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(54) **INTEGRATED REFRIGERATOR**

(57) The invention discloses an integrated refrigerator including a cabinet, a first and second storage compartment vertically distributed and separated by a partition are provided in the cabinet, the cabinet is further provided with a cabinet door for closing the first and second storage compartment, and an upper handle of the first storage compartment and a lower handle of the second storage compartment are both close to the partition so that an upper drawer and a lower drawer are aligned and easily pulled out.

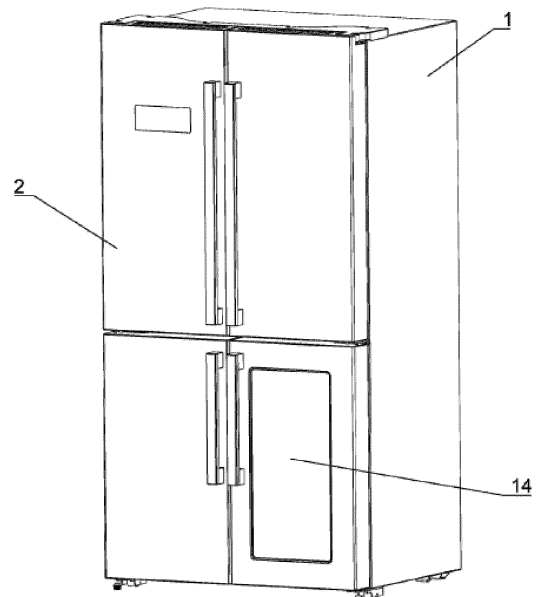


FIG. 1

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Description

TECHNICAL FIELD

[0001] The present invention relates to the field of refrigerators, and specifically relates to an integrated refrigerator.

BACKGROUND

[0002] Refrigerators have been widely used as household appliance for preserving food, and especially in today's society where people pay more and more attention to the quality of life, there is an increasing demand for the preservation environment of some articles or food. At present, refrigerators on the market usually integrates a fresh zone and a cold storage zone arranged up and down. Different food stuffs are preserved differently through the fresh zone and the cold storage zone.

[0003] In order to improve the convenience of use of the refrigerator, drawers are usually provided in the refrigerator to facilitate access and placement of the articles. A handle portion of the existing refrigerator drawer is provided in the middle of a front end face of the refrigerator drawer, such as the drawer structure of vegetable compartment drawer for refrigerator disclosed in China utility model patent No. CN215983518U. There are certain defects in arranging the handle portion in the middle, especially when used in a large refrigerator. Because the drawer is at a high position, arranging the handle portion in the middle further increases the position of the handle portion, which is inconvenient to push and pull the drawer and affects the aesthetics.

SUMMARY

[0004] The technical problem to be solved by the present invention is to provide an integrated refrigerator which is simple in structure, convenient for users to apply force to push and pull and has more humanized design.

[0005] In order to solve the above technical problem, the present invention is achieved by the following technical solution: An integrated refrigerator, includes a cabinet, a first storage compartment and a second storage compartment vertically distributed are provided in the cabinet, the first storage compartment and the second storage compartment are separated by a partition, the cabinet is further provided with a cabinet door for closing the first storage compartment and the second storage compartment, one or more upper drawers are provided in the first storage compartment, a lower portion of the upper drawer is provided with an upper handle, one or more lower drawers are provided in the second storage compartment, an upper portion of the lower drawer is provided with a lower handle, and the upper handle and the lower handle are both close to the partition.

[0006] Further, the upper handle is arranged at a lower end portion of a front end face of the upper drawer, and

the lower handle is arranged at an upper end portion of a front end face of the lower drawer, which have the advantage that the upper handle is arranged at the lower end portion of the upper drawer, so that the upper handle of the upper drawer located in the first storage compartment is located below and is at a position adapted to the user's forehead, so that the user can easily lift up or hold up the upper drawer containing articles, thereby facilitating pushing and pulling of the upper drawer. Similarly, the lower handle is arranged at the upper end portion of the lower drawer, so that the position of the lower handle is closer to the upper portion compared to the conventional design, so that the user can reduce the degree of bending during use, especially for the lower drawer at the bottom of the second storage compartment, and the user can also apply an obliquely upward pulling force to the lower drawer when pulling out the lower drawer. That is, lifting up the lower drawer reduces the contact area between the lower drawer and the cabinet, thereby facilitating the pulling out of the lower drawer.

[0007] Further, rear end portions of both sides of the upper drawer and the lower drawer are provided with rollers, a guide slide rail corresponding to the rollers is provided in the cabinet, the guide slide rail is provided with a guide groove, a lower side wall of the guide groove includes a smooth section, a V-shaped section and a forward-tilting section provided in sequence, and a lowest point of the V-shaped section is higher than a lowest point of the forward-tilting section, which have the advantage that it is convenient for the user to push out or pull out the upper drawer or the lower drawer by providing the rollers. In addition, the downward inclined forward-tilting section allows the rollers at the front end of the upper drawer or the lower drawer put in place to have a downward movement tendency under the action of gravity, preventing the upper drawer or the lower drawer from directly slipping off when shaking. In addition, the V-shaped section can also play a buffering role and a limiting role, that is, effectively preventing the user from directly pulling out the drawer with excessive force and providing a pause buffer zone.

[0008] Further, the guide slide rail is provided with a rotating wheel matched with the upper drawer or the lower drawer, the rotating wheel is rotatably arranged at a front end of the guide slide rail, and the rotating wheel protrudes from a lower side wall of the guide groove, which have the advantage that the rotating wheel protruding from the lower side wall of the guide groove can play a load-bearing role for the upper drawer or the lower drawer, and is convenient for users to push and pull the drawers due to rotatable nature of the rotating wheel.

[0009] Further, the plurality of upper drawers can be arranged and distributed in a vertical direction, and the plurality of upper drawers can also be arranged and distributed in a horizontal direction, and when the plurality of upper drawers are arranged in the horizontal direction, a baffle is provided between two adjacent upper drawers, and guide slide rails corresponding to rollers are provided

on both sides of the baffle, which have the advantages that the plurality of upper drawers vertically arranged can improve space utilization and facilitates food storage, and the upper drawers arranged side by side can be separated by the baffle to achieve dry-wet separation and improve the service efficiency of the refrigerator.

[0010] Further, a limiting strip is provided on both sides of the upper drawer and the lower drawer, the limiting strip is inserted into the corresponding guide groove, the limiting strip is provided with a stop block matched with the rotating wheel and protruding downward, and the stop block is close to the roller, which have the advantages that the limiting strips can ensure that the upper drawer or the lower drawer can slide reliably in the guide groove, and the stop block cooperates with the rotating wheel to play a buffering and blocking role.

[0011] Further, a sterilizing device is provided in the first storage compartment, and the sterilizing device includes an ion generator, and the ion generator is fixedly arranged at the top of the first storage compartment, which have the advantage that articles in the cabinet can be sterilized by the sterilizing device, thus slowing down bacterial growth and guarantee food storage environment.

[0012] Further, the upper drawer includes a first body and a first stopper, the first stopper is detachably snap-fitted to a front end of the first body, and the upper handle is arranged at a lower edge of the first stopper, which have the advantages that the first body and the first stopper in the detachable snap-fit facilitate assembly and production of the upper drawer, and the detachable upper drawer also facilitates later maintenance and disassembly.

[0013] Further, the lower drawer comprises a second body and a second stopper, the second stopper is detachably snap-fitted to a front end of the second body, and the lower handle is arranged at an upper edge of the second stopper.

[0014] Further, the cabinet is further provided therein with a wine cabinet arranged side by side with the second storage compartment, a vertical dividing plate is provided between the wine cabinet and the second storage compartment, the wine cabinet is provided with a plurality of horizontal shelves in the vertical direction, and the horizontal shelves are detachably matched with the cabinet, which have the advantages that providing the wine cabinet can effectively improve functional characteristics of the refrigerator and meet the needs of users for different functions of the refrigerator, and the detachable horizontal shelves can facilitate arrangement of wine bottles, thus arranging wine bottles of different sizes differently.

[0015] Compared with the prior art, the present invention has the following beneficial effects: the first storage compartment and the second storage compartment allow separate preservation of food articles with different preservation requirements, improving preservation reliability. In order to facilitate the access of food articles, the upper drawer and the lower drawer are respectively ar-

5 ranged in the first storage compartment and the second storage compartment, the drawers facilitate the user to store and access the food articles, and corresponding upper and lower handles are also arranged at the front ends of the upper drawer and the lower drawer. The upper handle is arranged at the lower portion of the upper drawer, so that the upper handle of the upper drawer located in the first storage compartment is located below and is at a position adapted to the user's forehand, so that the user can easily lift up or hold up the upper drawer containing articles, thereby facilitating pushing and pulling of the upper drawer. Similarly, the lower handle is arranged at the upper portion of the lower drawer, so that the position of the lower handle is closer to the upper portion compared to the conventional design, so that the user can reduce the degree of bending during use, especially for the lower drawer at the bottom of the second storage compartment, and the user can also apply an obliquely upward pulling force to the lower drawer when pulling out the lower drawer. That is, lifting up the lower drawer reduces the contact area between the lower drawer and the cabinet, thereby facilitating the pulling out of the lower drawer. In addition, the upper handle is arranged to be closed downward and the lower handle is arranged to be closed upward, so that the upper drawer and the lower drawer in the cabinet look neater, with better neatness and aesthetics.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In order to illustrate the technical solutions of the embodiments of the present invention more clearly, the accompanying drawings that need to be used in the embodiments will be briefly introduced below. Apparently, the accompanying drawings in the following description are merely some rather than all embodiments of the present invention, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is an overall structural diagram of the present invention;

FIG. 2 is a first schematic diagram of an internal structure of the present invention.

FIG. 3 is a second schematic diagram of the internal structure of the present invention.

FIG. 4 is a structural schematic diagram of upper drawers of the present invention provided side by side;

FIG. 5 is a structural schematic diagram of a baffle and an upper drawer of the present invention in fit with each other; and

FIG. 6 is a structural schematic diagram of a lower drawer of the present invention.

DESCRIPTION OF THE EMBODIMENTS

[0017] The present invention will be further described

in detail with reference to the accompanying drawings.

[0018] The following description is presented to disclose the present invention to enable those skilled in the art to practice the present invention. The preferred embodiments in the following description are by way of example only, and other obvious variations will occur to those skilled in the art. The basic principles of the present invention as defined in the following description may be applied to other embodiments, modifications, improvements, equivalents, and other technical solutions without departing from the spirit and scope of the present invention.

[0019] It should be understood by those skilled in the art that in the disclosure of the present invention, the orientation or positional relationship indicated by the terms "longitudinal", "transverse", "upper", "lower", "left", "right", "front", "back", "vertical", "horizontal", "top", "bottom", "inside", "outside", etc. is based on the orientation or positional relationship shown in the accompanying drawings, which is merely for the convenience of describing the present invention and simplifying the description, and does not indicate or imply that the referred apparatus or element must have a particular orientation and be constructed and operated in the particular orientation. Therefore, the above terms cannot be construed as limiting the present invention.

[0020] An integrated refrigerator, includes a cabinet 1, a first storage compartment 1.1 and a second storage compartment 1.2 vertically distributed are provided in the cabinet 1, the first storage compartment 1.1 and the second storage compartment 1.2 are separated by a partition 3, and the cabinet 1 is further provided with a cabinet door for closing the first storage compartment 1.1 and the second storage compartment 1.2, where the first storage compartment 1.1 is a fresh zone, and the second refrigerating compartment is a cold storage zone. One or a plurality of upper drawers 4 are provided in the first storage compartment 1.1, the plurality of upper drawers 4 can be arranged and distributed in a vertical direction, and the plurality of upper drawers 4 can also be arranged and distributed in a horizontal direction. When the plurality of upper drawers 4 are arranged in the horizontal direction, a baffle 6 is provided between two adjacent upper drawers 4, and the baffle 6 divides the upper drawers 4 in different columns to achieve dry-wet separation, which is convenient for users to store articles. In addition, one or more lower drawers 5 are vertically arranged in the second storage compartment 1.2.

[0021] The upper drawer 4 includes a first body 4.1 and a first stopper 4.2, the first stopper 4.2 is detachably snap-fitted to a front end of the first body 4.1, and an upper handle 4.3 is provided at a lower portion of the upper drawer 4. More preferably, the upper handle 4.3 is arranged at a lower edge of the first stopper 4.2. The lower drawer 5 includes a second body 5.1 and a second stopper 5.2, the second stopper 5.2 is detachably snap-fitted to a front end of the second body 5.1, and a lower handle 5.3 is provided at an upper portion of the

lower drawer 5. More preferably, the lower handle 5.3 is arranged at an upper edge of the second stopper 5.2, so that the upper handle 4.3 and the lower handle 5.3 are both close to the partition 3. The upper handle 4.3 is arranged at the lower end of the upper drawer 4, so that the upper handle 4.3 of the upper drawer 4 located in the first storage compartment 1.1 is located below and is at a position adapted to the user's forehead, so that the user can easily lift up or hold up the upper drawer 4 containing articles, thereby facilitating pushing and pulling of the upper drawer 4. Similarly, the lower handle 5.3 is arranged at the upper end portion of the lower drawer 5, so that the position of the lower handle 5.3 is closer to the upper portion compared to the conventional design, so that the user can reduce the degree of bending during use, especially for the lower drawer 5 at the bottom of the second storage compartment 1.2, and the user can also apply an obliquely upward pulling force to the lower drawer 5 when pulling out the lower drawer 5. That is, lifting up the lower drawer 5 reduces the contact area between the lower drawer 5 and the cabinet 1, thereby facilitating the pulling out of the lower drawer 5.

[0022] In order to further improve the convenience of pulling the upper drawer 4 or the lower drawer 5 in the cabinet 1, rear end portions of both sides of the upper drawer 4 and the lower drawer 5 are provided with rollers 11, a guide slide rail 7 corresponding to the rollers 11 is provided in the cabinet 1, the guide slide rail 7 is provided with a guide groove 8, a lower side wall of the guide groove 8 includes a smooth section 8.1, a V-shaped section 8.2 and a forward-tilting section 8.3 provided in sequence, and a lowest point of the V-shaped section 8.2 is higher than a lowest point of the forward-tilting section 8.3. A limiting strip 10 is provided on both sides of the upper drawer 4 and the lower drawer 5, the limiting strip 10 is inserted into the corresponding guide groove 8, the limiting strip 10 is provided with a stop block 10.1 matched with the rotating wheel 9 and protruding downward, and the stop block 10.1 is close to the roller 11. When the plurality of upper drawers 4 are arranged side by side, the guide slide rails 7 are arranged on both sides of the baffle 6 between two adjacent upper drawers 4, thus facilitating sliding of the corresponding upper drawer 4. The downward inclined forward-tilting section 8.3 allows the rollers 11 at the front end of the upper drawer 4 or the lower drawer 5 put in place to have a downward movement tendency under the action of gravity, preventing the upper drawer 4 or the lower drawer 5 from directly slipping off when shaking. In addition, the V-shaped section 8.2 can also play a buffering role and a limiting role, that is, effectively preventing the user from directly pulling out the drawer with excessive force and providing a pause buffer zone.

[0023] In addition, the guide slide rail 7 is provided with a rotating wheel 9 matched with the upper drawer 4 or the lower drawer 5, the rotating wheel 9 is rotatably arranged at a front end of the guide slide rail 7, and the rotating wheel 9 protrudes from a lower side wall of the guide

groove 8. The rotating wheel 9 protruding from the lower side wall of the guide groove 8 can play a load-bearing role for the upper drawer 4 or the lower drawer 5, and is convenient for users to push and pull the drawers due to rotatable nature of the rotating wheel 9.

[0024] In order to further improve use reliability of the refrigerator, a sterilizing device is provided in the first storage compartment 1.1, the sterilizing device includes an ion generator 12, and the ion generator 12 is fixedly arranged at the top of the first storage compartment 1.1. The first storage compartment 1.1 is sterilized by negative ions generated by the ion generator 12. A wine cabinet 13 may be further provided in the cabinet 1, and a see-through window 14 is provided on a door 2 corresponding to the wine cabinet 13.

[0025] The wine cabinet 13 and the second storage compartment 1.2 are arranged side by side, and the wine cabinet 13 and the second storage compartment 1.2 are divided into zones by a vertical dividing plate 15. In addition, the wine cabinet is provided with a plurality of horizontal shelves 16 in the vertical direction, the horizontal shelves 16 are detachably matched with the cabinet 1, and the horizontal shelves 16 are further provided with a plurality of placing openings 17 having a narrow width, so that bottle bodies of the wine bottles can be placed at the placing openings 17.

[0026] It will be appreciated by persons skilled in the art that the embodiments of the present invention described above and shown in the accompanying drawings are illustrative only and do not limit the present invention. The objects of the present invention have been fully and effectively achieved. The functional and structural principles of the present invention have been shown and described in the embodiments, and any variations or modifications may be made to the embodiments of the present invention without departing from the principles described.

Claims

1. An integrated refrigerator, comprising a cabinet (1), wherein a first storage compartment (1.1) and a second storage compartment (1.2) vertically distributed are provided in the cabinet (1), the first storage compartment (1.1) and the second storage compartment (1.2) are separated by a partition (3), the cabinet (1) is further provided with a cabinet door for closing the first storage compartment (1.1) and the second storage compartment (1.2), one or more upper drawers (4) are provided in the first storage compartment (1.1), a lower portion of the upper drawer (4) is provided with an upper handle (4.3), one or more lower drawers (5) are provided in the second storage compartment (1.2), an upper portion of the lower drawer (5) is provided with a lower handle (5.3), and the upper handle (4.3) and the lower handle (5.3) are both close to the partition (3).
2. The integrated refrigerator according to claim 1, wherein the upper handle (4.3) is arranged at a lower end portion of a front end face of the upper drawer (4), and the lower handle (5.3) is arranged at an upper end portion of a front end face of the lower drawer (5).
3. The integrated refrigerator according to claim 1, wherein rear end portions of both sides of the upper drawer (4) and the lower drawer (5) are provided with rollers (11), a guide slide rail (7) corresponding to the rollers (11) is provided in the cabinet (1), the guide slide rail (7) is provided with a guide groove (8), a lower side wall of the guide groove (8) comprises a smooth section (8.1), a V-shaped section (8.2) and a forward-tilting section (8.3) provided in sequence, and a lowest point of the V-shaped section (8.2) is higher than a lowest point of the forward-tilting section (8.3).
4. The integrated refrigerator according to claim 3, wherein the guide slide rail (7) is provided with a rotating wheel (9) matched with the upper drawer (4) or the lower drawer (5), the rotating wheel (9) is rotatably arranged at a front end of the guide slide rail (7), and the rotating wheel (9) protrudes from a lower side wall of the guide groove (8).
5. The integrated refrigerator according to claim 4, wherein a plurality of upper drawers (4) are arranged and distributed in a vertical direction, and the plurality of upper drawers (4) are also arranged and distributed in a horizontal direction, and when the plurality of upper drawers (4) are arranged in the horizontal direction, a baffle (6) is provided between two adjacent upper drawers (4), and guide slide rails (7) corresponding to rollers (11) are provided on both sides of the baffle (6).
6. The integrated refrigerator according to claim 4, wherein a limiting strip (10) is provided on both sides of the upper drawer (4) and the lower drawer (5), the limiting strip (10) is inserted into the corresponding guide groove (8), the limiting strip (10) is provided with a stop block (10.1) matched with the rotating wheel (9) and protruding downward, and the stop block (10.1) is close to the roller (11).
7. The integrated refrigerator according to claim 1, wherein a sterilizing device is provided in the first storage compartment (1.1), and the sterilizing device comprises an ion generator (12), and the ion generator (12) is fixedly arranged at the top of the first storage compartment (1.1).
8. The integrated refrigerator according to claim 1, wherein the upper drawer (4) comprises a first body (4.1) and a first stopper (4.2), the first stopper (4.2) is

detachably snap-fitted to a front end of the first body (4.1), and the upper handle (4.3) is arranged at a lower edge of the first stopper (4.2).

9. The integrated refrigerator according to claim 1, 5
wherein the lower drawer (5) comprises a second
body (5.1) and a second stopper (5.2), the second
stopper (5.2) is detachably snap-fitted to a front end
of the second body (5.1), and the lower handle (5.3) 10
is arranged at an upper edge of the second stopper
(5.2).
10. The integrated refrigerator according to claim 1,
wherein the cabinet (1) is further provided therein 15
with a wine cabinet (13) arranged side by side with
the second storage compartment (1.2), a vertical
dividing plate (15) is provided between the wine
cabinet (13) and the second storage compartment
(1.2), the wine cabinet (13) is provided with a plurality 20
of horizontal shelves (16) in the vertical direction,
and the horizontal shelves (16) are detachably
matched with the cabinet (1).

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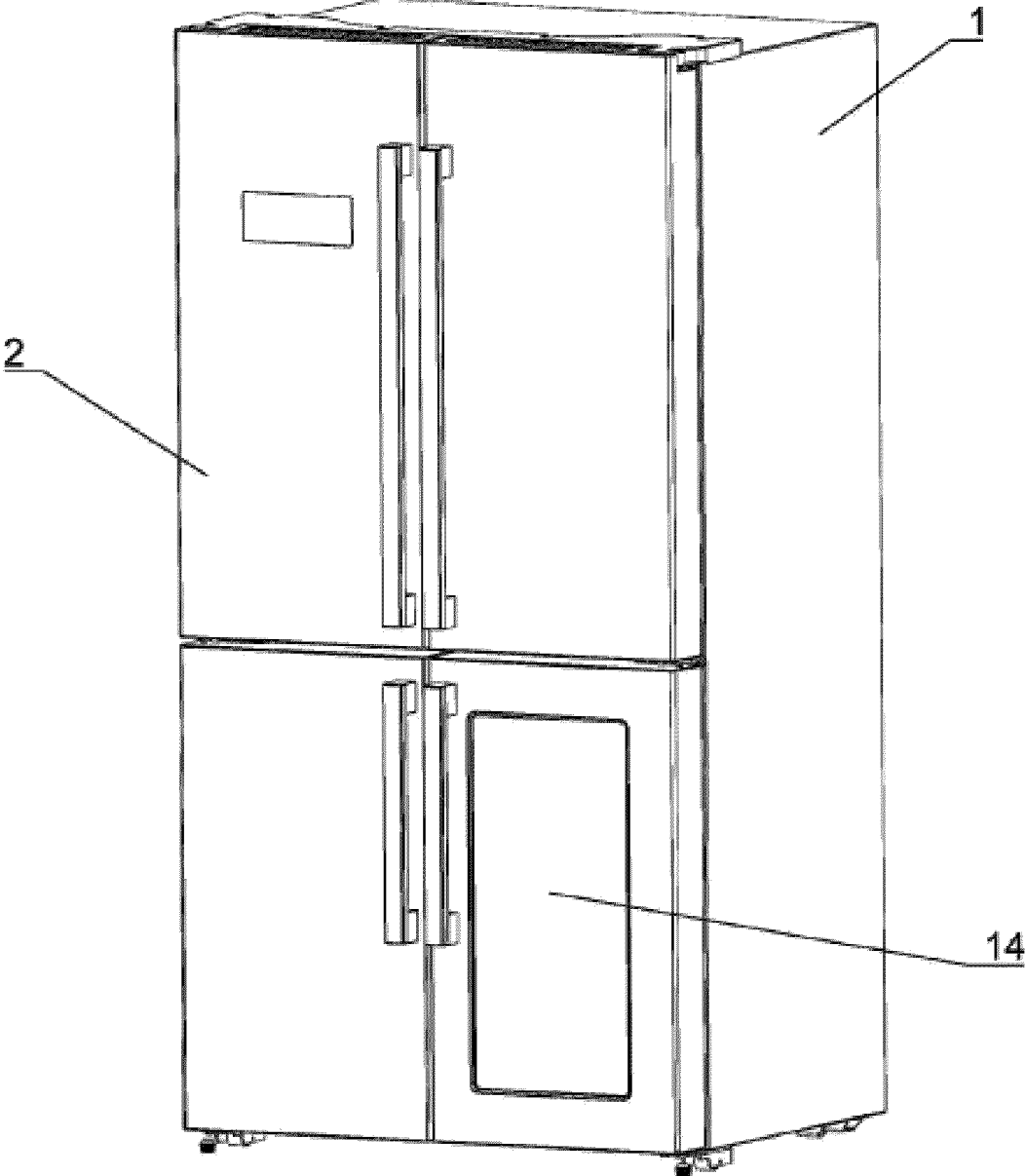


FIG. 1

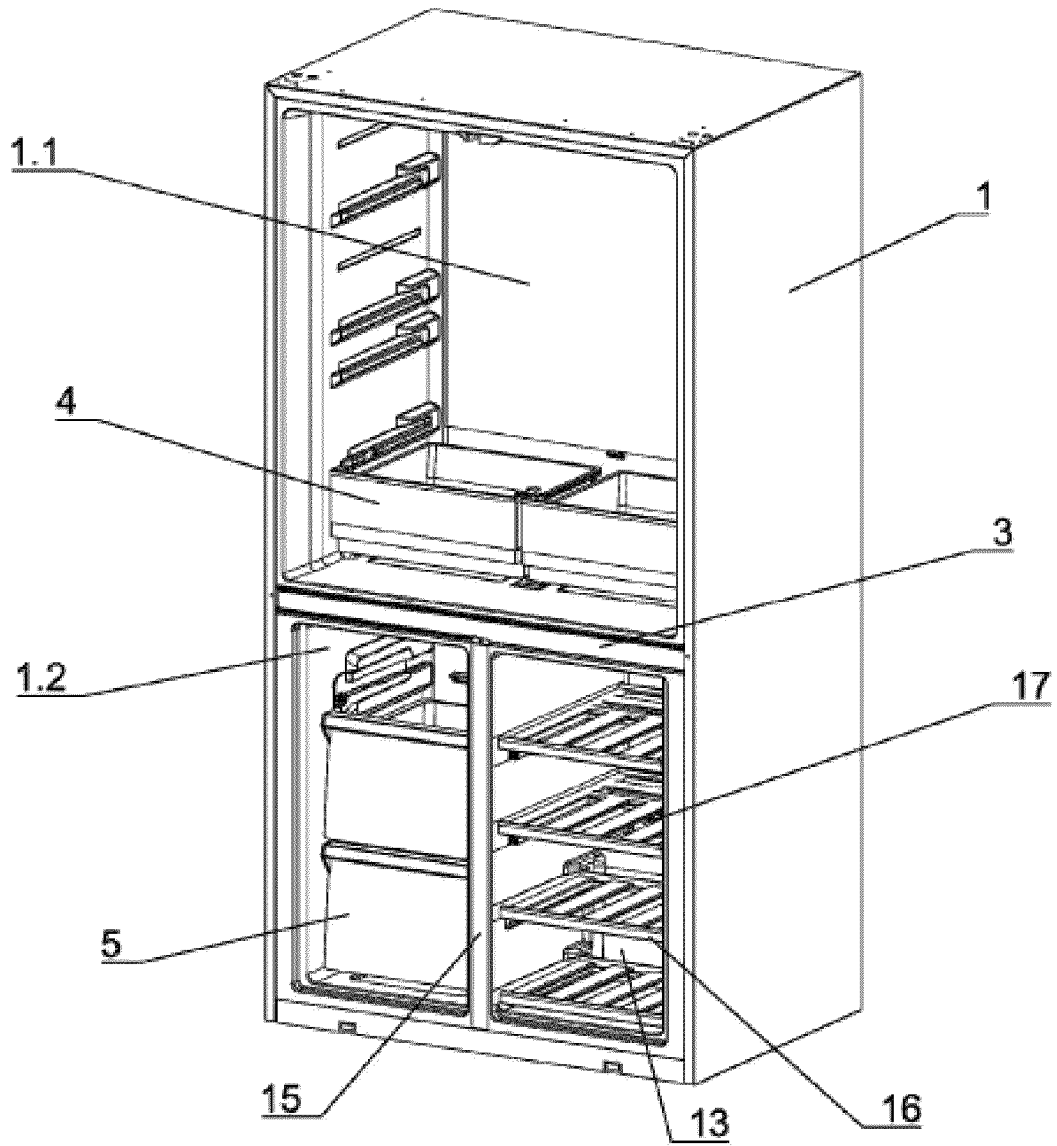


FIG. 2

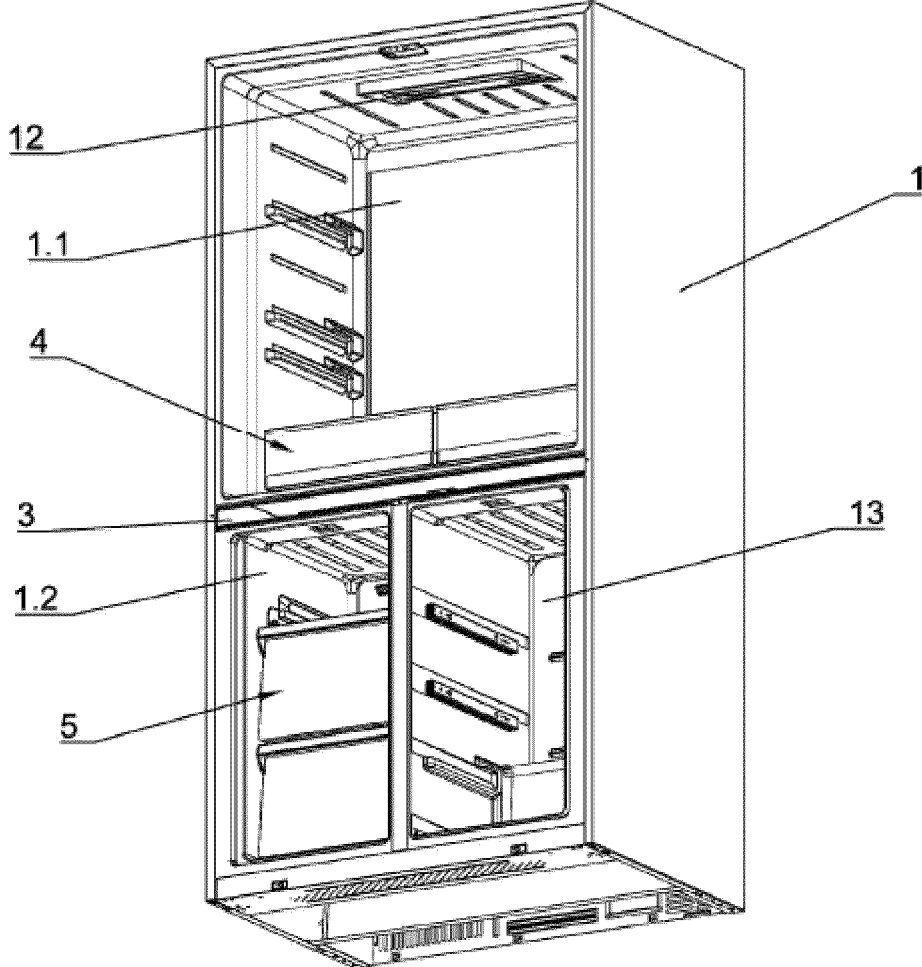


FIG. 3

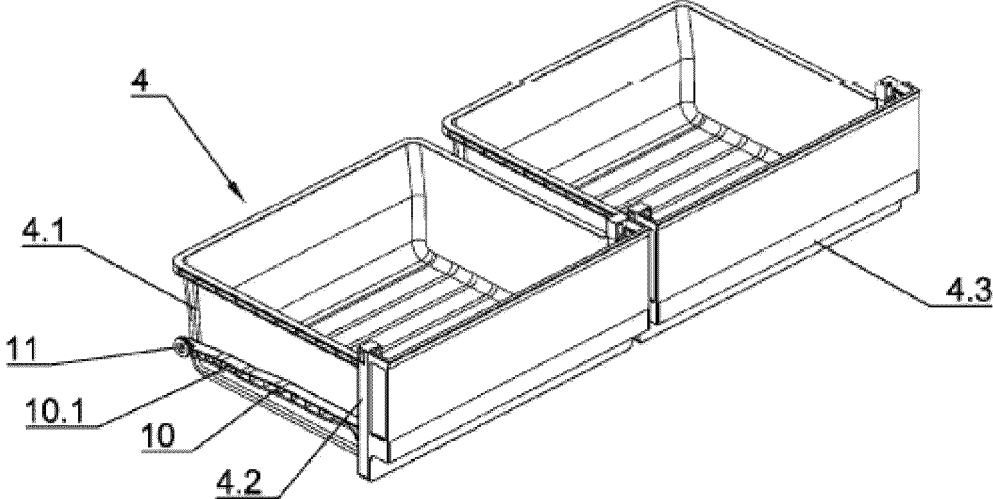


FIG. 4

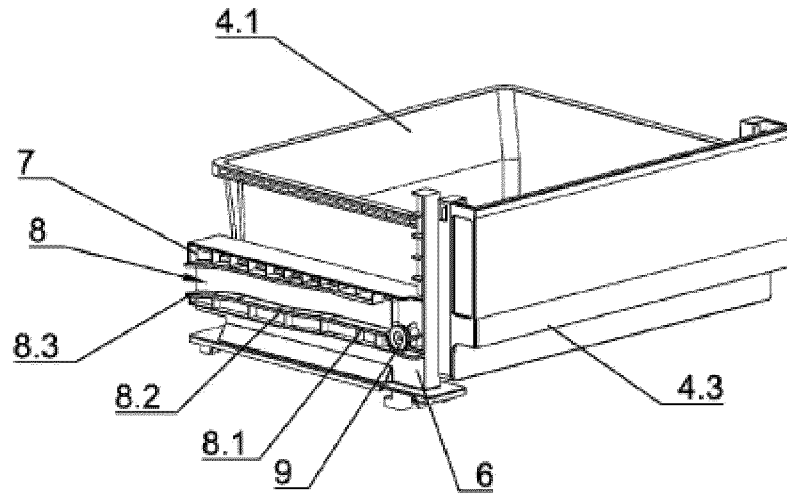


FIG. 5

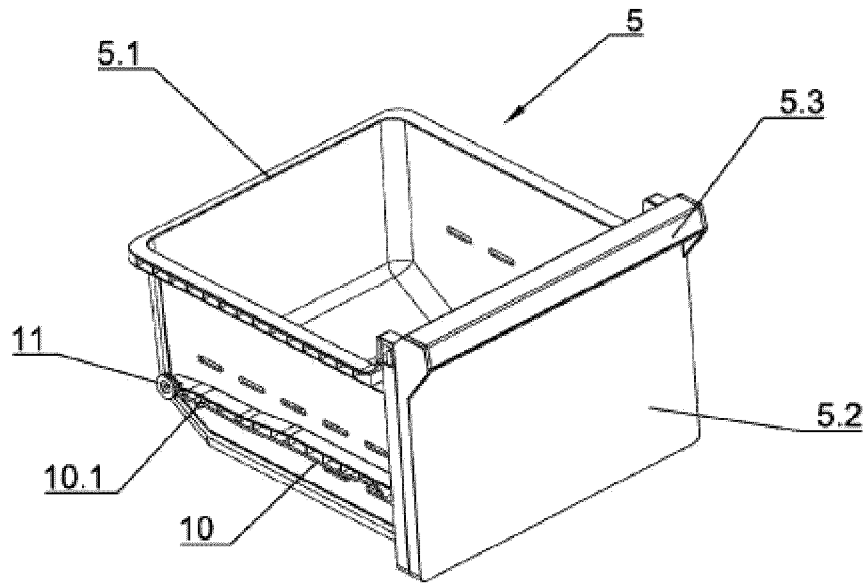


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/091422

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A. CLASSIFICATION OF SUBJECT MATTER		
F25D11/02(2006.01)i; F25D23/12(2006.01)i; F25D25/02(2006.01)i		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC: F25D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
CNTXT; CNKI; WPABS; DWPI; USTXT; EPTXT; WOTXT; ISI_Web of Science: 韩电, 冰箱, 冷藏库, 制冷器具, 抽屉, 拉手, 把手, 推拉, HANDIAN, refrigerator, drawer, handle, push, pull		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		<input checked="" type="checkbox"/> See patent family annex.
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Date of the actual completion of the international search	Date of mailing of the international search report	
04 August 2023	11 August 2023	
Name and mailing address of the ISA/CN	Authorized officer	
China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088		
	Telephone No.	

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Information on patent family members

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