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(54) **REFRIGERATOR**

KÜHLSCHRANK

RÉFRIGÉRATEUR

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(56) References cited:
EP-A1- 1 564 512 JP-A- 2000 039 256
US-A1- 2015 059 399

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Description

BACKGROUND

Technical Field

[0001] The utility model relates to the field of refrigeration apparatuses, and in particular, to a refrigerator.

Related Art

[0002] With the popularization of refrigeration apparatuses in people's daily life, more and more people start using a refrigeration apparatus such as a refrigerator to store perishable food such as vegetables and fish.

[0003] A refrigerator is used as an example. For convenience of taking, one or more drawers are generally disposed in a storage compartment (such as a refrigerating compartment) of the refrigerator. When a stored product needs to be taken, a user may pull out a drawer and take the required stored product. After taking the stored product, the user may push the drawer back into the storage compartment, so that an entire taking process is completed. Because the drawers within the existing refrigerators have open design and poor sealing performance, which easily results in odor tainting of the stored products within the storage compartments and even causes bacteria growth, and consequently, food hygiene is influenced.

[0004] JP 2000-39256 A1 discloses a refrigerator in which a vegetable case that can be pulled and pushed according to the open and close of a drawer type door is provided in a vegetable room, and a tray is movably provided in a forward/rearward direction on an upper part of the vegetable case, a rear part of the tray is formed to be one step deeper, and a rib is provided in a border part between the rear part and a front part so as to prevent a drop of a stored object.

SUMMARY

[0005] Embodiments of the utility model are intended to provide an improved refrigerator. The object is solved with the features of independent claim 1. Preferred embodiments are subject of the dependent claims.

[0006] Therefore, the embodiments of the utility model provide a refrigerator, including: a storage compartment; a drawer located within the storage compartment, the drawer having an opening facing upward; a lid for uncovering or covering the opening, the lid being slidably supported on an upper portion of the drawer, when the drawer is pulled out of the storage compartment, the lid being pulled out with the drawer and keeping the opening covered and sliding relative to the drawer to be pushed back into the storage compartment to uncover the opening; and a block located within the storage compartment, configured to prevent the lid from continuing moving rearward to keep the lid supported on the drawer that is pulled

out, and enable the lid to cover the opening when the drawer is pushed into the storage compartment.

[0007] Compared with lidless design used for the existing refrigerator drawer, solutions for embodiments of the utility model provide a refrigerator having a drawer. When the drawer is located within a storage compartment of the refrigerator and is pulled out of the storage compartment, an opening of the drawer is covered through a lid supported on the drawer, which can effectively improve sealing performance of the drawer and prevent a stored product in the drawer from being directly exposed within the storage compartment and being tainted with other stored products in the storage compartment, thereby helping improve food hygiene. Further, when the drawer is pulled out of the storage compartment, the lid can be pushed by a user to slide forward and rearward relative to the drawer to uncover the opening of the drawer, which is convenient for the user to take the stored product in the drawer. Further, with the design for the block, the lid can be prevented from excessively moving rearward until detaching from the drawer, so that it can be ensured that the lid is always supported on the drawer while sliding forward and rearward. Further, because the block is disposed within the storage compartment, when the opening of the drawer is pushed back into the storage compartment in an uncovered state, the user does not need to cover the lid intentionally, but the opening of the drawer can be covered automatically through cooperation of the lid with the block as the drawer is pushed back into the storage compartment, so that the drawer is in a sealed state within the storage compartment.

[0008] Optionally, the lid includes: a frame, the frame enclosing a viewing port; and a transparent member disposed within the viewing port and connected to the frame. Accordingly, when the drawer is pulled out of the storage compartment, an interior of the drawer can be visually seen without pushing open the lid, and the user can accurately and quickly determine whether a stored product being sought is stored in the drawer, thereby reducing the number of unnecessary uncovering and covering of the drawer. In other words, the user can push open the lid of the drawer to take the stored product after determining that the stored product to be taken is actually stored in the drawer, instead of first uncovering the lid and then determining whether the stored product is in the drawer, which further reduces a possibility of odor tainting. In one embodiment, the transparent member may be made of tempered glass.

[0009] Optionally, an area of the viewing port accounts for 60% to 90% of an area of the opening to ensure that all corners inside the drawer can be clearly seen from the viewing port, thereby avoiding a visual blind zone.

[0010] Optionally, the lid further includes a sealing strip fixed to a lower side of the lid and contacting an upper edge of the drawer when the lid covers the opening, thereby forming a confined space within the drawer, so that sealing performance of the drawer is better. In one embodiment, the sealing strip may be fixed to a frame

disposed surrounding a transparent member.

[0011] Optionally, the lid is made of a heat-conducting material to conduct temperature through a physical property of the material, thereby achieving a better freezing/unfreezing effect, so that partition storage and short-term sealed refrigeration can be implemented with a simple structural design.

[0012] Optionally, the drawer has an air duct, a space inside the drawer being in communication with a space outside the drawer when the air duct is opened, and the space inside the drawer being isolated from the space outside the drawer when the air duct is closed. Accordingly, a separate air duct designed on the drawer is beneficial to freely switch between partitioned storage and sealed storage, to meet diversified needs of users.

[0013] Optionally, the drawer includes a bottom wall, a front wall, a rear wall, a pair of side walls, and a top wall, the top wall being located between the opening and the front wall, and the air duct being located on a top wall of the drawer. Accordingly, when the air duct is opened, air inside the drawer can be quickly exchanged with air outside the drawer, and when the air duct is closed, it can be ensured that the drawer is in a relatively good sealed state. Further, when the drawer is pulled out of the storage compartment, the air duct disposed on the top wall of the drawer enables the user to visually observe a current state of the air duct, so that the user can adjust the air duct to be in an open/closed state as needed.

[0014] Optionally, the drawer further has a controller connected to the air duct to open or close the air duct. Accordingly, the user can control the air duct to be in an open/closed state as needed to flexibly switch the state of the drawer between the partitioned storage and the sealed storage.

[0015] Optionally, the lid has a stop, the lid moving rearward relative to the drawer until the stop abuts against the block to prevent the lid from continuing moving rearward. Accordingly, through the cooperation of the block with the stop, when the lid is pushed toward the storage compartment to uncover the opening of the drawer, the lid can be prevented from excessively moving rearward until detaching from the drawer, so that it can be ensured that the lid is always supported on the drawer. Further, when the drawer is pushed back into the storage compartment with the opening uncovered, as the drawer moves rearward, the lid is confined to an original place because the stop abuts against the block thereof. Accordingly, when the drawer moves into the storage compartment, the lid can be naturally covered on the drawer and the opening of the drawer is covered.

[0016] Optionally, the stop is connected to the handle of the lid, which facilitates overall aesthetic appearance of the drawer while simplifying the structure and being easy to manufacture.

[0017] The block is fixed to an inner wall of the storage compartment and extends to an upper side of the lid to effectively prevent the lid supported on the upper edge of the drawer from excessively moving rearward and con-

trol the lid to cover the opening of the drawer when the drawer is pushed backed to the storage compartment.

[0018] There is a gap between the block and the surface of the lid to improve a sliding effect of the lid, preventing the lid and/or the block from being damaged by unlubricated friction with the block when the lid moves forward and rearward, thereby optimizing user experience.

[0019] Optionally, the refrigerator further includes: a guide rail, configured to movably fix the drawer within the storage compartment, the drawer being adapted to be pulled out or pushed back into the storage compartment along the guide rail. Accordingly, the user can conveniently pull out or push back the drawer as needed, preventing the drawer and/or the storage compartment from being damaged by unlubricated friction with an inner wall of the storage compartment when the drawer moves forward and rearward relative to the storage compartment, which can help improve user experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

FIG. 1 is a partial schematic structural diagram of a refrigerator according to an embodiment of the utility model;

FIG. 2 is a side view of FIG. 1;

FIG. 3 is a schematic diagram of a combination of a lid and a drawer in FIG. 1;

FIG. 4 is a side view of FIG. 3;

FIG. 5 is a diagram showing an effect of a lid and a drawer located within the storage compartment in FIG. 1;

FIG. 6 is a top view of FIG. 1;

FIG. 7 is a side view of a partial structure of another refrigerator according to an embodiment of the utility model;

FIG. 8 is an exploded view of a lid in FIG. 1;

100-refrigerator; 110-storage compartment; 111-block; 112-guide rail; 120-drawer; 120a-bottom wall; 120b-front wall; 120c-rear wall; 120d-side wall; 120e-top wall; 121-opening; 122-upper edge; 123-handle portion; 124-air duct; 125-controller; 130-lid; 130a-front end of lid; 130b-rear end of lid; 131-handle; 132-stop; 133-frame; 134-viewing port; 135-transparent member; 136-sealing strip; gap-gap; x-width direction of the refrigerator; y-depth direction of the refrigerator; z-height direction of the refrigerator

DETAILED DESCRIPTION

[0021] Those skilled in the art understand that, as the background art states, drawers in existing refrigerators are all designed without lids, and consequently products cannot be stored in the drawer in a sealed manner.

[0022] In order to solve the foregoing technical prob-

lems, an embodiment of the utility model provides a refrigerator, including: a storage compartment; a drawer located within the storage compartment, the drawer having an opening facing upward; a lid for uncovering or covering the opening, the lid being slidably supported at an upper portion of the drawer, when the drawer is pulled out of the storage compartment, the lid being pulled out with the drawer while keeping the opening covered and sliding relative to the drawer to be pushed back into the storage compartment to uncover the opening; and a block located within the storage compartment, configured to prevent the lid from continuing moving rearward to keep the lid supported on the drawer that is pulled out, and enable the lid to cover the opening when the drawer is pushed into the storage compartment.

[0023] Those skilled in the art will understand that the solutions of embodiments of the utility model provide a refrigerator with a drawer. When the drawer is located within the storage compartment of the refrigerator and is pulled out of the storage compartment, the opening of the drawer is covered by a lid supported on the drawer, which can effectively improve sealing performance of the drawer and prevent a stored product in the drawer from being directly exposed within the storage compartment and being tainted with other stored products in the storage compartment, and can help improve food hygiene.

[0024] Further, when the drawer is pulled out of the storage compartment, the lid can be pushed by a user to slide forward and rearward relative to the drawer to uncover the opening of the drawer, which is convenient for the user to take the stored product in the drawer. Further, with the design for the block, the lid can be prevented from excessively moving rearward until detaching from the drawer, so that it can be ensured that the lid is always supported on the drawer while sliding forward and rearward. Further, because the block is disposed within the storage compartment, when the opening of the drawer is pushed back into the storage compartment in an uncovered state, the user does not need to cover the lid intentionally, but the opening of the drawer can be covered automatically through cooperation of the lid with the block as the drawer is pushed back into the storage compartment, so that the drawer is in a sealed state within the storage compartment.

[0025] In order to make the foregoing objective, features, and advantages of the utility model more clearly and easier to understand, specific embodiments of the utility model are described in details below with reference to accompanying drawings.

[0026] FIG. 1 is a partial schematic structural diagram of a refrigerator according to an embodiment of the utility model. In order to more clearly illustrate technical features of this embodiment, FIG. 1 mainly takes an example of a storage compartment of the refrigerator and a drawer disposed therein, and further describes a specific structure of the drawer.

[0027] It should be noted that the design of this embodiment may also be applied to a refrigeration appara-

tus such as a refrigerated cabinet or a freezer in which stored products need to be stored in a separated and sealed manner.

[0028] In particular, in this embodiment, the refrigerator 100 may further include: a storage compartment 110; and a drawer 120 located within the storage compartment 110.

[0029] A size of the drawer 120 may be adapted to an accommodation space of the storage compartment 110. For example, the storage compartment 110 may be adapted to accommodate one or more drawers 120.

[0030] More particular, with reference to FIG. 1 and FIG. 2 (the storage compartment 110 is omitted in FIG. 2), the drawer 120 may include a bottom wall 120a, a front wall 120b, a rear wall 120c, and a pair of side walls 120d, and may further include an accommodation space enclosed by the bottom wall 120a, the front wall 120b, the pair of side walls 120d, and the rear wall 120c, and the drawer 120 may have an opening 121 facing upward, the opening 121 exposing the accommodation space.

[0031] For example, the drawer 120 may be adapted to accommodate stored products, and a user may take the stored products placed in the accommodation space from the opening 121. Alternatively, the user may also place the stored products from the opening 121 in the accommodation space.

[0032] For convenience of description, in this embodiment, a width direction of the refrigerator 100 is set to a direction x, a depth direction of the refrigerator 100 is set to a direction y, and a height direction of the refrigerator 100 is set to a direction z. A direction from inside to outside of the storage compartment 110 is a positive direction of the direction y (that is, the direction +y in the figure). In other words, a direction in which the drawer 120 is pulled out of the storage compartment 110 is the positive direction of the direction y.

[0033] For example, a plurality of the drawers 120 may be arranged side by side along the direction x, the direction y, and/or the direction z within the storage compartment 110.

[0034] Next, one drawer 120 accommodated within the storage compartment 110 is used as an example for specific description.

[0035] In one or more embodiments, still referring to FIG. 1 and FIG. 2, the refrigerator 100 may further include a lid 130 for uncovering or covering the opening 121, the lid 130 being slidably supported on the upper portion of the drawer 120. The upper portion of the drawer 120 may refer to an upper edge 122 of at least one of the front wall 120b, a pair of side walls 120d, and a rear wall 120c of the drawer 120.

[0036] Further, referring to FIG. 3 and FIG. 4, when the drawer 120 is pulled out of the storage compartment 110, the lid 130 is pulled out with the drawer 120 while keeping the opening 121 covered. A pull-out direction is the direction +y shown in the figure.

[0037] Further, referring to FIG. 1 and FIG. 2, the lid 130 may slide relative to the drawer 120 to be pushed

back into the storage compartment 110 to uncover the opening 121. A pull-back direction is the direction -y shown in the figure.

[0038] Further, with reference to FIG. 1 to FIG. 4, the refrigerator 100 according to the invention further includes: a block 111 located within the storage compartment 110, configured to prevent the lid 130 from continuing moving rearward to keep the lid 130 supported on the drawer 120 that is pulled out, and when the drawer 120 is pushed into the storage compartment 110, enable the lid 130 to cover the opening 121.

[0039] According to the invention, the block 111 is fixed to an inner wall of the storage compartment 110 and extend to an upper side of the lid 130, to effectively prevent the lid 130 supported on the upper edge 122 of the drawer 120 from excessively moving rearward, and control the lid 130 to cover the opening 121 of the drawer 120 when the drawer 120 is pushed back into the storage compartment 110.

[0040] For example, referring to FIG. 1 to FIG. 4, the block 111 may be disposed on an inner top wall of the storage compartment 110 and extend downward (that is, along a negative direction of the direction z in the figure) to the upper side of the lid 130.

[0041] In a typical application scenario, referring to FIG. 5, the drawer 120 may initially be located within the storage compartment 110, and the lid 130 is supported on the upper edge 122 of the drawer 120 while keeping the opening 121 of the drawer 120 covered.

[0042] Further, the front wall 120b of the drawer 120 may be provided with a handle portion 123, and the user can pull the drawer 120 along the direction +y through the handle portion 123 to pull the drawer 120 out of the storage compartment 110.

[0043] When the drawer 120 is pulled out of the storage compartment 110, the lid 130 keeps the opening 121 of the drawer 120 covered, as shown in FIG. 4.

[0044] Further, an upper surface of the lid 130 may be provided with a handle 131, and the user can push the lid 130 along the direction -y through the handle 131 to uncover the opening 121 of the drawer 120, as shown in FIG. 2. The handle 131 extends from the upper surface of the lid 130 toward the direction z. In other words, at an angle shown in FIG. 2, the handle 131 protrudes from the upper surface of the lid 130.

[0045] The lid 130 slides rearward relative to the drawer 120 at an upper portion of the drawer 120 until the handle 131 abuts against the block 111, to prevent the lid 130 from continuing sliding rearward.

[0046] Further, when the opening 121 of the drawer 120 is required to be covered, the user may pull the lid 130 along the direction +y through the handle 131, to manually cover the opening 121 of the drawer 120. Then, the drawer 120 is pushed along the direction -y to push the drawer 120 together with the lid 130 supported thereon back into the storage compartment 110, so that the drawer 120 and the lid 130 return to a state shown in FIG. 5.

[0047] Alternatively, when the opening 121 of the drawer 120 is required to be covered, the user may also push the drawer 120 directly along the direction -y in a state shown in FIG. 2 to push the drawer 120 back into the storage compartment 110. In addition, because the handle 131 of the lid 130 abuts against the block 111, the lid 130 does not move rearward together with the drawer 120 when the drawer 120 moves rearward. Accordingly, through rearward movement of the drawer 120, the lid 130 can gradually cover the opening 121 of the drawer 120 until the drawer 120 and the lid 130 return to the state as shown in FIG. 5. As a variant, the block 111 may also be disposed on an inner side wall or on a rear wall of the storage compartment 110 and extend to the upper side of the lid 130. The upper side of the lid 130 may refer to an upper space of the lid 130 along the direction z.

[0048] According to the invention, the block 111 extends to an upper surface of the lid 130, and accordingly, the handle 131 only needs to protrude by a small size toward the direction z to abut against the block 111.

[0049] According to the invention, referring to FIG. 7, there is a gap between the block 111 and the upper surface of the lid 130, to improve a sliding effect of the lid 130 and prevent the lid 130 and/or the block 111 from being damaged by unlubricated friction with the block 111 when the lid 130 slides forward and rearward, thereby optimizing user experience.

[0050] Further, a height of the gap along the direction z may be set to be small enough to prevent a rear end 130b of the lid 130 from rotating downward when the lid 130 is pushed back. Rotating downward refers to rotating along a reverse direction of the direction z.

[0051] In one or more embodiments, the lid 130 may have a stop 132, and the lid 130 moves rearward relative to the drawer 120 until the stop 132 abuts against the block 111, to prevent the lid 130 from continuing moving rearward.

[0052] Accordingly, through cooperation of the block 111 with the stop 132, when the lid 130 is pushed toward the storage compartment 110 to uncover the opening 121 of the drawer 120, the lid 130 can be prevented from excessively moving rearward until detaching from the drawer 120, so that it can be ensured that the lid 130 is always supported on the drawer 120.

[0053] Further, when the drawer 120 is pushed rearward into the storage compartment 110 when the opening 121 is uncovered, as the drawer 120 moves rearward, the lid 130 is confined to an original place because the stop 132 abuts against the block 111 thereof. Accordingly, when the drawer 120 moves into the storage compartment 110, the lid 130 can be naturally covered on the drawer 120, and the opening 121 of the drawer 120 is covered.

[0054] For example, referring to FIG. 2, a height of the stop 132 along the direction z may be greater than a gap between the block 111 and the lid 130, to ensure that the stop 132 abuts against the block 111 when the stop 132 moves to the block 111 along the direction -y relative to

the drawer 120 with the lid 130, to prevent the lid 130 from continuing moving rearward.

[0055] In one or more embodiments, the stop 132 may be connected to the handle 131 of the lid 130, which facilitates overall aesthetic appearance of the drawer 120, while simplifying a structure and being easy to manufacture.

[0056] For example, the stop 132 and/or the handle 131 may be fixed to the upper surface of the lid 130 in a manner of bonding, interference fit, or bolting.

[0057] Further, the handle 131 and the stop 132 may be integrally formed.

[0058] For example, the stop 132 may be considered as an extension of the handle 131. Alternatively, the handle 131 may replace the stop 132 to prevent the lid 130 from sliding rearward, and vice versa.

[0059] In one or more embodiments, by adjusting a specific location of the handle 131 on the lid 130, and/or a specific location at which the block 111 extends to the upper side of the lid 130, a distance that the lid 130 may slide rearward relative to the drawer 120 can be adjusted, and an area in which the opening 121 is uncovered can be further adjusted.

[0060] For example, in order to uncover the opening 121 as large as possible, the handle 131 may be located at a front end 130a of the upper surface of the lid 130, the front end 130a being one end close to a front wall 120b of the drawer 120. The block 111 may extend to the upper side of the lid 130 and be close to an outer side (that is, one side close to of the front wall 120b of the drawer 120 when the drawer 120 is located within the storage compartment 110) of the storage compartment 110, to enable the lid 130 to slide rearward to substantially fully uncovering the opening 121 of the drawer 120 when the drawer 120 is pulled out of the storage compartment 110, and prevent the lid 130 from moving until the opening 121 is completely covered when the drawer 120 is pushed back into the storage compartment 110.

[0061] In one or more embodiments, referring to FIG. 8, the lid 130 may include: a frame 133, the frame 133 enclosing a viewing port 134; and a transparent member 135, disposed within the viewing port 134 and connected to the frame 133.

[0062] Accordingly, when the drawer 120 is pulled out of the storage compartment 110, an interior of the drawer 120 can be visually seen without pushing open the lid 130, and the user can accurately and quickly determine whether a stored product being sought is stored within the drawer 120, thereby reducing the number of unnecessary uncovering and covering of the drawer 120. In other words, the user can push open the lid 130 of the drawer 120 to take the stored product after determining that the stored product to be taken is actually stored in the drawer 120, instead of uncovering the lid 130 first and then determining whether the stored product is in the drawer 120, which further reduces a possibility of odor tainting.

[0063] Preferably, the transparent member 135 may

be made of a glass material to enable the lid 130 to be pressed against the upper edge 122 of the drawer 120 by its own weight while satisfying transparency of the viewing opening 134, thereby improving sealing performance of the drawer 120. For example, the transparent member 135 may be made of tempered glass.

[0064] In one or more embodiments, an area of the viewing port 134 may occupy 60% to 90% of an area of the opening 121, to ensure that all corners inside the drawer 120 can be clearly seen from the viewing port 134, thereby avoiding a visual blind zone. In a practical application, those skilled in the art can also adjust the area of the viewing port 134 to an appropriate size as needed to meet diversified needs of users.

[0065] In one or more embodiments, the lid 130 may further include: a sealing strip 136 fixed to a lower side of the lid 130, and contacting an upper edge 122 of the drawer 120 when the lid 130 covers the opening 121, thereby forming a confined space within the drawer 120, so that the sealing performance of the drawer 120 becomes better. For example, the sealing strip 136 may be fixed to the frame 133.

[0066] In one or more alternative examples, the lid 130 may also be made of a heat-conducting material to conduct temperature through a physical property of a material, achieving a better freezing/unfreezing effect, so that partition storage and short-term sealed refrigeration can be implemented with a simple structural design.

[0067] For example, the lid 130 may be made of a metal material with relatively good heat-conducting performance.

[0068] In one or more embodiments, the drawer 120 may be made of a transparent material, such as a transparent plastic box, to help visually observe stored products within the drawer 120.

[0069] In one or more embodiments, referring to FIG. 1, FIG. 3, and FIG. 6, the drawer 120 may have an air duct 124, a space inside the drawer 120 being in communication with a space outside the drawer 120 when the air duct 124 is opened, and the space inside the drawer 120 being isolated from the space outside the drawer 120 when the air duct (124) is closed.

[0070] Accordingly, a separate air duct 124 designed on the drawer 120 is beneficial to freely switch between partitioned storage and sealed storage, to meet diversified needs of users.

[0071] In a typical application scenario, the lid 130 is used to cover the opening 121 of the drawer 120 while closing the air duct 124, so that a separate confined space can be formed within the drawer 120 to implement sealed storage.

[0072] In another typical application scenario, the lid 130 is still used to cover the opening 121 of the drawer 120 while opening the air duct 124, and the drawer 120 can be used as a normal container. However, because other stored products within the stored compartment 110 are isolated with each other, a stored space within the storage compartment 110 can be separated, to imple-

ment partitioned storage.

[0073] In one or more embodiments, still referring to FIG. 1 and FIG. 3, the drawer 120 may include a bottom wall 120a, a front wall 120b, a rear wall 120c, a pair of side walls 120d, and a top wall 120e. The top wall 120e is located between the opening 121 and the front wall 120b, and the air duct 124 may be located on the top wall 120e of the drawer 120.

[0074] Accordingly, when the air duct 124 is opened, air inside the drawer 120 can be quickly exchanged with air outside the drawer 120, and when the air duct 124 is closed, it can be ensured that the drawer 120 is in a relatively good sealed state.

[0075] Further, when the drawer 120 is pulled out of the storage compartment 110, the air duct 124 disposed on the top wall 120e of the drawer 120 enables the user to visually observe a current state of the air duct 124, so that the user can adjust the air duct 124 to be in an open/closed state as needed.

[0076] In one or more embodiments, the drawer 120 may further have a controller 125 connected to the air duct 124 to open or close the air duct 124. Accordingly, the user can control the air duct 124 to be in an open/closed state as needed to freely and flexibly switch the state of the drawer 120 between the partitioned storage and the sealed storage.

[0077] For example, the controller 125 may be a physical controller, which controls opening/closing of the air duct 124 in a mechanical manner. For another example, the controller 125 may further be an electronic controller, which controls the opening/closing of the air duct 124 by transmitting a signal.

[0078] Preferably, the controller 125 may be located on the front wall 120b of the drawer 120 to facilitate user operation. For example, the user can manipulate the controller 125 without pulling the drawer 120 out of the storage compartment 110.

[0079] In one or more embodiments, the controller 125 may further be configured to record storage time of the stored products within the drawer 120.

[0080] In one or more embodiments, referring to FIG. 6, the refrigerator 100 may further include: a guide rail 112, configured to movably fix the drawer 120 within the storage compartment 110, the drawer 120 being adapted to be pulled out or pushed back into the storage compartment 110 along the guide rail 112. Accordingly, the user can conveniently pull out or push back the drawer 120 as needed, preventing the drawer 120 and/or the storage compartment 110 from being damaged by unlubricated friction with an inner wall of the storage compartment 110 when the drawer 120 moves forward and rearward relative to the storage compartment 110, which can help improve user experience.

[0081] In particular, the guide rail 112 may include: a fixed rail fixed to an inner wall of the storage compartment 110; and a movable rail fixed to an outer wall of the drawer 120 and coupled to the fixed rail, the movable rail sliding forward and rearward relative to the fixed rail. For-

ward/rearward sliding refers to moving forward and rearward along directions $\pm y$.

[0082] For example, the fixed rail may be fixed to a pair of inner side walls of the storage compartment 110, and the movable rail is fixed to a pair of side walls 120d of the drawer 120.

[0083] For another example, the fixed rail may be fixed to a pair of inner side walls of the storage compartment 110, and the movable rail is fixed to a bottom wall 120a of the drawer 120.

[0084] For example, the guide rail (also referred to as a sliding rail) 112 may be selected from a roller-type guide rail, a steel-ball-type guide rail, a gear-type guide rail, or a damping-type sliding rail. Those skilled in the art may also select other types of guide rails as needed, and details are not described herein.

[0085] In one or more embodiments, the fixed rail may be fixed to the inner wall of the storage compartment 110 in a bolting manner. Similarly, the movable rail may also be fixed to an outer wall of the drawer 120 and coupled to the fixed rail in a bolting manner.

[0086] In one or more alternative example, the fixed rail and/or the movable rail may also be fixed to the inner wall of the storage compartment 110 and/or the outer wall of the drawer 120 respectively in a manner of interference fit, bonding, or the like.

[0087] Accordingly, according to the solutions of the embodiments, when the drawer 120 is located within the storage compartment 110 of the refrigerator 100 and when the drawer 120 is pulled out of the storage compartment 110, the opening 121 of the drawer 120 is covered through the lid 130 supported on the drawer 120, thereby effectively improving the sealing performance of the drawer 120 and preventing the stored products within the drawer 120 from being directly exposed within the storage compartment 110 and being tainted with other stored products within the storage compartment 110, which can help improve food hygiene.

[0088] Further, when the drawer 120 is pulled out of the storage compartment 110, the lid 130 may be pushed by the user to slide forward and rearward relative to the drawer 120 to uncover the opening 121 of the drawer 120, which is convenient for the user to take stored products within the drawer 120.

[0089] Further, with the design of the block 111, the lid 130 can be prevented from excessively moving rearward until detaching from the drawer 120, so that it can be ensured that the lid 130 is always supported on the drawer 120 while sliding forward and rearward.

[0090] Further, because the block 111 is disposed within the storage compartment 110, when the opening 121 of the drawer 120 is pushed back into the storage compartment 110 in an uncovered state, the user does not need to cover the lid 130 intentionally, but the opening 121 of the drawer 120 may be covered automatically through cooperation of the lid 130 with the block 111 as the drawer 120 is pushed back into the storage compartment 110, so that the drawer 120 is in a sealed state

within the storage compartment 110.

[0091] Although the utility model is disclosed above, the utility model is not limited thereto. Various alterations and modifications may be made by a person skilled in the art without departing from the spirit and scope of the utility model, and thus the protection scope of the utility model should be subject to scope defined by the claims.

Claims

1. A refrigerator (100), comprising:

a storage compartment (110);
 a drawer (120) located within the storage compartment (110), the drawer (120) having an opening (121) facing upward;
 a lid (130) for uncovering or covering the opening (121), the lid (130) being slidably supported on an upper portion of the drawer (120), and when the drawer (120) is pulled out of the storage compartment (110), the lid (130) being pulled out with the drawer (120) while keeping the opening (121) covered and sliding relative to the drawer (120) to be pushed back into the storage compartment (110) to uncover the opening (121);
 a block (111) located within the storage compartment (110), configured to: prevent the lid (130) from continuing moving rearward to keep the lid (130) supported on the drawer (120) that is pulled out, and when the drawer (120) is pushed into the storage compartment (110), enable the lid (130) to cover the opening (121) **characterized in that** the block (111) is fixed to an inner wall of the storage compartment (110) and extends to an upper side of the lid (130), and that there is a gap between the block (111) and a surface of the lid (130).

2. The refrigerator (100) according to claim 1, **characterized in that** the lid (130) comprises: a frame (133), the frame (133) enclosing a viewing port (134); and a transparent member (135) disposed within the viewing port (134) and connected to the frame (133).

3. The refrigerator (100) according to claim 2, **characterized in that** an area of the viewing port (134) accounts for 60% to 90% of an area of the opening (121).

4. The refrigerator (100) according to anyone of claims 1 to 3, **characterized in that** the lid (130) further comprises:
 a sealing strip (136) fixed to a lower side of the lid (130) and contacting an upper edge (122) of the drawer (120) when the lid (130) covers the opening (121).

5. The refrigerator (100) according to anyone of claims 1 to 4, **characterized in that** the lid (130) is made of a heat-conducting material.

6. The refrigerator (100) according to anyone of claims 1 to 5, **characterized in that** the drawer (120) comprises:
 an air duct (124), a space inside the drawer (120) being in communication with a space outside the drawer (120) when the air duct (124) is opened, and the space inside the drawer (120) being isolated from the space outside the drawer (120) when the air duct (124) is closed.

7. The refrigerator (100) according to claim 6, **characterized in that** the drawer (120) comprises a bottom wall (120a), a front wall (120b), a rear wall (120c), a pair of side walls (120d), and a top wall (120e), the top wall (120e) being located between the opening (121) and the front wall (120b), and the air duct (124) being located on the top wall (120e) of the drawer (120).

8. The refrigerator (100) according to claim 6, **characterized in that** the drawer (120) further comprises: a controller (125) connected to the air duct (124) to open or close the air duct (124).

9. The refrigerator (100) according to anyone of claims 1 to 8, **characterized in that** the lid (130) has a stop (132), the lid (130) moving rearward relative to the drawer (120) until the stop (132) abuts against the block (111) to prevent the lid (130) from continuing moving rearward.

10. The refrigerator (100) according to claim 9, **characterized in that** the stop (132) is connected to a handle (131) of the lid (130).

11. The refrigerator (100) according to anyone of claims 1 to 10, **characterized by** further comprising:
 a guide rail (112), configured to movably fix the drawer (120) within the storage compartment (110), the drawer (120) being adapted to be pulled out of or pushed back into the storage compartment (110) along the guide rail (112).

Patentansprüche

1. Kühlschrank (100), der Folgendes umfasst:

ein Aufbewahrungsfach (110),
 einen Einschub (120), der sich in dem Aufbewahrungsfach (110) befindet, wobei der Einschub (120) eine nach oben weisende Öffnung (121) aufweist,
 einen Deckel (130) zum Freigeben oder Abde-

- cken der Öffnung (121), wobei der Deckel (130) an einem oberen Abschnitt des Einschubs (120) verschiebbar gelagert ist und, wenn der Einschub (120) aus dem Aufbewahrungsfach (110) herausgezogen wird, zusammen mit dem Einschub (120) herausgezogen wird und dabei die Öffnung (121) geschlossen hält und in Bezug auf den Einschub (120) so verschiebbar ist, dass er in das Aufbewahrungsfach (110) zurückgeschoben werden kann und die Öffnung (121) freigibt,
eine Sperre (111), die sich in dem Aufbewahrungsfach (110) befindet und so konfiguriert ist, dass er: den Deckel (130) daran hindert, sich weiter nach hinten zu bewegen, damit er auf dem Einschub (120) bleibt, der herausgezogen wird, und dem Deckel (130), wenn der Einschub (120) in das Aufbewahrungsfach (110) hineingeschoben wird, ein Abdecken der Öffnung (121) ermöglicht, **dadurch gekennzeichnet, dass** die Sperre (111) an einer Innenwand des Aufbewahrungsfachs (110) befestigt ist und sich bis zu einer Oberseite des Deckels (130) erstreckt und dass zwischen der Sperre (111) und einer Oberfläche des Deckels (130) ein Spalt besteht.
2. Kühlschrank (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Deckel (130) Folgendes umfasst:
- einen Rahmen (133), der ein Sichtfenster (134) umgibt, und
ein lichtdurchlässiges Element (135), das in dem Sichtfenster (134) angeordnet und mit dem Rahmen (133) verbunden ist.
3. Kühlschrank (100) nach Anspruch 2, **dadurch gekennzeichnet, dass** eine Fläche des Sichtfensters (134) 60% bis 90% einer Fläche der Öffnung (121) ausmacht.
4. Kühlschrank (100) nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** der Deckel (130) ferner Folgendes umfasst:
- einen Dichtungstreifen (136), der an einer Unterseite des Deckels (130) befestigt ist und eine Oberkante (122) des Einschubs (120) berührt, wenn der Deckel (130) die Öffnung (121) abdeckt.
5. Kühlschrank (100) nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** der Deckel (130) aus einem wärmeleitenden Material hergestellt ist.
6. Kühlschrank (100) nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der Einschub (120) Folgendes umfasst:
- eine Luftführung (124), wobei ein Raum in dem Einschub (120) mit einem Raum außerhalb des Einschubs (120) in Verbindung steht, wenn die Luftführung (124) geöffnet ist, und der Raum in dem Einschub (120) von dem Raum außerhalb des Einschubs (120) getrennt ist, wenn die Luftführung (124) geschlossen ist.
7. Kühlschrank (100) nach Anspruch 6, **dadurch gekennzeichnet, dass** der Einschub (120) eine Bodenwand (120a), eine Vorderwand (120b), eine Rückwand (120c), ein Paar Seitenwände (120d) und eine Deckwand (120e) umfasst, wobei sich die Deckwand (120e) zwischen der Öffnung (121) und der Vorderwand (120b) und die Luftführung (124) an der Deckwand (120e) des Einschubs (120) befindet.
8. Kühlschrank (100) nach Anspruch 6, **dadurch gekennzeichnet, dass** der Einschub (120) ferner Folgendes umfasst:
- eine Steuerung (125), die zum Öffnen oder Schließen der Luftführung (124) mit der Luftführung (124) verbunden ist.
9. Kühlschrank (100) nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** der Deckel (130) einen Anschlag (132) aufweist, wobei sich der Deckel (130) in Bezug auf den Einschub (120) nach hinten bewegt, bis der Anschlag (132) an der Sperre (111) anliegt und so verhindert, dass sich der Deckel (130) weiter nach hinten bewegt.
10. Kühlschrank (100) nach Anspruch 9, **dadurch gekennzeichnet, dass** der Anschlag (132) mit einem Griff (131) des Deckels (130) verbunden ist.
11. Kühlschrank (100) nach einem der Ansprüche 1 bis 10, **dadurch gekennzeichnet, dass** er ferner Folgendes umfasst:
- eine Führungsschiene (112), die so konfiguriert ist, dass sie den Einschub (120) beweglich in dem Aufbewahrungsfach (110) befestigt, wobei der Einschub (120) so ausgelegt ist, dass er sich an der Führungsschiene (112) entlang aus dem Aufbewahrungsfach (110) herausziehen oder in dieses hineinschieben lässt.

Revendications

1. Réfrigérateur (100) comprenant :
- un compartiment de stockage (110),
un tiroir (120) situé dans le compartiment de stockage (110), le tiroir (120) comprenant une ouverture (121) face vers le haut ;
un couvercle (130) pour découvrir ou recouvrir l'ouverture (121), le couvercle (130) étant supporté à coulissement sur une partie supérieure

- du tiroir (120), et quand le tiroir (120) est extrait du compartiment de stockage (110), le couvercle (130) est retiré avec le tiroir (120) tout en gardant l'ouverture (121) recouverte et glissant par rapport au tiroir (120) qu'on repoussera dans le compartiment de stockage (110) pour découvrir l'ouverture (121),
un bloc (111) situé dans le compartiment de stockage (110) configuré pour : empêcher le couvercle (130) de poursuivre son mouvement vers l'arrière pour garder le couvercle (130) soutenu sur le tiroir (120) qu'on extrait, et quand le tiroir (120) est poussé dans le compartiment de stockage (110), permettre au couvercle (130) de recouvrir l'ouverture (121),
caractérisé en ce que le bloc (111) est fixé à une paroi intérieure du compartiment de stockage (110) et s'étend vers un côté supérieur du couvercle (130) et **en ce qu'** il y a un entrefer entre le bloc (111) et la surface du couvercle (130).
2. Réfrigérateur (100) selon la revendication 1, **caractérisé en ce que** le couvercle (130) comprend un cadre (133), le cadre (133) entourant un regard (134) ; et un élément transparent (135) disposé à l'intérieur du regard (134) et raccordé au cadre (133).
3. Réfrigérateur (100) selon la revendication 2, **caractérisé en ce que** la surface du regard (134) prend de 60% à 90% de la surface de l'ouverture (121).
4. Réfrigérateur (100) selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** le couvercle (130) comprend en outre :
une bande d'étanchéité (136) fixée à un côté inférieur du couvercle (130) et entrant en contact avec un bord supérieur (122) du tiroir (120) quand le couvercle (130) recouvre l'ouverture (121).
5. Réfrigérateur (100) selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** le couvercle (130) est fabriqué en une matière thermo-conductrice.
6. Réfrigérateur (100) selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** le couvercle (120) comprend :
un conduit d'air (124), un espace à l'intérieur du tiroir (120) qui est en communication avec un espace à l'extérieur du tiroir (120) quand le conduit d'air (124) est ouvert, et l'espace à l'intérieur du tiroir (120) étant isolé de l'espace à l'extérieur du tiroir (120) quand le conduit d'air (124) est fermé.
7. Réfrigérateur (100) selon la revendication 6, **caractérisé en ce que** le tiroir (120) comprend une paroi de plancher (120a), une paroi avant (120b), une pa-
- roi arrière (120c), une paire de parois latérales (120d) et une paroi supérieure (120e), la paroi supérieure (120e) étant située entre l'ouverture (121) et la paroi avant (120b), et le conduit d'air (124) étant situé sur la paroi supérieure (120e) du tiroir (120).
8. Réfrigérateur (100) selon la revendication 6, **caractérisé en ce que** le tiroir (120) comprend en outre : un contrôleur (125) raccordé au conduit d'air (124) pour ouvrir ou fermer le conduit d'air (124).
9. Réfrigérateur (100) selon l'une quelconque des revendications 1 à 8, **caractérisé en ce que** le couvercle (130) comprend une butée (132), le couvercle (130) se déplaçant vers l'arrière par rapport au tiroir (120) jusqu'à ce que la butée (132) vienne en butée contre le bloc (111) pour empêcher le couvercle (130) de poursuivre son mouvement vers l'arrière.
10. Réfrigérateur (100) selon la revendication 9, **caractérisé en ce que** la butée (132) est raccordée à une poignée (131) du couvercle (130).
11. Réfrigérateur (100) selon l'une quelconque des revendications 1 à 10, **caractérisé en ce qu'**il comprend en outre :
un rail de guidage (112) réalisé pour fixer le tiroir (120) de manière amovible à l'intérieur du compartiment de stockage (110), le tiroir (120) étant propre à être extrait ou repoussé dans le compartiment de stockage (110) le long du rail de guidage (112).

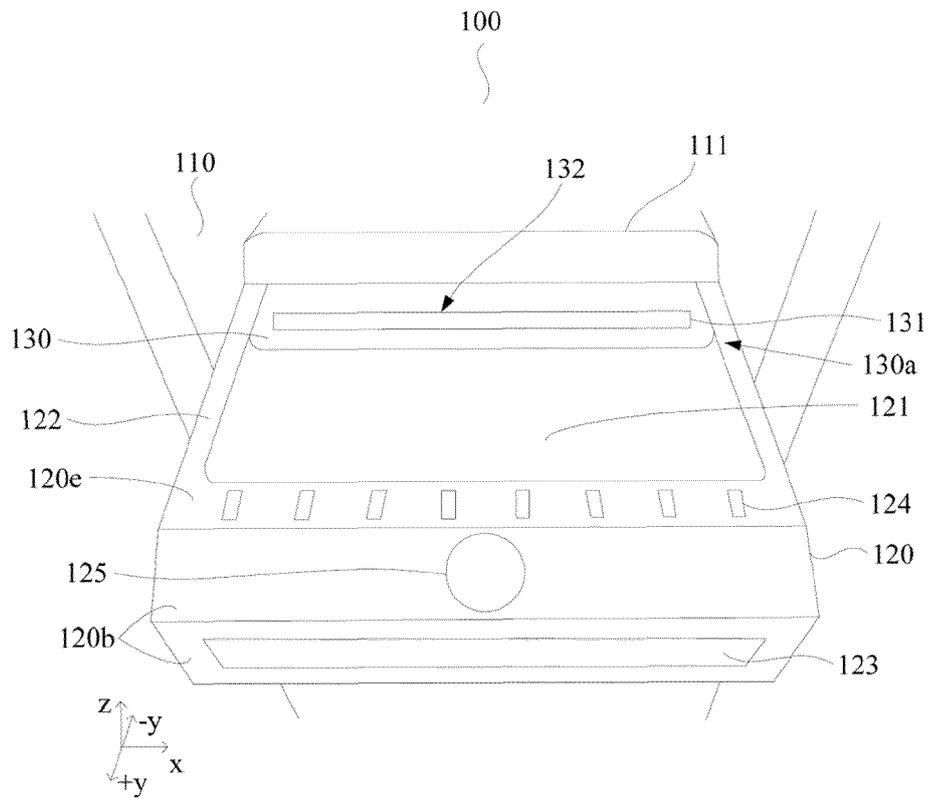


FIG. 1

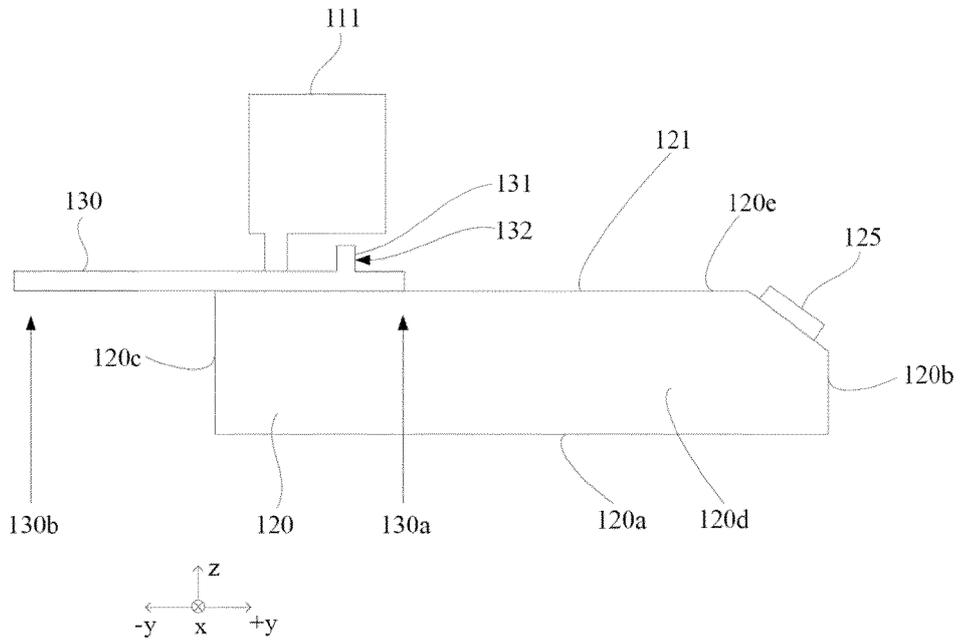


FIG. 2

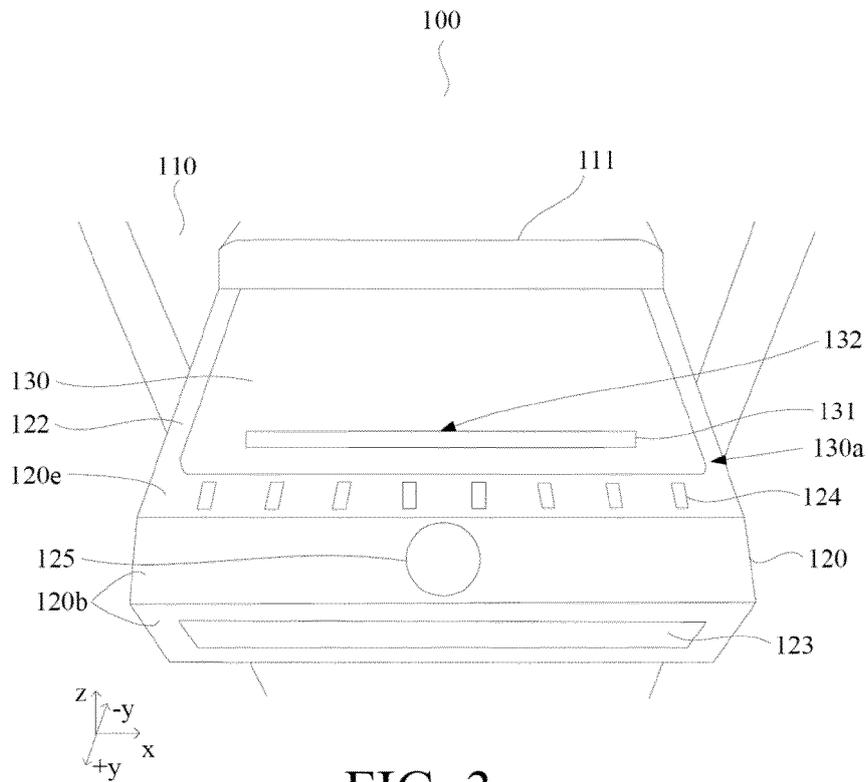
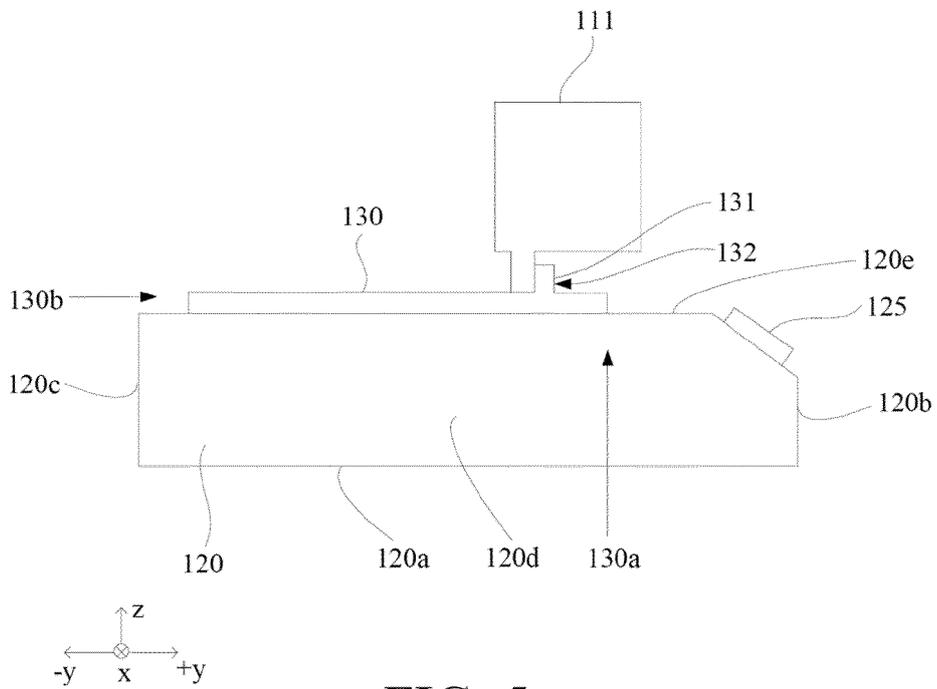
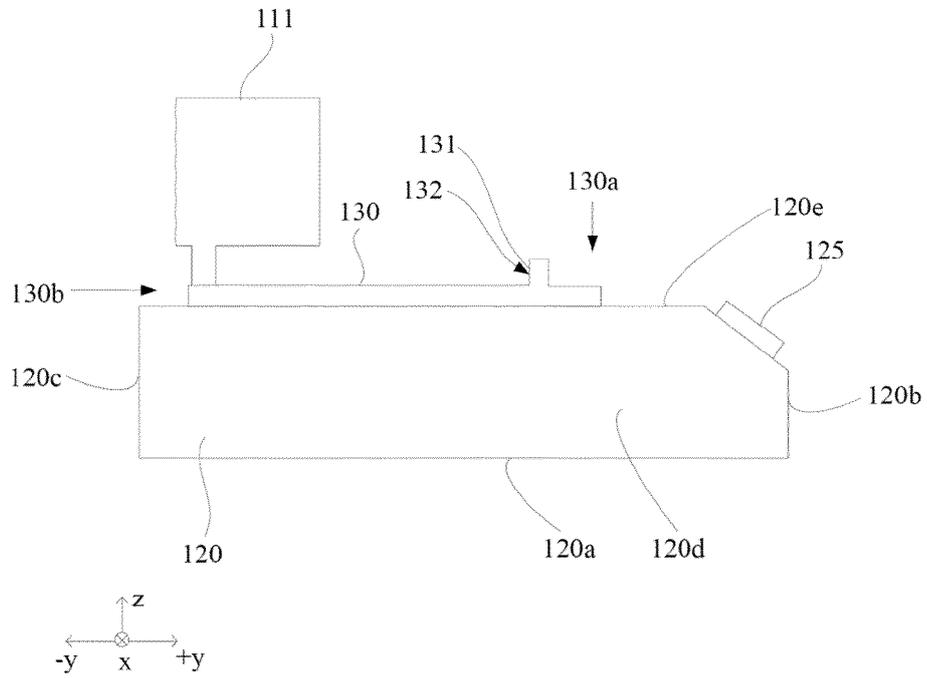


FIG. 3



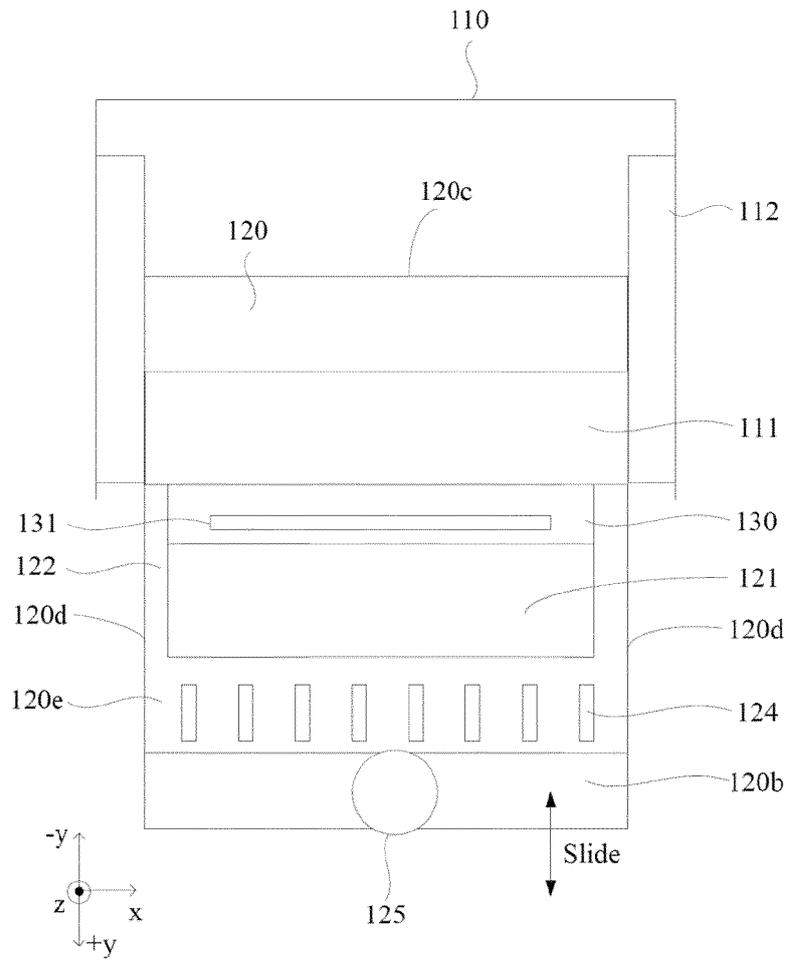


FIG. 6

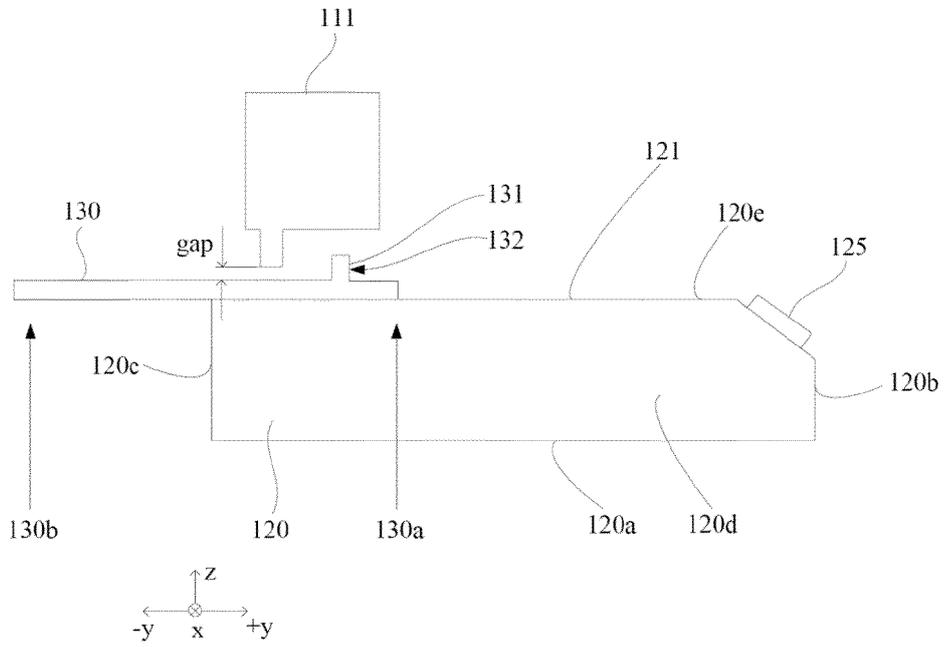


FIG. 7

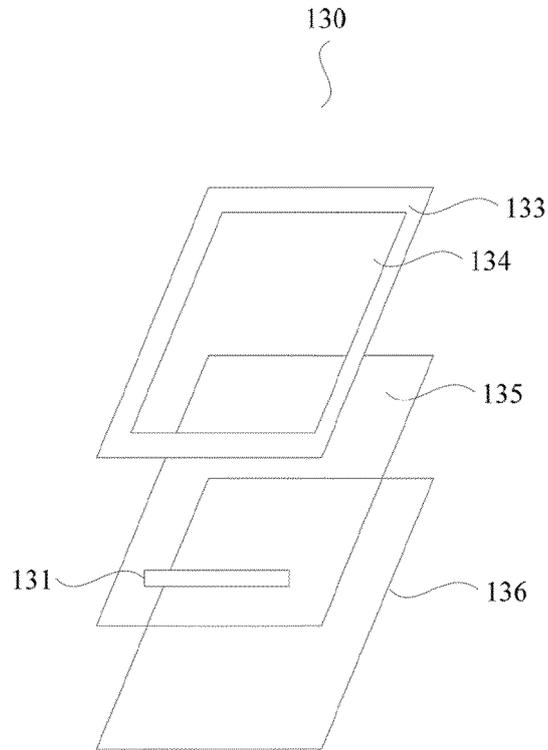


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2000039256 A [0004]