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(54) **A REFRIGERATOR COMPRISING A DOOR SHELF WITH ADJUSTABLE STORAGE AREA**

EIN KÜHLSCHRANK MIT EINEM TÜRBODEN MIT EINSTELLBAREM LAGERBEREICH

RÉFRIGÉRATEUR COMPRENANT UNE ÉTAGÈRE DE PORTE À ZONE DE STOCKAGE RÉGLABLE

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Description

[0001] The present invention relates to a refrigerator comprising a door shelf with an article storage area that can be increased and decreased.

[0002] Refrigerators comprise shelves attached to the door or the body, whereon food and beverage containers are placed. When placing tall containers onto the shelf, one or more than one shelf above the said shelf is required to be removed or displaced. When placing short containers onto the shelf, a dead volume is created between the said shelf and the shelf thereabove. In the state of the art, foldable or telescopic shelf systems are used in order to create flexible usage volumes that enable the containers with various sizes to be stored.

[0003] On the inner surface of the door, the refrigerator door generally comprises door shelves extending along the width of the door, arranged one above the other. In some embodiments, the door shelves are in the form of boxes, wherein the food items to be cooled/frozen are placed. Especially in the foldable door shelves, the article storage capacity thereof can be changed by increasing/decreasing the height or the width of the door shelves; however, the article storage capacity cannot be precisely increased/decreased and practical solutions cannot be provided.

[0004] The International Patent Application No. WO2010020622 (A2) discloses a door shelf composed of a fixed shelf and a movable shelf that can be folded towards the side of the fixed shelf facing the inner volume of the refrigerator.

[0005] In the Utility Model Application No. CN101025325 (A) an extendable bottle refrigerator cold storage bottle base is disclosed.

[0006] The aim of the present invention is the realization of a refrigerator wherein the article storage area of the door shelf is increased so as to provide the user with flexibility of usage.

[0007] The refrigerator realized in order to attain the aim of the present invention is explicated in the claims.

[0008] The door shelf used in the refrigerator of the present invention is composed of two parts and comprises a rear shelf section and a front shelf section that is telescopically attached to the rear shelf section. By means of an adjustment mechanism provided under the door shelf, the distance between the front shelf section and the rear shelf section is changed and the width of the door shelf in the direction perpendicular to the inner lining of the door or the length thereof in the direction parallel to the inner lining of the door can be changed.

[0009] The adjustment mechanism comprises more than one locking claw arranged as an array in the direction of the horizontal movement direction of the front shelf section and a trigger that is moved by the user, enabling the front shelf section to be fixed on the rear shelf section by engaging with the locking claws.

[0010] The width or the length of the refrigerator door shelf is adjusted by moving the front shelf section. The

user pulls the trigger towards himself/herself in order to move the front shelf section. The trigger rotatably moves downwards and is released from the locking claws. When the front shelf section is moved to the desired position, the trigger is released so as to engage with the locking claws to fix the position of the front shelf section.

[0011] In the refrigerator of the present invention, the width and the length of the door shelf is adjusted by moving the front shelf section back and forth by means of the adjustment mechanism, and the article storage area of the door shelf can be changed. In the refrigerator, the height of the door shelf can also be adjusted by means of a height adjustment mechanism.

[0012] The refrigerator realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the schematic view of a door shelf arranged on the door, the width of which can be adjusted.

Figure 2 - is the schematic view of a door shelf arranged on the door, the length of which can be adjusted.

Figure 3 - the cross-sectional view of a door shelf and an adjustment mechanism.

Figure 4 - the cross-sectional view of a door shelf at the largest position thereof.

Figure 5 - the cross-sectional view of a door shelf at the narrowest position thereof.

Figure 6 - the exploded view of a refrigerator door, a door shelf and an adjustment mechanism.

[0013] The elements illustrated in the figures are numbered as follows:

1. Door
2. Door shelf
3. Rear shelf section
4. Front shelf section
5. Adjustment mechanism
6. Locking claw
7. Handle
8. Retaining extension
9. Trigger
10. Spring
- W: Door shelf width
- L: Door shelf length

[0014] The refrigerator comprises a body, at least one door (1) that allows access into the body and a door shelf (2) that is disposed on the inner lining of the door (1).

[0015] The door shelf (2) used in the refrigerator of the present invention is composed of two parts and comprises

- a rear shelf section (3) adjacent to the inner lining of the door (1),
- a front shelf section (4) that is telescopically attached

to the rear shelf section (3) and that is movable on the rear shelf section (3) in a direction perpendicular or parallel to the inner lining plane of the door (1), and

- an adjustment mechanism (5) that is arranged under the door shelf (2) and that changes the distance between the front shelf section (4) and the rear shelf section (3) such that the width (W) of the door shelf (2) in the direction perpendicular to the inner lining of the door (1) or the length (L) of the door shelf (2) in the direction parallel to the inner lining of the door (1) can be changed (Figure 1 and Figure 2).

[0016] The adjustment mechanism (5) comprises,

- more than one locking claw (6) arranged under the door shelf (2) as an array in the horizontal movement direction of the front shelf section (4), and
- a trigger (9) that has a handle (7) and a retaining extension (8) that engages with the locking claws (6), that is mounted on a connection point under the front shelf section (4) so as to rotate around the horizontal axis, that is moved by the user by means of the handle (7) and that enables the position of the front shelf section (4) on the rear shelf section (3) to be fixed by the retaining extension (8) engaging with the locking claws (6).

[0017] The width (W) or the length (L) of the door shelf (2) is adjusted by moving the front shelf section (4). The user pulls handle (7) the trigger (9) towards himself/herself in order to move the front shelf section (4). The trigger (9) moves downwards by rotating around the connection point and the retaining extension (8) is released from the locking claws (6). When the front shelf section (4) is moved to the desired position, the handle (7) is released and the retaining extension (8) engages with the locking claws (6) so as to fix the position of the front shelf section (4).

[0018] The adjustment mechanism (5) further comprises a spring (10) that is disposed at the connection point where the trigger (9) is attached to the front shelf section (4) and that enables the trigger (9) released by the user to return to its original position such that the retaining extension (8) engages with the locking claws (6) and that the door shelf (2) is fixed at the adjusted width (W) or length (L).

[0019] In an embodiment of the present invention, the door shelf (2) comprises the front shelf section (4) that can be moved back and forth on the rear shelf section (3), in a direction perpendicular to the inner lining of the door (1). The front shelf section (4) is telescopically attached to the rear shelf section (3) that bears against the inner lining of the door (1) and the transverse width (W) of the door shelf (2) is adjusted by means of the adjustment mechanism (5) disposed thereunder. The adjustment mechanism (5) enables the distance between the front shelf section (4) and the inner lining of the door (1) to be changed in a controlled manner. When the door

shelf (2) is adjusted to the desired width (W), the position of the front shelf section (4) is fixed by means of the adjustment mechanism (5).

[0020] In another embodiment of the present invention, the refrigerator comprises a height adjustment mechanism (not shown in figures) that is disposed under the door shelf (2) and that enables the door shelf (2) to be moved up and down parallel to the inner lining of the door (1) and enables the door shelf (2) to be fixed at the adjusted height. By means of the adjustment mechanism, the door shelf (2), together with the front shelf section (4) and the rear shelf section (3), can be moved up and down parallel to the inner lining plane of the door (1) and fixed at the adjusted height.

[0021] In the refrigerator of the present invention, the width (W) or the length (L) of the door shelf (2) is adjusted by moving the front shelf section (4) back and forth by means of the adjustment mechanism (5), and the usable volume inside the door shelf (2) can be changed according to the user preference. In the refrigerator of the present invention, the height of the door shelf (2) can also be adjusted by means of a height adjustment mechanism. By means of the door shelf (2) that can be moved both back and forth as well as up and down, flexible usage is provided.

Claims

1. A refrigerator **comprising** a body, at least one door (1) that allows access into the body, a door shelf (2) that is disposed on an inner lining of the door (1), a rear shelf section (3) adjacent to the inner lining of the door (1), a front shelf section (4) that is telescopically attached to the rear shelf section (3) and that is movable on the rear shelf section (3) in a direction perpendicular or parallel to the inner lining plane of the door (1), and an adjustment mechanism (5) that is arranged under the door shelf (2) and that changes the distance between the front shelf section (4) and the rear shelf section (3) such that the width (W) of the door shelf (2) in the direction perpendicular to the inner lining of the door (1) or the length (L) of the door shelf (2) in the direction parallel to the inner lining of the door (1) can be changed, the adjustment mechanism (5) comprising: more than one locking claw (6) arranged under the door shelf (2) as an array in the horizontal movement direction of the front shelf section (4), and **characterized by** a trigger (9) that has a handle (7) and a retaining extension (8) that engages with the locking claws (6).
2. A refrigerator as in Claim 1, **characterized by** the adjustment mechanism (5) comprising the trigger (9) that is mounted on a connection point under the front shelf section (4) so as to rotate around a horizontal axis, that is moved by a user by means of the handle (7) and that enables the position of the front shelf

section (4) on the rear shelf section (3) to be fixed by the retaining extension (8) engaging with the locking claws (6).

3. A refrigerator as in Claim 2, **characterized by** the adjustment mechanism (5) comprising a spring (10) that is disposed at the connection point where the trigger (9) is attached to the front shelf section (4) and that enables the trigger (9) released by the user to return to its original position such that the retaining extension (8) engages with the locking claws (6) and that the door shelf (2) is fixed at the adjusted width (W) or length (L).
4. A refrigerator as in any one of the above claims, **characterized by** the door shelf (2) comprising the front shelf section (4) that can be moved on the rear shelf section (3) back and forth parallel to the inner lining of the door (1) and that is telescopically attached to the rear shelf section (3) that bears against the inner lining of the door (1), where the transverse width (W) of the door shelf (2) is adjusted by means of the adjustment mechanism (5) disposed under the door shelf (2).
5. A refrigerator as in any one of the above claims, **characterized by** a height adjustment mechanism that is disposed under the door shelf (2) and that enables the door shelf (2) to be moved up and down parallel to the inner lining of the door (1) and enables the door shelf (2) to be fixed at the adjusted height.

Patentansprüche

1. Ein Kühlschrank **umfasst** einen Körper, mindestens eine Tür (1), die den Zugang zu dem Körper ermöglicht, einen Türregal (2), das an einer Innenverkleidung der Tür (1) angeordnet ist, einen hinteren Regalabschnitt (3) neben der Innenverkleidung der Tür (1), einen vorderen Regalabschnitt (4), der teleskopisch an dem hinteren Regalabschnitt (3) angebracht ist und auf dem hinteren Regalabschnitt (3) in einer Richtung senkrecht oder parallel zur inneren Verkleidungsebene der Tür (1) beweglich ist, und einen Einstellmechanismus (5), der unter dem Türregal (2) angeordnet ist und der den Abstand zwischen dem vorderen Regalabschnitt (4) und dem hinteren Regalabschnitt (3) so ändert, dass die Breite (W) des Türregals (2) in der Richtung senkrecht zur Innenverkleidung der Tür (1) oder die Länge (L) des Türregals (2) in der Richtung parallel zur Innenverkleidung der Tür (1) geändert werden kann; der Einstellmechanismus (5) umfasst: mehr als eine Verriegelungsklaue (6), die unter der Türablage (2) als Anordnung in horizontaler Bewegungsrichtung des vorderen Regalabschnitts (4) angeordnet ist und durch einen Abzug (9) **gekennzeichnet ist**, der ei-

nen Griff (7) aufweist und die Verlängerung (8) hält, die mit den Verriegelungsklauen (6) in Eingriff steht.

2. Ein Kühlschrank, wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** der Einstellmechanismus (5) einen Auslöser (9) umfasst, der an einem Verbindungspunkt unter dem vorderen Regalabschnitt (4) angebracht ist, um sich um eine horizontale Achse zu drehen, die von einem Benutzer mit Hilfe des Griffs (7) bewegt wird und ermöglicht, dass die Position des vorderen Regalabschnitts (4) am hinteren Regalabschnitt (3) durch die Halteverlängerung (8) zu fixieren, die mit den Verriegelungsklauen (6) in Eingriff steht.
3. Ein Kühlschrank, wie in Anspruch 2 aufgeführt, **ist dadurch gekennzeichnet, dass** der Einstellmechanismus (5) eine Feder (10) umfasst, der Einstellmechanismus (5) umfasst eine Feder (10), die an dem Verbindungspunkt angeordnet ist, an dem der Abzug (9) am vorderen Regalabschnitt (4) angebracht ist, und der es dem vom Benutzer freigegebenen Abzug (9) ermöglicht, in seine ursprüngliche Position umzukehren, sodass die Halteverlängerung (8) in die Verriegelungsklauen (6) eingreift und das Türregal (2) auf die eingestellte Breite (W) oder Länge (L) fixiert ist.
4. Ein Kühlschrank, wie in einem der vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** das Türregal (2) den vorderen Regalabschnitt (4) umfasst, der auf dem hinteren Regalabschnitt (3) parallel zur Innenverkleidung der Tür hin und her bewegt werden kann (1), wobei es teleskopisch an dem hinteren Regalabschnitt (3) befestigt werden kann, zur Innenverkleidung der Tür hin und her bewegt werden kann (1).
5. Ein Kühlschrank, wie in einem der vorherigen Ansprüchen aufgeführt, **ist dadurch gekennzeichnet, dass** ein Höhenverstellmechanismus unter dem Türregal (2) angeordnet ist und es ermöglicht, dass das Türregal (2) parallel zur Innenverkleidung der Tür (1) auf und ab bewegt und das Türregal (2) in der eingestellten Höhe fixiert werden.

Revendications

1. Un réfrigérateur **comprenant** un corps, au moins une porte (1) qui permet l'accès dans le corps, une étagère de porte (2) qui est disposée sur un revêtement intérieur de la porte (1), une section d'étagère arrière (3) adjacente au revêtement intérieur de la porte (1), une section d'étagère avant (4) qui est fixée de manière télescopique à la section d'étagère arrière (3) et qui est mobile sur la section d'étagère arrière (3) dans une direction perpendiculaire ou pa-

rallèle au plan de revêtement intérieur de la porte (1), et un mécanisme de réglage (5) qui est disposé sous la tablette de porte (2) et qui modifie la distance entre la section de tablette avant (4) et la section de tablette arrière (3) de telle sorte que la largeur (W) de la tablette de porte (2) dans la direction perpendiculaire au revêtement intérieur de la porte (1) ou la longueur (L) de la tablette de porte (2) dans la direction parallèle au revêtement intérieur de la porte (1) peuvent être modifiées, le mécanisme de réglage (5) comprenant plus d'une griffe de verrouillage (6) disposée sous la tablette de porte (2) en tant que rangée dans la direction de mouvement horizontale de la section de tablette avant (4), et **est caractérisé en ce qu'un déclencheur (9) comporte une poignée (7) et une extension de retenue (8) qui s'engage avec les griffes de verrouillage (6).**

haut et vers le bas parallèlement au revêtement intérieur de la porte (1) et de fixer la tablette de porte (2) à la hauteur réglée.

2. Un réfrigérateur comme dans la déclaration 1, **est caractérisé en ce que** le mécanisme de réglage (5) comprenant la gâchette (9) est montée sur un point de connexion sous la section de la tablette avant (4) de manière à tourner autour d'un axe horizontal, est déplacée par un utilisateur au moyen de la poignée (7) et permet de fixer la position de la section de la tablette avant (4) sur la section de la tablette arrière (3) par l'extension de retenue (8) s'engageant avec les griffes de verrouillage (6).
3. Un réfrigérateur comme dans la déclaration 2, **est caractérisé en ce que** le mécanisme de réglage (5) comprend un ressort (10) qui est disposé au point de connexion où la gâchette (9) est fixée à la section de la tablette avant (4) et qui permet à la gâchette (9) libérée par l'utilisateur de revenir à sa position initiale de telle sorte que la rallonge de retenue (8) s'engage avec les griffes de verrouillage (6) et que la tablette de porte (2) est fixée à la largeur (W) ou à la longueur (L) ajustée.
4. Un réfrigérateur comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce que** la tablette de porte (2) comprenant la section de tablette avant (4) peut être déplacée sur la section de tablette arrière (3) d'avant en arrière parallèlement au revêtement intérieur de la porte (1) et est fixée de manière télescopique à la section de tablette arrière (3) qui s'appuie contre le revêtement intérieur de la porte (1), où la largeur transversale (W) de la tablette de porte (2) est ajustée au moyen du mécanisme d'ajustement (5) disposé sous la tablette de porte (2).
5. Un réfrigérateur comme dans l'une quelconque des déclarations ci-dessus, **est caractérisé en ce qu'il** comporte un mécanisme de réglage de la hauteur qui est disposé sous la tablette de porte (2) et qui permet de déplacer la tablette de porte (2) vers le

Figure 1

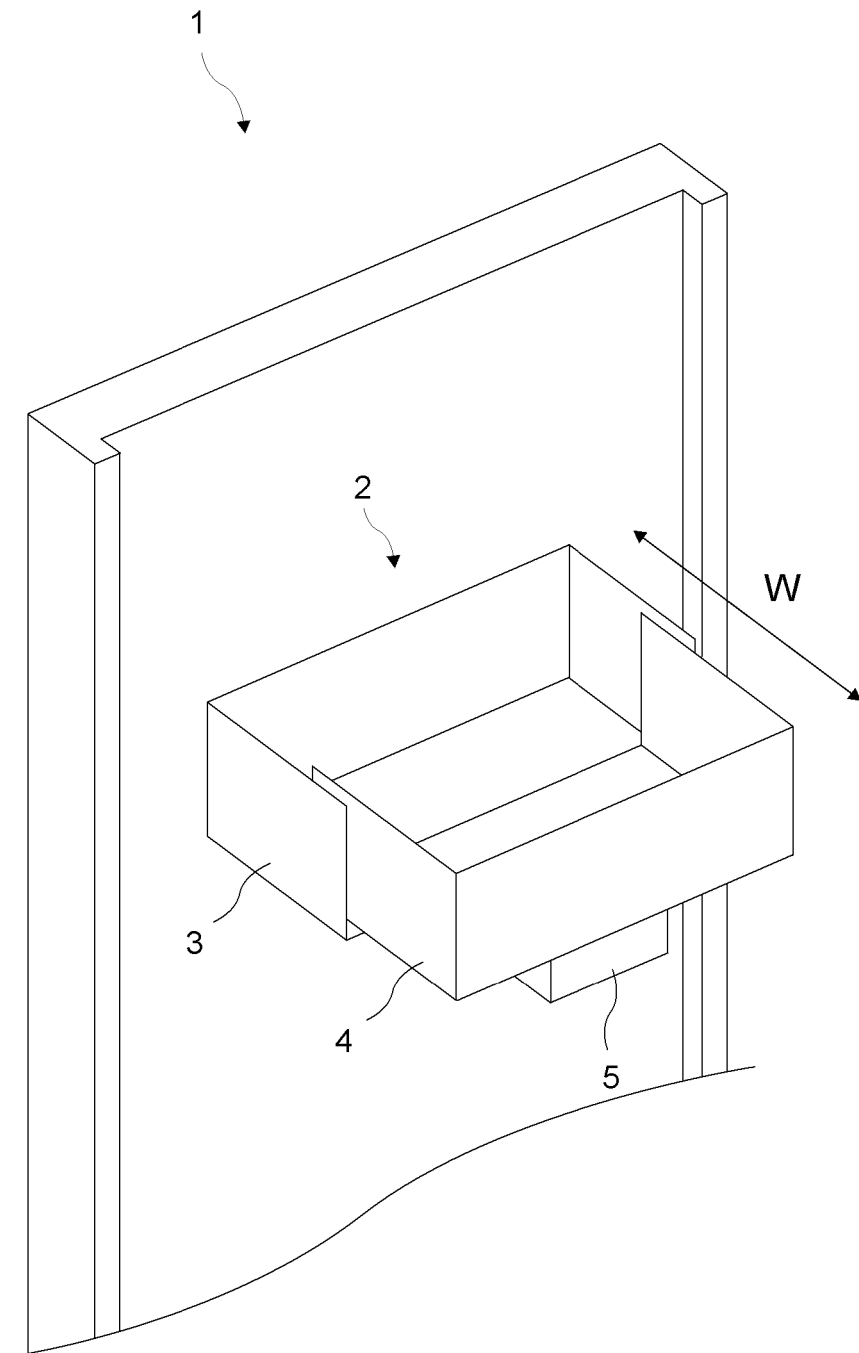


Figure 2

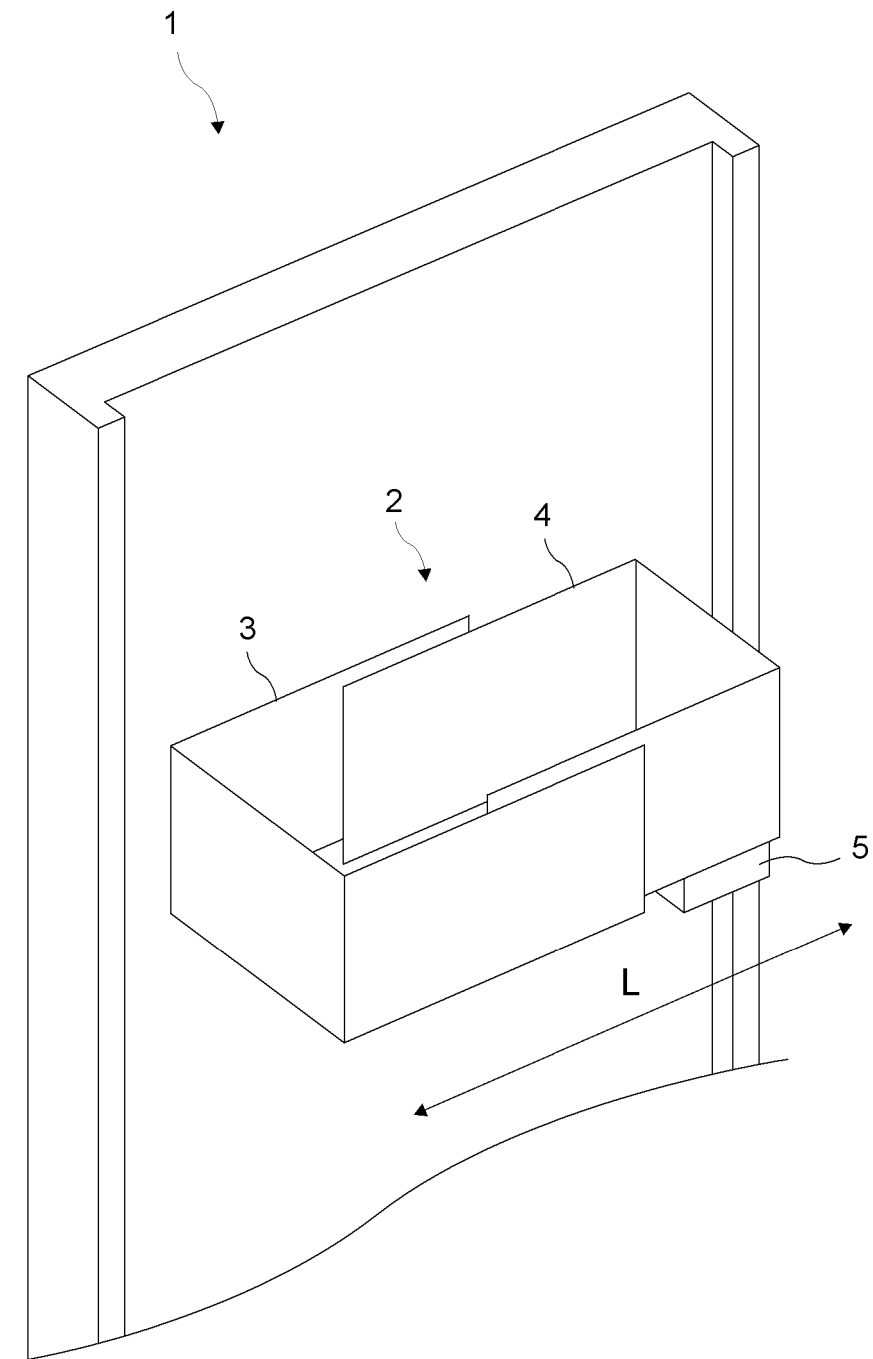


Figure 3

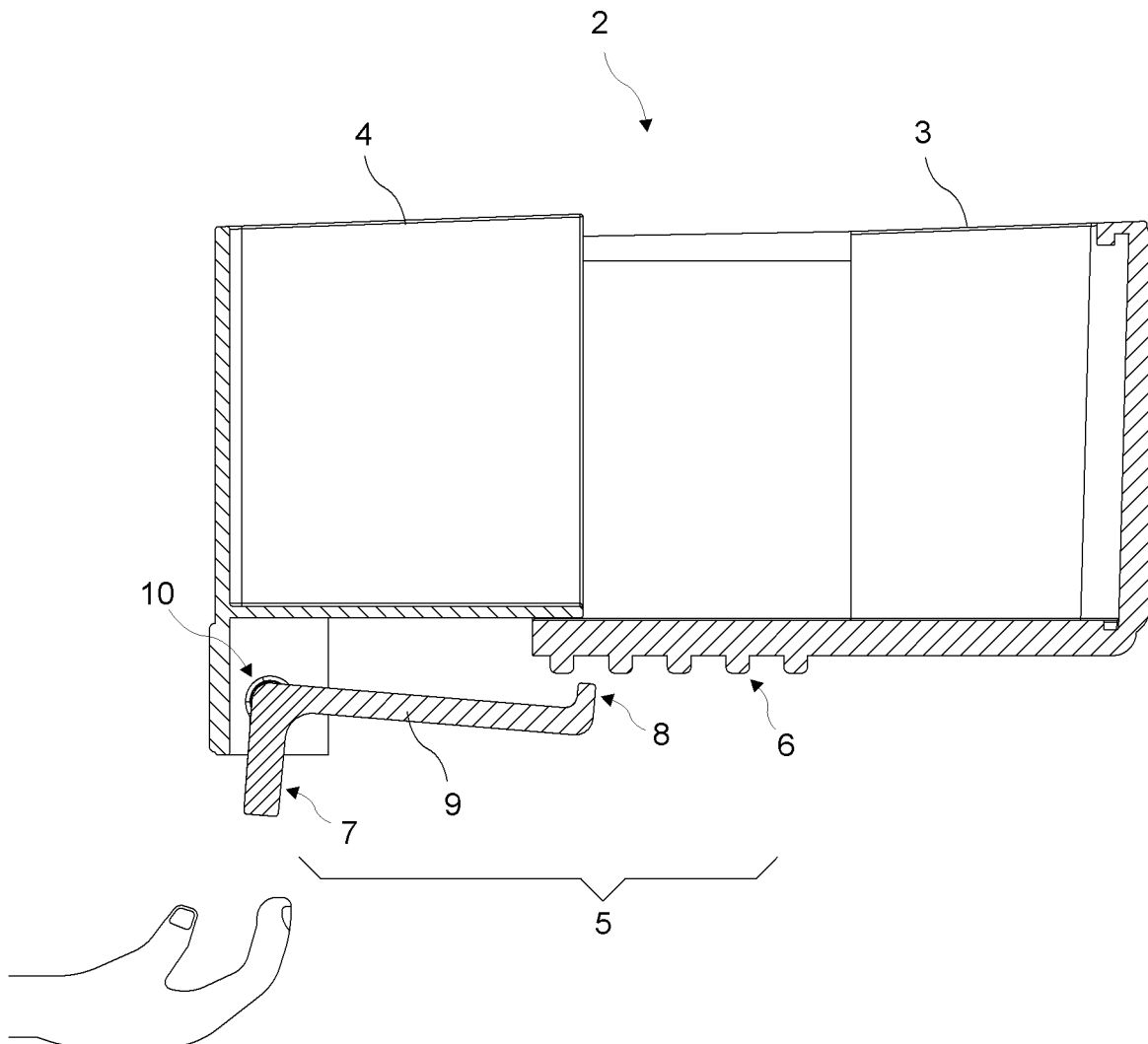


Figure 4

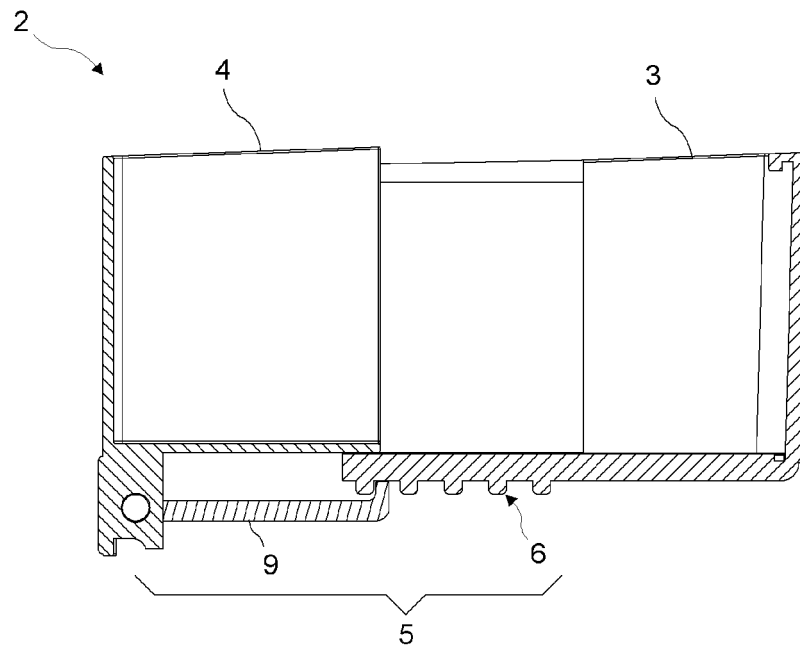


Figure 5

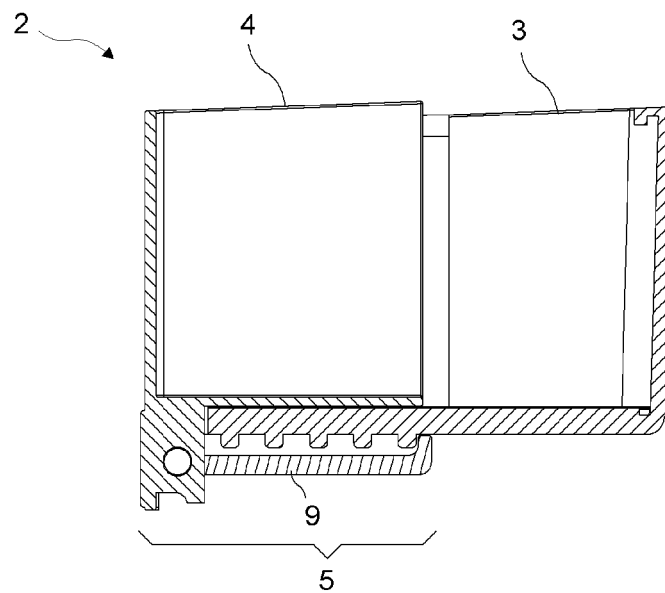
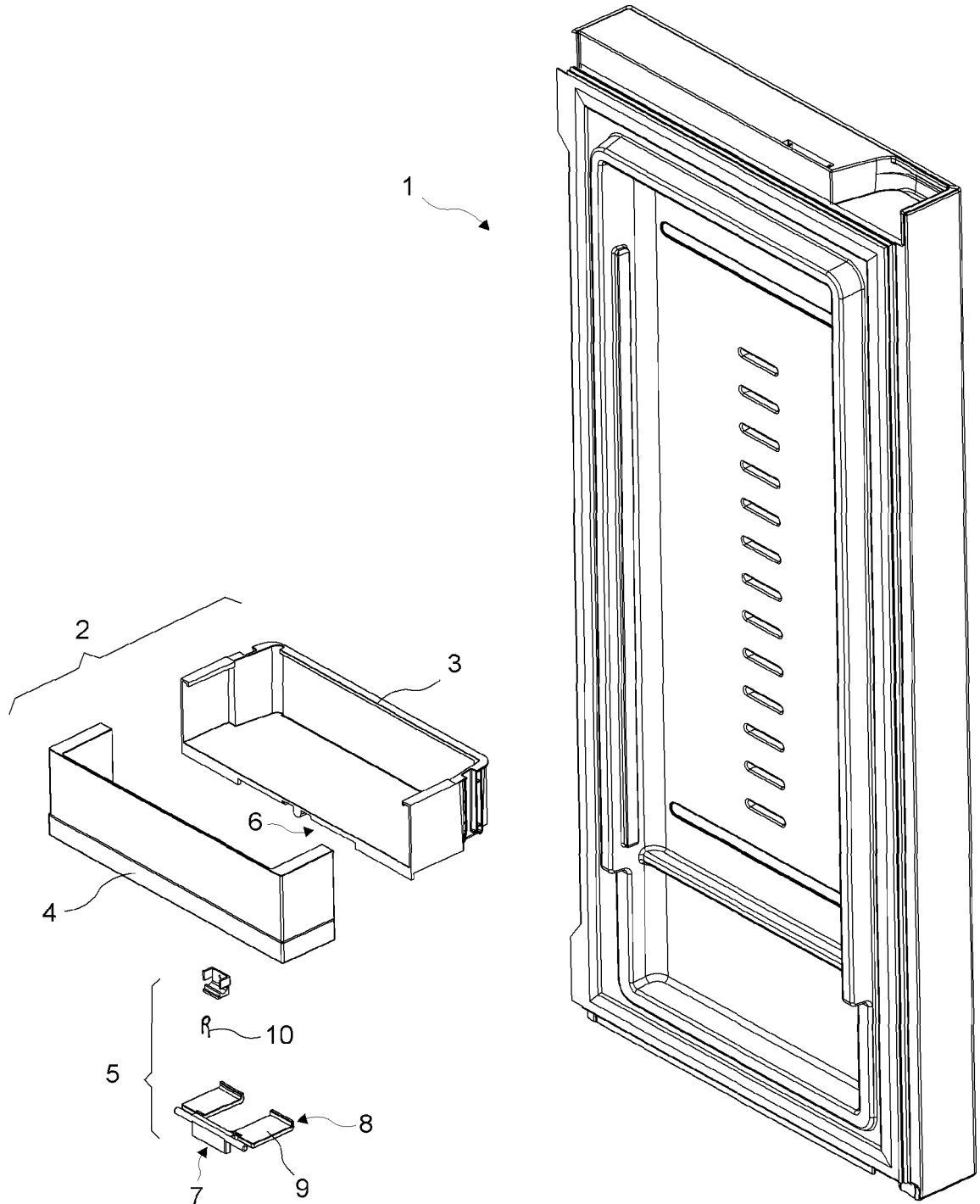


Figure 6



REFERENCES CITED IN THE DESCRIPTION

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