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DISPENSING BOX AND WASHING MACHINE

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The present disclosure relates to the field of cleaning apparatus, and in particular, to a dispensing device and a washing machine. The dispensing device (100) includes at least one first dispensing box (1) and at least one second dispensing box (2). The first dispensing box (1) is provided with a liquid storage bin (11), a front end of the liquid storage bin (11) is provided with a
- door (3), and the door (3) opens or closes the liquid storage bin (11) in a rotating manner. The second dispensing box (2) is provided with a dispensing member (21), the dispensing member (21) each includes at least one dispensing chamber (211), and the dispensing member (21) opens or closes the dispensing chamber (211) in a push-pull manner.

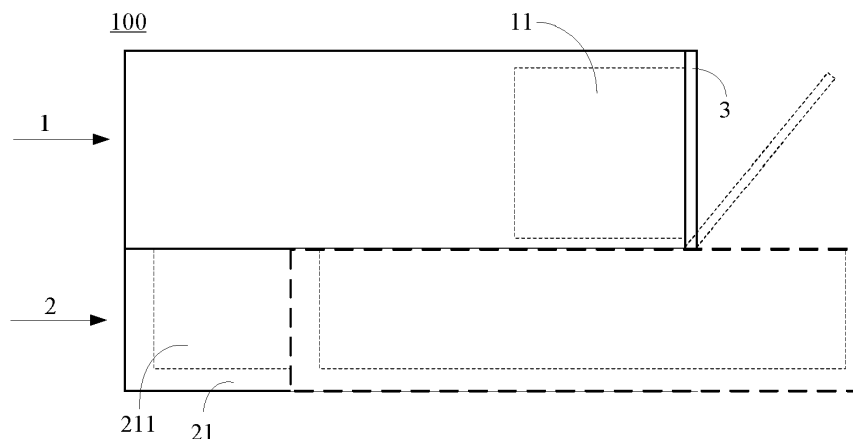


FIG. 1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the field of cleaning apparatus, and in particular, to a dispensing device and a washing machine.

BACKGROUND

[0002] A cleaning apparatus, especially a washing machine which is frequently used in daily life, typically includes a manual dispensing chamber and an automatic dispensing chamber for washing liquid in order to satisfy a variety of operating habits of a user. The manual dispensing chamber may store the washing liquid for a current wash, and the automatic dispensing chamber may store the washing liquid for a number of washes.

SUMMARY

[0003] The present disclosure provides a dispensing device and a washing machine to address deficiencies in the related art.

[0004] A first aspect of the present disclosure provides a dispensing device including at least one first dispensing box and at least one second dispensing box, wherein

the first dispensing box is provided with a liquid storage bin, a front end of the liquid storage bin is provided with a door, and the door opens or closes the liquid storage bin in a rotating manner, and the second dispensing box is provided with a dispensing member, the dispensing member each includes at least one dispensing chamber, and the dispensing member opens or closes the dispensing chamber in a push-pull manner.

[0005] Optionally, when a position of the dispensing member is changed in the push-pull manner, the liquid storage bin is not displaced in a push-pull direction.

[0006] Optionally, the dispensing device further includes a connecting member, and the door is rotated relative to an edge of an opening of the liquid storage bin by the connecting member.

[0007] Optionally, one or more of the first dispensing boxes are provided with a plurality of liquid storage bins, and the plurality of liquid storage bins are arranged in a horizontal direction or in a vertical direction.

[0008] Optionally, the at least one first dispensing box and/or the at least one second dispensing box are arranged in a horizontal direction or in a vertical direction.

[0009] Optionally, when the liquid storage bin and the dispensing chamber are in a closed state, a front surface of the dispensing member and a front surface of the door are aligned with each other.

[0010] Optionally, when the liquid storage bin and the dispensing chamber are in a closed state, a front surface

of the dispensing member covers a front surface of the door.

[0011] Optionally, a depth of the liquid storage bin is greater than a height of an opening of the liquid storage bin.

[0012] Optionally, the door is provided with a plurality of guide ribs, and the guide ribs extend towards an opening of the liquid storage bin.

[0013] Optionally, the first dispensing box includes a plurality of liquid storage bins, and at least one of the plurality of liquid storage bins is opened and closed through a same door.

[0014] Optionally, the push-pull manner is of a drawer type.

[0015] A second aspect of the present disclosure provides a washing machine, including the dispensing device according to any one of the above embodiments.

[0016] As can be seen from the above embodiments, the present disclosure provides a dispensing device, by which the probability of a user making an error in placing washing liquid can be reduced and thus the user experience can be improved.

[0017] It should be understood that the above general description and the following detailed description are exemplary and explanatory only and do not limit the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings herein, which are incorporated into and form a part of the specification, illustrate embodiments in accordance with the present disclosure and are used in conjunction with the specification to explain the principle of the present disclosure.

FIG. 1 is a schematic diagram of a state of a dispensing device according to an exemplary embodiment.

FIG. 2 is a schematic diagram of an arrangement of a liquid storage bin of a first dispensing box according to an exemplary embodiment.

FIG. 3 is a schematic diagram of another arrangement of a liquid storage bin of a first dispensing box according to an exemplary embodiment.

[0019] FIG. 4 is a schematic diagram of an arrangement of liquid storage bins of a plurality of first dispensing boxes according to an exemplary embodiment.

FIG. 5 is a schematic diagram of another arrangement of liquid storage bins of a plurality of first dispensing boxes according to an exemplary embodiment.

FIG. 6 is a schematic diagram of yet another arrangement of liquid storage bins of a plurality of first dispensing boxes according to an exemplary embodiment.

FIG. 7 is a schematic diagram of an arrangement of a plurality of first dispensing boxes according to an exemplary embodiment.

FIG. 8 is a schematic diagram of an arrangement of a plurality of first dispensing boxes and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 9 is a schematic diagram of another arrangement of a plurality of first dispensing boxes and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 10 is a schematic illustration of an arrangement of a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 11 is a schematic diagram of another arrangement of a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 12 is a schematic diagram of further another arrangement of a plurality of first dispensing boxes and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 13 is a schematic diagram of yet another arrangement of a plurality of first dispensing boxes and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 14 is a schematic diagram of further yet another arrangement of a plurality of first dispensing boxes and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 15 is a schematic diagram of an arrangement of a single first dispensing box and a single second dispensing box according to an exemplary embodiment.

FIG. 16 is a schematic diagram of another arrangement of a single first dispensing box and a single second dispensing box according to an exemplary embodiment.

FIG. 17 is a schematic diagram of an arrangement of a single first dispensing box and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 18 is a schematic diagram of another arrangement of a single first dispensing box and a plurality of second dispensing boxes according to an exemplary embodiment.

FIG. 19 is a schematic diagram of a dispensing device when being in a closed state according to an exemplary embodiment.

FIG. 20 is a schematic diagram of another dispensing device when being in a closed state according to an exemplary embodiment.

FIG. 21 is a schematic diagram of a structure of a first dispensing box according to an exemplary embodiment.

FIG. 22 is a schematic diagram of a dispensing box according to an exemplary embodiment.

FIG. 23 is a schematic diagram of the dispensing box in FIG. 22 when being in an open state.

FIG. 24 is a schematic diagram of a structure of a liquid storage bin according to an exemplary embodiment.

FIG. 25 is a schematic diagram of an arrangement of a liquid storage bin of the dispensing box of FIG. 22.

FIG. 26 is a schematic diagram of another arrangement of a liquid storage bin of the dispensing box of FIG. 22.

FIG. 27 is a schematic diagram of a structure of a dispensing member of the dispensing box of FIG. 22.

FIG. 28 is a schematic diagram of another structure of a dispensing member of the dispensing box of FIG. 22.

FIG. 29 is a cross-section schematic diagram of another dispensing box according to an exemplary embodiment.

FIG. 30 is a schematic perspective view of the dispensing box of FIG. 29.

FIG. 31 is a schematic diagram of a fitting state of a door and a liquid storage bin according to an exemplary embodiment.

FIG. 32 is a schematic diagram of a structure of further another dispensing box according to an exemplary embodiment.

FIG. 33 is a schematic diagram of a structure of a dispensing member according to an exemplary embodiment.

FIG. 34 is a schematic diagram of a structure of further another dispensing box according to an exemplary embodiment.

FIG. 35 is a schematic diagram of a disassembly of the dispensing box in FIG. 34.

FIG. 36 is another schematic diagram of a disassembly of the dispensing box in FIG. 34.

FIG. 37 is a schematic diagram of a state of the dispensing box in FIG. 34.

FIG. 38 is a schematic diagram of another state of the dispensing box in FIG. 34.

FIG. 39 is a diagram of a relative position relationship of a liquid storage bin and a liquid filling member according to an exemplary embodiment.

FIG. 40 is a diagram of another relative position relationship of a liquid storage bin and a liquid filling member illustrated according to an exemplary embodiment.

FIG. 41 is a schematic diagram of a structure of a washing machine according to an exemplary embodiment.

DETAILED DESCRIPTION

[0019] Exemplary embodiments will be described in detail herein, examples of which are illustrated in the accompanying drawings. When the following description is made with reference to the drawings, the same numerals in different drawings refer to the same or similar elements unless otherwise indicated. The implementations described in the exemplary embodiments below are not intended to represent all implementations of the embodiments of the present disclosure. Rather, they are merely

examples of devices and methods according to some aspects of the present disclosure as recited in the appended claims.

[0020] The terms used in the present disclosure are used solely for the purpose of describing particular embodiments and are not intended to limit the present disclosure. The singular forms of "a", "an", "the" and "said" as used in the present disclosure and the appended claims are also intended to include the plural forms, unless the context clearly indicates otherwise. It should also be understood that the term "and/or" as used herein refers to and includes any or all possible combinations of one or more of the associated listed items.

[0021] It should be understood that although the terms such as first, second, third, and the like may be used in the present disclosure to describe various information, such information should not be limited by these terms. These terms are used only to distinguish information of the same type from one another. For example, without departing from the scope of the present disclosure, first information may also be referred to as second information, and similarly, the second information may also be referred to as the first information. Depending on the context, for example, the word "if" as used herein may be interpreted as "while" or "when" or "in response to determining that ...".

[0022] In the related art, an automatic dispensing chamber and a manual dispensing chamber are provided in a same drawer, and arranged along a sliding direction of the drawer. The automatic dispensing chamber and the manual dispensing chamber may be exposed at the same time by a subsequent operation of the drawer, and as such, a user is prone to make a mistake when placing washing liquid, and the user experience is not good.

[0023] Based on this, the present disclosure provides a dispensing device by which a dispensing box device can reduce the probability of error of a user placing a wash and improve the user experience.

[0024] FIG. 1 is a schematic simple diagram of a dispensing device 100 according to an exemplary embodiment. As shown in FIG. 1, the dispensing device 100 includes a single first dispensing box 1 and a single second dispensing box 2. The first dispensing box 1 is provided with a liquid storage bin 11, and a door 3 is provided at a front end of the liquid storage bin 11 and may be rotated to open or close the liquid storage bin 11. The second dispensing box 2 is provided with a dispensing member 21, and the dispensing member 21 includes one or more dispensing chambers 211 and may open and close the dispensing chamber 211 in a push-pull manner. By way of example, as shown in FIG. 1, when the door 3 is rotated from the solid line position to the dashed line position, the liquid storage bin 11 may be switched from a closed state to an open state to facilitate liquid filling, and when the dispensing member 21 is pulled from the solid line position to the dashed line position, the dispensing chamber 211 may be switched from a closed state to an open state to facilitate liquid filling. In this way, the

liquid storage bin 11 and the dispensing chamber 211 are provided in the first dispensing box 1 and the second dispensing box 2 respectively, and are opened in different ways and not at the same time, which facilitates the user to distinguish the liquid storage bin 11 and the dispensing chamber 211 in the opening way thereof, and thus reduces the probability of making an error in placing washing liquid.

[0025] In some embodiments, the first dispensing box 1 and the second dispensing box 2 may be of a one-piece structure, i.e., it can be understood that the dispensing device 100 is of a one-piece structure, and that the first dispensing box 1 and the second dispensing box 2 are different chambers sharing the same sidewall. In other embodiments, the first dispensing box 1 and the second dispensing box 2 are separate structures, and the dispensing device 100 is obtained by subsequent assembly.

[0026] In some embodiments, the dispensing member 21 may be slidably connected to a box body of the second dispensing box 2 by means of a slide groove and a guide rail which are fitted with each other, so that the dispensing member 21 may subsequently open or close the dispensing chamber 211 in the push-pull manner. In other embodiments, the dispensing member 21 may be closely fitted to the box body of the second dispensing box 2 or be fitted to the box body of the second dispensing box 2 through a gap, so as to subsequently restrict the push-pull track of the dispensing member 21 through the limit from the box body. In yet other embodiments, the dispensing member 21 may open or close the dispensing chamber 211 in a drawer-type manner. To facilitate user operation, a front surface of the dispensing member 21 may be recessed inwardly to form a pulling groove, or a handle may be provided on the front surface of the dispensing member 21.

[0027] In some embodiments, the dispensing device 100 further includes a connecting member (not shown) by which the door 3 may be rotated relative to an edge of an opening of the liquid storage bin 11. For example, the connecting member may include a rotating shaft, which is fixedly connected to the door 3 and is also rotationally connected to an inner wall of the liquid storage bin 11 or a box body of the first dispensing box 1, so that rotation of the door 3 is achieved by rotation of the rotating shaft with respect to the liquid storage bin 11, and thus the liquid storage bin 11 may be opened or closed. Optionally, the connecting member may be a convex cylinder provided at the door 3 or be a hinge, which may be designed according to the need, and the present disclosure is not limited thereto. Of course, in order to reduce the spillage of the washing liquid, a sealant or other sealing material may be provided at the connection of the door 3.

[0028] In the embodiment shown in FIG. 1, it is illustrated as an example that the dispensing device 100 includes a single first dispensing box 1 and a single second dispensing box 2. In other embodiments, the dispensing device 100 may include a plurality of first dispensing box-

es 1 or a plurality of second dispensing boxes 2, the plurality of first dispensing boxes 1 may be of a one-piece structure or be separate structures, and the plurality of second dispensing boxes 2 may be of a one-piece structure or be separate structures. The dispensing member 21 of each second dispensing box 2 may include one or more dispensing chambers 211, and the number of dispensing chambers 211 included in the dispensing member 21 of one second dispensing box 2 may be equal to or different from the number of dispensing chambers 211 included in the dispensing member 21 of a different second dispensing box 2.

[0029] Optionally, when a position of the dispensing member 21 is changed in the push-pull manner, the liquid storage bin 11 is not displaced in the push-pull direction. Taking FIG. 1 as an example, when the dispensing member 21 opens the dispensing chamber 211 by moving to the right in a horizontal direction, the liquid storage bin 11 is not displaced in the horizontal direction, i.e., the liquid storage bin 11 remains motionless. In this way, the position of the liquid storage bin 11 is not changed with the movement of the dispensing member 21, and the original position of the liquid storage bin 11 is always maintained when the dispensing chamber 211 is exposed. On the one hand, it can avoid the case where the user makes an error in placing the washing liquid when the liquid storage bin 11 is exposed due to the movement of the dispensing chamber 211, and thus can reduce the probability of placing error. On the other hand, as the liquid storage bin 11 remains motionless, the wear and tear brought about by the movement of the liquid storage bin 11 may be reduced, and especially for a pump body for extracting the washing liquid in the liquid storage bin 11, the wear and tear of a pipeline thereof may be reduced. Further, as the liquid storage bin 11 does not move, the user may push and pull the object lightly, which improves the user experience. It can be understood that when the dispensing device 100 includes a plurality of dispensing members 21, and the position of each dispensing member 21 is changed in the push-pull manner, the liquid storage bin 11 is not displaced in the push-pull direction of any one of the dispensing members 21. When the dispensing device 100 includes a plurality of first dispensing boxes 1, and the position of each dispensing member 21 is changed in the push-pull manner, the liquid storage bin 11 included in each first dispensing box 1 is not displaced in the push-pull direction of any one of the dispensing members 21.

[0030] The following will be described with respect to the arrangement of the liquid storage bin 11.

[0031] In some embodiments, the dispensing device 100 may include a single first dispensing box 1, and the single first dispensing box 11 may include a plurality of liquid storage bins 11, which may be arranged in a vertical direction, as shown in FIG. 2. The vertical direction may be understood as a height direction of the dispensing device 100, or a depth direction of the liquid storage bin 11. Alternatively, as shown in FIG. 3, the plurality of liquid

storage bins 11 may be arranged in a horizontal direction. For example, with respect to FIG. 1, the horizontal direction may be a direction perpendicular to the paper surface. The horizontal direction is perpendicular to the vertical direction, and the horizontal direction may be understood as a left-right direction or a front-back direction of a cleaning apparatus when the dispensing device 100 is assembled to the cleaning apparatus. The openings of the plurality of liquid storage bins 11 are provided towards the same side. The first dispensing box 1 is provided with a plurality of liquid storage bins 11, which facilitates matching the wide variety of washing liquids currently available on the market.

[0032] In other embodiments, the dispensing device 100 may include a plurality of first dispensing boxes 1, which may all be provided with a plurality of liquid storage bins 11. As shown in FIG. 4, the plurality of liquid storage bins 11 included in each of the first dispensing boxes 1 may be arranged in the vertical direction; alternatively, as shown in FIG. 5, the plurality of liquid storage bins 11 included in each of the first dispensing boxes 1 may be arranged in the horizontal direction; alternatively, as shown in FIG. 6, the plurality of the liquid storage bins 11 included in some of the first dispensing boxes 1 are arranged in the vertical direction, and the plurality of liquid storage bins 11 included in others of the first dispensing boxes 1 are arranged in the horizontal direction. Optionally, where the dispensing device 100 includes a plurality of first dispensing boxes 1, it may be that one or more of the plurality of first dispensing boxes 1 includes a plurality of liquid storage bins 11, and the plurality of liquid storage bins 11 may be arranged with reference to any of the embodiments of FIGS. 4-FIGS. 6.

[0033] The above embodiments are illustrated by the example of the dispensing device 100 including two first dispensing boxes 1, and in other embodiments, the dispensing device 100 may include three or more first dispensing boxes 1. Similarly, in the case where the first dispensing box 1 includes a plurality of liquid storage bins 11, the present disclosure is illustrated by the example of the first dispensing box 1 including two liquid storage bins 11, and in other embodiments, the first dispensing box 1 may include three or more liquid storage bins 11, which will not be repeated herein.

[0034] In the case where the first dispensing box 1 includes a plurality of liquid storage bins 11, the same door 3 may close at least one of the plurality of liquid storage bins 11. For example, the doors 3 in the first dispensing box 1 may correspond to the liquid storage bins 11 in a one-to-one correspondence relationship in the same first dispensing box 1; alternatively, one door 3 in the first dispensing box 1 may close all of the liquid storage bins 11 in the same first dispensing box 1; alternatively, one door 3 in the first dispensing box 1 may close some of the liquid storage bins 11 in the same first dispensing box 1, which is designed according to the need, and the present disclosure is not limited thereto.

[0035] In an embodiment of the present disclosure, at

least one first dispensing box 1 and/or at least one second dispensing box 2 are arranged in the vertical direction or the horizontal direction.

[0036] Specifically, in some embodiments, as shown in FIG. 7, the dispensing device 100 includes a plurality of first dispensing boxes 1, and the plurality of first dispensing boxes 1 are arranged in the vertical direction. Further, as shown in FIG. 8, on the basis of the plurality of first dispensing boxes 1 being arranged in the vertical direction, if the dispensing device 100 includes a plurality of second dispensing boxes 2, the plurality of second dispensing boxes 2 may be arranged in the horizontal direction as shown in FIG. 8 or may be arranged in the vertical direction as shown in FIG. 9. Alternatively, some of the second dispensing boxes 2 may be arranged in the horizontal direction and some of the second dispensing boxes 2 may be arranged in the vertical direction. In other embodiments, as shown in FIG. 10, the plurality of first dispensing boxes 1 are arranged in the horizontal direction, and on the basis of the plurality of first dispensing boxes 1 arranged in the horizontal direction, if the dispensing device 100 includes a plurality of second dispensing boxes 2, the plurality of second dispensing boxes 2 may be arranged in the horizontal direction or in the vertical direction, or partially in the horizontal direction and partially in the vertical direction.

[0037] In another embodiment, as shown in FIG. 11, the dispensing device 100 includes a plurality of second dispensing boxes 2, and the plurality of second dispensing boxes 2 are arranged in the vertical direction. Further, as shown in FIG. 12, on the basis of the plurality of second dispensing boxes 2 being arranged in the vertical direction, if the dispensing device 100 includes a plurality of first dispensing boxes 1, the plurality of first dispensing boxes 1 may be arranged in the horizontal direction as shown in FIG. 12 or in the vertical direction as shown in FIG. 13. Alternatively, some of the first dispensing boxes 1 may be arranged in the horizontal direction and some of the first dispensing boxes 1 may be arranged in the vertical direction. In other embodiments, as shown in FIG. 14, the plurality of second dispensing boxes 2 may be arranged in the horizontal direction, and on the basis of the plurality of second dispensing boxes 2 arranged in the horizontal direction, if the dispensing device 100 includes a plurality of first dispensing boxes 1, the plurality of first dispensing boxes 1 may be arranged in the horizontal direction. In other embodiments, the plurality of first dispensing boxes 1 may be arranged in the vertical direction, or partially in the horizontal direction and partially in the vertical direction.

[0038] In yet other embodiments, as shown in FIG. 15, the dispensing device 100 may include one first dispensing box 1 and one second dispensing box 2, and the single first dispensing box 1 and the single second dispensing box 2 may be arranged in the vertical direction. Optionally, as shown in FIG. 16, the single first dispensing box 1 and the single second dispensing box 2 may be arranged in the horizontal direction.

[0039] In further embodiments, as shown in FIG. 17, the dispensing device 100 may include a single first dispensing box 1 and a plurality of second dispensing boxes 2, the single first dispensing box 1 and the plurality of second dispensing boxes 2 are arranged in the vertical direction. In other embodiments, as shown in FIG. 18, the single first dispensing box 1 and the plurality of second dispensing boxes 2 are arranged in the horizontal direction. Similarly, in the case where the dispensing device 100 includes a single second dispensing box 2 and the plurality of first dispensing boxes 1, the single second dispensing box 2 and the plurality of first dispensing boxes 1 may be arranged in the horizontal direction or vertical direction. Again similarly, in the case where the dispensing device 100 includes a plurality of first dispensing boxes 1 and a plurality of second dispensing boxes 2, the plurality of first dispensing boxes 1 and the plurality of second dispensing boxes 2 may be arranged in horizontal direction or vertical direction.

[0040] It is to be noted that in the above embodiments, it is illustrated as an example that there are two first dispensing boxes 1 when the dispensing device 100 includes a plurality of first dispensing boxes 1, and in other embodiments, the dispensing device 100 may also include three or more first dispensing boxes 1. Similarly, it is illustrated as an example that there are two second dispensing boxes 2 when the dispensing device 100 includes a plurality of second dispensing boxes 2, and in other embodiments, the dispensing device 100 may also include three or more second dispensing boxes 2. In the embodiments with respect to the arrangement of the first dispensing box 1 and the second dispensing box 2, the liquid storage bins 11 of the first dispensing box 1 may be arranged in the horizontal direction or in the vertical direction, or partially in the horizontal direction and partially in the vertical direction, and the present disclosure is not limited thereto.

[0041] The first dispensing box 1 and the second dispensing box 2 are arranged in the horizontal direction or in the vertical direction and in combination with the opening manner of the liquid storage bin 11 and the dispensing chamber 211. It can be understood that when the dispensing device 100 is assembled to the cleaning apparatus, the front surface of the door 3 and that of the dispensing member 21 may be used as a part of the outer surface of the cleaning apparatus, and thus the liquid storage bin 11 and the dispensing chamber 211 are arranged in a side-by-side manner. However in the related art, the automatic dispensing chamber and the manual dispensing chamber are arranged along the sliding direction of the drawer. Therefore, compared to the related art, the present disclosure can, on the one hand, reduce the displacement amount for the user to open the liquid storage bin 11 and the dispensing chamber 211, and on the other hand, can separate flow paths of the liquid storage bin 11 and the dispensing chamber 211 in the design of the flow path of the washing liquid. In comparison with the related art in which the washing liquid flowing from

the chamber located at the front end needs to pass through the area corresponding to another chamber for flowing out, the present disclosure can shorten the flow path and reduce the washing liquid residue.

[0042] Optionally, as shown in FIG. 19, when the liquid storage bin 11 and the dispensing chamber 211 are in a closed state, the front surface of the dispensing member 21 is aligned/flush with the front surface of the door 3, so as to enhance the aesthetics. The front surface of the dispensing member 21 is aligned/flush with the front surface of the door 3, which also means that the door 3 will not move with the dispensing member 21, the liquid storage bin 11 will not move with the dispensing member 21, and the dispensing member 21 will move independently, which reduces the probability of a displacing error of the washing liquid, and at the same time reduces the wear and tear of the liquid storage bin 11 and the corresponding part thereof. In other embodiments, as shown in FIG. 20, the front surface of the dispensing member 21 may cover the front surface of the door 3 when the liquid storage bin 11 and the dispensing chamber 211 are in a closed state, thereby visually providing an integrated effect while reducing an appearance assembly gap. Optionally, the door 3 may be partially covered or fully covered.

[0043] In some embodiments, as shown in FIG. 21, a depth of the liquid storage bin 11 is greater than a height of an opening of the liquid storage bin 11, and the user can fill the washing liquid through the opening, and store the washing liquid by using the space sunken relative to the opening. Of course, in order to facilitate dumping of the washing liquid by the user, a plurality of guide ribs 4 may be provided on the door 3, and each guide rib 4 may extend towards the opening of the liquid storage bin 11, so that by providing the plurality of guide ribs 4, a drainage chamber may be formed between adjacent guide ribs 4. Therefore, when the door 3 is in an open state, the user may fill the washing liquid in the drainage chamber, and then the washing liquid may enter into the liquid storage bin 11 with the guidance of the guide ribs 4 as the door 3 is closed. As shown in FIG. 21, the guide rib 4 may extend in a vertical direction with respect to the edge of the door 3 located in the opening, or in other embodiments, the guide rib 4 may also extend at an angle with respect to the edge of the door 3 located in the opening. Optionally, the guide rib 4 may be provided in a regular quadrilateral shape as shown in FIG. 21, and in other embodiments, the guide rib 4 may also be provided in other regular shapes; optionally, the guide rib 4 may be provided in the middle of the door 3, or the guide rib 4 may also be provided at the edge of the door 3, which may be designed as desired, and the present disclosure is not limited thereto.

[0044] As shown in FIGS. 22 and 23, the present disclosure also provides a dispensing box 200, which may include at least one liquid storage bin 5 and at least one dispensing member 6. A front end of the liquid storage bin 5 is provided with a door 7, which opens or closes

the liquid storage bin 5 in a rotating manner. The dispensing member 6 includes at least one dispensing chamber 61, and may open or close the dispensing chamber 61 in a push-pull manner. When the door 7 is switched from a state shown in FIG. 22 to a state shown in FIG. 23, the liquid storage bin 5 may be switched from a closed state to an open state; and when the dispensing member 6 is switched from the state shown in FIG. 22 to the state shown in FIG. 23, the dispensing chamber 61 may be switched from a closed state to an open state. As further shown in FIGS. 22 and 23, the liquid storage bin 5 and the dispensing member 6 may be arranged in the vertical direction.

[0045] On the basis of the above, the dispensing chamber 61 may be opened or closed by pushing or pulling the dispensing member 6, and the liquid storage bin 5 may be opened or closed by rotating the door 7, i.e., the dispensing chamber 61 and the liquid storage bin 5 may each be opened by a different part, which can reduce the probability of making an error by the user in displacing the washing liquid. At the same time, the liquid storage bin 5 and the dispensing member 6 are arranged in the vertical direction, which, compared to the related art where the automatic dispensing chamber and the manual dispensing chamber are arranged along the sliding direction of the drawer, on the one hand, can reduce the displacement amount for the user to open the liquid storage bin 5 and the dispensing chamber 61, and on the other hand, can separate flow paths of the liquid storage bin 5 and the dispensing chamber 61 in the design of the flow path of the washing liquid. In comparison with the related art in which the washing liquid flowing from the chamber located at the front end needs to pass through the area corresponding to another chamber for flowing out, the present disclosure can shorten the flow path and reduce the washing liquid residue.

[0046] In the embodiment shown in FIGS. 22 and 23, it is illustrated as an example that the liquid storage bin 5 and the dispensing member 6 are arranged in the vertical direction. In other embodiments, the liquid storage bin 5 and the dispensing member 6 may also be arranged in the horizontal direction, which also facilitates reducing the displacement of the user for opening the liquid storage bin 5 and the dispensing chamber 61, and also facilitates shortening the flow path of the washing liquid. It is understood that the vertical direction is the height direction of the cleaning apparatus in which it is disposed, and the horizontal direction is the left-right direction or the front-back direction of the cleaning apparatus. Of course, the front surfaces of the door 7 and the dispensing member 6 may form a part of the surface of the cleaning apparatus in order to facilitate operation by the user.

[0047] In some embodiments, the dispensing member 6 may be slidably connected to a box body of the dispensing box 200 by means of a slide groove and a guide rail which are fitted with each other, so that the dispensing member 6 may subsequently open or close the dispensing chamber 61 in the push-pull manner. In other embod-

iments, the dispensing member 6 may be closely fitted to the box body of the dispensing box 200 or be fitted to the box body of the dispensing box 200 through a gap, so as to subsequently restrict the push-pull track of the dispensing member 6 through the limit from the box body. In yet other embodiments, the dispensing member 6 may open or close the dispensing chamber 61 in a drawer-type manner. To facilitate user operation, a front surface of the dispensing member 6 may be recessed inwardly to form a pulling groove, or a handle may be provided on the front surface of the dispensing member 6.

[0048] In some embodiments, the dispensing device 200 further includes a connecting member (not shown) by which the door 7 may be rotated relative to an edge of an opening of the liquid storage bin 5. For example, the connecting member may include a rotating shaft, which is fixedly connected to the door 7 and is also rotationally connected to an inner wall of the liquid storage bin 5 or a box body of the dispensing box 200, so that rotation of the door 7 is achieved by rotation of the rotating shaft with respect to the liquid storage bin 5, and thus the liquid storage bin 5 may be opened or closed. Optionally, the connecting member may be a convex cylinder provided at the door 7 or be a hinge, which may be designed according to the need, and the present disclosure is not limited thereto. Of course, in order to reduce the spillage of the washing liquid, a sealant or other sealing material may be provided at the connection of the door 7. The liquid storage bin 5 may be formed by being enclosed by the box body of the dispensing box 200, or the liquid storage bin 5 may be a separate structure from the box body, and thus the liquid storage bin 5 is formed by being enclosed by the separate structure.

[0049] Optionally, when a position of the dispensing member 6 is changed in the push-pull manner, the liquid storage bin 5 is not displaced in the push-pull direction. Taking FIGS. 22 and 23 as an example, when the dispensing member 6 opens the dispensing chamber 61 by moving to the right in a horizontal direction, i.e., is switched from the state shown in FIG. 22 to the state shown in FIG. 23, the liquid storage bin 5 is not displaced in the horizontal direction, i.e., the liquid storage bin 5 remains motionless. In this way, the position of the liquid storage bin 5 is not changed with the movement of the dispensing member 6, and the original position of the liquid storage bin 5 is always maintained when the dispensing chamber 61 is exposed. On the one hand, it can avoid the case where the user makes an error in placing the washing liquid when the liquid storage bin 5 is exposed due to the movement of the dispensing chamber 61, and thus can reduce the probability of placing error. On the other hand, as the liquid storage bin 5 remains motionless, the wear and tear brought about by the movement of the liquid storage bin 5 may be reduced, and especially for a pump body for extracting the washing liquid in the liquid storage bin 5, the wear and tear of a pipeline thereof may be reduced. Further, as the liquid storage bin 5 does not move, the user may push and pull

the object lightly, which improves the user experience. It can be understood that when the dispensing box 200 includes a plurality of dispensing members 6, and the position of each dispensing member 6 is changed in the push-pull manner, the liquid storage bin 5 is not displaced in the push-pull direction of any one of the dispensing members 6. When the dispensing box 200 includes a plurality of dispensing members 6, and the position of each dispensing member 6 is changed in the push-pull manner, the liquid storage bin 5 included in each dispensing box 200 is not displaced in the push-pull direction of any one of the dispensing members 6.

[0050] In the embodiment shown in FIGS. 22 and 23, the dispensing box 200 may include one or more liquid storage bins 5, and the following describes the arrangement of the plurality of liquid storage bins 5 included in the dispensing box 200.

[0051] In some embodiments, as shown in FIGS. 24 and 25, the dispensing box 200 may include a plurality of liquid storage bins 5. The plurality of liquid storage bins 5 may be arranged in the horizontal direction as shown in FIGS. 24 and 25. The horizontal direction is perpendicular to a height direction of the dispensing box 200. Alternatively, the plurality of liquid storage bins 5 may be arranged in the vertical direction as shown in FIG. 26. When the dispensing box 200 is assembled to the cleaning apparatus, the horizontal direction may be understood as a left-right direction or a front-back direction of the cleaning apparatus, and the openings of the plurality of liquid storage bins 5 are provided towards the same side. In this regard, the dispensing box 200 is provided with a plurality of liquid storage bins 5, which facilitates matching the wide variety of washing liquids currently available on the market.

[0052] Similarly, the dispensing box 200 may include a plurality of dispensing members 6, and the dispensing member 6 may include at least one dispensing chamber 61, such as a single dispensing chamber 61 as shown in FIG. 27, or two dispensing chambers as shown in FIG. 28. Of course, the dispensing members 6 may include three or more dispensing chambers. When any of the dispensing members 6 includes a plurality of dispensing chambers 61, the plurality of dispensing chambers 61 may be arranged in the vertical direction or the horizontal direction. When the dispensing box 200 includes a plurality of dispensing members 6, the plurality of dispensing members 6 may be arranged in the vertical direction or the horizontal direction. When each of the plurality of dispensing members 6 includes a plurality of dispensing chambers 61, it may be that the dispensing chambers of some dispensing members 6 are arranged in the horizontal direction, and the dispensing chambers of some dispensing members 6 are arranged in the vertical direction.

[0053] Optionally, in the case where the dispensing box 200 includes a plurality of liquid storage bins 5, the door 7 may close at least one of the plurality of liquid storage bins 5. For example, the doors 7 in the dispensing

box 200 may correspond to the liquid storage bins 7 in a one-to-one correspondence relationship in the same dispensing box 200; alternatively, one door 7 in the dispensing box 200 may close all of the liquid storage bins 5 in the same dispensing box 200; alternatively, one door 7 in the dispensing box 200 may close some of the liquid storage bins 5 in the same dispensing box 200, which is designed according to the need, and the present disclosure is not limited thereto.

[0054] Optionally, as shown in FIG. 29, when the liquid storage bin 5 and the dispensing chamber 61 are in a closed state, the front surface of the dispensing member 6 is aligned/flush with the front surface of the door 7, so as to enhance the aesthetics. The front surface of the dispensing member 6 is aligned/flush with the front surface of the door 7, which also means that the door 7 will not move with the dispensing member 6, the liquid storage bin 5 will not move with the dispensing member 6, and the dispensing member 6 will move independently, which reduces the probability of a displacing error of the washing liquid, and at the same time reduces the wear and tear of the liquid storage bin 5 and the corresponding part thereof. In other embodiments, as shown in FIG. 30, the front surface of the dispensing member 5 may cover the front surface of the door 7 when the liquid storage bin 5 and the dispensing chamber 6 are in a closed state, thereby visually providing an integrated effect while reducing an appearance assembly gap. Optionally, the door 7 may be partially covered or fully covered.

[0055] In some embodiments, as shown in FIG. 31, a depth of the liquid storage bin 5 is greater than a height of an opening of the liquid storage bin 5, and the user can fill the washing liquid through the opening, and store the washing liquid by using the space sunken relative to the opening. Of course, in order to facilitate dumping of the washing liquid by the user, a plurality of guide ribs 8 may be provided on the door 7, and each guide rib 8 may extend towards the opening of the liquid storage bin 5, so that by providing the plurality of guide ribs 8, a drainage chamber may be formed between adjacent guide ribs 8. Therefore, when the door 7 is in an open state, the user may fill the washing liquid in the drainage chamber, and then the washing liquid may enter into the liquid storage bin 5 with the guidance of the guide ribs 8 as the door 7 is closed. As shown in FIG. 31, the guide rib 8 may extend in a vertical direction with respect to the edge of the door 7 located in the opening, or in other embodiments, the guide rib 8 may also extend at an angle with respect to the edge of the door 7 located in the opening. Optionally, the guide rib 8 may be provided in a regular quadrilateral shape as shown in FIG. 31, and in other embodiments, the guide rib 8 may also be provided in other regular shapes; optionally, the guide rib 8 may be provided in the middle of the door 7, or the guide rib 8 may also be provided at the edge of the door 7, which may be designed as desired, and the present disclosure is not limited thereto.

[0056] As shown in FIG. 32, the present disclosure also

provides a dispensing box 300 including a box body 301, and the box body 301 is provided with a liquid storage bin 9, a liquid filling member 10, and a dispensing member 12. The liquid filling member 10 is communication with the liquid storage bin 9, and the liquid filling member 10 is opened in a push-pull manner to expose a liquid filling port, so as to facilitate the user to fill the washing liquid into the liquid storage bin 9 through the liquid filling member 10. The liquid filling member 10 is closed in a push-pull manner, so that the liquid filling port is received to avoid falling dust. The dispensing member 12 includes at least one dispensing chamber 121, and the dispensing member 12 is opens or closes the dispensing chamber 121 in a push-pull manner. The dispensing member 12 and the liquid storage bin 9 are arranged in a horizontal direction.

[0057] On the basis of the above, the dispensing chamber 121 may be opened or closed by pushing or pulling the dispensing member 12, and the washing liquid may be filled into the liquid storage bin 9 through the opening of the liquid filling member 10, which can reduce the probability of making an error by the user in placing the washing liquid. At the same time, the liquid storage bin 9 and the dispensing member 12 are arranged in the horizontal direction, which, compared to the related art where the automatic dispensing chamber and the manual dispensing chamber are arranged along the sliding direction of the drawer, on the one hand, can reduce the displacement amount for opening by the user, and on the other hand, can separate flow paths of the liquid storage bin 9 and the dispensing chamber 121 in the design of the flow path of the washing liquid. In comparison with the related art in which the washing liquid flowing from the chamber located at the front end needs to pass through the area corresponding to another chamber for flowing out, the present disclosure can shorten the flow path and reduce the washing liquid residue.

[0058] Optionally, in some embodiments, the liquid filling member 10 may be a hollow structure with a liquid filling port and a fluid outlet formed on the liquid filling member 10, is in communication with the liquid storage bin 9 through the fluid outlet, and is filled with the washing liquid through the liquid filling port. In other embodiments, as shown in FIG. 32, the liquid filling member 10 may include a base plate and a plurality of ribs extending from the base plate, and adjacent ribs and the base plate disposed between the adjacent ribs may enclose a cavity through which the liquid filling member 10 is in communication with the liquid storage bin 9, and through which the washing liquid may subsequently be filled after the liquid filling member 10 is opened.

[0059] In the embodiment shown in FIG. 32, it is illustrated as an example that the dispensing box 300 includes a single liquid storage bin 9, a single liquid filling member 10 and a single dispensing member 12. In other embodiments, the dispensing box 300 may also include a plurality of liquid storage bins 9, a plurality of liquid filling members 10 and a plurality of dispensing members 12,

and the present disclosure is not limited thereto. When the dispensing box 300 includes a plurality of liquid storage bins 9, the same liquid filling member 10 may be in communication with one or more liquid storage bins 9. For example, an additional set of ribs is provided on the basis of that shown in FIG. 32, which may achieve that one liquid filling member 10 is in communication with two liquid storage bins 9, which is illustrated herein by way of example only.

[0060] In the embodiment shown in FIG. 32, it is illustrated as an example that the liquid storage bin 9 and the dispensing member 12 are arranged in the horizontal direction. In other embodiments, the liquid storage bin 9 and the dispensing member 12 may also be arranged in the vertical direction, which can also reduce the displacement of the user opening the liquid storage bin 9 and the dispensing chamber 121, and at the same time, can shorten the flow path of the washing liquid. It is understood that the vertical direction is the height direction of the cleaning apparatus where it disposed, and the horizontal direction is the left-right direction or the front-back direction of the cleaning apparatus. The liquid storage bin 9 may be formed by being enclosed by the box body 301, or the liquid storage bin 9 has a box-like structure that is distinct from the box body 301.

[0061] In some embodiments, the dispensing member 12 may be slidably connected to the box body of the dispensing box 300 by means of a slide groove and a guide rail which are fitted with each other, so that the dispensing member 12 may subsequently open or close the dispensing chamber 121 in the push-pull manner. In other embodiments, the dispensing member 12 may be closely fitted to the box body of the dispensing box 300 or be fitted to the box body of the dispensing box 300 through a gap, so as to subsequently restrict the push-pull track of the dispensing member 12 through the limit from the box body. In yet other embodiments, the dispensing member 12 may open or close the dispensing chamber 121 in a drawer-type manner. To facilitate user operation, a front surface of the dispensing member 12 may be recessed inwardly to form a pulling groove, or a handle may be provided on the front surface of the dispensing member 12.

[0062] As shown in FIG. 32, the top side of the dispensing chamber 121 has an opening structure, and the dispensing member 12 may be pushed or pulled to expose part of the opening so as to fill the liquid. Optionally, the dispensing chamber 121 is a hollow area of the dispensing member 12, and the filling of liquid may be achieved through the opening. As shown in FIG. 33, the dispensing member 12 may also include a liquid outlet 122, through which the liquid filled in the dispensing chamber 121 may be exported. In order to reduce the residue, the bottom surface of the dispensing chamber 121 is provided with a guide bevel 123 which is downwardly inclined, which is conducive to the flow of washing liquid. The bottom surface of the dispensing chamber 121 may be provided with one or more guide bevels 123

which are downwardly inclined. When the dispensing member 12 is provided with both the liquid outlet 122 and the guide bevel 123, the liquid outlet 122 may be provided at the end of the guide bevel 123, i.e., the liquid outlet 122 may be provided at the deepest part of the dispensing chamber 121.

[0063] Optionally, when a position of the dispensing member 12 is changed in the push-pull manner, the liquid storage bin 9 is not displaced in the push-pull direction. Taking FIG. 32 as an example, when the dispensing member 12 opens the dispensing chamber 121 by moving to the right in the arrow direction, the liquid storage bin 9 is not displaced in the arrow direction, i.e., the liquid storage bin 9 remains motionless. Similarly, when a position of the liquid filling member 10 is changed in the push-pull manner, the liquid storage bin 9 is not displaced in the push-pull direction. In this way, the position of the liquid storage bin 9 is not changed with the movement of the dispensing member 12 or the liquid filling member 10, and the original position of the liquid storage bin 9 is always maintained when the dispensing chamber 121 or the liquid filling member 10 is exposed. On the one hand, it can avoid the case where the user makes an error in placing the washing liquid when the liquid storage bin 9 is exposed due to the movement of the dispensing chamber 121, and thus can reduce the probability of placing error. On the other hand, as the liquid storage bin 9 remains motionless, the wear and tear brought about by the movement of the liquid storage bin 9 may be reduced, and especially for a pump body for extracting the washing liquid in the liquid storage bin 9, the wear and tear of a pipeline thereof may be reduced. Further, as the liquid storage bin 9 does not move, the user may push and pull the object lightly, which improves the user experience. It can be understood that when the dispensing box 300 includes a plurality of dispensing members 12, and the position of each dispensing member 12 is changed in the push-pull manner, the liquid storage bin 9 is not displaced in the push-pull direction of any one of the dispensing members 12. When the dispensing box 300 includes a plurality of dispensing members 12, and the position of each dispensing member 12 is changed in the push-pull manner, the liquid storage bins 9 included in each dispensing box 300 are not displaced in the push-pull direction of any one of the dispensing members 12. Similarly, when the dispensing box 300 includes a plurality of liquid filling members 10, and the position of each liquid filling member 10 is changed in a push-pull manner, the liquid storage bin 9 is not displaced in the push-pull direction of any of the liquid filling members 10. When the dispensing box 300 includes a plurality of liquid filling members 10, and the position of each liquid filling member 10 is changed in a push-pull manner, the liquid storage bins 9 included in each dispensing box 300 are not displaced in the push-pull direction of any of the liquid filling members 10.

[0064] Optionally, the dispensing member 12 and the liquid filling member 10 may be synchronously pushed

or pulled together, for example, in some embodiments, the dispensing member 12 may be connected to the liquid filling member 10, for example, they may be fixed by way of integrally molding, or welding or bonding or bolted connection, so that a user may open the dispensing chamber 121 and the liquid filling member 10 at the same time when pushing or pulling the liquid filling member 10 or the dispensing member 12, thereby reducing the operation complexity. In order to facilitate the operation of simultaneously pulling the dispensing member 12 and the liquid filling member 10, the liquid filling member 10 and the dispensing member 12 may have a common push-pull part, for example, the push-pull part may be provided on the front surface of the dispensing member 12, and the dispensing member 12 is connected to the liquid filling member 10, so that the liquid filling member 10 and the dispensing member 12 are pulled simultaneously by the push-pull part. The push-pull part may be a pulling groove or a handle. Alternatively, the push-pull part may be provided on the front surface of the liquid filling member 10, and the push-pull part may be a pulling groove or a handle.

[0065] In yet other optional embodiments, the liquid filling member 10 and the dispensing member 12 may also be independently pushed and pulled, i.e., they are structurally separated. The user may act on the liquid filling member 10 and the dispensing member 12 separately to achieve the opening and closing of the dispensing chamber 121 and the liquid filling member 10. For example, as shown in FIG. 34, the liquid filling member 10 and the dispensing member 12 have respective push-pull parts, which may be respectively provided at the front ends of the liquid filling member 10 and the dispensing member 12. The dispensing member 12 and the liquid filling member 10 are moved through the respective push-pull parts thereof.

[0066] Optionally, as shown in FIGS. 34 and 35, the front surface of the dispensing member 12 may cover the front surface of the liquid filling member 10 when the liquid filling member 10 and the dispensing chamber 121 are in a closed state, which visually provides an integrated effect, and at the same time reduces an appearance assembly gap. Optionally, the front surface of the dispensing member 12 may partially cover the liquid filling member 10 or completely cover the liquid filling member 10. In other embodiments, when the liquid filling member 10 and the dispensing chamber 121 are in the closed state, the front surface of the dispensing member 12 is aligned/flush with the front surface of the liquid filling member 10, which may enhance the aesthetics. The front surface of the dispensing member 12 is aligned/flush with the front surface of the liquid filling member 10, which also means that the liquid filling member 10 will not move with the dispensing member 12, the liquid storage bin 9 will not move with the dispensing member 12, and the dispensing member 12 will move independently, which reduces the probability of a displacing error of the washing liquid, and at the same time reduces the wear and

tear of the liquid storage bin 9 and the corresponding part thereof.

[0067] As shown in FIG. 36, the dispensing box 300 may also include a first cover body 13 and a second cover body 14. The second cover body 14 covers the liquid storage bin 9 and the liquid filling member 10 in a closed state to reduce impurities falling into the liquid storage bin 9. The first cover body 13 may cover the liquid storage bin 9, the liquid filling member 10, and the second cover body 14. The first cover body 13 and the second cover body 14 may provide a double protection for the liquid storage bin 9, thereby reducing contamination by impurities, and reducing the reduction of the washing liquid concentration caused by water splashing thereinto. The first cover body 13 and the second cover body 14 may be snap-fastened to the box body 301 or fixed to the box body 301 by a fastener such as bolt. In the embodiment shown in FIG. 36, it is illustrated as an example that the dispensing box 300 includes the first cover body 13 and the second cover body 14. In other embodiments, the dispensing box 300 may also include only the first cover body 13, which covers the liquid storage bin 9 and the dispensing member 12.

[0068] The structure of the second cover body 14 may be adapted to the structure of the liquid storage bin 9, for example, when the top of the liquid storage bin 9 is flat, the second cover body 14 is a plate-like structure; and for example, when the top of the liquid storage bin 9 is of a stepped structure, the second cover body 14 is a step-structured plate accordingly.

[0069] In each of the above embodiments, as shown in FIGS. 33-38, the liquid filling member 10 is located in the front area of the liquid storage bin 9, and the liquid filling member 10 is a separate component from the liquid storage bin 9. The front area of the liquid storage bin 9 may be understood as an area of the liquid storage bin 9 which is relatively front in the push-pull direction of the liquid filling member 10. The liquid filling member 10 is arranged in the front area of the liquid storage bin 9, which is conducive to shortening the length of the liquid filling member 10 in the push-pull direction, thereby making the pushing and pulling as easy as possible for the user, and improving the user experience. The liquid storage bin 9 and the liquid filling member 10 are arranged as two separate structural components, so that when the liquid filling member is pushed or pulled, the liquid storage bin 9 remains immobile in the push-pull direction, thereby reducing wear and tear of the liquid storage bin 9 itself and the corresponding parts such as the pump body. Further, as the liquid storage bin 9 does not move, the user may push and pull the object easily.

[0070] In some embodiments, the liquid filling member 10 may be slidably connected to a box body of the dispensing box 300 by means of a slide groove and a guide rail which are fitted with each other, so that the liquid filling member 10 may subsequently be opened or closed in the push-pull manner. In other embodiments, the liquid filling member 10 may be closely fitted to the box body

of the dispensing box 300 or be fitted to the box body of the dispensing box 300 through a gap, so as to subsequently restrict the push-pull track of the liquid filling member 10 through the limit from the box body.

[0071] Optionally, the front portion of the liquid storage bin 9 is provided with an accommodating part 91 to accommodate the liquid filling member 10, and the liquid filling member 10 may be translated relative to the accommodating part 91 when the user acts on the liquid filling member 10. For example, the liquid filling member 10 and the accommodating part 91 may be connected by a slide rail to achieve a sliding connection therebetween and thus to open or close the liquid filling member 10 in the push-pull manner. For another example, the liquid filling member 10 may be closely fitted to the accommodating part or be fitted to the accommodating part through a gap, so as to subsequently restrict the push-pull track of the liquid filling member 10 through the limit from the box body. Of course, in order to avoid the liquid filling member 10 from being excessively opened, the bottom of the liquid filling member 10 may be provided with a limiting member, which is limited by touching against the front wall of the liquid storage bin 9 when the liquid filling member 10 is switched to a fully opened state.

[0072] In some embodiments, the front portion of each of two side walls of the liquid storage bin 9 is provided with a step part which extends upwardly, for example, the side wall 92 of the liquid storage bin 9 is provided with a first step part 93, and the side wall 94 is provided with a second step part 95. The first step part 93 and the second step part 95 form the accommodating part 91, in which the liquid filling member 10 may be at least partially accommodated. In other embodiments, the liquid storage bin 9 may also include a base plate connected to the first step part 93 and the second step part 95, respectively, which is oriented towards the bottom of the fluid filling member 10, and the accommodating part is enclosed by the first step part 93, the second step part 95 and the base plate.

[0073] Further, an overlapping area between the liquid filling member 10 and the accommodating part 91 when the liquid filling member 10 is in an open state is smaller than an overlapping area between the liquid filling member 10 and the accommodating part 91 when the liquid filling member 10 is in a closed state. For example, taking the first step part 93 and the second step part 95 enclosing the accommodating part 91 as an example, when the liquid filling member 10 is in the closed state, the liquid filling member 10 is completely contained within the accommodating part 91, at which time the overlapping area between the liquid filling member 10 and the accommodating part 91 is the largest, whereas when the liquid filling member 10 is in the open state, the liquid filling member 10 is partially moved to the outside of the accommodating part 91, and thus the overlapping area between the liquid filling member 10 and the accommodating part 91 is reduced.

[0074] In yet other embodiments, as shown in FIG. 39,

the liquid filling member 10 is provided in the front area of the liquid storage bin 9, and the bottom of the liquid filling member 10 is above the top of the liquid storage bin 9. That is, it is to be appreciated that the liquid storage bin 9 and the liquid filling member 10 are arranged in the vertical direction, to avoid a reduction in the volume of the liquid storage bin 9 due to the assembly of the liquid filling member 10. Optionally, the liquid filling member is provided in the front area of the liquid storage bin 9 and the bottom of the liquid filling member 10 is flush with the top of the liquid storage bin 9.

[0075] In yet further embodiments, as shown in FIG. 40, the liquid filling member 10 is provided in the front area of the liquid storage bin 9 and the bottom of the liquid filling member 10 is provided between the top and bottom of the liquid storage bin 9. By providing the bottom of the liquid filling member 10 between the top and the bottom of the liquid storage bin 9, it may ensure that the washing liquid flowing out of the liquid filling member 10 may flow directly into the liquid storage bin 9, and thus spillage is reduced.

[0076] Based on the technical solution of the present disclosure, there is also provided a washing machine as shown in FIG. 41. The washing machine may include the dispensing device 100 described in any of the above embodiments, or the washing machine may include the dispensing box 200 described in any of the above embodiments; or the washing machine may include the dispensing box 300 described in any of the above embodiments.

Embodiment 1. A dispensing device including at least one first dispensing box and at least one second dispensing box, wherein

the first dispensing box is provided with a liquid storage bin, a front end of the liquid storage bin is provided with a door, and the door opens or closes the liquid storage bin in a rotating manner, and

the second dispensing box is provided with a dispensing member, the dispensing member each includes at least one dispensing chamber, and the dispensing member opens or closes the dispensing chamber in a push-pull manner.

Embodiment 2. The dispensing device according to embodiment 1, wherein when a position of the dispensing member is changed in the push-pull manner, the liquid storage bin is not displaced in a push-pull direction.

Embodiment 3. The dispensing device according to embodiment 1 or 2, wherein the dispensing device further includes a connecting member, and the door is rotatable relative to an edge of an opening of the liquid storage bin by the connecting member.

Embodiment 4. The dispensing device according to embodiment 1 or 2, wherein the at least one first dispensing box includes a plurality of first dispensing

boxes, one or more of the first dispensing boxes are provided with a plurality of liquid storage bins, and the plurality of liquid storage bins are arranged in a horizontal direction or in a vertical direction.

Embodiment 5. The dispensing device according to embodiment 1 or 2, wherein the at least one first dispensing box and/or the at least one second dispensing box are arranged in a horizontal direction or in a vertical direction.

Embodiment 6. The dispensing device according to embodiment 1 or 2, wherein when the liquid storage bin and the dispensing chamber are in a closed state, a front surface of the dispensing member and a front surface of the door are aligned with each other.

Embodiment 7. The dispensing device according to embodiment 1 or 2, wherein when the liquid storage bin and the dispensing chamber are in a closed state, a front surface of the dispensing member covers a front surface of the door.

Embodiment 8. The dispensing device according to embodiment 1 or 2, wherein a depth of the liquid storage bin is greater than a height of an opening of the liquid storage bin.

Embodiment 9. The dispensing device according to embodiment 1 or 2, wherein the door is provided with a plurality of guide ribs, and the guide ribs extend towards an opening of the liquid storage bin.

Embodiment 10. The dispensing device according to embodiment 1 or 2, wherein the first dispensing box includes a plurality of liquid storage bins, and at least one of the plurality of liquid storage bins is opened and closed through a same door.

Embodiment 11. The dispensing device according to embodiment 1 or 2, wherein the push-pull manner is of a drawer type.

Embodiment 12. A dispensing box, including:

at least one liquid storage bin, provided with a door at a front end of the liquid storage bin, the door opening or closing the liquid storage bin in a rotating manner; and

at least one dispensing member, including at least one dispensing chamber, the dispensing member opening or closing the dispensing chamber in a push-pull manner; wherein the liquid storage bin and the dispensing member are arranged in a horizontal direction or in a vertical direction.

Embodiment 13. The dispensing box according to embodiment 12, wherein when a position of the dispensing member is changed in the push-pull manner, the liquid storage bin is not displaced in a push-pull direction.

Embodiment 14. The dispensing box according to embodiment 12 or 13, wherein the dispensing box includes a plurality of liquid storage bins, and the plurality of liquid storage bins are arranged in the

horizontal direction or in the vertical direction.

Embodiment 15. The dispensing box according to embodiment 12 or 13, wherein the dispensing box further includes a connecting member, and the door is rotated relative to an edge of an opening of the liquid storage bin by the connecting member.

Embodiment 16. The dispensing box according to embodiment 12 or 13, wherein when the liquid storage bin and the dispensing chamber are in a closed state, a front surface of the dispensing member and a front surface of the door are aligned with each other.

Embodiment 17. The dispensing box according to embodiment 12 or 13, wherein when the liquid storage bin and the dispensing chamber are in a closed state, a front surface of the dispensing member covers a front surface of the door.

Embodiment 18. The dispensing box according to embodiment 12 or 13, wherein a depth of the liquid storage bin is greater than a height of an opening of the liquid storage bin.

Embodiment 19. The dispensing box according to embodiment 12 or 13, wherein the door is provided with a plurality of guide ribs, and the guide ribs extend towards an opening of the liquid storage bin.

Embodiment 20. A dispensing box, including:

at least one liquid storage bin;
at least one liquid filling member, being in communication with the liquid storage bin, the liquid filling member being opened or closed in a push-pull manner; and
at least one dispensing member, the dispensing member including at least one dispensing chamber and opening or closing the dispensing chamber in the push-pull manner, wherein the liquid storage bin and the dispensing member are arranged in a horizontal direction or in a vertical direction.

Embodiment 21. The dispensing box according to embodiment 20, wherein when a position of the dispensing member is changed in the push-pull manner, the liquid storage bin is not displaced in a push-pull direction; and/or

when a position of the liquid filling member is changed in the push-pull manner, the liquid storage bin is not displaced in the push-pull direction.

Embodiment 22. The dispensing box according to embodiment 20 or 21, wherein the liquid filling member is located in a front area of the liquid storage bin, and is a discrete member from the liquid storage bin.

Embodiment 23. The dispensing box according to embodiment 20 or 21, wherein the dispensing member and the liquid filling member are pushed and pulled synchronously or independently.

Embodiment 24. The dispensing box according to embodiment 20 or 21, wherein the dispensing mem-

ber and the liquid filling member have respective push-pull parts or have a common push-pull part.

Embodiment 25. The dispensing box according to embodiment 20 or 21, wherein when the liquid filling member and the dispensing chamber are in a closed state, a front surface of the dispensing member covers a front surface of the liquid filling member.

Embodiment 26. The dispensing box according to embodiment 20 or 21, wherein when the liquid filling member and the dispensing chamber are in a closed state, a front surface of the liquid filling member and a front surface of the dispensing member are aligned with each other.

Embodiment 27. The dispensing box according to embodiment 20 or 21, further including a first cover body covering the liquid storage bin and the dispensing chamber.

Embodiment 28. The dispensing box according to embodiment 27, further including a second cover body covering the liquid storage bin and the liquid filling member, wherein the first cover body covers the second cover body.

Embodiment 29. The dispensing box according to embodiment 20 or 21, wherein a front area of the liquid storage bin is provided with an accommodating part to accommodate the liquid filling member.

Embodiment 30. The dispensing box according to embodiment 29, wherein an overlapping area between the liquid filling member and the accommodating part in an open state is smaller than an overlapping area between the liquid filling member and the accommodating part in a closed state.

Embodiment 31. The dispensing box according to embodiment 20 or 21, wherein the liquid filling member is provided in a front area of the liquid storage bin, and a bottom of the liquid filling member is above or flush with a top of the liquid storage bin.

Embodiment 32. The dispensing box according to embodiment 20 or 21, wherein the liquid filling member is provided in a front area of the liquid storage bin, and a bottom of the liquid filling member is between a top and a bottom of the liquid storage bin.

Embodiment 33. A washing machine, including the dispensing device according to any one of embodiments 1-11, or the dispensing box according to any one of embodiments 12-32.

Claims

1. A dispensing device (100) comprising at least one first dispensing box (1) and at least one second dispensing box (2), wherein

the first dispensing box (1) is provided with a liquid storage bin (11), a front end of the liquid storage bin (11) is provided with a door (3), and the door (3) opens or closes the liquid storage

bin (11) in a rotating manner, and the second dispensing box (2) is provided with a dispensing member (21), the dispensing member (21) each comprises at least one dispensing chamber (211), and the dispensing member (21) opens or closes the dispensing chamber (211) in a push-pull manner.

2. The dispensing device (100) according to claim 1, wherein when a position of the dispensing member (21) is changed in the push-pull manner, the liquid storage bin (11) is not displaced in a push-pull direction.
3. The dispensing device (100) according to claim 1 or 2, wherein the dispensing device further comprises a connecting member, and the door (3) is rotatable relative to an edge of an opening of the liquid storage bin (11) by the connecting member.
4. The dispensing device (100) according to claim 1 or 2, wherein the at least one first dispensing box (1) comprises a plurality of first dispensing boxes (1), one or more of the first dispensing boxes (1) are provided with a plurality of liquid storage bins (11), and the plurality of liquid storage bins (11) are arranged in a horizontal direction or in a vertical direction.
5. The dispensing device (100) according to claim 1 or 2, wherein the at least one first dispensing box (1) and/or the at least one second dispensing box (2) are arranged in a horizontal direction or in a vertical direction.
6. The dispensing device (100) according to claim 1 or 2, wherein when the liquid storage bin (11) and the dispensing chamber (211) are in a closed state, a front surface of the dispensing member (21) and a front surface of the door (3) are aligned with each other.
7. The dispensing device (100) according to claim 1 or 2, wherein when the liquid storage bin (11) and the dispensing chamber (211) are in a closed state, a front surface of the dispensing member (21) covers a front surface of the door (3).
8. The dispensing device (100) according to claim 1 or 2, wherein a depth of the liquid storage bin (11) is greater than a height of an opening of the liquid storage bin (11).
9. The dispensing device (100) according to claim 1 or 2, wherein the door (3) is provided with a plurality of guide ribs (4), and the guide ribs (4) extend towards an opening of the liquid storage bin (11).
10. The dispensing device (100) according to claim 1 or

2, wherein the first dispensing box (1) comprises a plurality of liquid storage bins (11), and at least one of the plurality of liquid storage bins (11) is opened and closed through a same door (3).

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11. The dispensing device (100) according to claim 1 or 2, wherein the push-pull manner is of a drawer type.

12. A washing machine, comprising the dispensing device (100) according to any one of claims 1-11.

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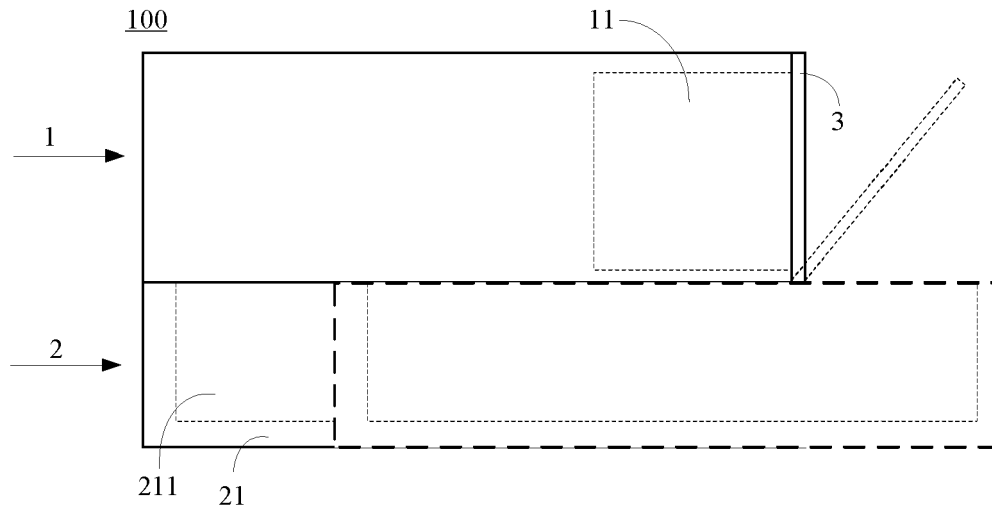


FIG. 1

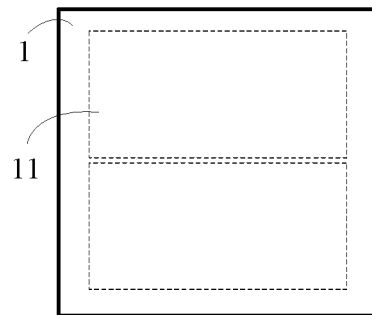


FIG. 2

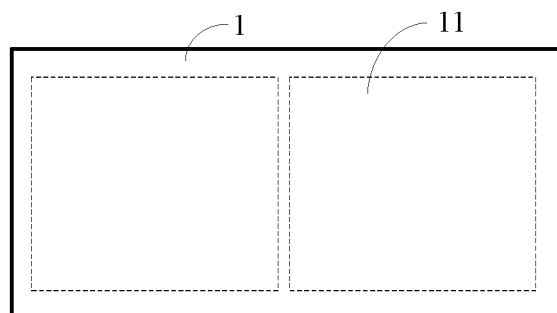


FIG. 3

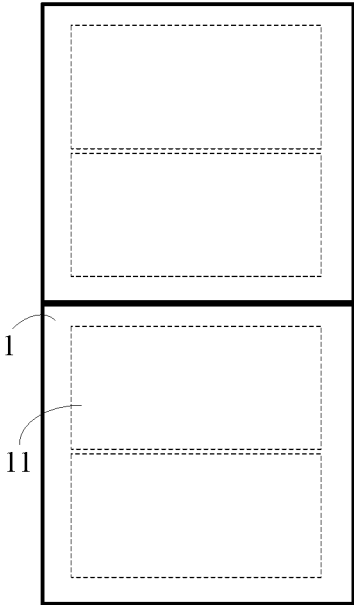


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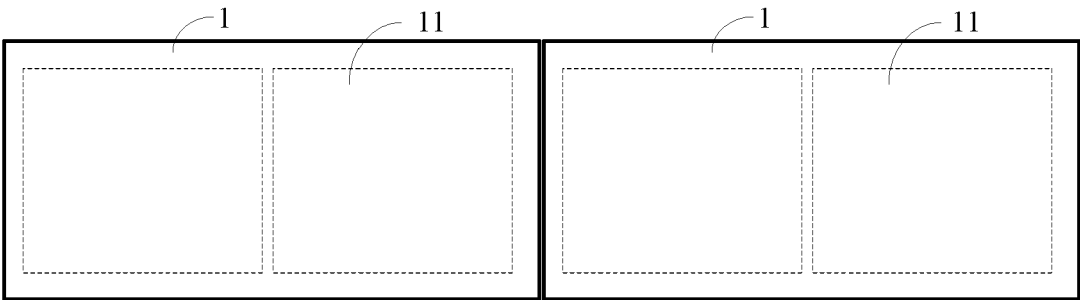


FIG. 5

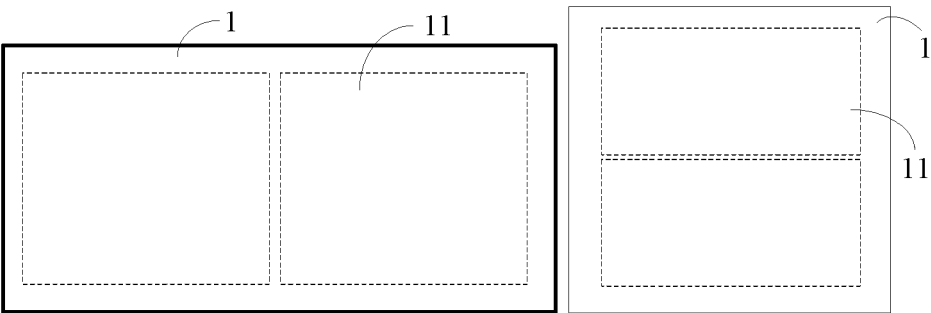


FIG. 6

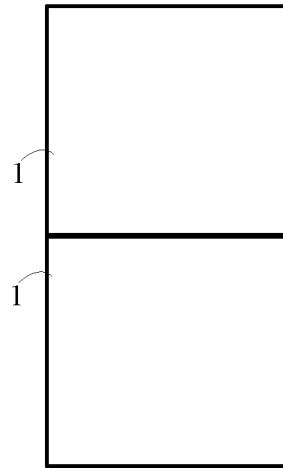


FIG. 7

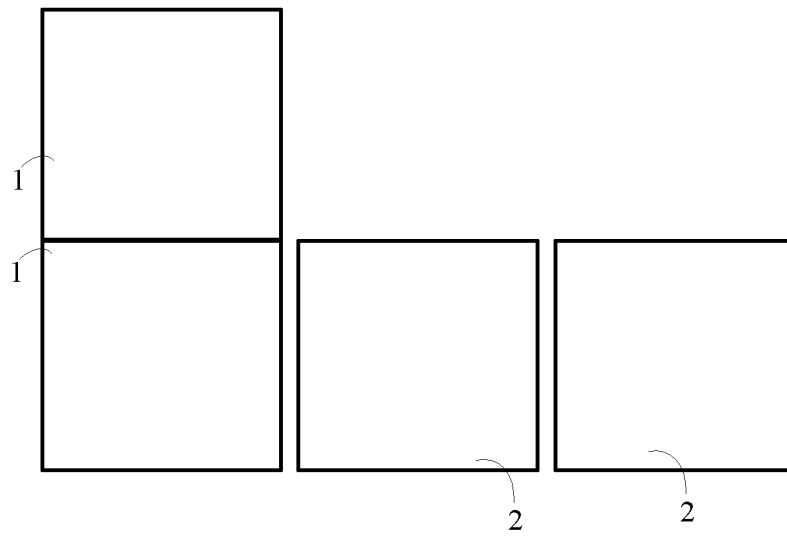


FIG. 8



FIG. 9

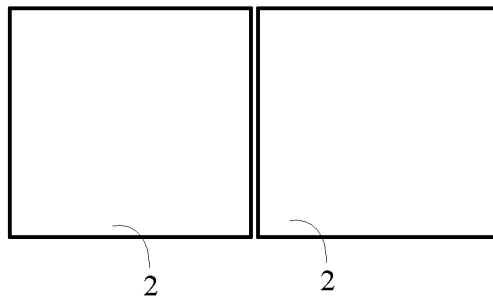


FIG. 10

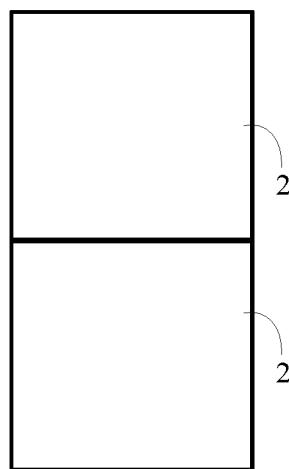


FIG. 11

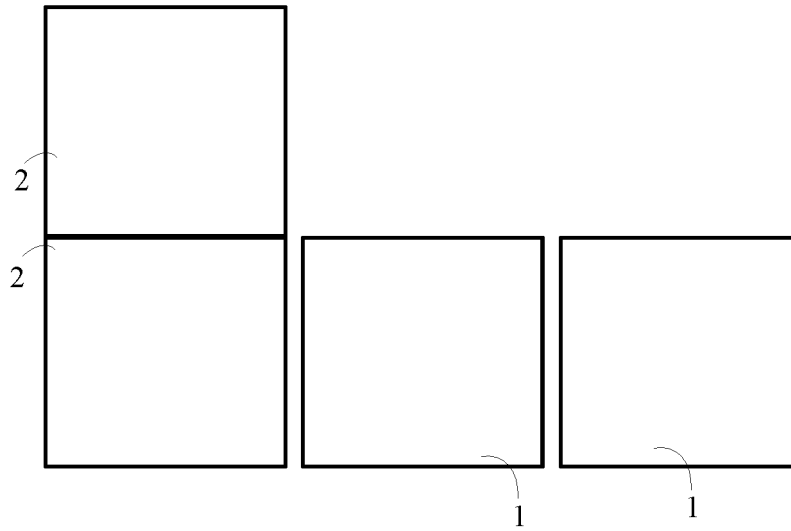


FIG. 12

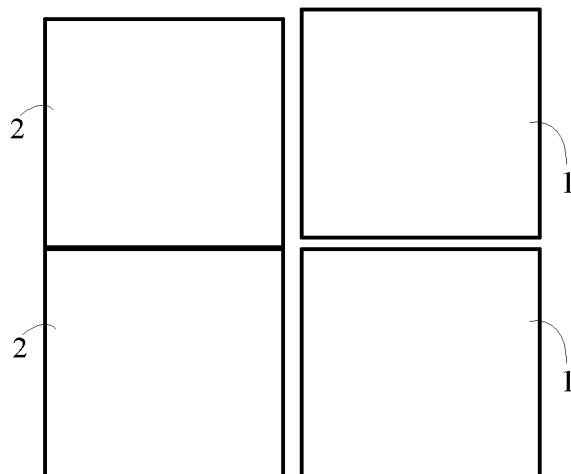


FIG. 13

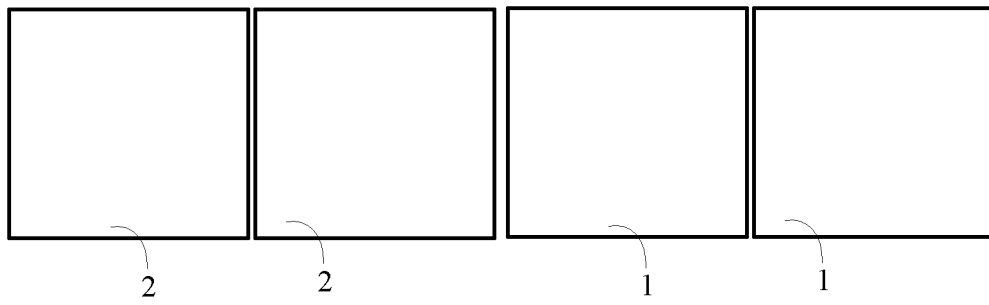


FIG. 14

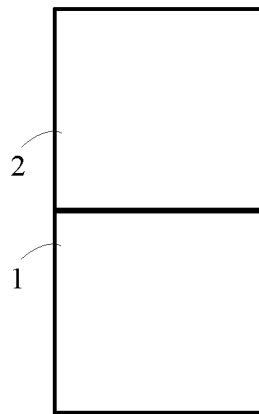


FIG. 15

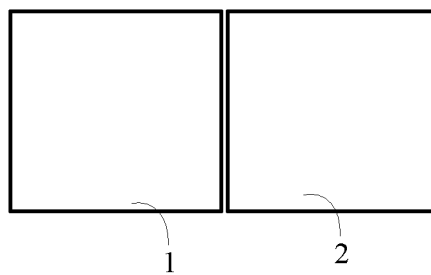


FIG. 16

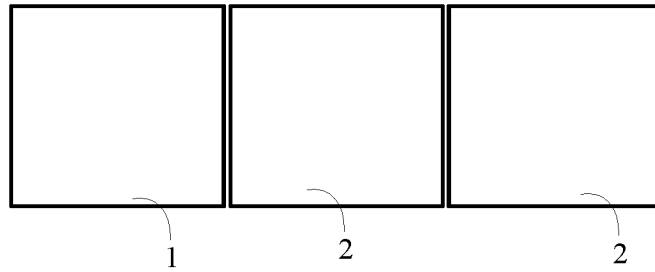


FIG. 17

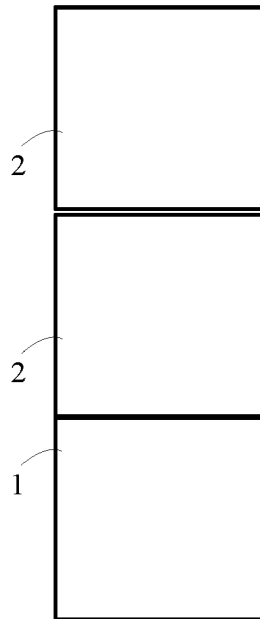


FIG. 18

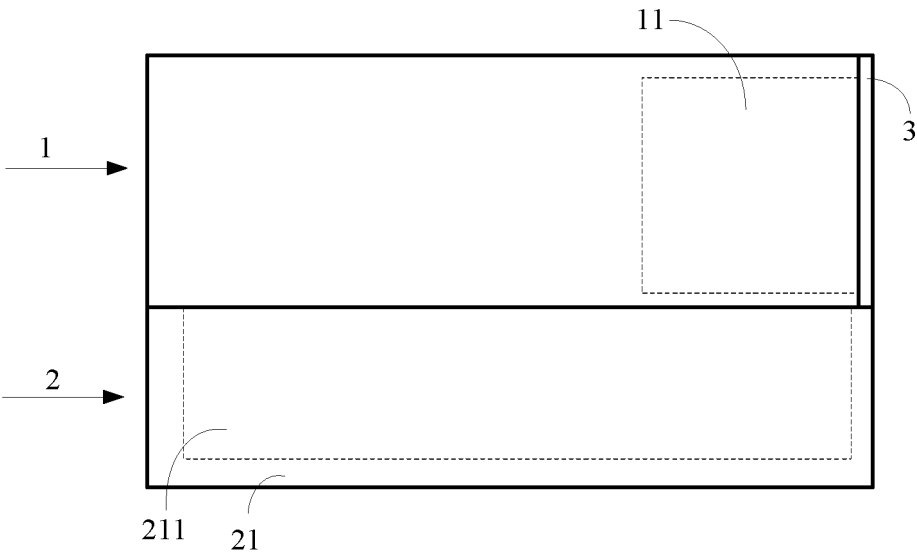


FIG. 19

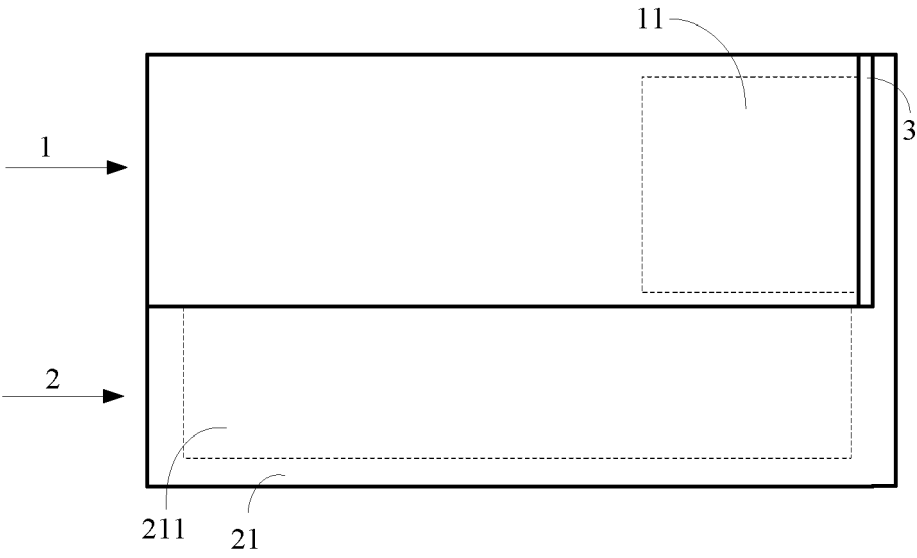


FIG. 20

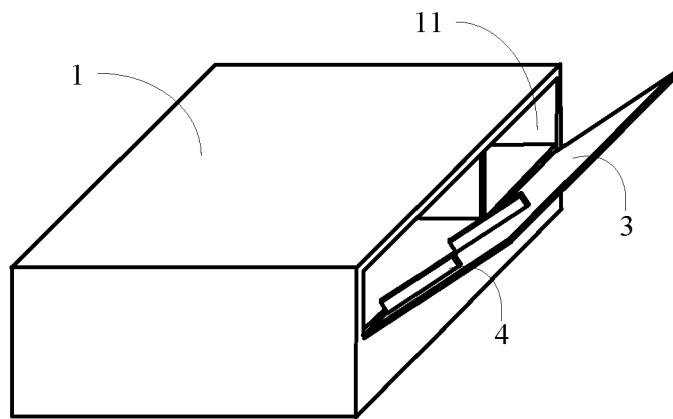


FIG. 21

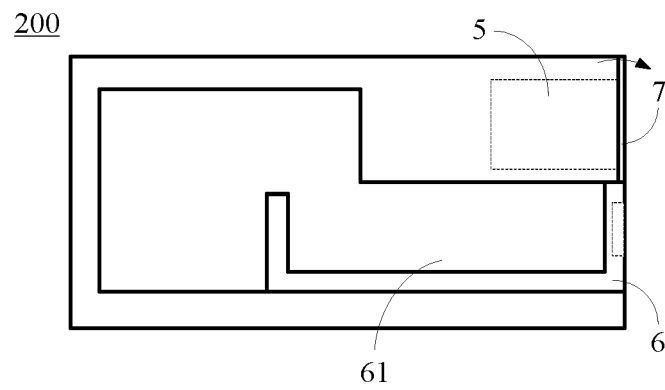


FIG. 22

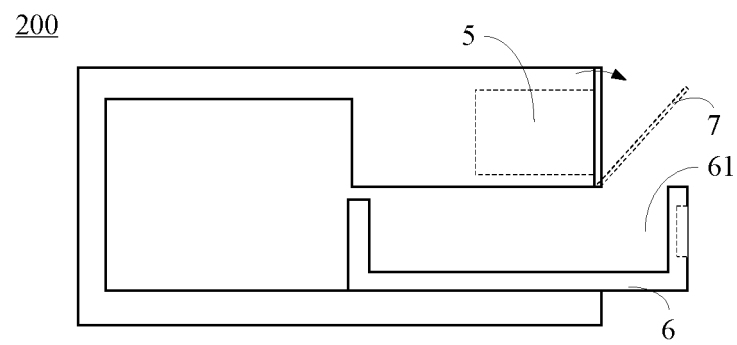


FIG. 23

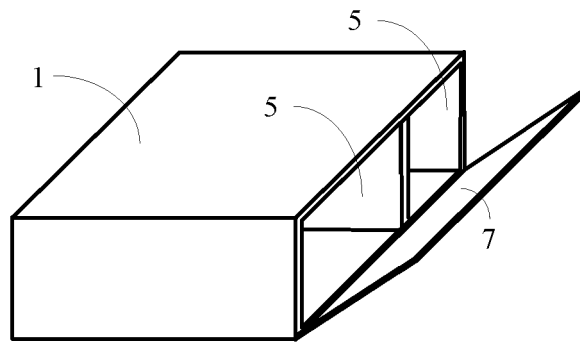


FIG. 24

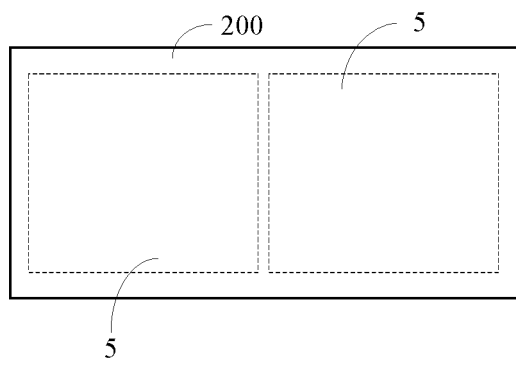


FIG. 25

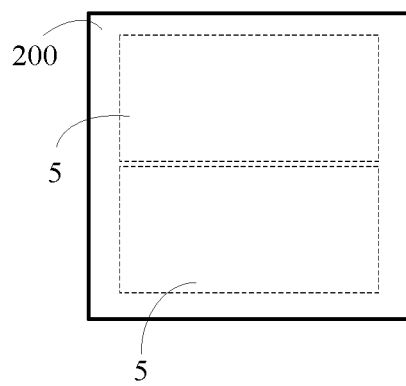
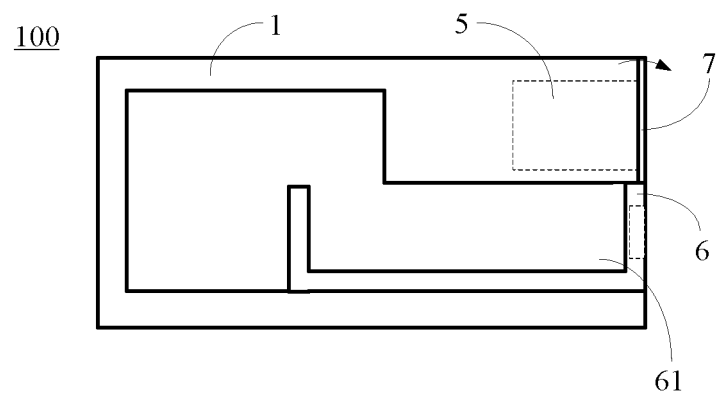
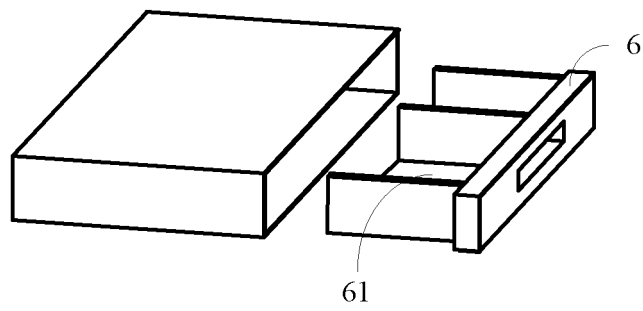
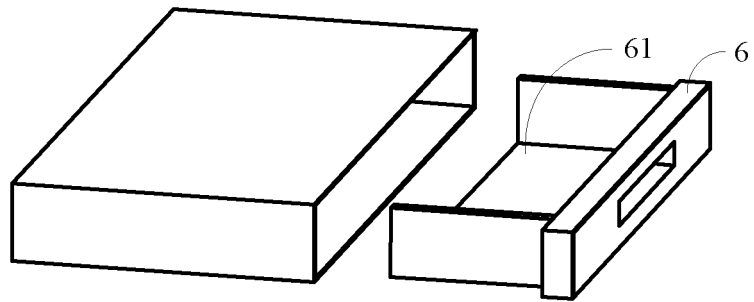


FIG. 26



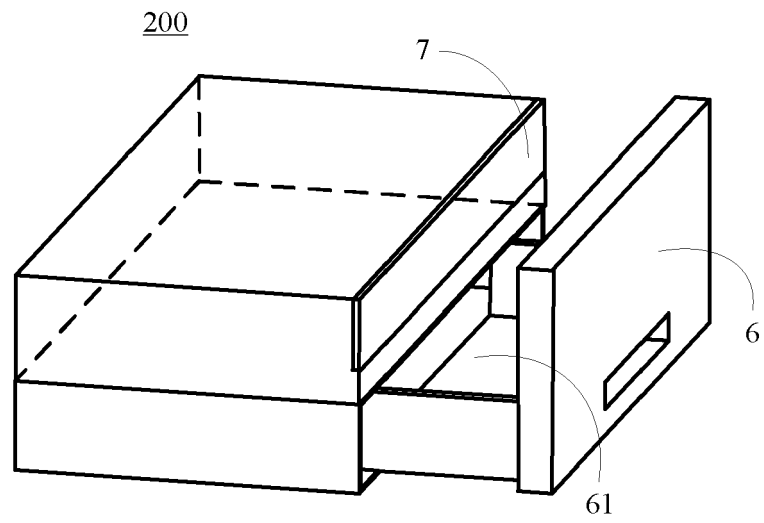


FIG. 30

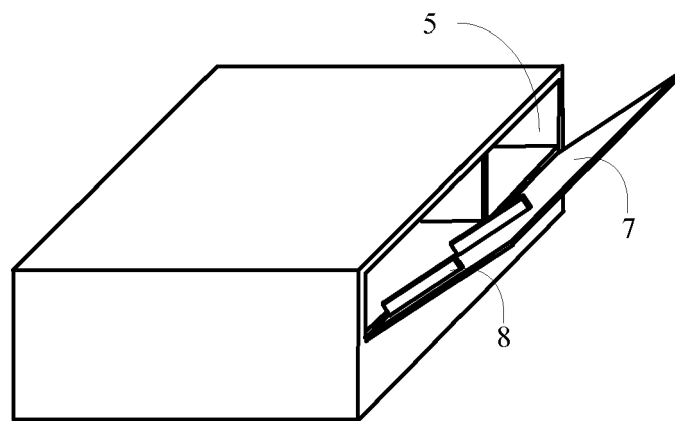


FIG. 31

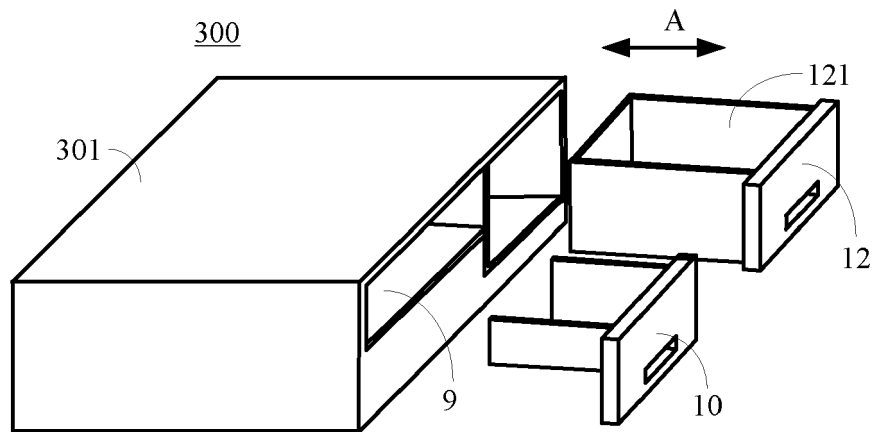


FIG. 32

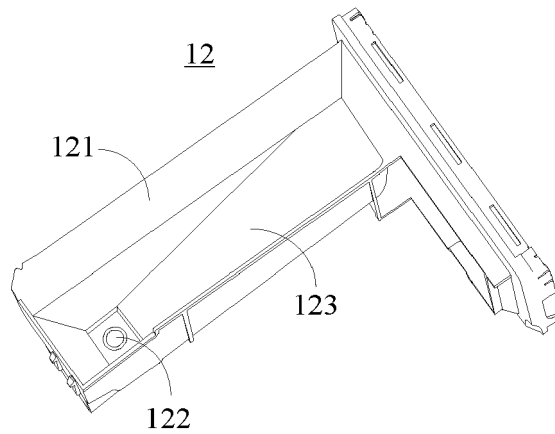


FIG. 33

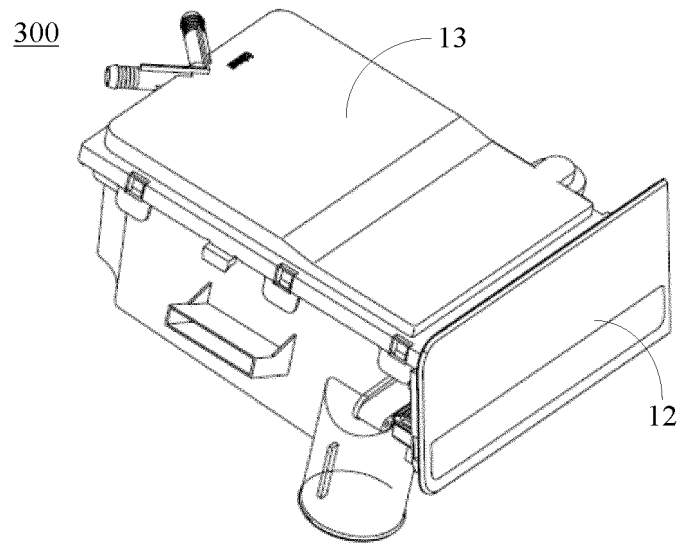


FIG. 34

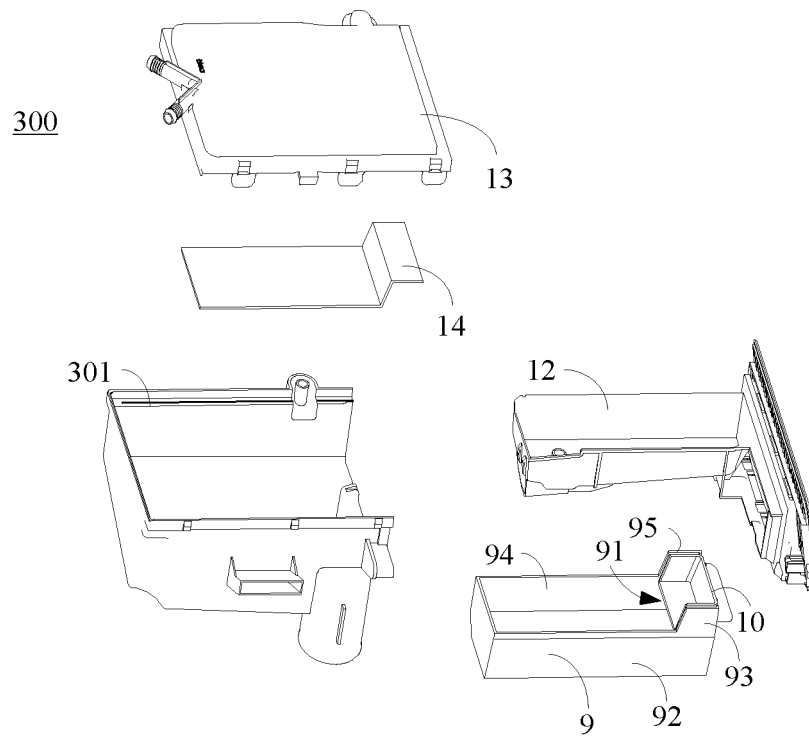


FIG. 35

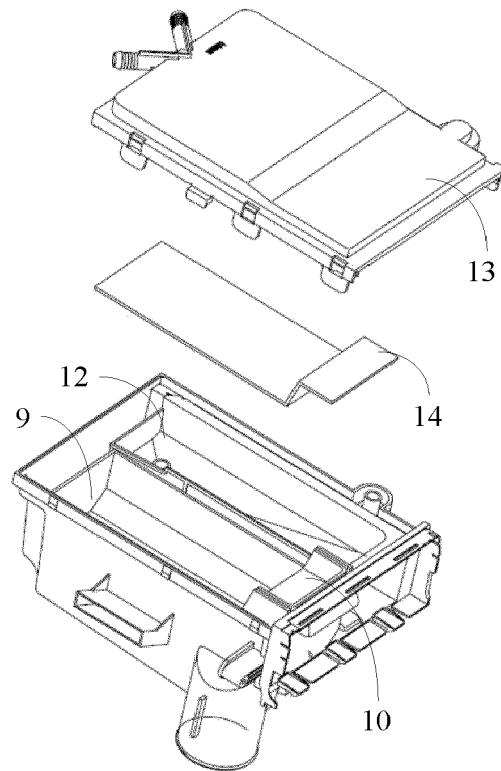


FIG. 36

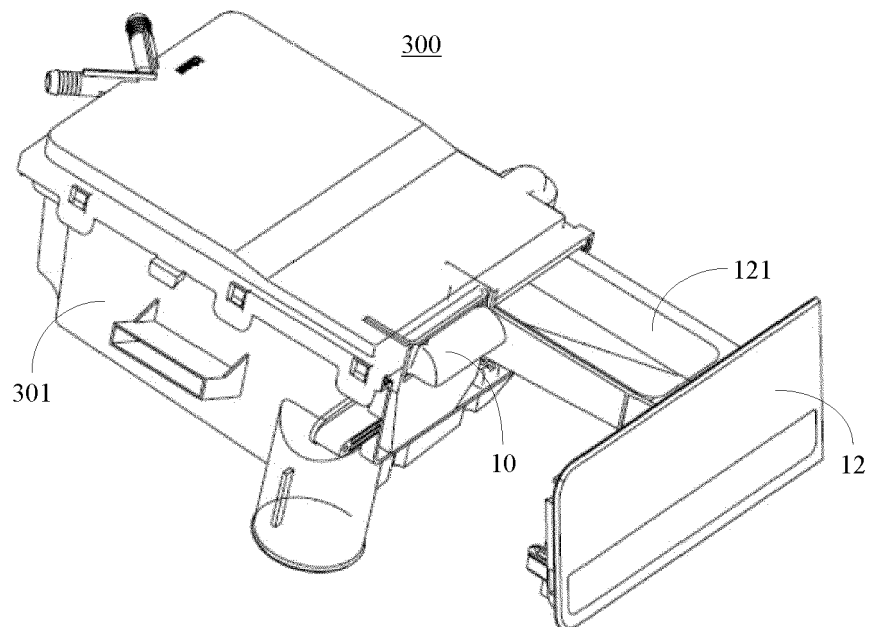


FIG. 37

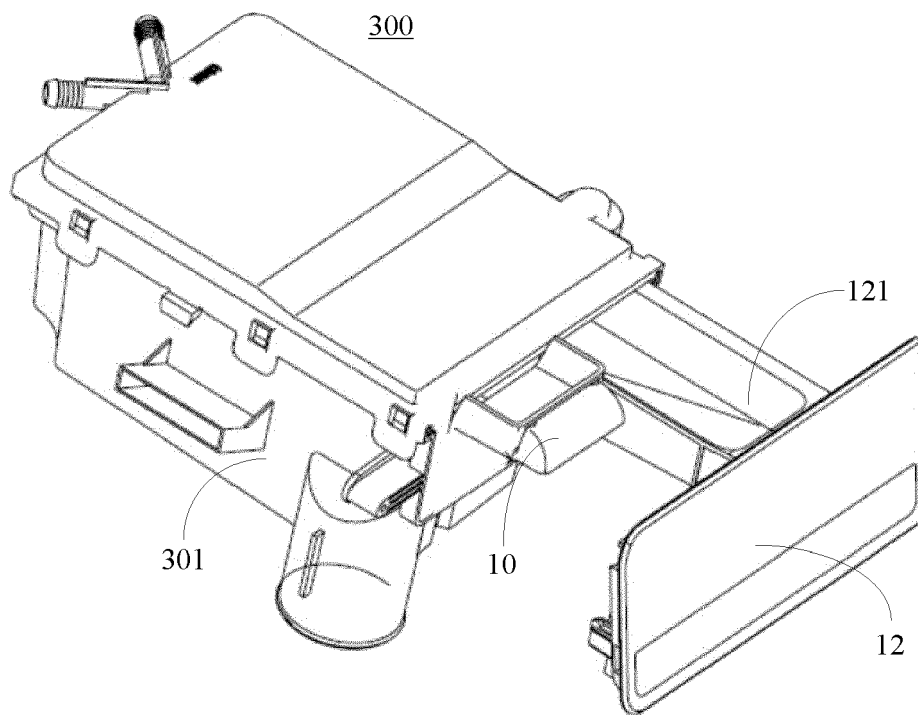


FIG. 38

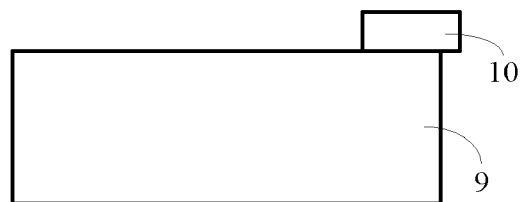


FIG. 39



FIG. 40

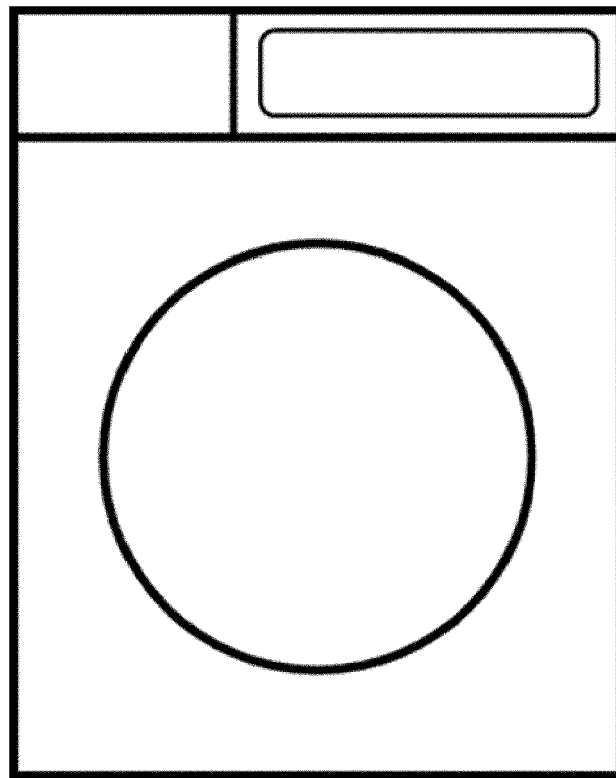


FIG. 41



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Application Number

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X	WO 2020/043623 A1 (ELECTROLUX APPLIANCES AB [SE]) 5 March 2020 (2020-03-05) * figures *	1-12	
A	WO 2015/133796 A1 (LG ELECTRONICS INC [KR]) 11 September 2015 (2015-09-11) * abstract; figures *	1-12	
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			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 June 2024	Examiner Stroppa, Giovanni
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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