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(54) **A COOLING DEVICE**
EIN KÄLTEGERÄT
UN APPAREIL FRIGORIFIQUE

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Description

[0001] The present invention relates to a cooling device comprising a visual detection means.

[0002] In cooling devices, visual detection means that are arranged on the door, the body or on the shelves on the door and that enable the visual data of the interior of the cooling device to be transmitted to the users are used. In such cooling devices, the obtained visual data can be transmitted to an image display device arranged on the cooling device body by means of the cable or wireless network connection feature of the cooling device. Similarly, said visual data can be transmitted to external and portable image display devices owned by the user with wireless network connection feature. Said visual data provides the user with the information about the interior of the cooling device but due to the positioning of the visual detection means, the latter also invades the privacy of the user by obtaining the visual data related to the user and the user's living environment. Considering the weak security measures of the wireless network connections, this situation may pose a threat to the privacy of the user.

[0003] Another problem in the cooling devices comprising a visual detection means is encountered when the related image is tagged by the user after the obtained visual data is transferred to the image display device. The user can create tags by entering information such as the expiry date, package opening date etc. of the items and place the same on the images of the items displayed on the image display device. However, when the user takes the item out of the cooling device and places the same at another location after use, the user has to move the tags to the new position of the foodstuff, delete the tag and create new one or place the foodstuff to its previous position since said tags remain in the first position determined by the user on the image display device.

[0004] In the state of the art Patent Document No. EP2843337, a cooling device is disclosed, wherein a visual detection means is used. Further cooling devices are known from US2016/047587, DE102013216764 and US2014/169640. Furthermore, WO2017/155269 is a prior art document according to Article 54(3) EPC and discloses a further example of a cooling device.

[0005] The aim of the present invention is to assign to the new position of the foodstuff without the need for user intervention the tag previously created on the image display device by the user including information such as the expiry date, the package opening date etc. of the foodstuff when the positions of the foodstuffs to be cooled in the cooling device are changed.

[0006] In order to attain the aim of the present invention, a cooling device as defined in the independent claim 1 is provided.

[0007] The foodstuffs placed in the cooling device to be cooled are isolated from the outer environment by means of a body with insulation properties. The door mounted to the front side of the body enables the user

to access to the interior of the body in the open position and thermally insulates the interior of the body from the outer environment in the closed position. In the body, body shelves placed between the two opposite lateral walls of the body and whereon the foodstuffs to be cooled are placed are provided. Door shelves are arranged on the surface of the door facing the inner surface of the body. Said door shelves comprise a base and two side walls that extend perpendicularly to the base from the opposite edges of the base. The first side wall is positioned on the side of the door that moves relative to the body and the second side wall is positioned on the side that faces the user in the open position of the door. A visual detection means is arranged on the side of the first side wall where the door is hinged to the body. As the door moves from the open position to the closed position and from the closed position to the open position, the visual detection means obtains the visual data of the interior of the body and transmits the same to the control unit positioned in the cooling device. By arranging the visual detection means on the first side wall, in cases when the door is opened with a wide angle, the field of view of the visual detection means is limited to the interior of the body, the body shelves and the foodstuffs placed on the body shelves, and thus, the privacy of the user is provided by preventing the visual detection means from recording visual data related to the user. Thus, the product perception is improved.

[0008] In an embodiment of the present invention, the cooling device comprises doors that extend along the body, that are positioned parallel to each other and that can be opened and closed independently. By means of a plurality of doors and the visual detection means arranged on the first walls of the door shelves on said doors, the visual data of the interior of the body, the body shelves and the foodstuffs placed on the body shelves is collected from more than one angle. Thus, the visual defects that may occur as a result of the rotation movement during the opening-closing of the door are prevented and the product perception is improved.

[0009] In an embodiment of the present invention, the field of view of the visual detection means positioned on the first wall is limited by the body shelf edge of the body shelf which is at the same vertical position as the said visual detection means and that is positioned on the body inner wall which is the farthest from the visual detection means. Thus, the user is prevented from entering the field of view of the visual detection means regardless of the opening angle of the door, and the user privacy is ensured.

[0010] According to the present invention, the visual data obtained by means of the visual detection means is processed by means of the control unit and transferred to the image display device. The connection between the control unit and the image display device can be provided with a cable system arranged in the cooling device or the data can be transferred to an external image display device owned by the user via the wireless network connec-

tion feature of the control unit. Thus, the user can access the latest visual data related to the interior of the cooling device and the ease of use is provided while the product perception on the user is improved.

[0011] According to the present invention, the user can create tags on the image display device displaying the image of the foodstuffs that is obtained by the visual detection means such that the tags correspond to the positions of the foodstuffs. The content of said tags can be provided as templates that are prepared in advance according to user needs, and the user is enabled to enter customized data independently of the templates. Said data may include the information regarding the expiry dates of the items, the package opening date of the foodstuffs and tags that indicate ownership in cases when the cooling device is used by a plurality of users. By means of tagging, the expiry dates of the foodstuffs in the cooling device can be monitored.

[0012] According to the present invention, when the door is in the open position, by means of the visual detection means, the control unit can track the movements of the hands of the user in the cooling device and the foodstuffs that are relocated. When the user tags the foodstuff, a new tag is created on the image display device. In cases when the user takes the foodstuff out of the cooling device for use and places the same back or relocates the foodstuff in the body, tags that are idle and that do not correspond to the position of the foodstuff remain on the image display device. By means of the item recognition feature, the control unit matches the tag that is available on the image display device and that corresponds to the foodstuff with the new position of the foodstuff and automatically moves said tag onto the said foodstuff on the image display device without the need for user intervention. Thus, the quality perception of the user related to the product is improved. The present invention is also advantageous in that the user saves time as it is not necessary to move the tags to the new positions of the foodstuffs.

[0013] In an embodiment of the present invention, the visual detection device comprises a wide-angle lens. The wide-angle lens scans a wide angle in the body during the opening and closing of the door and thus, obtains the visual data of a larger volume. Consequently, the need for a second visual detection means is eliminated and the costs are reduced.

[0014] In an embodiment of the present invention, the image display device is arranged on the door of the cooling device. Thus, the need for the user to procure an external image display device is eliminated, and the usage costs are improved by preventing the user from covering additional costs for using the cooling device.

[0015] By means of the present invention, the user is enabled to tag the foodstuffs placed into the cooling device to be cooled on the image display device, and when the positions of said foodstuffs are changed, the related tags are automatically matched with the new positions of the foodstuffs and the corresponding change on the

image display device is performed automatically by means of the control unit.

[0016] A cooling device realized in order to attain the aim the object of the present invention is illustrated in the attached figures, where:

Figure 1 - is the view of the cooling device.

Figure 2 - is the perspective view of the cooling device wherein the doors thereof are not mounted.

Figure 3 - is the sideways view of the door in the open position.

Figure 4 - is the perspective view of the door from the side where the same is mounted to the body.

Figure 5 - is the perspective view of the door shelf in the dismantled state.

[0017] The elements illustrated in the figures are numbered as follows:

1. Cooling device
2. Body
3. Body shelf
4. Door
5. Base
6. First side wall
7. Second side wall
8. Door shelf
9. Control unit
10. Visual detection means
11. Image display device

[0018] The cooling device (1) comprises a body (2); at least one shelf (3) arranged on the lateral walls of the body (2) for placing the foodstuffs to be cooled thereon; a door (4) that prevents user access to the interior of the body (2) in the closed position and enables the user to access to the interior of the body (2) in the open position, and a door shelf (8) that is arranged on the inner wall of the door (4) and that has a base (5), a first side wall (6) extending perpendicular to the base (5) at the side of the door (4) where the door (4) is hinged to the body (2) and a second side wall (7) that is arranged on the other end of the base (5) oppositely to the first side wall (6), wherein the base, the first side wall (5) and the second sidewall (7) define a storage space for placing the foodstuffs.

[0019] The cooling device (1) of the present invention comprises a visual detection means (10) that is arranged on the first side wall (6) surface that faces the interior of the body (2) when the door (4) is in the closed position and that captures the image of the foodstuffs to be cooled on the body shelf (3) when the door (4) is moved from the closed position to the open position and from the open position to the closed position and transmits the same to a control unit (9).

[0020] In the cooling device (1) of the present invention, the inner volume of the cooling device (1) is separated from the outer environment by means of the body (2) with thermal insulation. The door (4) is provided for

enabling access into the body (2), and said door (4) prevents access into the body (2) in the closed position and allows access into the body (2) in the open position. The door shelves (8) are provided on the door (4) of the cooling device (1) and positioned as to face the interior of the body (2) when the door (4) is in the closed position. Each door shelf (8) has the base (5), two side walls (6, 7) that extend upwards almost perpendicularly to the base (5) and a front wall. The door shelf (8) is defined by said walls. The first side wall (6) is positioned at the side of the door (4) where the hinges are located. When the door (4) is in the closed position, the first side wall (6) faces the lateral wall of the body (2) in the direction of the hinges of the door (4). The visual detection means (10) is arranged on the first side wall (6) so as to face the lateral wall of the body (2) in the direction of the hinges when the door (4) is in the closed position. During the closing and opening of the door (4), the visual detection means (10) obtains the visual data of the body shelves (3) and transmits said data to the control unit (9). The visual detection means (10) obtains visual data only during the opening and closing of the door (4). By means of the position of the visual detection means (10) on the door shelf (8), the field of view of the visual detection means (10) is limited to the interior of the cooling device (1) even when the door (4) is opened with the largest angle allowed by the hinges. Thus, the visual detection means (10) is prevented from recording the visual data of the user and the home environment of the user, and the product perception is improved by increasing the customer privacy.

[0021] The cooling device (1) of the present invention comprises at least two doors (4) that are arranged along the body (2) side by side and parallel to each other and that allow the user to access the interior of the body (2) by opening and closing independently of each other. By means of providing two or more doors (4) in the cooling device (1), the visual detection means (10) arranged on the door shelves (8) on the opposite doors (4) capture the view of the body shelves (3) from opposite directions during the opening and closing of the doors (4). Thus, the visual data obtained from two or more points is transmitted to the control unit (9) and combined by the control unit (9) such that the defects on the images can be eliminated.

[0022] The present invention is also advantageous in that by means of the visual data combined by the control unit (9), the interior of the body (2) can be viewed from left, right and the center. Thus, the user is enabled to view a foodstuff that is behind a larger foodstuff in the body (2) from different angles, and the product perception is improved.

[0023] The cooling device (1) of the present invention comprises the visual detection means (10), the field of view of which is limited by the opposite edge of the body shelf (3) at about the same height as the visual detection means (10) when the door (4) is open. Thus, the visual detection means (10) is enabled to obtain the visual data

of only the interior of the body (2). Consequently, the face and the body of the user and the home environment do not enter the field of view of the visual detection means (10), and customer privacy is provided, improving the product perception.

[0024] The cooling device (1) of the present invention comprises an image display device (11) for displaying the images captured by the visual detection means (10) by means of the control unit (9). The visual data obtained by means of the visual detection means (10) and transmitted to the control unit (9) is combined by the control unit (9) and transmitted to the image display device (11). The connection between the control unit (9) and the image display device (11) can be a cable or a wireless connection. By means of the image display device (11), the user is enabled to access the information related to the foodstuffs placed in the cooling device (1) without opening the door (2) of the cooling device (1) and thus, the operational efficiency of the cooling device (1) is increased and the energy consumption thereof is decreased. The user is enabled to connect to the control unit (9) via remote access by means of wireless devices and thus, the user is enabled to be informed of the foodstuffs in the cooling device (1) and the product perception is improved by providing convenience before or after shopping.

[0025] The cooling device (1) of the present invention comprises the control unit (9) that enables the image of the foodstuffs to be cooled obtained by the visual detection means (10) to be tagged by the user on the screen of the image display device (11). The user may tag the foodstuffs placed into the cooling device (1) on the image display device (11) by touching the screen or by means of the buttons arranged almost adjacent to the screen. Said tags may include the date, item type or the expiry date in accordance with the user needs. By enabling the user to tag the foodstuffs to be cooled, the need for the user to memorize the expiry dates or package opening dates of the foodstuffs is eliminated, and the user gets real-time information related to the freshness of the foodstuffs to be cooled by means of the tags on the image display device (11). Thus, the user is prevented from consuming a spoiled foodstuff and the user is informed about the foodstuffs that should be replaced in the near future, and the product quality perception of the user is improved.

[0026] The cooling device (1) of the present invention comprises the control unit (9) that monitors the hand movements of the user in the body (2), that, when the user changes the positions of the foodstuffs to be cooled in the body (2), monitors the position changes of the foodstuffs to be cooled and matches the tag assigned on the image display device (11) by the user to the new positions of the foodstuffs to be cooled. The positions of the foodstuffs frequently used by the user in the cooling device (1) change often and the tag assigned by means of the image display device (11) to the foodstuff remains in the previous position. By means of the control unit (9), when

the positions of the foodstuffs are changed, the control unit (9) recognizes the relocated foodstuff, compares the previous position thereof with the new position thereof and moves the tag assigned to the foodstuff by the user to the new position of the foodstuff. Thus, the need for user to move the tag of the foodstuff that is taken out of the cooling device (1) or relocated in the cooling device (1) to the new position of the foodstuff on the image display device (11) is eliminated. Consequently, ease of use is provided for the user and the unused tags and the tags that do not correspond to the foodstuffs to be cooled on the image display device (11) are eliminated, and the product quality perception of the user is improved.

[0027] The cooling device (1) of the present invention comprises the visual detection means (10) that has a wide-angle lens. The visual detection means (10) that has a wide-angle lens obtains visual information at a wide angle, and thus, the image captured during the opening and closing of the door (4) is enabled to have an increased depth and the quality of the image displayed on the image display device (11) is increased.

[0028] The cooling device (1) of the present invention comprises the image display device (11) that is arranged on the door (4). By arranging the image display device (11) on the cooling device (1), the user is enabled to view the interior of the cooling device (1) without opening the door (4) of the cooling device (1) and energy saving is provided. Furthermore, the user does not need to purchase an external image display device to view the interior of the cooling device (1), and the user is prevented from spending additional costs for using the feature of the cooling device (1).

[0029] By means of the present invention, when the user takes the foodstuffs in the cooling device (1) out for use and places the same back into the cooling device (1), the invasion of the user privacy is prevented by means of the visual detection means (10) that has a limited field of view.

Claims

1. A cooling device (1) **comprising** a body (2); at least one shelf (3) arranged on the lateral walls of the body (2) for placing the foodstuffs to be cooled thereon; a door (4) that prevents user access to the interior of the body (2) in the closed position and enables the user to access to the interior of the body (2) in the open position, and a door shelf (8) that is arranged on the inner wall of the door (4) and that has a base (5), a first side wall (6) extending perpendicular to the base (5) at the side of the door (4) where the door (4) is hinged to the body (2) and a second side wall (7) that is arranged on the other end of the base (5) oppositely to the first side wall (6), wherein the base, the first side wall (5) and the second sidewall (7) define a storage space for placing the foodstuffs, a visual detection means (10) that is arranged on the

first side wall (6) surface that faces the interior of the body (2) when the door (4) is in the closed position and that captures the image of the foodstuffs on the body shelf (3) when the door (4) is moved from the closed position to the open position and from the open position to the closed position and transmits the same to a control unit (9); an image display device (11) for displaying the images captured by the visual detection means (10) by means of the control unit (9) wherein the control unit (9) enables the image of the foodstuffs obtained by the visual detection means (10) to be tagged by the user on the screen of the image display device (11) and wherein the control unit (9), by means of the visual detection means, monitors the hand movements of the user in the body (2), that, when the user changes the positions of the foodstuffs to be cooled in the body (2), monitors the position changes of the foodstuffs to be cooled and matches the tag assigned on the image display device (11) by the user to the new positions of the foodstuffs to be cooled.

2. A cooling device (1) as in claim 1, wherein the visual detection means (10), the field of view of which is limited by the opposite edge of the body shelf (3) at about the same height as the visual detection means (10) when the door (4) is open.

3. A cooling device (1) as in claim 1 or 2, wherein the visual detection means (10) having a wide-angle lens.

4. A cooling device (1) as in Claims 1 to 3, wherein the image display device (11) that is arranged on the door (4).

Patentansprüche

1. Ein Kühlgerät (1) **umfasst** einen Körper (2); mindestens ein Regal (3), das an den Seitenwänden des Körpers (2) angeordnet ist, um die zu kühlenden Lebensmittel darauf zu platzieren; eine Tür (4), die den Zugang des Benutzers zum Inneren des Körpers (2) in der geschlossenen Position verhindert und dem Benutzer den Zugang zum Inneren des Körpers (2) in der offenen Position ermöglicht; und eine Türablage (8), die an der Innenwand der Tür (4) angeordnet ist und eine Basis (5) umfasst, eine erste Seitenwand (6), die sich senkrecht zur Basis (5) an der Seite der Tür (4) erstreckt, an der die Tür (4) an des Körpers (2) angelenkt ist, wobei eine zweite Seitenwand (7), die aus das andere Ende der Basis (5) gegenüber der ersten Seitenwand (6) ist, wobei die Basis (5), die erste Seitenwand (6) und die zweite Seitenwand (7) einen Lagerraum zum Platzieren der Lebensmittel ermöglichen; ein visuelles Erfassungsmittel (10), welches an der Oberfläche der ersten

Seitenwand (6) angeordnet ist und dem Inneren des Körpers (2) zugewandt ist, wenn sich die Tür (4) in der geschlossenen Position befindet, und das Bild der Lebensmittel auf der Oberfläche vom Regal (3) aufnimmt, wenn die Tür (4) von der geschlossenen Position in die offene Position und von der offenen Position in die geschlossene Position bewegt wird und diese an eine Steuereinheit (9) überträgt; eine Bildanzeigevorrichtung (11) zum Anzeigen der Bilder, die von der visuellen Erfassungseinrichtung (10) mit Hilfe der Steuereinheit (9) aufgenommen wurden, wobei die Steuereinheit (9) das Bild der Lebensmittel anzeigt, die durch die visuelle Erfassungseinrichtung (10) erhalten wurden, um vom Benutzer auf dem Bildschirm der Bildanzeigevorrichtung (11) erkannt zu werden, wobei die Steuereinheit (9) mittels der visuellen Erfassungsmittel die Handbewegungen des Benutzers im Körper (2) überwacht, darüber hinaus überwacht sie die Positionsänderungen der zu kühlenden Lebensmittel und ordnet das vom Benutzer auf dem Bildanzeigergerät (11) zugewiesene Etikett den neuen Positionen der zu kühlenden Lebensmittel zu.

2. Ein Kühlgerät (1), wie in Anspruch 1 aufgeführt, umfasst ein visuelles Erfassungsmittel (10), dessen Sichtfeld durch die gegenüberliegende Kante des Regals (3) in etwa der gleichen Höhe wie das visuelle Erfassungsmittel (10) begrenzt ist, wenn die Tür (4) geöffnet ist.
3. Ein Kühlgerät (1), wie in Anspruch 1 oder 2 aufgeführt, umfasst ein visuelles Erfassungsmittel (10), dass eine Weitwinkellinse aufweist.
4. Ein Kühlgerät (1), wie in den Ansprüchen 1 bis 3 aufgeführt, umfasst eine Bildanzeigevorrichtung, die an der Tür (4) angeordnet ist.

Revendications

1. Un appareil de refroidissement (1) **comprenant** un corps (2); au moins une étagère (3) disposée sur les parois latérales du corps (2) pour placer les articles alimentaires à refroidir; une porte (4) qui empêche l'utilisateur d'accéder à l'intérieur du corps (2) en position fermée et qui permet à l'utilisateur d'accéder à l'intérieur du corps (2) en position ouverte, et un rayonnage de porte (8) disposé sur la paroi intérieure de la porte (4) et qui possède une base (5), une première paroi latérale (6) s'étendant perpendiculairement à la base (5) du côté de la porte (4) lorsque la porte (4) est rabattue sur le corps (2) et une seconde paroi latérale (7) qui est disposée sur l'autre extrémité de la base (5) à l'opposé de la première paroi latérale (6), dans lequel la base, la première paroi latérale (5) et la seconde paroi latérale (7) définissent

un espace de stockage pour placer les articles alimentaires, un dispositif de détection visuelle (10) qui est disposé sur la surface de la première paroi latérale (6) en face de l'intérieur du corps (2) lorsque la porte (4) est en position fermée et qui capture l'image des articles alimentaires posés sur l'étagère du corps (3) lorsque la porte (4) passe de la position fermée à la position ouverte et de la position ouverte à la position fermée et la transmet à une unité de commande (9); un dispositif d'affichage d'image (11) pour afficher les images capturées par le dispositif de détection visuelle (10) à l'aide de l'unité de commande (9) dans lequel l'unité de commande (9) permet à l'utilisateur de marquer les images des articles alimentaires obtenues par le dispositif de détection visuelle (10) sur l'écran du dispositif d'affichage d'image (11) et dans lequel l'unité de commande (9) surveille les mouvements de la main de l'utilisateur dans le corps (2) à l'aide du dispositif de détection visuelle, qui, lorsque l'utilisateur change la position des articles alimentaires à refroidir dans le corps (2), surveille les changements de position des aliments à refroidir et fait concorder le marquage assigné sur le dispositif d'affichage d'image (11) par l'utilisateur avec les nouvelles positions des articles alimentaires à refroidir.

2. Un appareil de refroidissement (1) selon la revendication 1, dont le dispositif de détection visuelle (10), duquel le champ de vision est limité par le bord opposé de l'étagère du corps (3) à environ la même hauteur que le dispositif de détection visuelle (10) lorsque la porte (4) est ouverte.
3. Un appareil de refroidissement (1) selon les revendications 1 ou 2, dont le dispositif de détection visuelle (10) a un objectif grand angle.
4. Un appareil de refroidissement (1) selon les revendications 1 à 3, dont le dispositif d'affichage d'image (11) est disposé sur la porte (4).

Figure 1

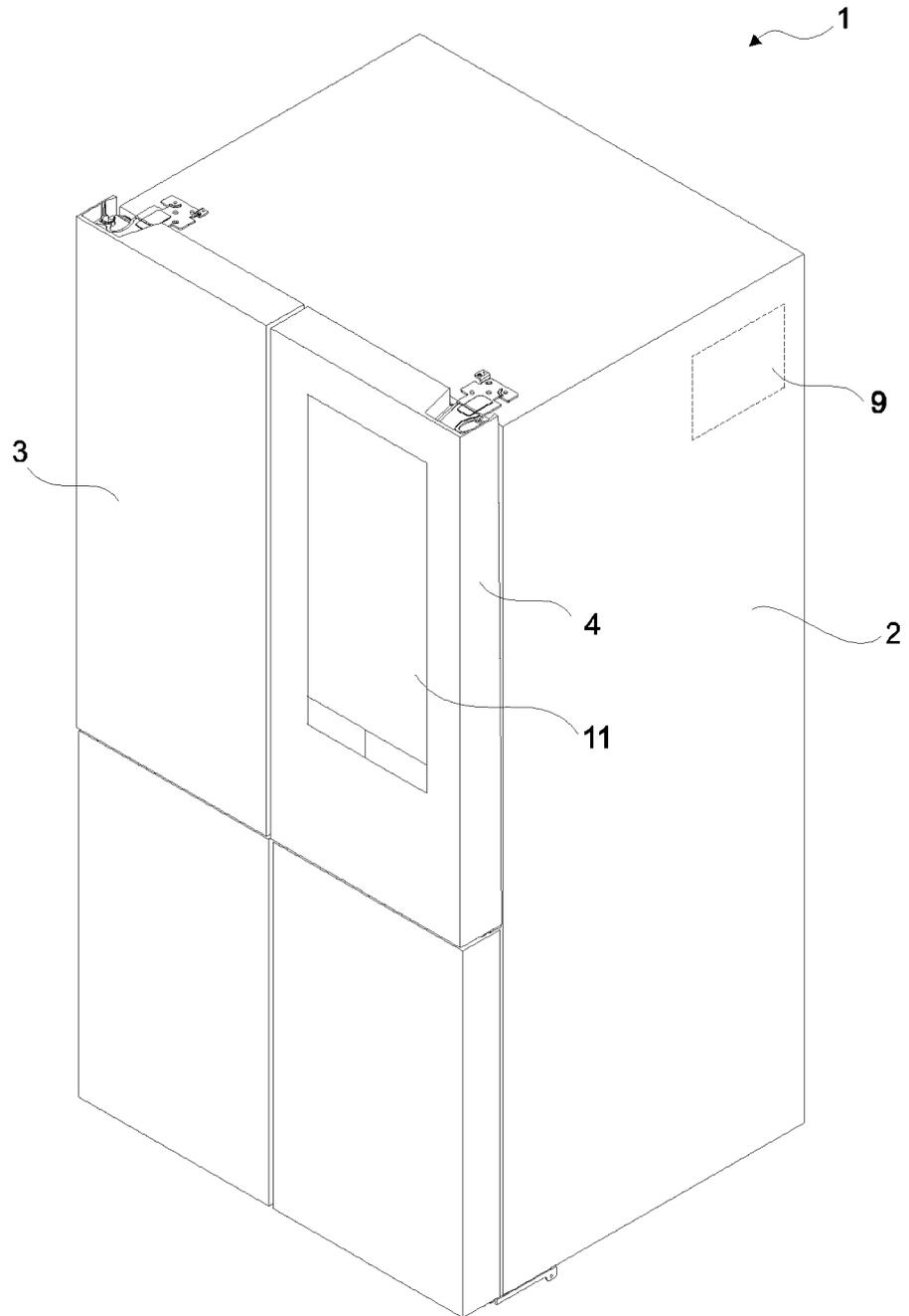


Figure 2

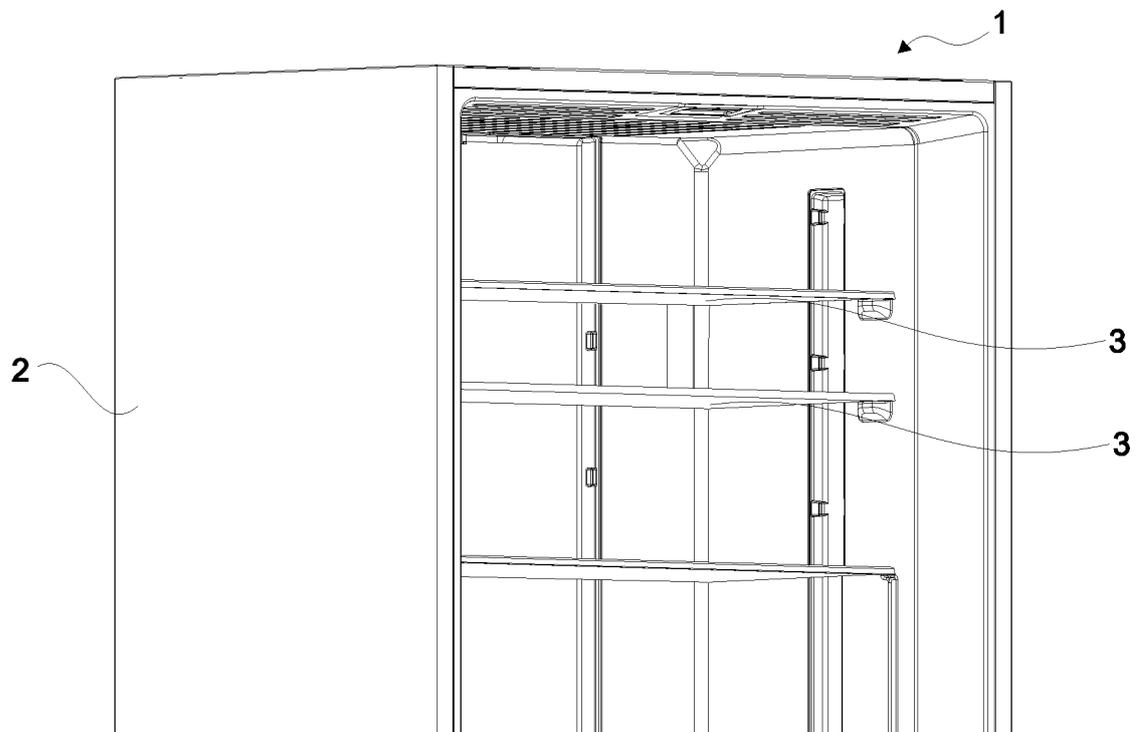


Figure 3

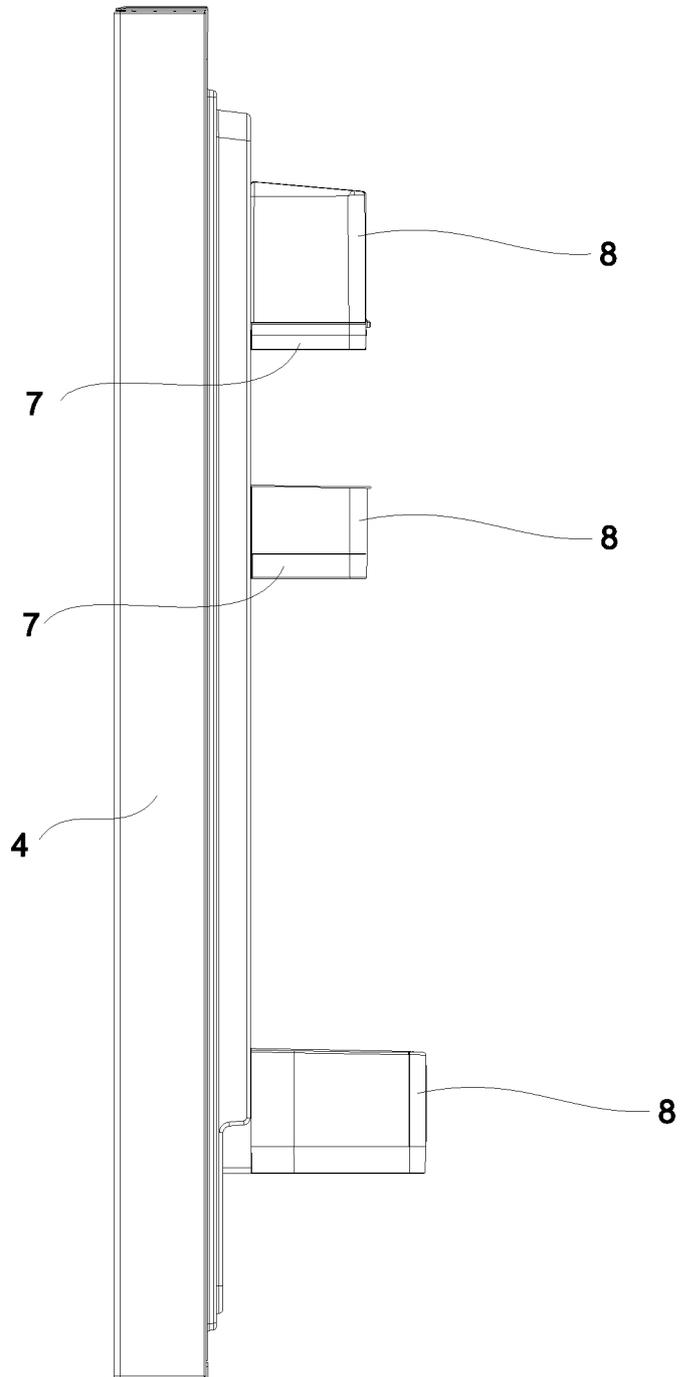


Figure 4

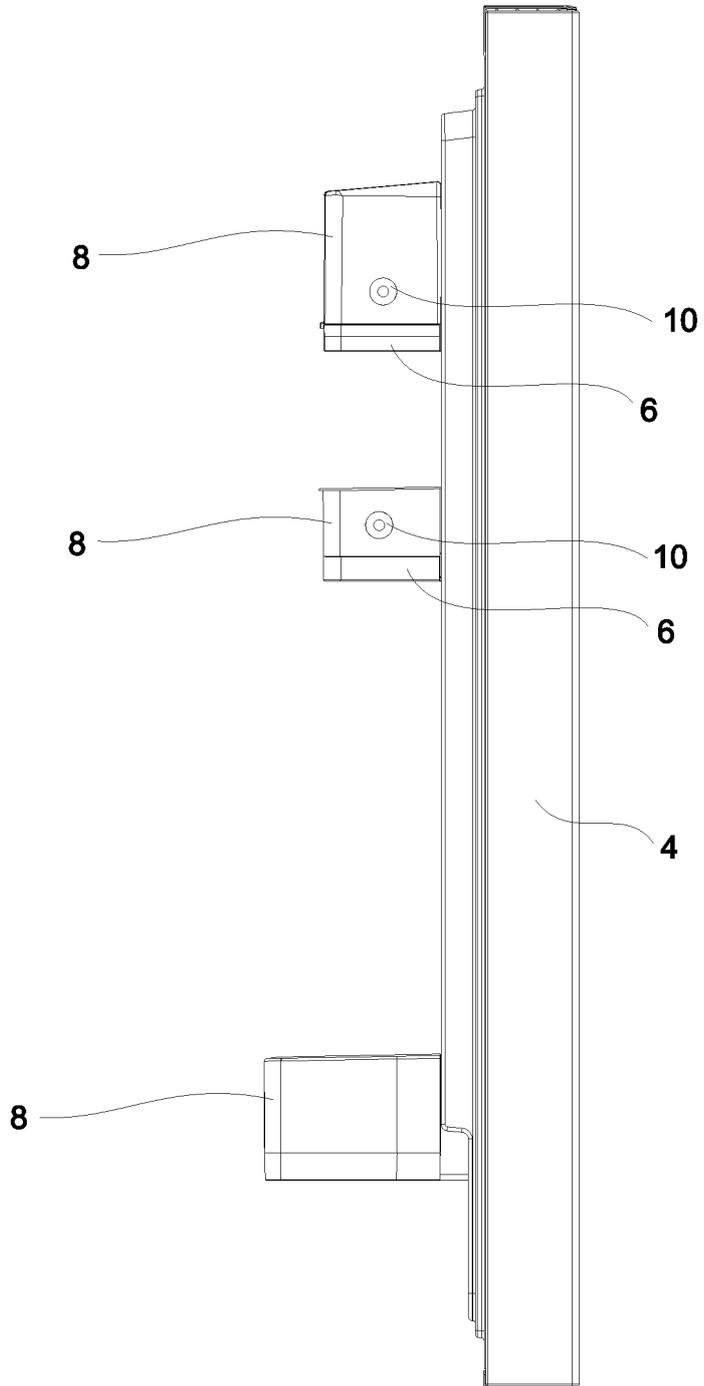
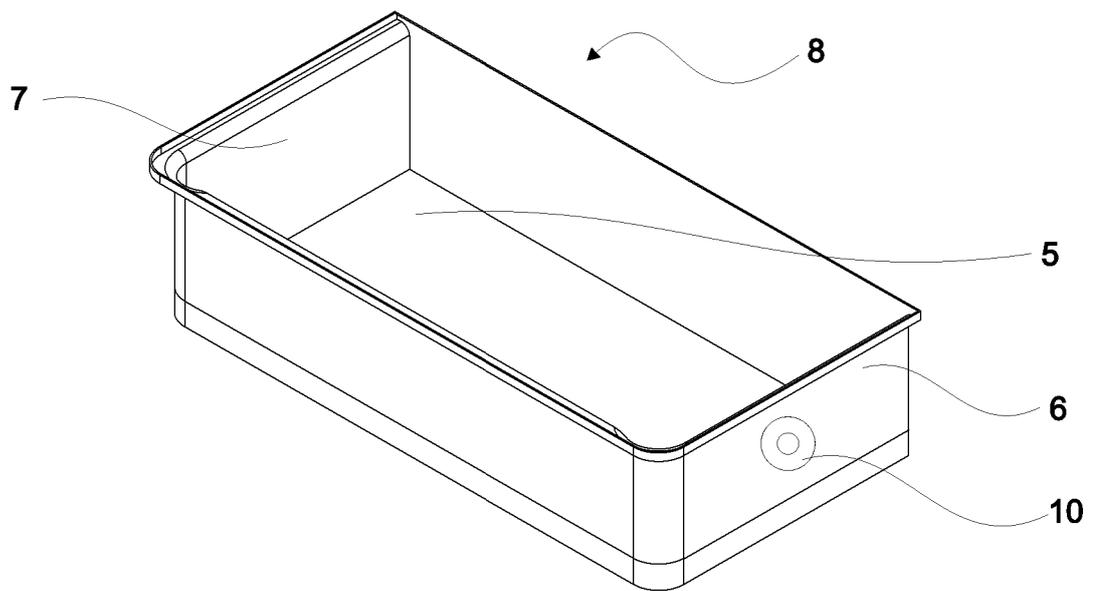


Figure 5



REFERENCES CITED IN THE DESCRIPTION

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