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(54) **DISPENSING DEVICE AND LAUNDRY TREATMENT APPARATUS**

(57) A dispensing device (1) for a laundry treatment apparatus includes a housing (1) having a cavity (101) and multiple dispensing compartments (2) that can be partially pulled from the cavity (101) through an insertion port (102). Each dispensing compartment (2) has a dis-

pensing port (201) and a discharging port (202), with a linkage structure (3) allowing one compartment to pull at least one other compartment outward when moved past a first predetermined distance.

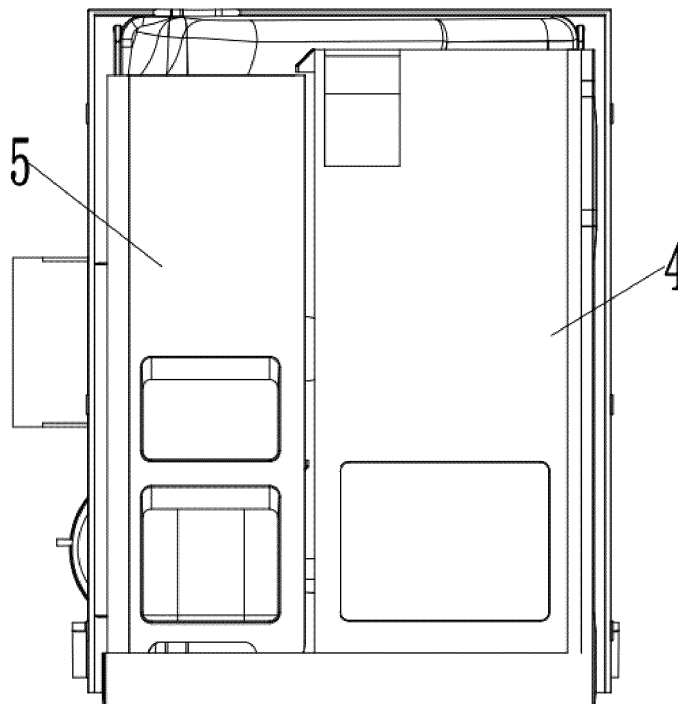


Fig. 10

Description

TECHNICAL FIELD

[0001] The invention relates to the technical field of laundry treatment apparatuses, and specifically relates to a dispensing device and a laundry treatment apparatus.

BACKGROUND OF THE INVENTION

[0002] For a wide diversity of dispensing options, a dispensing device of a laundry treatment apparatus is generally provided with a plurality of compartments in one box, into which different detergent can be dispensed. When in use, the box is pulled out and a required compartment is selected to dispense the laundry liquid.

SUMMARY OF THE INVENTION

[0003] An objective of the invention is to provide a dispensing device and a laundry treatment apparatus, so as to facilitate daily operations by users.

[0004] To achieve the above objective, a first aspect of the invention provides a dispensing device. The dispensing device includes: a housing including a cavity, and an insertion port and a releasing port that are in communication with the cavity; and a plurality of dispensing compartments, where the plurality of dispensing compartments are all connected to the housing and are capable of being at least partially inserted into the cavity or at least partially pulled out from the cavity through the insertion port. The dispensing compartment includes a dispensing port and a discharging port. The discharging port is in direct or indirect communication with the cavity. The plurality of dispensing compartments are configured in such a way that after one of the dispensing compartments is pulled out from the cavity for a first predetermined distance, the one of the dispensing compartments is capable of pulling out at least one of remaining dispensing compartments for a second predetermined distance from the cavity by means of a linkage structure, the dispensing port of the one of the dispensing compartments at the first predetermined distance is at least partially located outside the housing. The dispensing port of the at least one of the remaining dispensing compartments at the second predetermined distance is at least partially located outside the housing, and/or the at least one of the remaining dispensing compartments at the second predetermined distance is capable of being continuously pulled out from the cavity under the action of an external force.

[0005] In some examples, the one of the dispensing compartments is a first dispensing compartment, the at least one of the remaining dispensing compartments includes a second dispensing compartment, and the first dispensing compartment and the second dispensing compartment are arranged in parallel. The linkage struc-

ture includes a first matching part located on the first dispensing compartment and a second matching part located on the second dispensing compartment. The first matching part at the first predetermined distance is capable of abutting against the second matching part, so as to be able to drive the second dispensing compartment to move for the second predetermined distance.

[0006] In some examples, the first matching part includes a first protrusion, and the first protrusion includes a first matching surface facing the second matching part; and/or, the second matching part includes a second protrusion, and the second protrusion includes a second matching surface facing the first matching part.

[0007] In some examples, the first protrusion is configured to be a first plate body, the first matching surface is formed on the first plate body, and a first reinforcing rib is on a side of the first plate body facing away from the first matching surface; and/or, the second protrusion is configured to be a second plate body, the second matching surface is formed on the second plate body, and a second reinforcing rib is on a side of the second plate body facing away from the second matching surface.

[0008] In some examples, the first dispensing compartment includes a first handle part. The first handle part is capable of covering the insertion port and shields the second dispensing compartment.

[0009] In some examples, the second dispensing compartment includes a second handle part. The second handle part at the second predetermined distance is at least partially located outside the housing.

[0010] In some examples, the second handle part is configured as a holding port that runs through the second dispensing compartment in a vertical direction.

[0011] In some examples, The discharging port of the first dispensing compartment is configured to allow a suction member to penetrate to suck a to-be-dispensed agent in the first dispensing compartment.

[0012] In some examples, at least part of an inner side wall surface of the first dispensing compartment extends obliquely towards an inner bottom surface of the first dispensing compartment relative to a vertical direction, and the discharging port is located on a top wall of the first dispensing compartment and arranged opposite the inner bottom surface.

[0013] In some examples, The second dispensing compartment includes at least one dispensing space. The at least one dispensing space each includes the dispensing port and the discharging port. The discharging port is located on a bottom wall of the second dispensing compartment.

[0014] In some examples, the housing includes an upper housing and a lower housing butted against each other. The upper housing and the lower housing define the cavity and the insertion port. A slot matched with the upper housing in an inserted manner is on a periphery of the lower housing. At least part of the slot forms a guiding groove configured to support and guide movement of the plurality of dispensing compartments.

[0015] In some examples, the guiding groove includes an inner wall and an outer wall that extend side by side, and a connecting wall connected between the inner wall and the outer wall. The upper housing includes a U-shaped clamping groove part into which the outer wall is inserted. The dispensing compartment adjacent to the guiding groove includes a sliding rail inserted between the inner wall and the clamping groove part.

[0016] In some examples, the upper housing includes a guiding part extending between any two adjacent of the dispensing compartments. At least one of the two adjacent of the dispensing compartments is movably connected to the guiding part.

[0017] A second aspect of the invention provides a laundry treatment apparatus including the above dispensing device.

[0018] In some examples, the laundry treatment apparatus includes a case. The dispensing device is connected to any one of side wall surfaces of the case and arranged adjacent to a side edge of the side wall surface on which the dispensing device is located. The one of the dispensing compartments is arranged farther away from the side edge than any one of the remaining dispensing compartments.

[0019] Through the technical solution, in the invention, after the one of the dispensing compartments is pulled out from the cavity for the first predetermined distance, the dispensing port of the one of the dispensing compartment is at least partially located outside the housing, such that normal dispensing of a user can be allowed. In addition, when the one of the dispensing compartment is continuously pulled out, the one of the dispensing compartments is capable of pulling out at least one of remaining dispensing compartments for a second predetermined distance from the cavity by means of a linkage structure, such that the plurality of dispensing compartments may be pulled out from the cavity of the dispensing device in sections. In this way, the user may select and pull out one or more dispensing compartments as required. The dispensing compartment pulled firstly may be set as a dispensing compartment frequently used according to daily usage habits or preferences of the user, such as an automatic dispensing compartment. In addition, the situation that after compartments are pulled out all at once in the related art, the user needs to identify the compartment to be used and avoid misoperation can be prevented, and daily operations by the user can be facilitated. In addition, when not all the dispensing compartments need to be pulled out, for instance, when the dispensing compartment frequently used is pulled out firstly according to the preference of the user, less external space is occupied.

[0020] Other features and advantages of the invention will be described in detail in the following specific embodiments.

BRIEF DESCRIPTION OF DRAWINGS

[0021] The accompanying drawings, used to provide further understanding of the invention, constitute part of the description, and serve to explain the invention along with the following specific embodiments, instead of limiting the invention. In the drawings:

Fig. 1 is a schematic structural diagram of a dispensing device according to an example of the invention; Fig. 2 is a schematic structural diagram of an interior of a dispensing device according to an example of the invention;

Fig. 3 is a schematic structural diagram of a housing of a dispensing device according to an example of the invention;

Fig. 4 is a schematic structural diagram of dispensing compartments of a dispensing device according to an example of the invention;

Fig. 5 is a schematic diagram of a connecting structure of a first dispensing compartment and a lower housing of a dispensing device according to an example of the invention;

Fig. 6 is a schematic diagram of a connecting structure of a second dispensing compartment and a housing of a dispensing device according to an example of the invention;

Fig. 7 is a schematic structural diagram of a first dispensing compartment and a second dispensing compartment of a dispensing device according to an example of the invention;

Fig. 8 is a schematic structural diagram of a first dispensing compartment of a dispensing device according to an example of the invention;

Fig. 9 is a schematic structural diagram of a second dispensing compartment of a dispensing device according to an example of the invention;

Fig. 10 is a schematic diagram of a first state of a first dispensing compartment and a second dispensing compartment of a dispensing device according to an example of the invention;

Fig. 11 is a schematic diagram of a second state of a first dispensing compartment and a second dispensing compartment of a dispensing device according to an example of the invention;

Fig. 12 is a schematic diagram of a third state of a first dispensing compartment and a second dispensing compartment of a dispensing device according to an example of the invention; and

Fig. 13 is a schematic diagram of a fourth state of a first dispensing compartment and a second dispensing compartment of a dispensing device according to an example of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Specific embodiments of the invention will be described in detail below in conjunction with the accom-

panying drawings. It should be understood that the specific embodiments described here are merely illustrative of the invention and are not intended to limit the invention.

[0023] In this disclosure, unless otherwise stated, directional words such as "inside" or "outside" are used to indicate "inside" or "outside" relative to a contour of a corresponding part. In addition, the terms such as "first" and "second" used in the disclosure are used to distinguish one element from another, and are not sequential or important. In addition, when the following descriptions involve the accompanying drawings, unless otherwise specified, the same reference numeral in different accompanying drawings denotes the same or a similar element. The above definitions are only used to explain and illustrate the invention, and should not be construed as limitations on the invention.

[0024] For a wide diversity of dispensing options, a dispensing device of a laundry treatment apparatus is generally provided with a plurality of compartments in one box, into which different detergent can be dispensed. When in use, the box is pulled out and a required compartment is selected to dispense the laundry liquid. In daily use, only one of the compartments is used by a user habitually or preferably, while remaining chambers are often unused. In this case, if all the compartments are pulled out at once, the user needs to identify the compartment or dispensing port to be used, and also has to target at the dispensing port when dispensing the laundry liquid, to avoid mistaken dispensing, which is inconvenient to operate. With many compartments, the box occupies large external space after being pulled out, and is inconvenient to operate in a small space.

[0025] As shown in Figs. 1-13, a first aspect of the invention provides a dispensing device. The dispensing device includes a housing 1 and a plurality of dispensing compartments 2. The housing 1 includes a cavity 101, an insertion port 102 in communication with the cavity 101, and a releasing port 103 configured to release a to-be-dispensed agent in the dispensing device. The plurality of dispensing compartments 2 are all connected to the housing 1 and are capable of being at least partially inserted into the cavity 101 or at least partially pulled out from the cavity 101 through the insertion port 102. The dispensing compartments 2 is provided with a dispensing port 201 and a discharging port 202. The discharging port 202 is in direct or indirect communication with the cavity 101. The plurality of dispensing compartments 2 are configured in such a way that after one of the dispensing compartments 2 is pulled out from the cavity 101 for a first predetermined distance, the one of the dispensing compartments 2 is capable of pulling out at least one of remaining dispensing compartments 2 for a second predetermined distance from the cavity 101 by means of a linkage structure 3. The dispensing port 201 of the one of the dispensing compartments 2 at the first predetermined distance is at least partially located outside the housing 1. The dispensing port 201 of the at least one of the remaining dispensing compartments 2 at the second predeter-

mined distance is at least partially located outside the housing 1, and/or the at least one of the remaining dispensing compartments 2 at the second predetermined distance is capable of being continuously pulled out from the cavity 101 under the action of an external force.

[0026] In a dispensing process, the one of the dispensing compartments 2 is pulled out from the cavity 101 for the first predetermined distance by a user. In this case, the one of the dispensing compartments 2 is located at a first position, at least part of the dispensing port 201 of the one of the dispensing compartments 2 is located outside the cavity 101, and the dispensing port 201 of the remaining dispensing compartments 2 are still located in the cavity 101 or cannot be pulled out from the cavity 101 by the external force. The to-be-dispensed agent may be dispensed into the dispensing port 201 of the dispensing compartment 2 at the first position by the user. If the remaining dispensing compartments 2 need to be used later, the dispensing compartment 2 at the first position may be continuously pulled out, such that at least one of remaining dispensing compartments 2 may be pulled out from the cavity 101 for the second predetermined distance through the linkage structure 3, and at least one of the remaining dispensing compartments 2 may be placed at a second position. In this case, the dispensing port 201 of the dispensing compartment 2 at the second position may be at least partially located outside the housing 1, or may be continuously pulled out from the cavity 101 under the action of the external force. In this way, the to-be-dispensed agent may be dispensed to the at least one of the remaining dispensing compartments 2 by the user. In this way, one dispensing compartment 2 or more dispensing compartments 2 may be selected and pulled out by the user as required. The dispensing compartment 2 pulled firstly may be set as a dispensing compartment 2 frequently used according to daily usage habits or preferences of the user, such as an automatic dispensing compartment. In addition, the situation that after compartments are pulled out all at once in the related art, the user needs to identify the compartment required and avoid misoperation can be prevented, and daily operations by the user can be facilitated. In addition, when not all the dispensing compartments 2 need to be pulled out, and for instance, when the dispensing compartment 2 frequently used is pulled out firstly according to the preference of the user, less external space is occupied.

[0027] The first predetermined distance and the second predetermined distance are designed according to sizes of actual application products, such as the dispensing device and a laundry treatment apparatus. The first predetermined distance and the second predetermined distance may be the same or not, which is not specifically limited by the invention.

[0028] In some embodiments of the invention, as shown in Figs. 2, 4 and 7, the dispensing compartment 2 firstly pulled out from the cavity 101 for the first predetermined distance may be a first dispensing compartment 4, the at least one of the remaining dispensing

compartments 2 may include a second dispensing compartment 5, and the first dispensing compartment 4 and the second dispensing compartment 5 are arranged in parallel. The linkage structure 3 includes a first matching part 6 arranged on the first dispensing compartment 4 and a second matching part 7 arranged on the second dispensing compartment 5. The first matching part 6 at the first predetermined distance is capable of abutting against the second matching part 7, such that the second dispensing compartment 5 may be driven to move for the second predetermined distance.

[0029] The first dispensing compartment 4 and the second dispensing compartment 5 may be set according to preferences or usage habits of users. For instance, the discharging port 202 of the first dispensing compartment 4 may be configured to allow a suction member to penetrate to suck a to-be-dispensed agent in the first dispensing compartment 4, that is, the first dispensing compartment 4 may be an automatic dispensing compartment commonly used by the users. With an intelligent design of the automatic dispensing compartment, the automatic dispensing compartment is firstly pulled out by a user, so as to satisfy a preference of the user. The second dispensing compartment 5 has at least one dispensing space 502, each dispensing space 502 has a dispensing port 201 and a discharging port 202, and the discharging port 202 is located on a bottom wall of the second dispensing compartment 5. Different dispensing spaces 502 may be configured to allow different to-be-dispensed agents, such as a softener and a detergent, to be dispensed to. The second dispensing compartment 5 is a manual dispensing compartment seldom used by the user. When the first dispensing compartment 4 is pulled out from the cavity 101 for the first predetermined distance, the first matching part 6 just abuts against the second matching part 7. In this case, the dispensing port 201 of the first dispensing compartment 4 is exposed, and the user may only conduct a dispensing operation on the first dispensing compartment 4. When a dispensing operation needs to be conducted on the second dispensing compartment 5, the first dispensing compartment 4 may be pulled out continuously, such that the second dispensing compartment 5 is pulled out from the cavity 101 for the second predetermined distance under the action of the first matching part 6 and the second matching part 7. In this case, the dispensing port 201 of the second dispensing compartment 5 may be moved out from the cavity 101, or the second dispensing compartment 5 may be continuously pulled out under the action of an external force until the dispensing port 201 of the second dispensing compartment 5 is moved out from the cavity 101, such that the dispensing operation may be conducted on the second dispensing compartment 5 conveniently by the user. The suction member may be of any suitable suction structure, and for instance, composed of a suction pump and a suction tube in communication with the first dispensing compartment 4. The suction pump may pump the to-be-dispensed agent in the first dispen-

sing compartment 4 to a corresponding dispensing position by means of the suction tube.

[0030] The first dispensing compartment 4 and the second dispensing compartment 5 may have various arrangement forms. The second dispensing compartment 5 may be arranged at any position around the first dispensing compartment 4. For instance, the second dispensing compartment 5 is located at a bottom, a top or a side of the first dispensing compartment 4, which is not limited by the invention. In the invention, the second dispensing compartment 5 is located at one side of the first dispensing compartment 4 in a horizontal direction, for instance.

[0031] As shown in Figs. 7 and 8, the first matching part 6 may include a first protrusion 601, and the first protrusion 601 is provided with a first matching surface 602 facing the second matching part 7. In order to facilitate matching of the first matching part 6 with the second matching part 7, the second matching part 7 may include a second protrusion 701, and the second protrusion 701 is provided with a second matching surface 702 facing the first matching part 6. The first protrusion 601 is arranged opposite the second protrusion 701, such that at least partial zones of the first matching surface 602 and the second matching surface 702 may abut against each other. In addition, in order to ensure an abutting effect and own strength of the first protrusion 601 and the second protrusion 701, the first protrusion 601 may be configured to be a first plate body, the first matching surface 602 is formed on the first plate body, and one side of the first plate body facing away from the first matching surface 602 is provided with a first reinforcing rib 603; and/or, the second protrusion 701 may be configured to be a second plate body, the second matching surface 702 is formed on the second plate body, and one side of the second plate body facing away from the second matching surface 702 is provided with a second reinforcing rib 703. A plate structure increases a contact area of the matching surfaces, such that stability of the first matching part 6 and the second matching part 7 after abutting can be ensured. A plurality of first reinforcing ribs 603 and/or second reinforcing ribs 703 are arranged and uniformly distributed on the plate bodies, such that strength of the plate structure can be improved.

[0032] In some embodiments not illustrated, the first matching part 6 and the second matching part 7 may also be arranged in other forms. For instance, the first matching part 6 may directly abut against an outer wall surface of the second dispensing compartment 5, that is, part of the outer wall surface of the second dispensing compartment 5 may be used as the second matching part 7. Alternatively, the second matching part 7 may directly abut against an outer wall surface of the first dispensing compartment 4, that is, part of the outer wall surface of the first dispensing compartment 4 may be used as the first matching part 6, such that one of the dispensing compartments 2 drives another adjacent dispensing compartment 2 to move.

[0033] In some embodiments not illustrated, the first matching part 6 and the second matching part 7 may also have various configurations and matching modes. For instance, one of the first matching part 6 and the second matching part 7 may be configured to be a plate body or a block structure, and the other one may be configured to be a recess. The plate body or the block structure may reciprocate in the recess until the plate body or the block structure abuts against an end of the recess so as to achieve an effect of pushing the dispensing compartment 2 to move.

[0034] In some embodiments, as shown in Figs. 1, 2, 4 and 5, the first dispensing compartment 4 is provided with a first handle part 401. The first handle part 401 is capable of covering the insertion port 102 and shields the second dispensing compartment 5. For instance, when the first dispensing compartment 4 is in a storage state, an unused state or an unpulled-out state, the first handle part 401 may cover the insertion port 102. In this way, the first dispensing compartment 4 may be firstly pulled out by directly pulling the first handle part 401 without identification of a user, and then the second dispensing compartment 5 may be driven to move by the first dispensing compartment 4. In addition, after the first handle part 401 covers the insertion port 102, an overall appearance of the dispensing device or a laundry treatment apparatus using the dispensing device of the invention can be improved.

[0035] In order to facilitate an operation of pulling the second dispensing compartment 5 out from the cavity 101, as shown in Figs. 11 and 12, the second dispensing compartment 5 may be provided with a second handle part 501. The second handle part 501 at the second predetermined distance is at least partially located outside the housing 1. In this way, after the second dispensing compartment 5 is pulled out from the cavity 101 for the second predetermined distance, if an exposed space of the dispensing port 201 of the second dispensing compartment 5 is small, or the dispensing port 201 is not exposed from the cavity 101, the user may continuously pull the second dispensing compartment 5 out from the cavity 101 by means of the second handle part 501. The second handle part 501 may be configured as a holding port that runs through the second dispensing compartment 5 in a vertical direction, such that the second handle part 501 has a simple overall structure and a small occupied space, and may be more conveniently operated by the user. For instance, the user only needs to insert a hand into the holding port from top to bottom.

[0036] In some embodiments of the invention, as shown in Figs. 4 and 7, at least part of an inner side wall surface of the first dispensing compartment 4 extends obliquely towards an inner bottom surface of the first dispensing compartment 4 relative to a vertical direction. The discharging port 202 is located on a top wall of the first dispensing compartment 4 and arranged opposite the inner bottom surface. In this way, the to-be-dispensed agent located in the first dispensing compartment 4 may

be gathered in one place, and may be conveniently pumped away later. Clearly, in the dispensing space of the second dispensing compartment 5, an inner side wall surface of the dispensing space may also extend obliquely towards an inner bottom surface of the second dispensing compartment 5 relative to a vertical direction, such that the to-be-dispensed agent may conveniently flow out from the dispensing space.

[0037] In addition, in order to ensure sealing and aesthetics of the dispensing compartment 2, a top cover 204 may be arranged on a top of the dispensing compartment 2, and an openable or normally open dispensing region may be provided on the top cover 204 to form the dispensing port 201.

[0038] In some embodiments, as shown in Figs. 1-3, 5 and 6, the housing 1 includes an upper housing 8 and a lower housing 9 butted against each other. The upper housing 8 and the lower housing 9 define the cavity 101 and the insertion port 102. A periphery of the lower housing 9 is provided with a slot 10 matched with the upper housing 8 in an inserted manner. At least part of the slot 10 forms a guiding groove 11 configured to support and guide movement of the plurality of dispensing compartments 2. The slot 10 may not only be configured to connect the upper housing 8 to the lower housing 9, but also facilitate sliding of the dispensing compartments 2, and a connecting structure and a sliding structure need not to be separately arranged, such that less space is occupied while a housing structure is simplified.

[0039] The guiding groove 11 includes an inner wall 1101 and an outer wall 1102 that extend side by side, and a connecting wall 1103 connected between the inner wall 1101 and the outer wall 1102. The upper housing 8 is provided with a U-shaped clamping groove part 801 into which the outer wall 1102 is inserted. The dispensing compartment 2 adjacent to the guiding groove 11 is provided with a sliding rail 203 inserted between the inner wall 1101 and the clamping groove part 801. The upper housing 8 and the lower housing 9 are connected by inserting the outer wall 1102 into the clamping groove part 801. In addition, in order to ensure stability after the upper housing 8 and the lower housing 9 are connected to each other, connecting structures matched with each other may be arranged on two sides of the upper housing 8 and the lower housing 9. After the sliding rail 203 is inserted between the inner wall 1101 and the clamping groove part 801, the dispensing compartment 2 may reciprocate in a pulling or inserting direction of the dispensing compartment 2 on the connecting wall 1103 by means of the sliding rail 203. Clearly, in order to prevent the dispensing compartment 2 from slipping out of the cavity 101, the sliding rail 203 and the guiding groove 11 may be separately provided with limiting structures, and the two limiting structures may abut against each other after the dispensing compartment moves to an extreme position away from the cavity 101, such that the dispensing compartment 2 may be limited.

[0040] In some embodiments of the invention, the

upper housing 8 may be further provided with a guiding part 802 extending between any two adjacent of the dispensing compartments 2, and at least one of the two adjacent of the dispensing compartments 2 is movably connected to the guiding part 802. Through the guiding part 802, the dispensing compartment 2 may have an extra supporting and guiding zone, such that stability of the dispensing compartments 2 during movement can be ensured.

[0041] A second aspect of the invention provides a laundry treatment apparatus. The laundry treatment apparatus includes the above dispensing device. The laundry treatment apparatus includes a case. The dispensing device is connected to any one of side wall surfaces of the case and arranged adjacent to a side edge of the side wall surface on which the dispensing device is located. The one of the dispensing compartments 2 is arranged farther away from the side edge than any one of the remaining dispensing compartments 2. With the first dispensing compartment 4 and the second dispensing compartment 5 as an instance, compared with the second dispensing compartment 5, the first dispensing compartment 4 farther away from the side edge of the laundry treatment apparatus is more commonly used by the user. Most laundry treatment apparatuses are placed against a wall. The arrangement mode may make the first dispensing compartment 4 far away from the wall, such that an operating space for the user to dispense the agent cannot be influenced by the wall, and the to-be-dispensed agent may be conveniently dispensed to the dispensing compartment 2. The laundry treatment apparatus may be, for instance, a washer. The washer may be, for instance, a drum washing machine or a pulsator washing machine, which is not limited by the invention.

[0042] To sum up, the invention describes a usage mode of the dispensing device including the first dispensing compartment 4 and the second dispensing compartment 5, for instance. For instance, in normal use, the user may firstly pull the first dispensing compartment 4 out from the cavity 101 for the first predetermined distance by means of the first handle part 401, such that the dispensing port 201 of the first dispensing compartment 4 may be pulled out from the cavity 101, and the to-be-dispensed agent may be dispensed to the first dispensing compartment 4 by the user. If the remaining dispensing compartments 2 are not need to be used later, the first dispensing compartment 4 may be pushed back into the cavity 101 after dispensing, such that the dispensing operation may be completed. If the user still needs to use the remaining dispensing compartments 2, such as the second dispensing compartment 5, the first dispensing compartment 4 may be continuously pulled out, and the first matching part 6 located on the first dispensing compartment 4 and the second matching part 7 abut against each other. The first matching part 6 may push the second matching part 7 while the first dispensing compartment 4 continuously moves, such that the second dispensing compartment 5 connected to the second

matching part 7 may be pulled out from the cavity 101 for the second predetermined distance. In this case, the user may conduct different operations according to different conditions. If the second dispensing compartment 5 is at least partially located outside the housing 1 after being pulled out from the cavity 101 for the second predetermined distance, that is, the second handle part 501 is exposed from the cavity 101, the user may pull the dispensing port 201 of the second dispensing compartment 5 out from the cavity 101 by means of the second handle part 501 and pour the to-be-dispensed agent into the second dispensing compartment. If the dispensing port 201 of the second dispensing compartment is exposed after the second dispensing compartment 5 is pulled out from the cavity 101 for the second predetermined distance, the user may directly pour the to-be-dispensed agent into the dispensing port 201, and then push the first dispensing compartment 4 and the second dispensing compartment 5 back into the cavity 101 after dispensing, such that the entire dispensing operation may be completed. In this way, it is ensured that the plurality of dispensing compartments 2 may be pulled out from the cavity 101 of the dispensing device in sections, such that the user may select and pull out one dispensing compartment 2 or more dispensing compartments 2 as required. The dispensing compartment 2 pulled firstly may be set as a dispensing compartment 2 frequently used according to daily usage habits or preferences of the user, such as an automatic dispensing compartment. In addition, the situation that after compartments are pulled out all at once in the related art, the user needs to identify the chamber required and avoid misoperation can be prevented, and daily operations by the user can be facilitated. In addition, when not all the dispensing compartments 2 need to be pulled out, and for instance, when the dispensing compartment 2 frequently used is pulled out firstly according to the preference of the user, less external space is occupied.

[0043] The preferred embodiments of the invention are described in detail above with reference to the accompanying drawings. However, the invention is not limited to specific details of the embodiments described above. Within the scope of the technical concept of the invention, various simple modifications can be made to the technical solution of the invention, and these simple modifications all fall within the protection scope of the invention.

[0044] It should also be noted that various specific technical features described in the above specific embodiments may be combined in any suitable manner, without contradiction. In order to avoid unnecessary repetition, various possible combinations will not be described separately in the invention.

Claims

1. A dispensing device, comprising:

- a housing (1) comprising a cavity (101), and an insertion port (102) and a releasing port (103) that are in communication with the cavity (101); and
 a plurality of dispensing compartments (2), wherein the plurality of dispensing compartments (2) are all connected to the housing (1) and are capable of being at least partially inserted into the cavity (101) or at least partially pulled out from the cavity (101) through the insertion port (102), the dispensing compartments (2) comprise a dispensing port (201) and a discharging port (202), and the discharging port (202) is in direct or indirect communication with the cavity,
 wherein the plurality of dispensing compartments (2) are configured in such a way that after one of the dispensing compartments (2) is pulled out from the cavity (101) for a first predetermined distance, the one of the dispensing compartments (2) is capable of pulling out at least one of remaining dispensing compartments (2) for a second predetermined distance from the cavity (101) by means of a linkage structure (3), the dispensing port (201) of the one of the dispensing compartments (2) at the first predetermined distance is at least partially located outside the housing (1),
 wherein the dispensing port (201) of the at least one of the remaining dispensing compartments (2) at the second predetermined distance is at least partially located outside the housing (1), and/or the at least one of the remaining dispensing compartments (2) at the second predetermined distance is capable of being continuously pulled out from the cavity (101) under the action of an external force.
2. The dispensing device according to claim 1, wherein the one of the dispensing compartments (2) is a first dispensing compartment (4), the at least one of the remaining dispensing compartments (2) comprises a second dispensing compartment (5), the first dispensing compartment (4) and the second dispensing compartment (5) are arranged in parallel, the linkage structure (3) comprises a first matching part (6) located on the first dispensing compartment (4) and a second matching part (7) located on the second dispensing compartment (5), and the first matching part (6) at the first predetermined distance is capable of abutting against the second matching part (7), so as to be able to drive the second dispensing compartment (5) to move for the second predetermined distance.
 3. The dispensing device according to claim 2, wherein the first matching part (6) comprises a first protrusion (601), and the first protrusion (601) comprises a first matching surface (602) facing the second matching part (7); and/or, the second matching part (7) comprises a second protrusion (701), and the second protrusion (701) comprises a second matching surface (702) facing the first matching part (6).
 4. The dispensing device according to claim 3, wherein the first protrusion (601) is configured to be a first plate body, the first matching surface (602) is formed on the first plate body, and a first reinforcing rib (603) is on a side of the first plate body facing away from the first matching surface (602); and/or, the second protrusion (701) is configured to be a second plate body, the second matching surface (702) is formed on the second plate body, and a second reinforcing rib (703) is on a side of the second plate body facing away from the second matching surface (702).
 5. The dispensing device according to any one of claims 2-4, wherein the first dispensing compartment (4) comprises a first handle part (401), and the first handle part (401) is capable of covering the insertion port (102) and shields the second dispensing compartment (5).
 6. The dispensing device according to any one of claims 2-5, wherein the second dispensing compartment (5) comprises a second handle part (501), and the second handle part (501) at the second predetermined distance is at least partially located outside the housing (1).
 7. The dispensing device according to claim 6, wherein the second handle part (501) is configured as a holding port that runs through the second dispensing compartment (5) in a vertical direction.
 8. The dispensing device according to any one of claims 2-7, wherein the discharging port (202) of the first dispensing compartment (4) is configured to allow a suction member to penetrate to suck a to-be-dispensed agent in the first dispensing compartment (4).
 9. The dispensing device according to claim 8, wherein at least part of an inner side wall surface of the first dispensing compartment (4) extends obliquely towards an inner bottom surface of the first dispensing compartment (4) relative to a vertical direction, and the discharging port (202) is located on a top wall of the first dispensing compartment (4) and arranged opposite the inner bottom surface.
 10. The dispensing device according to any one of claims 2-9, wherein the second dispensing compartment (5) comprises at least one dispensing space

(502), the at least one dispensing space (502) each comprises the dispensing port (201) and the discharging port (202), and the discharging port (202) is located on a bottom wall of the second dispensing compartment (5).

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11. The dispensing device according to any one of claims 1-10, wherein the housing (1) comprises an upper housing (8) and a lower housing (9) butted against each other, the upper housing (8) and the lower housing (9) define the cavity (101) and the insertion port (102), a slot (10) matched with the upper housing (8) in an inserted manner is on a periphery of the lower housing (9), and at least part of the slot (10) forms a guiding groove (11) configured to support and guide movement of the plurality of dispensing compartments (2).
12. The dispensing device according to claim 11, wherein the guiding groove (11) comprises an inner wall (1101) and an outer wall (1102) that extend side by side, and a connecting wall (1103) connected between the inner wall (1101) and the outer wall (1102), the upper housing (8) comprises a U-shaped clamping groove part (801) into which the outer wall (1102) is inserted, and the dispensing compartment (2) adjacent to the guiding groove (11) comprises a sliding rail (203) inserted between the inner wall (1101) and the clamping groove part (801).
13. The dispensing device according to claim 12, wherein the upper housing (8) comprises a guiding part (802) extending between any two adjacent of the dispensing compartments (2), and at least one of the two adjacent of the dispensing compartments (2) is movably connected to the guiding part (802).
14. A laundry treatment apparatus, comprising the dispensing device according to any one of claims 1-13.
15. The laundry treatment apparatus according to claim 14, comprising a case, wherein the dispensing device is connected to any one of side wall surfaces of the case and arranged adjacent to a side edge of the side wall surface on which the dispensing device is located, and the one of the dispensing compartments (2) is arranged farther away from the side edge than any one of the remaining dispensing compartments (2).

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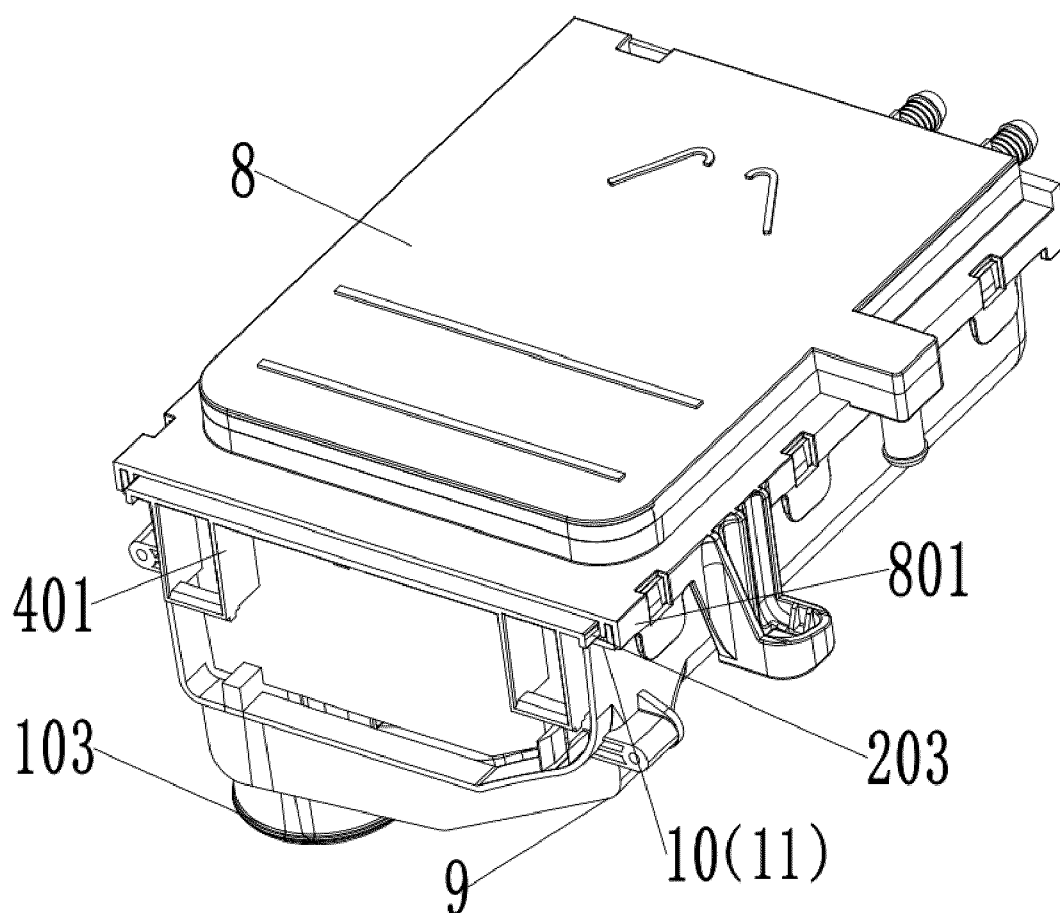


Fig. 1

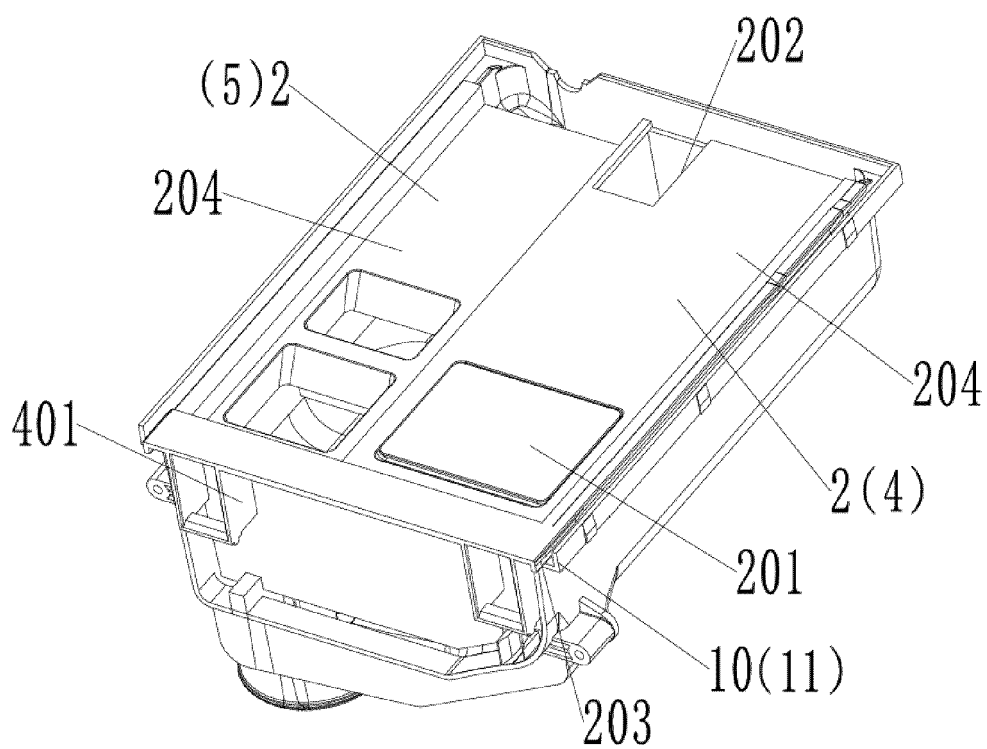


Fig. 2

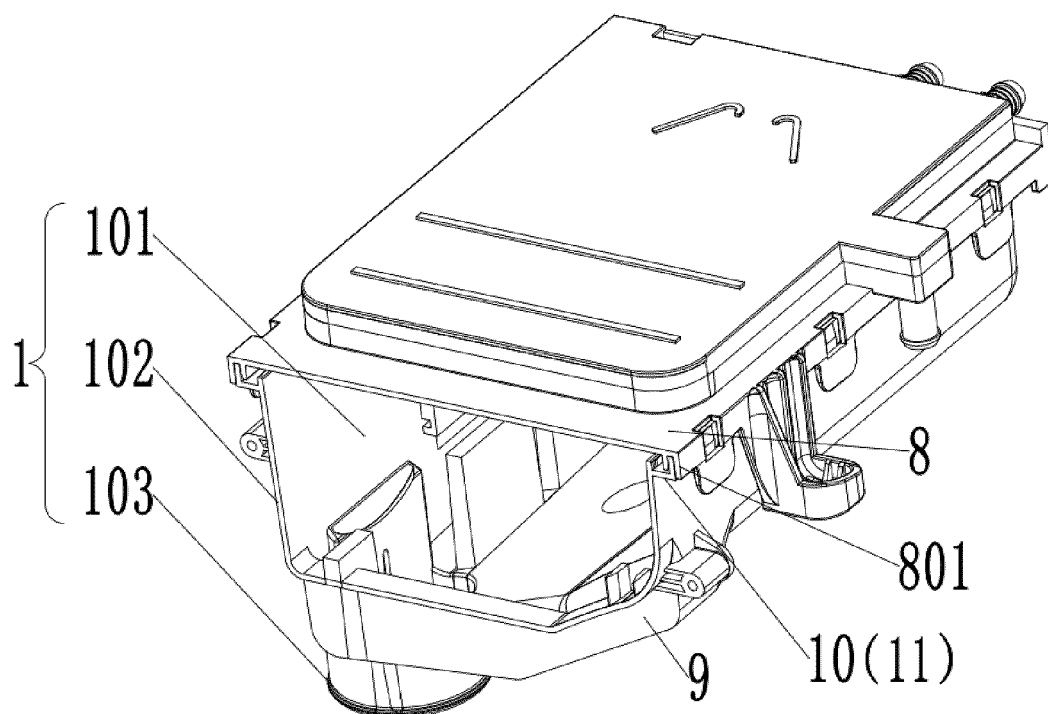


Fig. 3

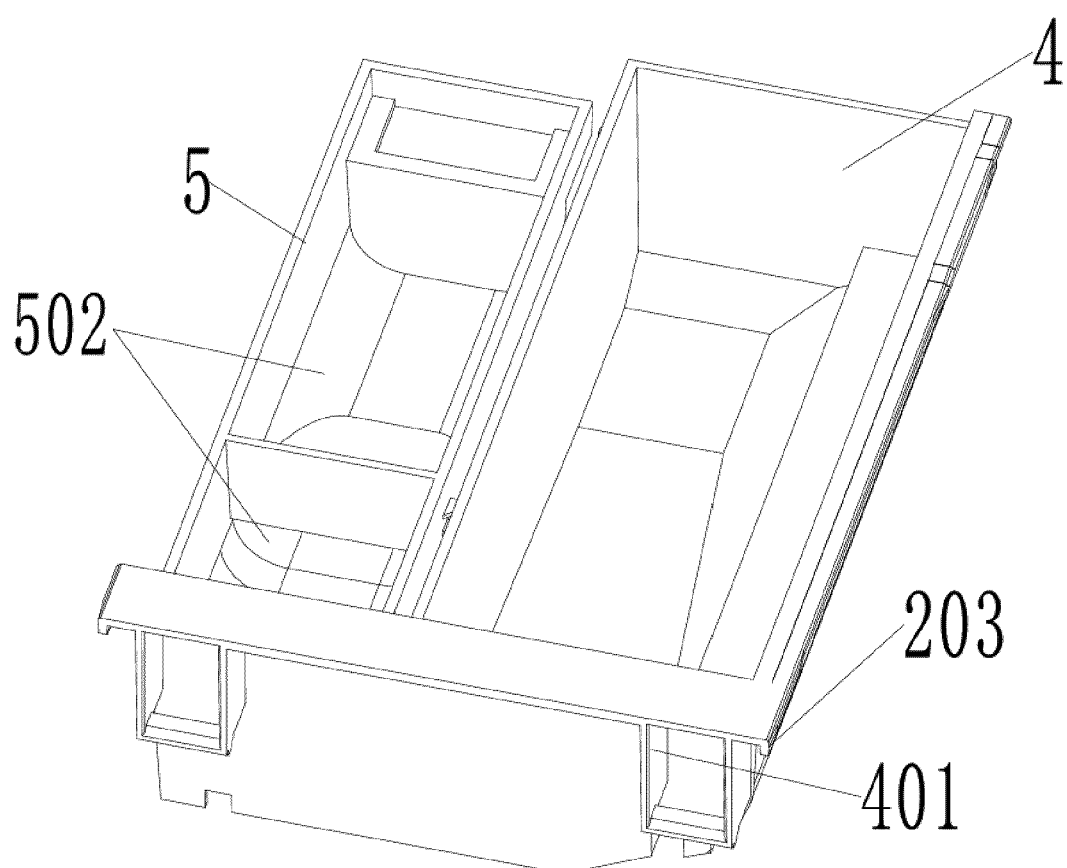


Fig. 4

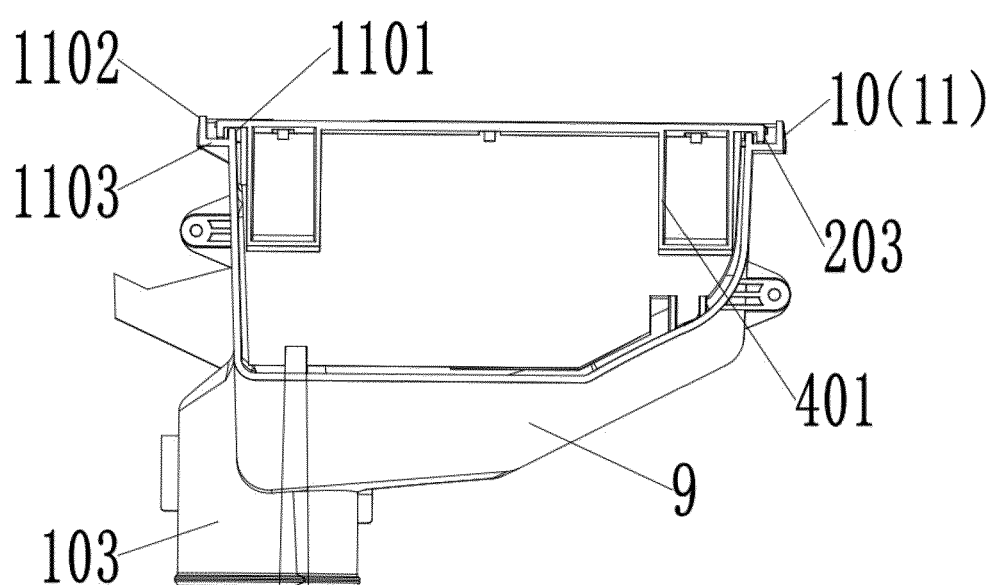


Fig. 5

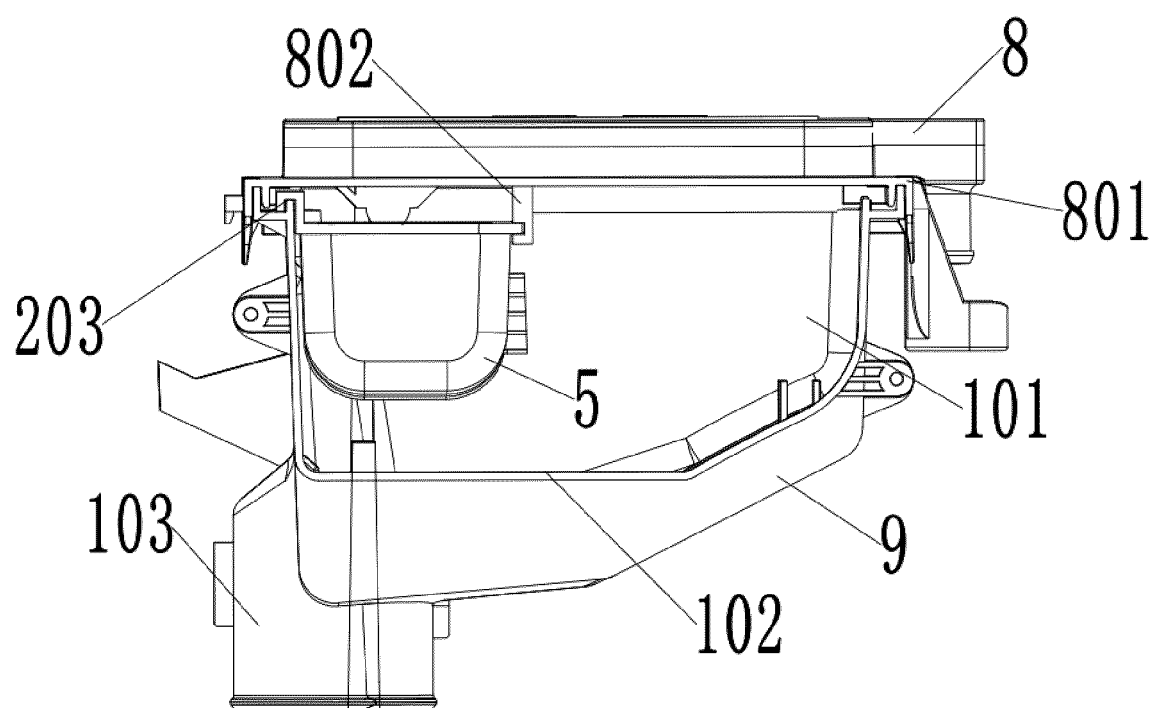


Fig. 6

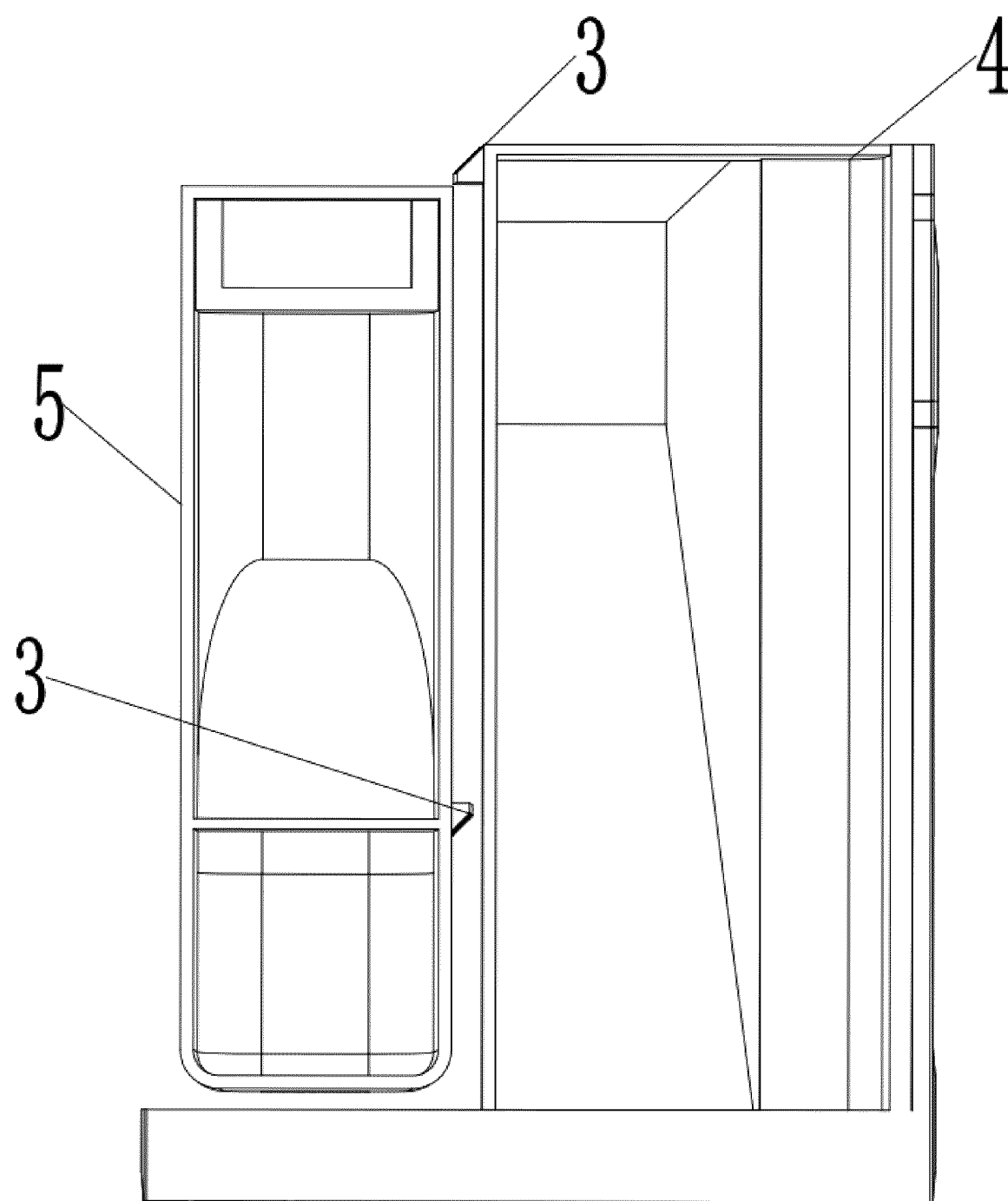


Fig. 7

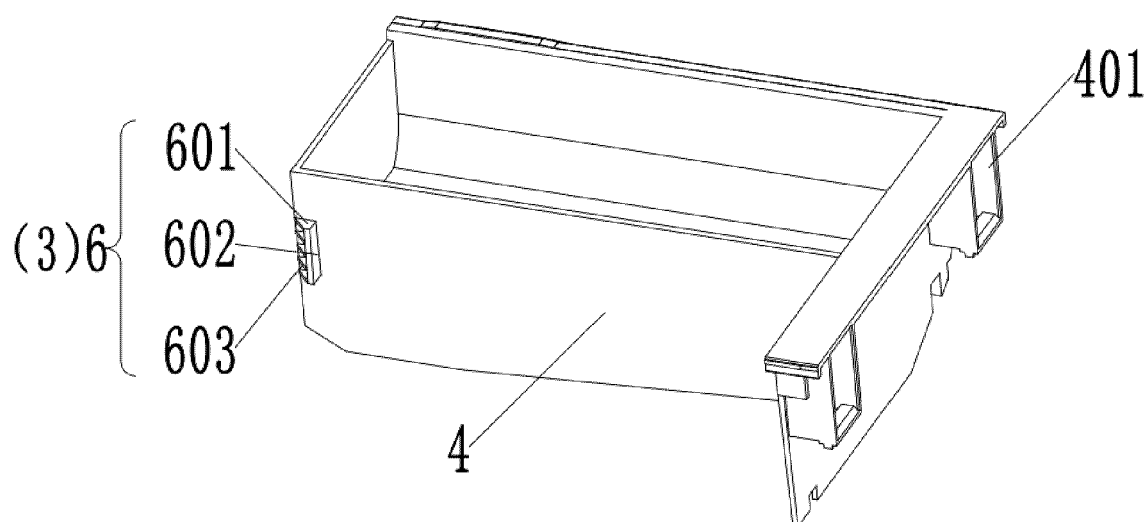


Fig. 8

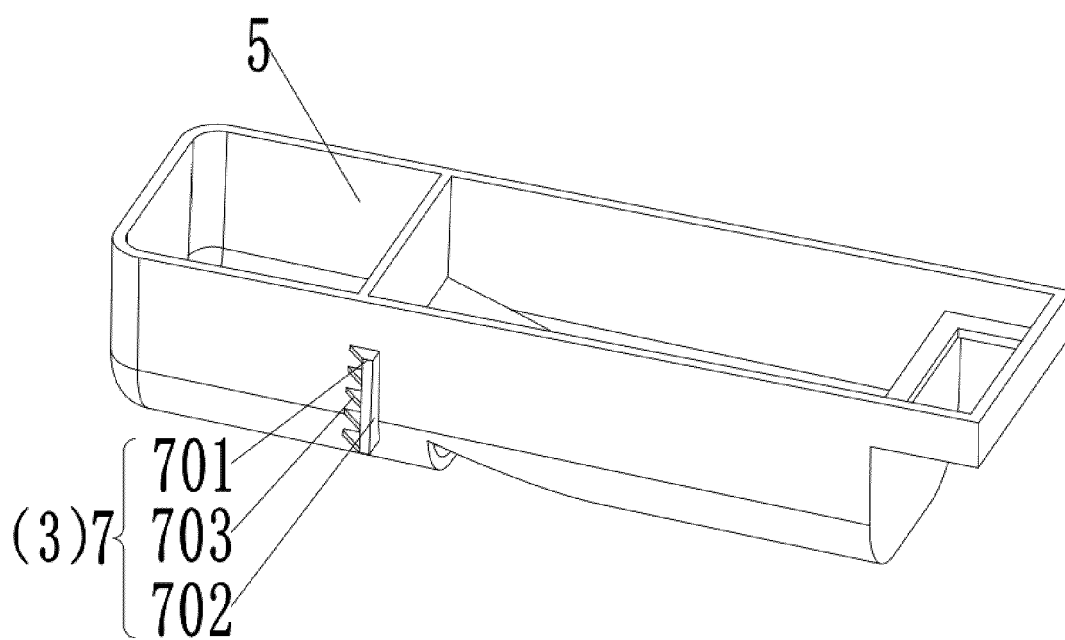


Fig. 9

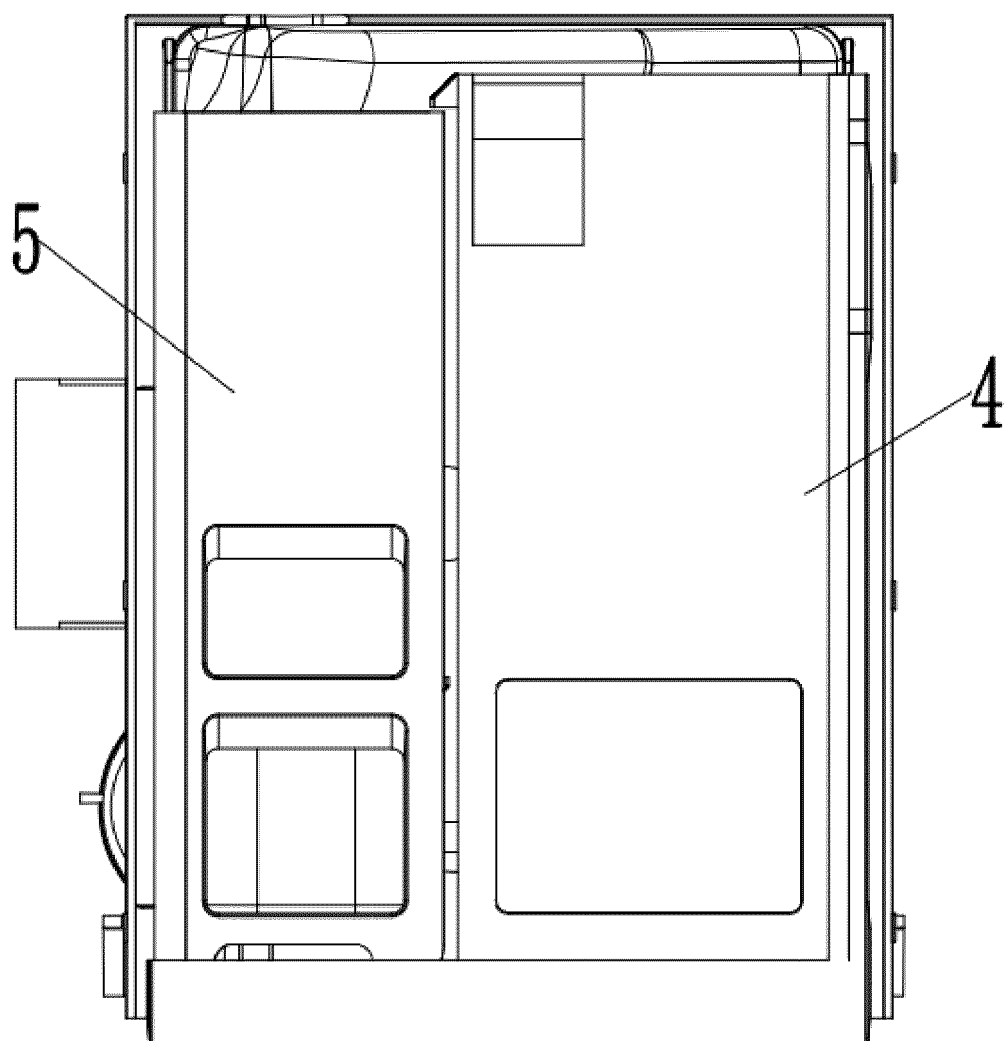


Fig. 10

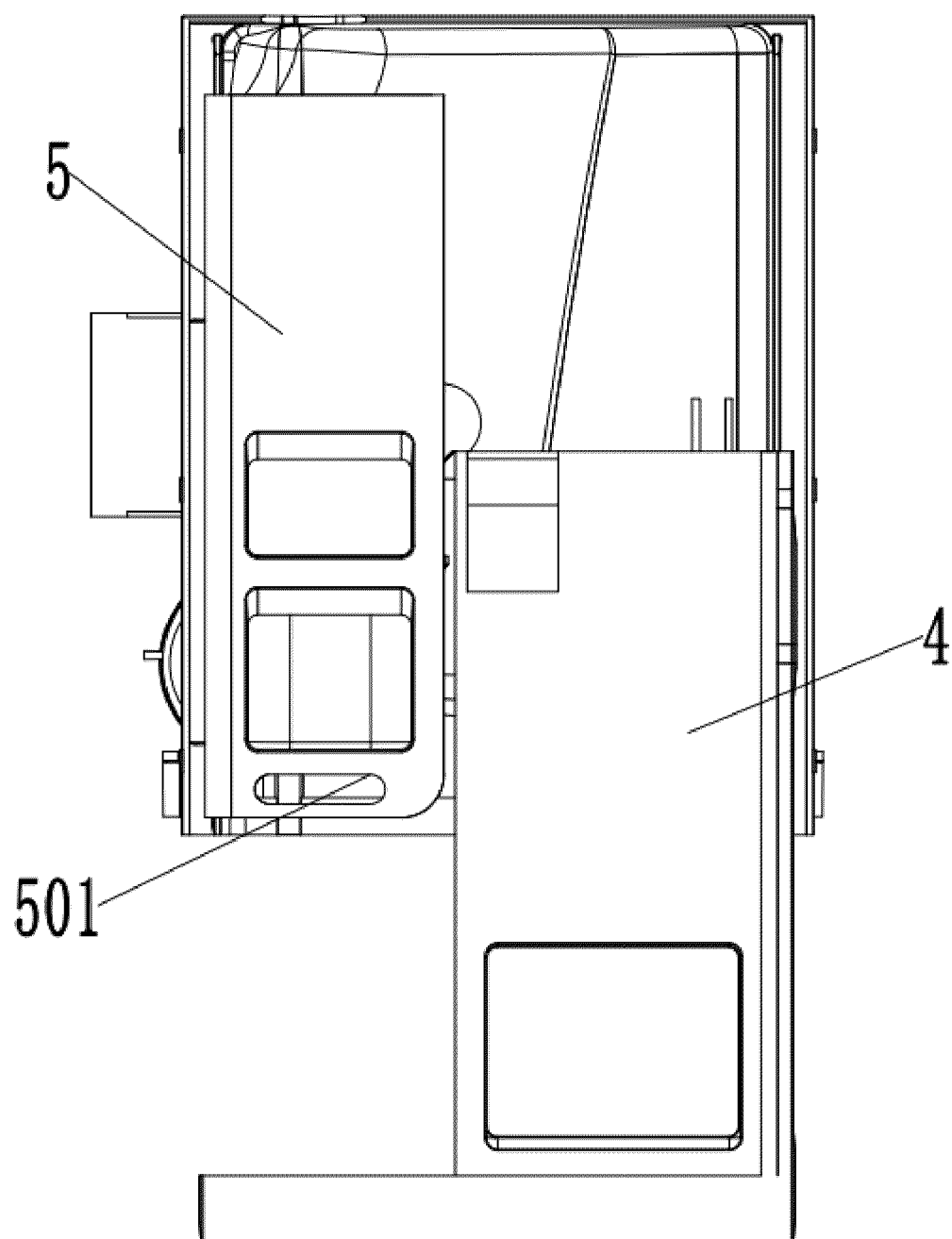


Fig. 11

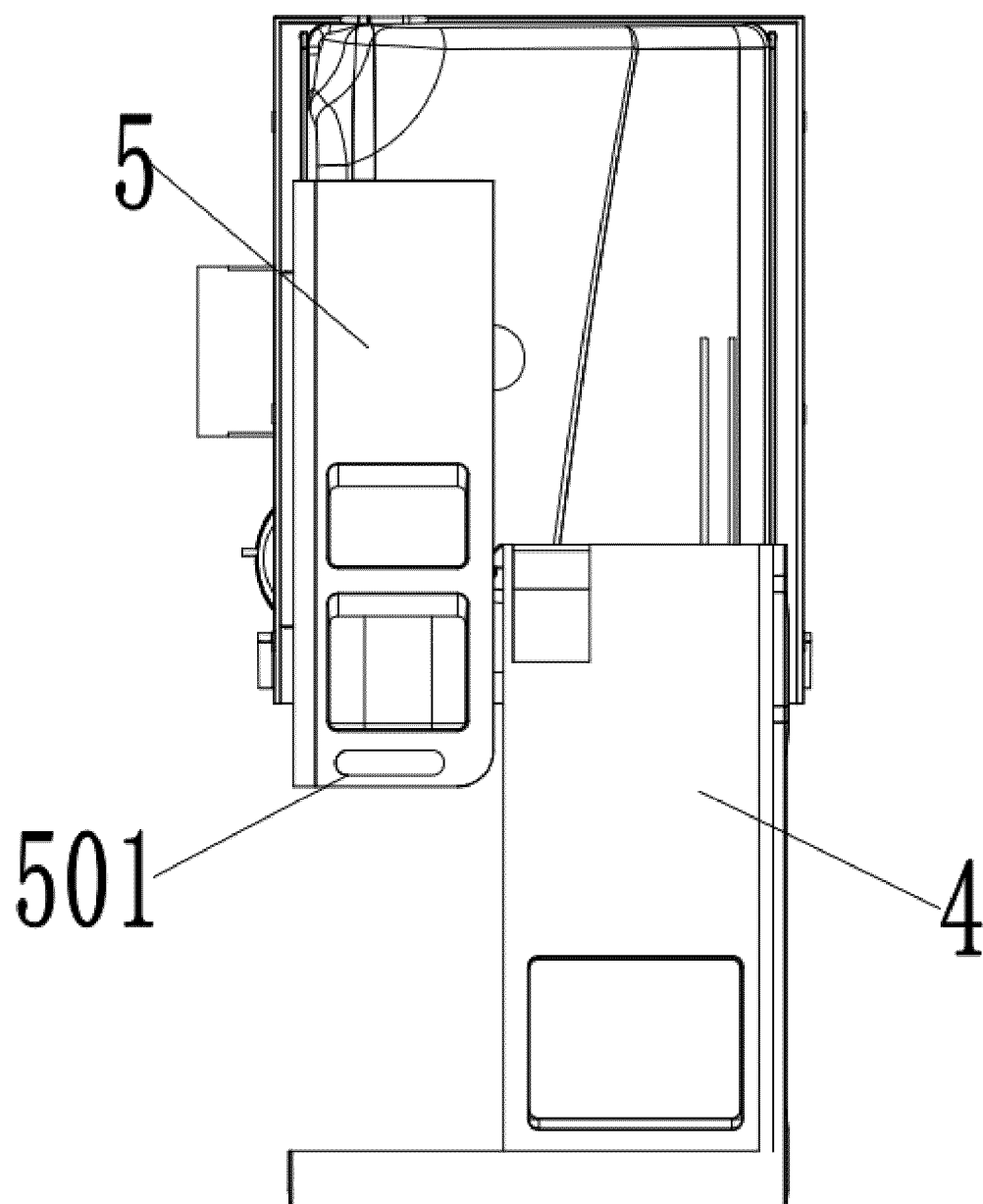


Fig. 12

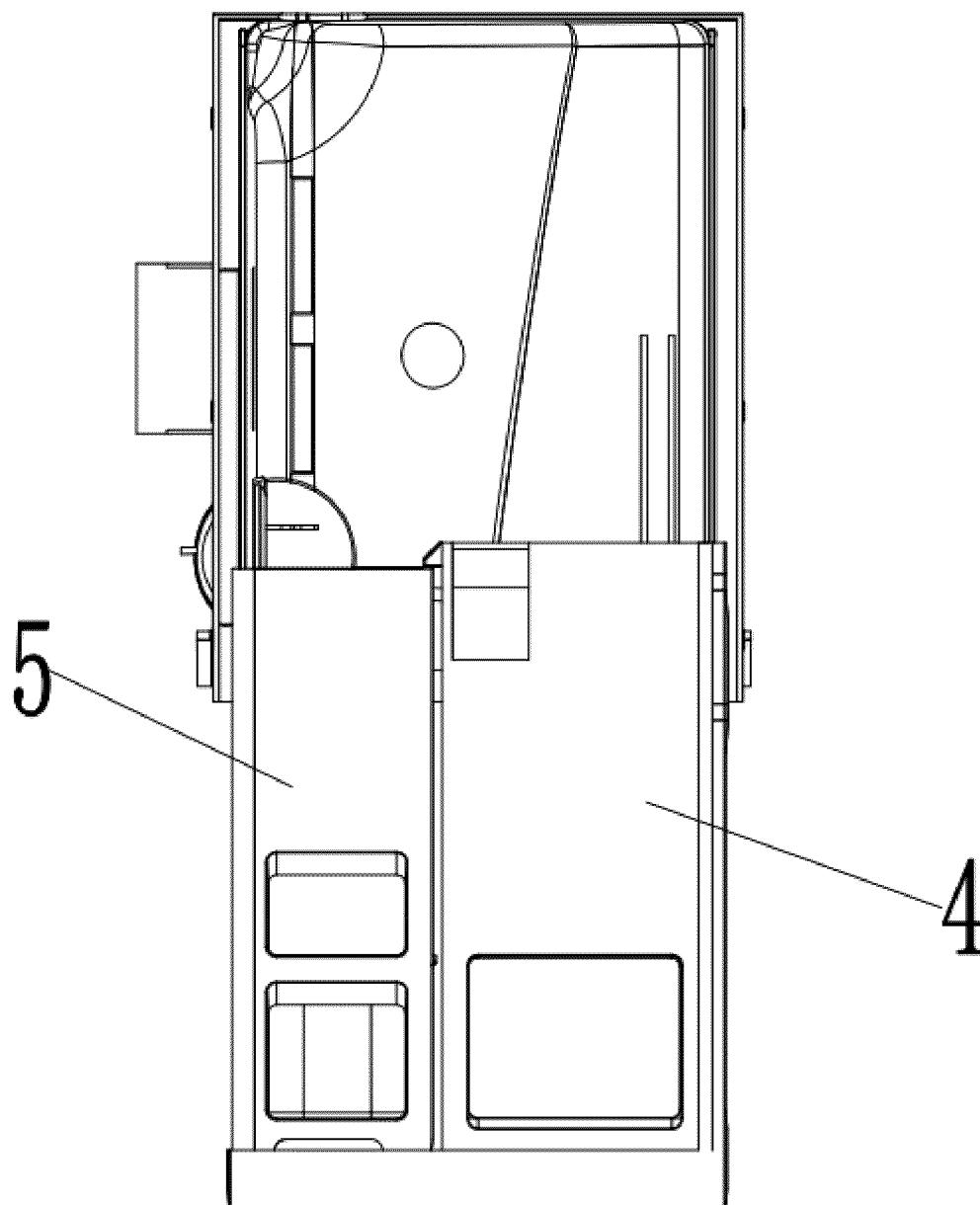


Fig. 13



EUROPEAN SEARCH REPORT

Application Number

EP 24 21 2881

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 104 404 740 A (HEFEI ROYALSTAR SANYO ELECTRIC APPLIANCE CO LTD) 11 March 2015 (2015-03-11) * the whole document *	1-10, 12-15	INV. D06F39/02
A	EP 1 842 953 A2 (IAR SILTAL SPA [IT]) 10 October 2007 (2007-10-10) * abstract; figures *	1-15	
A	WO 2019/201149 A1 (QINGDAO HAIER DRUM WASHING MACHINE CO LTD [CN]) 24 October 2019 (2019-10-24) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 April 2025	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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ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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10 - 04 - 2025

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EP 1842953	A2	10-10-2007	NONE
WO 2019201149	A1	24-10-2019	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82