body 10. The deicing piece 11 is configured to cause the second mold to be subjected a force, and the box body 10 is provided with an ice pouring port 102. This embodiment takes the first mold as the upper mold 1, the

second mold as the lower mold 2, and the box body 10 as the rectangular shape for example. Of course, in practice, the first mold and the second mold can be interchanged, and the box body 10 can also be cylindrical.

[0078] The deicing piece 11 is provided with two and the two are located at two opposite corners of the box body 10. Correspondingly, the deformation-and-deicing mechanism is also provided with two and the two are located at the same two corners of the box body 10. The deformation-and-deicing mechanism can refer to Embodiment 1 or Embodiment 2. The deicing piece 11 and the deformation-and-deicing mechanism are arranged close to each other, so that when deicing piece 11 is subjected to force on the lower mold 2, the second contact surface can better apply force to the first contact surface, making it easier for the upper mold 1 to deform, a design of the deformation-and-deicing mechanism providing at two diagonal corner positions can increase the micro deformation of the upper mold 1, resulting in better deicing effect. Providing with two deicing pieces 11, making it easy to operate and apply force with two hands. Of course, in addition to proving with two deicing piece 11, the deicing piece 11 can also be provided with one or more. Correspondingly, the deformation-and-deicing mechanism can be the same or different from the deicing piece 11. When there is only one deicing piece 11, the deicing piece 11 is placed at one corner of the box body 10 and a stop plate is provided at one corner opposite to deicing piece 11. The stop plate is configured to prevent an end far away from deicing piece 11 from warping when the upper mold 1 deforms. The deicing piece 11 and the lower mold 2 are integrated structures, so that the deicing piece 11 and the lower mold 2 are integrated. Only one set of molds needs to be developed, without the need to develop two independent molds separately, reducing a manufacturing cost and simplifying an installation process. Of course, in addition to the integrated structure, the deicing piece 11 can also be fixedly connected to the lower mold 2. However, the deicing piece 11 is not limited to being fixedly connected to the lower mold 2, but can also be provided in other places, such as on the box body 10, which contacts with the lower mold 2 and drives the lower mold 2 to move under force. The deicing piece 11 is fixedly connected to the lower mold 2, which is convenient for applying force to the lower mold, and the structure and assembly are relatively simple.

[0079] In an implementation mode, as shown in FIG. 6, the box body 10 is provided with a first support part 12 and a second support part 13. The first support part 12 and the second support part 13 are integrated structures and are two groups, respectively located at the other two diagonal corners of the box body 10. A part of the upper mold 1 is supported by the first support part 12, a part of the lower mold 2 is supported by the second support part 13. The first support part 12 and the second support part 13 can provide support to the upper mold 1 and the lower mold 2 respectively, enabling deformation to occur under being subjected the force. They are respectively provided at the other two diagonal corners, combined with a design of proving with the deicing piece 11 and the deformation-and-deicing mechanism at the two diagonal corners, to maximize the micro deformation of the upper mold 1 and the lower mold 2, and achieve the best deicing effect. The integrated structure has better firmness and is also integrated with the box body 10, which requires only one production mold to reduce the production cost.

[0080] The position of the first support part 12 and the second support part 13 is not strictly required to be at the other diagonal corner of the box body, the first support part 12 or the second support part 13 can be provided near a corner of the box body 10. A connection line between the first support part 12 and the second support part 13 and the connection line between the two deformation-and-deicing mechanisms of the ice making mold can have an intersection point, as long as the deformation-and-deicing mechanism is matched with the first support part 12 and the second support part 13, it can make the upper and lower molds have deformation. And it can be regarded as an equivalent solution to this solution.

[0081] As shown in FIGs. 5 and 10, the box cover is provided with a number of avoidance holes that are equal to the number of deicing pieces and have a shape matching an upper end surface of the deicing piece. The upper mold 1 is further provided with corresponding avoidance notches. Before the mold is combined and deicing, an upper surface of the box cover 14 is flush with an upper end face of the deicing piece 11, which is for the sake of aesthetics, but can also be flushed. As shown in FIGs. 6 and 10, an avoidance groove 101 is formed at one corner near the deicing piece 11 on the box body 10. The avoidance groove 101 is configured to accommodate the fingers when pressing the deicing piece 11 by hand, and the design of the avoidance hole 141 is convenient for fingers to press the deicing piece 11. The avoidance groove 101 is designed for fingers to operate and press the deicing piece 11 naturally, which is not tiring and convenient.

[0082] As shown in FIGs. 8 and 10, a lower end of the box body 10 is further provided with an ice storage chamber 15. Side walls around a lower end of the box body 10 are inwardly concave to form an inwardly concave step surface. An inner wall of an upper end of the ice storage chamber 15 is tightly matched with the inwardly concave step surface; the ice storage chamber 15 is configured to store produced ice cubes.

[0083] In an initial state, the upper end face of the deicing piece 11 is flush with the upper surface of the box cover 14. When the ice cubes need to be deicing, both hands naturally bend and press the two deicing piece 11. The two deicing pieces 11 move down, and the lower mold 2 is forced to move down. At the same time, the deformation-and-deicing mechanism in Embodiment 1 or Embodiment 2 drives the corresponding position of the upper mold 1 to move down. At this time, the upper mold 1 is partially supported by the first support part 12, and combined with each other, the upper mold 1

undergoes deformation, the deformation variable is relatively large, which allows all ice cubes to smoothly detach from upper mold 1, while the upper mold 1 and the lower mold 2 have not yet been opened. As the deicing piece 11 is further pressed down, the deformation-and-deicing mechanism is subjected to more than a certain degree of force, which causes the upper mold 1 and lower mold 2 to detach from. At this time, all ice cubes move down with the lower mold 2 and are partially supported by the second support part 13. When deicing piece 11 continues to press down, the lower mold 2 undergoes deformation under the interaction of the second support part 13 and the deicing piece 11 continuing to move down. Thus, the ice cubes can be detached from the lower mold 2, and the detached ice cubes are located in the box body 10 between the upper mold 1 and the lower mold 2. When needed, they can be poured out from the ice pouring port 102, or they can be poured out from the ice pouring port 102 and stored in the ice storage chamber 15.

Embodiment 5

[0084] This embodiment provides an ice making box, as shown in FIG. 18-20, which is different from Embodiment 4 in that the deicing piece 11 is configured to apply force to the second mold so as to drive the hook 16 through the clamp groove 17 to deform the first mold. The deicing piece 11 and the deformation-and-deicing mechanism are provided close to each other, so that when the deicing piece 11 is subjected to force on the lower mold 2, the clamp groove 17 can better apply force to the hook 16 to facilitate the deformation of the upper mold 1.

[0085] As shown in FIGs. 18 and 20, side walls around the lower end of the box body 10 are inwardly concave to form an inwardly concave step surface 10d, an inner wall of an upper end of the ice storage chamber 15 is tightly matched with the inwardly concave step surface 107d. There is a cover 10c on the ice pouring port 102, and the ice cubes are located in the box body 10 after being deiced. When they need to be poured out, the cover 10c is opened and pour it out from the ice pouring port 102 to achieve contactless deicing.

[0086] Although preferred embodiments of the present disclosure have been described, those skilled in the art may make additional changes and modifications to these embodiments once they have knowledge of the basic creative concepts. Therefore, the claims are intended to be interpreted as including preferred embodiments and all changes and modifications falling within the scope of the present disclosure.

[0087] Obviously, technicians in this field can make various modifications and variations to the present disclosure without departing from the spirit and scope of the present disclosure. In this way, if these modifications and variations of the present disclosure fall within the scope of the claims and equivalent technologies of the present disclosure, the present disclosure also intends to include these modifications and variations.

Claims

1. An ice making mold, comprising a first mold, a second mold, and at least one deformation-and-deicing mechanism, the deformation-and-deicing mechanism comprises a first contact surface provided on the first mold and a second contact surface provided on the second mold; when the second mold is subjected to a force, the second contact surface drives the first contact surface to render the first mold deform.

2. The ice making mold according to claim 1, wherein when the first mold and the second mold cooperate with each other, the first mold and the second mold have two states of closing mold and opening mold:

   in the closing mold state, an ice making chamber is formed between the first mold and the second mold; in the opening mold state, the first mold and the second mold are separated from each other,
   the second mold can deform the first mold under an action of the deformation-and-deicing mechanism;
   a position of the first contact surface is opposite to the position of the second contact surface; in the closing mold state, the second mold can press the first contact surface to drive the first mold to deform under an action of an external force that separates the first mold from the second mold, so as to deice.

3. The ice making mold according to claim 1, wherein the deformation-and-deicing mechanism comprises a bump (3) provided on the first mold and a bayonet (4) provided on the second mold and matched with the bump (3),

   when the first mold and the second mold are combined, the bump (3) is located in the bayonet (4), an upper end face of the bump (3) abuts against an inner wall of an upper end of the bayonet (4),
   the upper end face of the bump (3) is the first contact surface, the inner wall of the upper end of the bayonet (4) is the second contact surface.

4. The ice making mold according to claim 1, wherein the deformation-and-deicing mechanism comprises a first inclined surface (5) provided on the first contact surface and a second inclined surface (6) provided on the second contact surface that matches the first inclined surface (5), wherein the first inclined surface (5) and the second inclined surface (6) are bonded and connected.

5. The ice making mold according to claim 1, wherein the deformation-and-deicing mechanism comprises a hook (16) provided on the first mold and a clamp groove (17) provided on the second mold, and the hook (16) is clamping connection with the clamp groove (17),

when the second mold is subjected to a force, the clamp groove (17) drives the hook (16) to make the first mold deform,
an upper end face of the hook (16) is the first contact surface, a lower end face of the clamp groove (17) is the second contact surface.

6. The ice making mold according to claim 5, wherein a notch (17a) is formed in a middle of an outer wall of the clamp groove (17), which runs throughs from top to bottom, front to back, left to right, a width of the notch (17a) is slightly smaller than a length of the hook (16), and two ends of the hook (16) abuts against the side walls on two sides of the notch (17a);

7. The ice making mold according to any one of claims 3-6, a lower end of the bump (3) is provided with a guide surface, so that when the first mold and the second mold are combined, the bump (3) is clamped into the bayonet (4);
the hook (16) has a first guide surface (16b), the hook (16) extends into the clamp groove (17) under a guidance of the first guide surface (16b) to be buckle connection with the clamp groove (17); side walls on two sides of the notch (17a) are respectively provided with a second guide surface (17b), so that a shape of the second mold can be fully changed.

8. The ice making mold according to claim 1, further comprising a deicing piece (11), which is fixedly connected to the second mold, or the deicing piece (11) and the second mold are integrated;

the first mold is provided with an avoidance notch (142) matching a position and shape of the deicing piece (11);
an external force is applied to the second mold through the deicing piece (11), so as to press the first contact surface and drive the first mold to deform.

9. The ice making mold according to any one of claims 1-6, 8, wherein the first mold and the second mold both comprise an edge surface (7) and an ice making area (8) formed by a central depression, the ice making area (8) is connected with the edge surface (7) through a vertical surface (9) provided vertically, the ice making areas (8) of the first mold and the second mold are both provided with a plurality of semi ice making chambers (1a),
when the first mold and the second mold are combined, the edge surfaces (7), the ice making area (8) and the vertical surface (9) on the first mold and the second mold are connected with each other; the semi ice making chambers (1a) on the ice making area (8) of the first mold and the second mold are connected with each other to form an ice making chamber.

10. The ice making mold according to claim 9, wherein the ice making mold further comprises at least one of the following:

the bump (3) and the bayonet (4) are respectively provided on the vertical surface (9) of the first mold and the second mold;
the first inclined surface (5) is provided on the edge surface (7) of the first mold, the edge surface (7) of the second mold extends in a direction toward the first inclined surface (5) to form an extension part, and the extension part is provided with the second inclined surface (6);
the hook (16) and the clamp groove (17) are respectively located on the edge surfaces (7) of the first mold and the second mold;
the first contact surfaces of two deformation-and-deicing mechanism are respectively provided at two places with the farthest relative distance near the edge surface (7) of the first mold;
the semi ice-making chamber (1a) is surrounded by a third inclined surfaces (1b) around an opening of the chamber;
the deformation-and-deicing mechanism is provided with two, the two deformation-and-deicing mechanisms are respectively provided at two opposite corners of the ice making mold.

11. An ice making box, comprising a box body (10) and the ice making mold according to claim 1 provided in the box body (10).

12. The ice making box according to claim 10, wherein the box body (10) is provided with a first support part (12) and a second support part (13), a part of the first mold is supported by the first support part (12), a part of the second mold is supported by the second support part (13).

13. The ice making box according to claim 12, comprising a deicing piece (11),

wherein the deicing piece (11) is provided with two deicing pieces, respectively located at two opposite corners of the box body (10), and correspondingly, the deformation-and-deicing mechanism is provided with two deformation-and-deicing mechanisms, and respectively located at the same two opposite corners of the box body

(10);
alternatively, the deicing piece (11) is provided with one deicing piece, located at one corner of the box body (10), a stop plate is provided at one corner opposite the deicing piece (11).

14. The ice making box according to claim 13, wherein an upper end of the box body (10) is further provided with a box cover (14), the box cover (14) is provided with a number of avoidance holes (141) that are equal to the number of deicing pieces (11) and have a shape matching an upper end surface of the deicing piece (11);

a lower end of the box body (10) is further provided with an ice storage chamber (15), side walls around a lower end of the box body (10) are inwardly concave to form an inwardly concave step surface, an inner wall of an upper end of the ice storage chamber (15) is tightly matched with the inwardly concave step surface;
one corner of the cover body (10) near the deicing piece (11) is concave downwards to form an avoidance groove (101), which is configured to accommodate fingers when pressing the deicing piece (11) by hand.

15. The ice making box according to claim 14, wherein the box body (10) further comprises at least one of the following:

the first support part (12) and the second support part (13) are integrated;
the first support part (12) and the second support part (13) are two groups, and respectively located at the other two diagonal corners of the box body (10);
before closing mold and deicing, an upper surface of the box cover (14) is flush with an upper end face of the deicing piece (11);
the box body (10) is provided with an ice pouring port (102), a cover (102c) is provided on the ice pouring port (102).

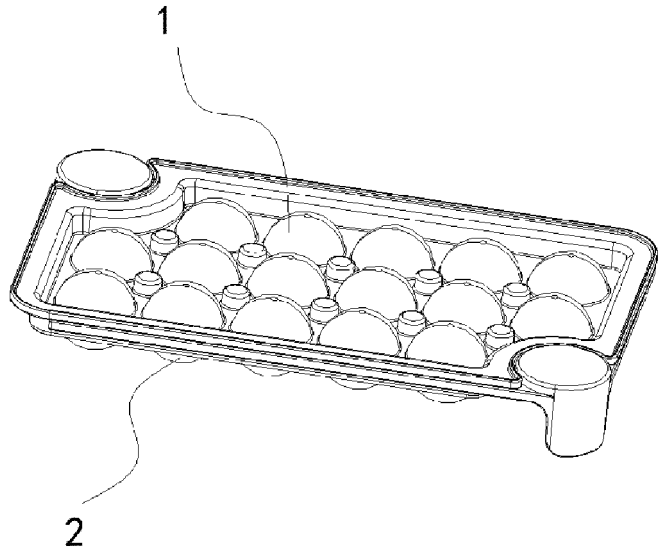

FIG. 1

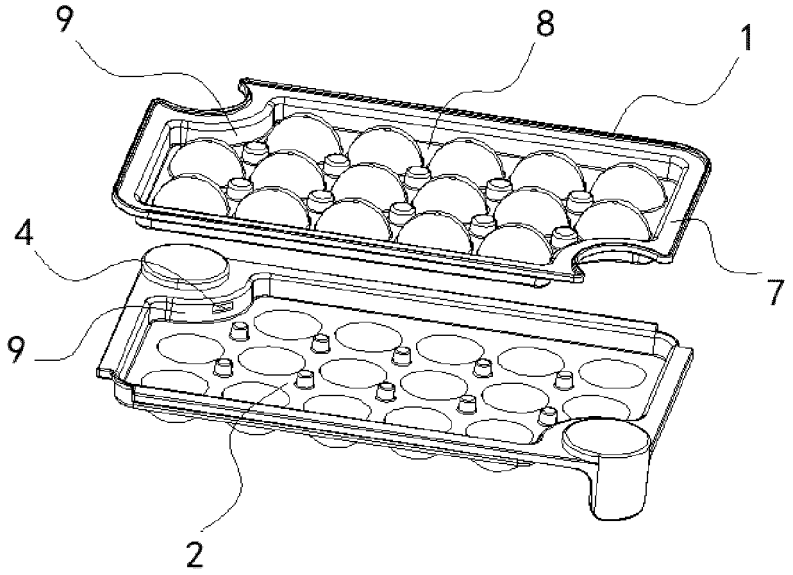

FIG. 2

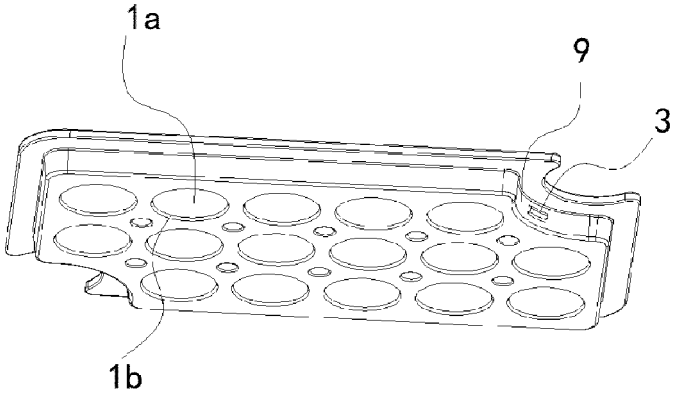

FIG. 3

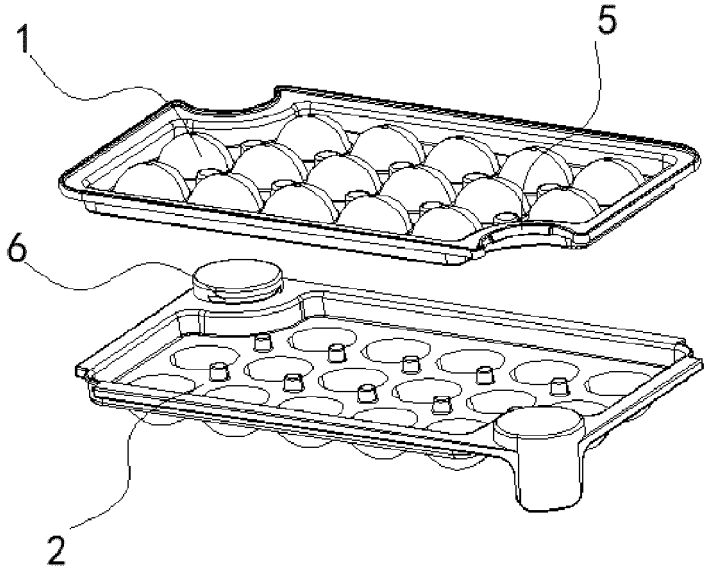

FIG. 4

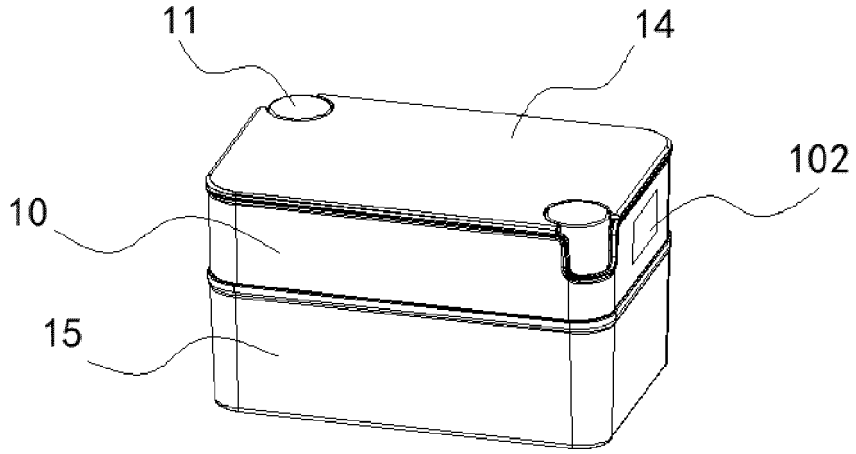

FIG. 5

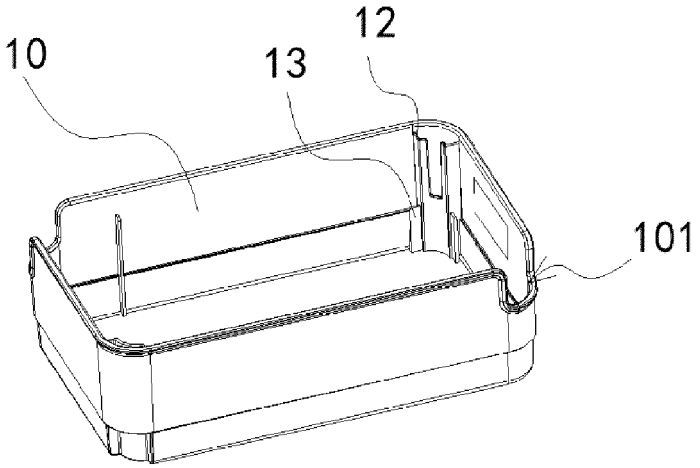

FIG. 6

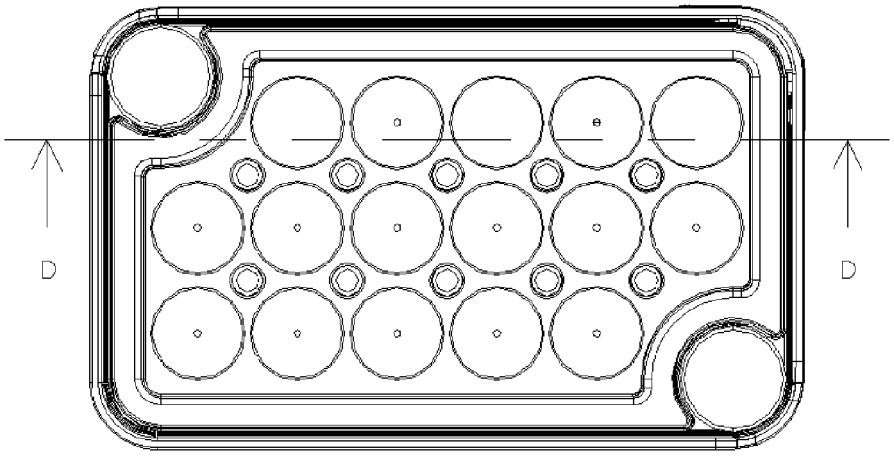

FIG. 7

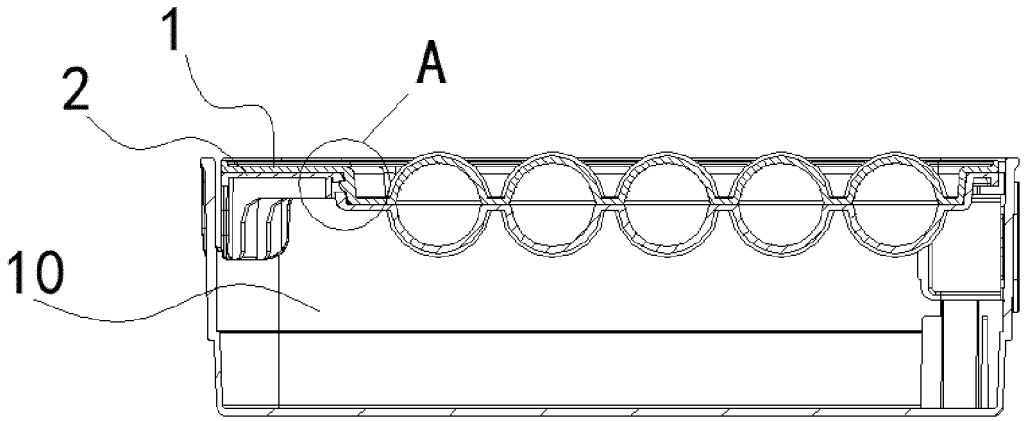

FIG. 8

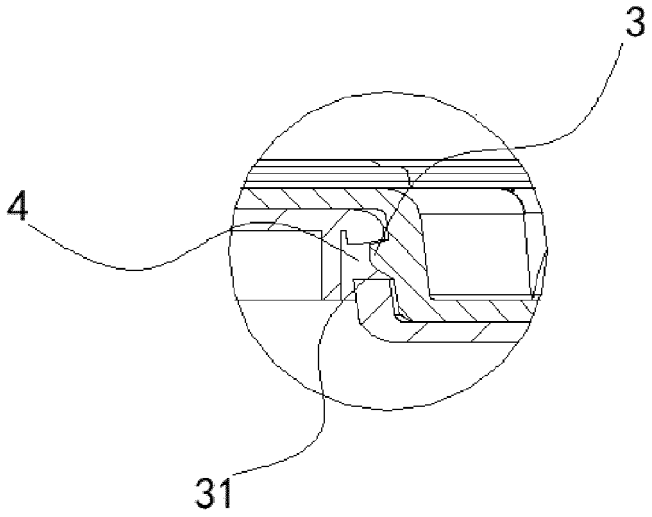

FIG. 9

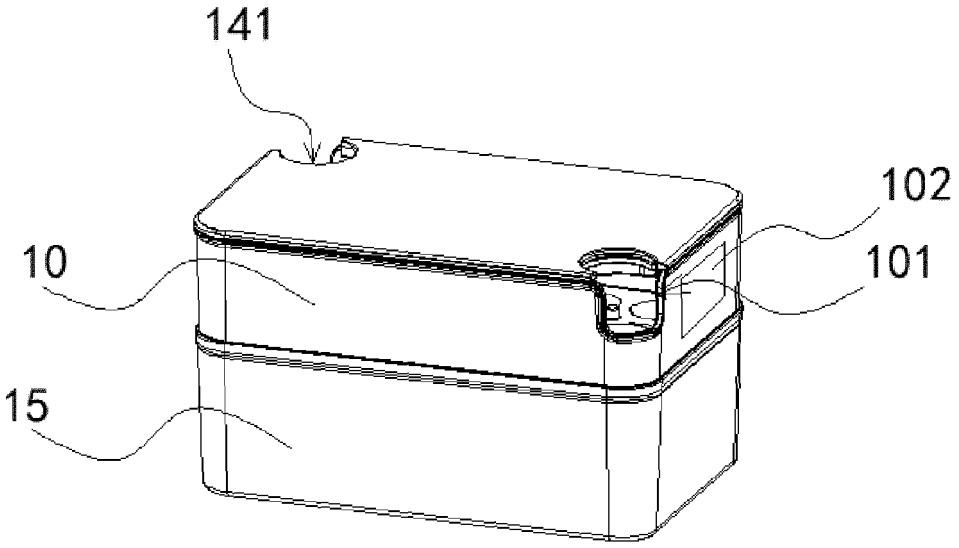

FIG. 10

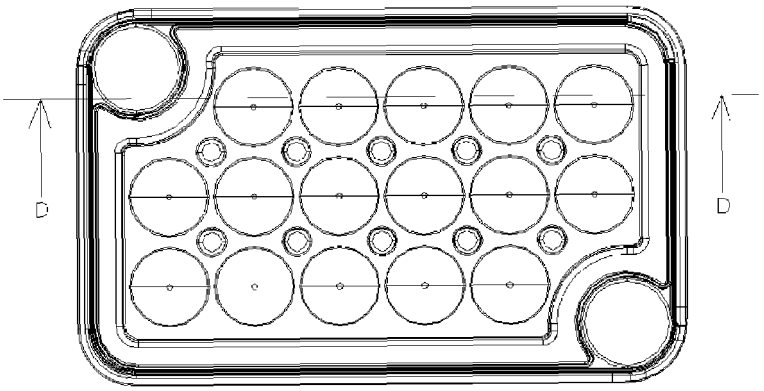

FIG. 11

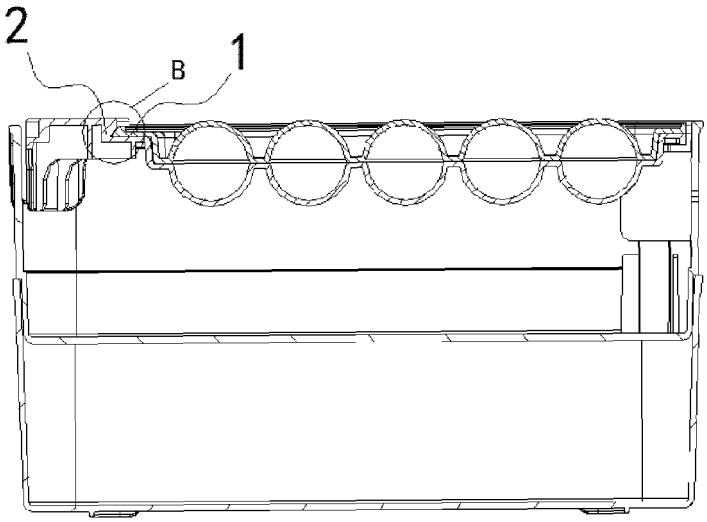

FIG. 12

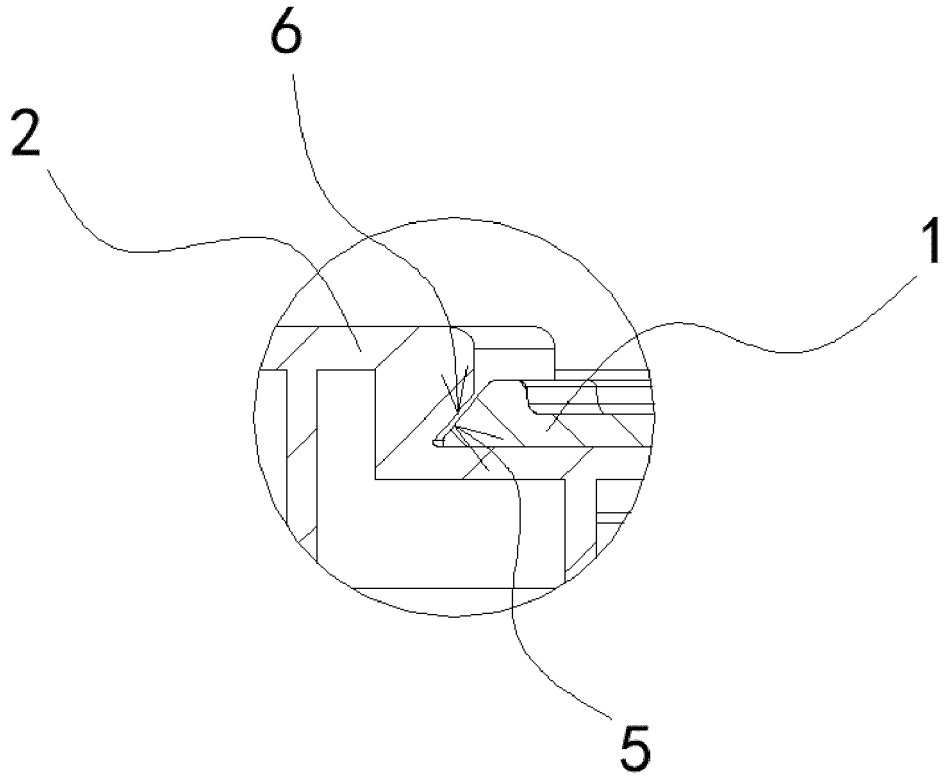

FIG. 13

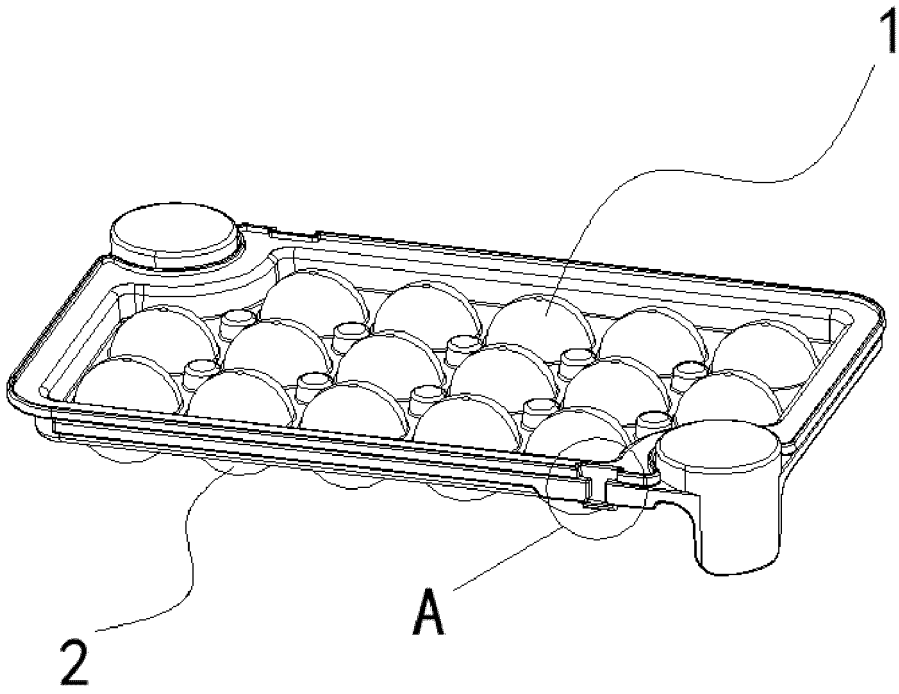

FIG. 14

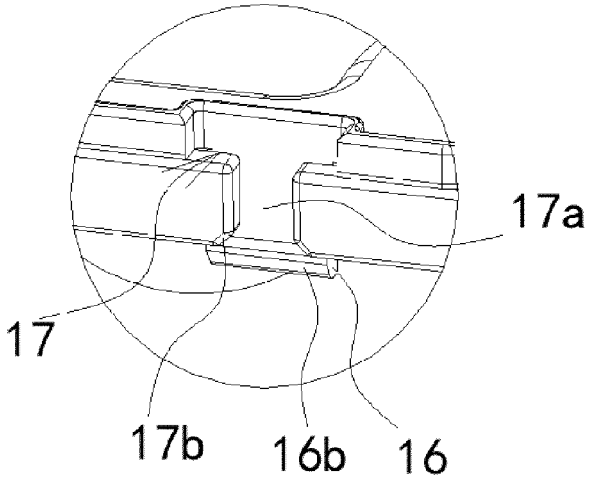

FIG. 15

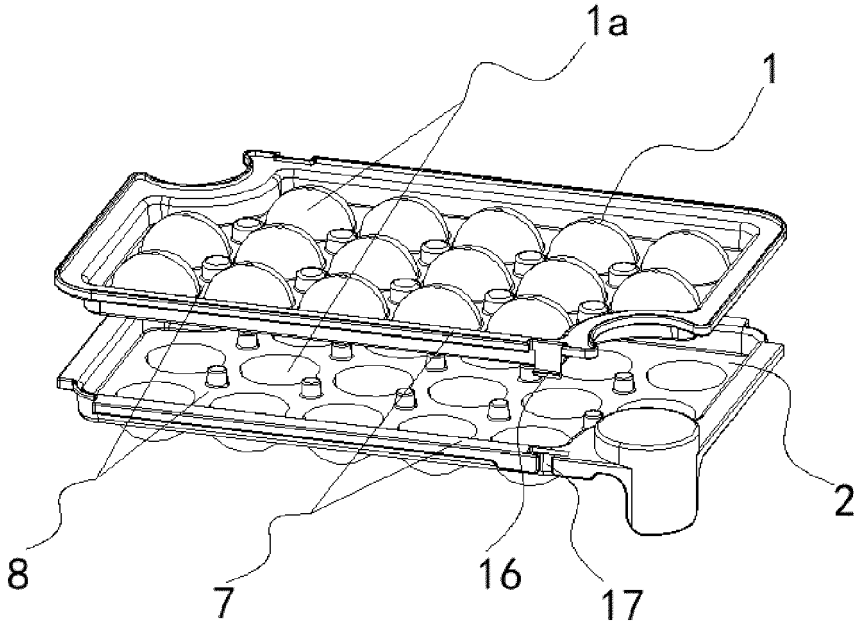

FIG. 16

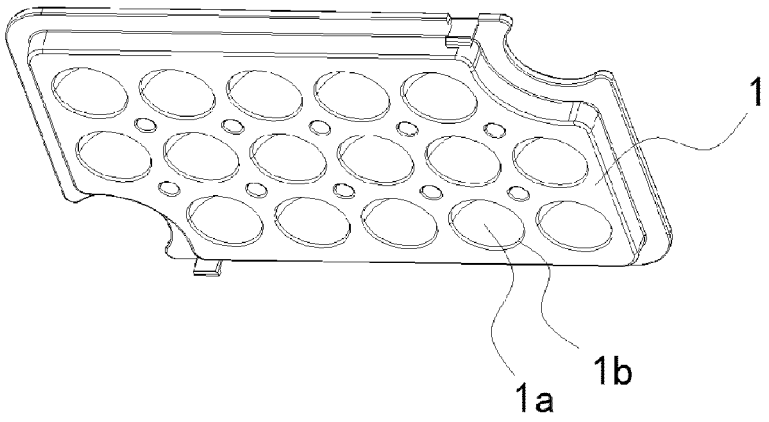

FIG. 17

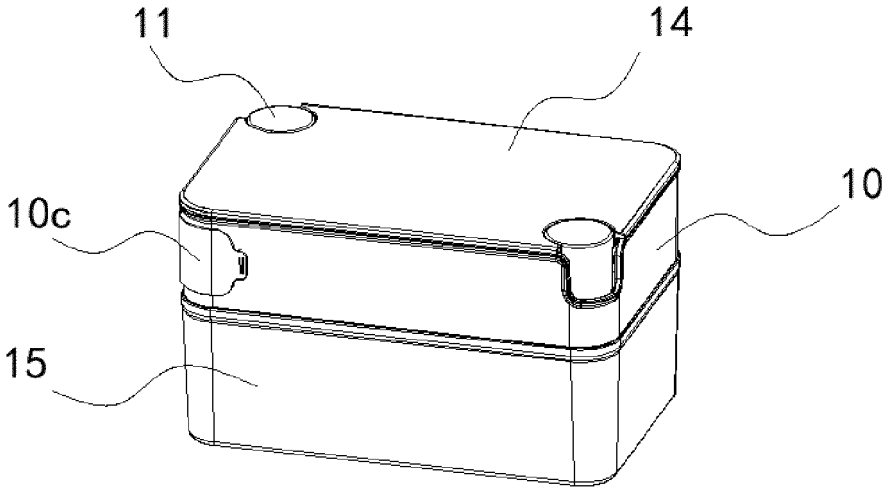

FIG. 18

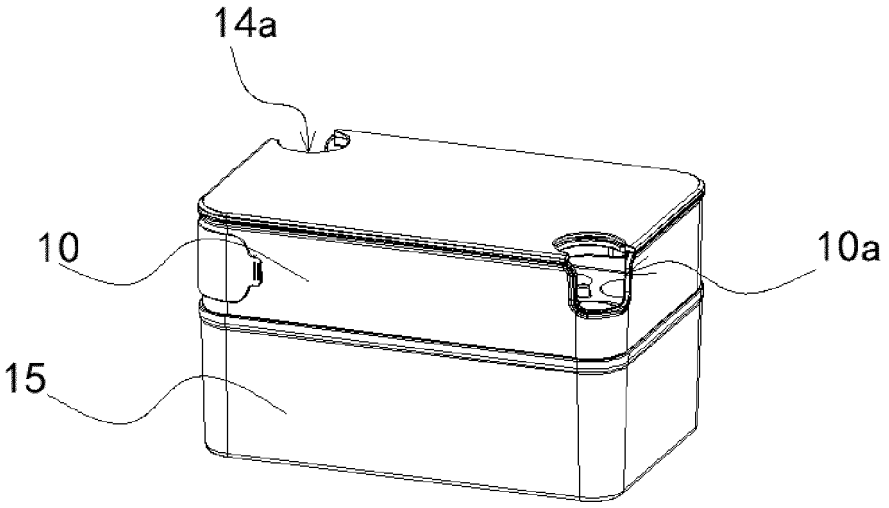

FIG. 19

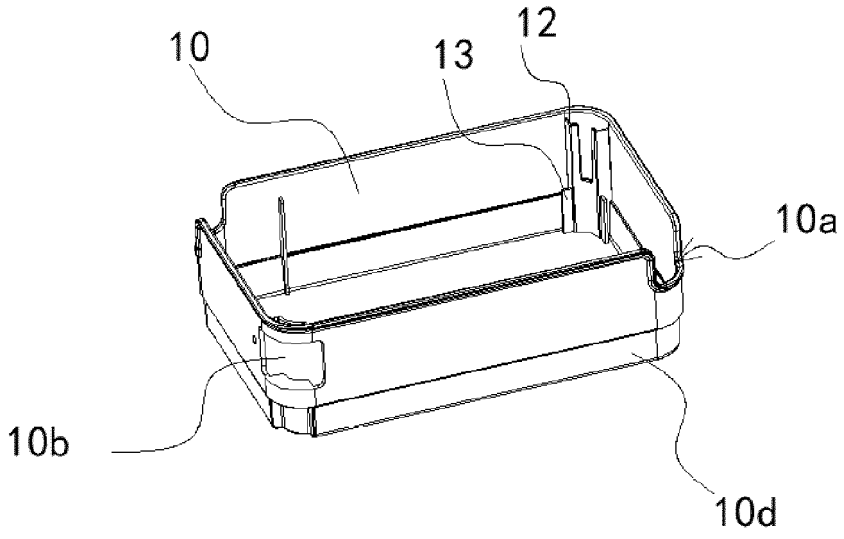

FIG. 20

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EUROPEAN SEARCH REPORT

Application Number
EP 24 16 1968

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	KR 101 914 675 B1 (JINHAN IND CO LTD [KR]) 6 November 2018 (2018-11-06) * figures 2, 3b *	1-13 14,15	INV. F25C1/22 F25C5/06
X	CN 105 546 898 A (CHINA AVIATION POWER MACHINERY INST) 4 May 2016 (2016-05-04) * figure 2 *	1,10	
X	US 2007/164192 A1 (HOLDEN WILLIAM [US] ET AL) 19 July 2007 (2007-07-19) * figure 5 *	1,10	
Y	CN 219 103 413 U (WU LINA) 30 May 2023 (2023-05-30) * figure 15 *	14,15	

TECHNICAL FIELDS SEARCHED (IPC)
F25C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 July 2024	Kuljis, Bruno

CATEGORY OF CITED DOCUMENTS

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D : document cited in the application
L : document cited for other reasons

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 16 1968

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24-07-2024

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REFERENCES CITED IN THE DESCRIPTION

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- CN 308224636S **[0002]**