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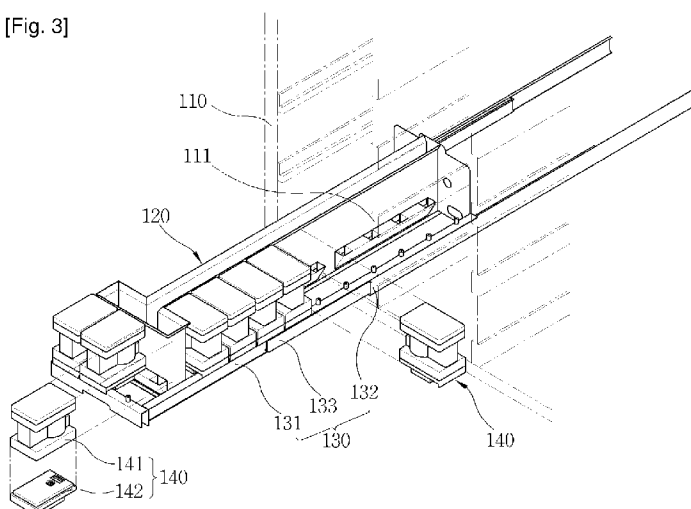
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(54) Title: TABLET CABINET OF MEDICINE PACKING MACHINE

[Fig. 3]



(57) Abstract: A tablet cabinet of a medicine packing machine is disclosed. The tablet cabinet, in which a variety of tablets are classified and stored according to kinds of the tablets, the tablet cabinet includes: a cabinet body having an inner space, whose at least one side is open; a plurality of tablet cassettes, each including a tablet case storing one kind of tablets, and a tablet discharging unit for discharging the tablets stored in the tablet case according to a prescription signal; and a plurality of drawers arranged in tiers in the cabinet body and capable of being drawn out of or pushed into the cabinet body, wherein in each drawer, a plurality of tablet cassettes are arranged in two lines on the drawer along a direction in which the drawer is drawn out of the cabinet body, a plurality of additional tablets cassettes are arranged in a direction perpendicular to the direction in which the drawer is drawn out, in a head portion of the drawer, and a transfer passage is formed in a center portion of the drawer in such a manner that tablets discharging from the tablet cassettes are dropped down through the transfer passage.

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Description

TABLET CABINET OF MEDICINE PACKING MACHINE

Technical Field

- [1] The following description relates to a medicine packing machine, and more particularly, to a tablet cabinet of a medicine packing machine, in which a variety of tablets are classified and stored in separate spaces according to the kinds of the tablets.

Background Art

- [2] Human beings are being threatened by various diseases in their lifetimes, and actually being often suffered from some diseases. Thus, various medicines for treating such diseases have been developed.
- [3] Some kinds of diseases can be treated by a single medicine, but, in general cases, since most diseases are accompanied by several symptoms, a doctor writes a prescription in which various medicines are mixed according to symptoms to effectively treat a disease.
- [4] In order to allow patients to take medicines conventionally, a pharmacist packs and provides medicines for a dose of medicine based on a doctor's prescription. Conventionally, since medicines should be packed for a dose of medicine with pharmacists' hands, in general hospitals, etc., a long time and a large amount of manpower have been consumed to pack medicines and also waiting times were too long.
- [5] For these reasons, a medicine packing machine for automatically packing medicines for a dose of medicine based on a doctor's prescription input to a computer has been developed.
- [6] The medicine packing machine includes a tablet cabinet in which a variety of tablets are classified and stored according to the kinds of the tablets, and a packing unit positioned below the tablet cabinet and packing tablets supplied from the tablet cabinet for a dose of medicine. Here, the tablet cabinet includes a plurality of tablet cassettes in which tablets are classified and stored according to the kinds of the tablets and from which tablets are discharged according to a prescription signal.
- [7] Conventionally, a tablet cabinet includes a plurality of spaces into which tablet cassettes can be put at multiple stages from two sides of the tablet cabinet, and a transfer passage for transferring tablets discharged from the tablet cassettes to a packing unit. Here, the transfer passage is open to the spaces from which the tablets are discharged.
- [8] In the conventional tablet cabinet, since the tablet cassettes are arranged around the circumference of the tablet cabinet, a user can easily recognize the identification numbers of the tablet cassettes or check the amount of tablets remaining in the tablet

cassettes.

[9] However, the tablet cabinet described above can contain a relatively small number of tablet cassettes since the tablet cassettes can be positioned only around the circumference of the tablet cabinet. Accordingly, the kinds of tablets which can be stored into the tablet cassettes are also limited. Also, since a transfer passage through which tablets are transferred is formed in the center of the tablet cabinet, all the tablet cassettes should be detached from the tablet cabinet in order to clean the transfer passage.

[10] In order to increase the number of tablet cassettes which can be contained in the tablet cabinet, the tablet cassettes can be disposed in a plurality of drawers with multi stages in such a manner that the tablet cassettes can be drawn out of the tablet cabinet when the drawers slide out of the tablet cabinet.

[11] However, in this case, when a user wants to pull out a tablet cassette from a drawer, he or she should draw out the drawer.

[12] In order to remove such inconvenience, there is a method of installing a pivoting door in front of drawers and installing tablet cassettes in which tablets in frequent use will be stored on the inner side of the door.

[13] However, in this case, since tablet cassettes are installed on a door, the weight of the door becomes heavy, and when the door is open, the center of gravity may be shifted toward the front portion of the medicine packing machine. Accordingly, in order to shift the center of gravity to the center of the medicine packing machine, it is needed to increase the weight of the rear portion of the medicine packing machine, resulting in an increase of the total weight of the medicine packing machine.

[14] Also, in the case where a transfer passage to transfer tablets discharged from the tablet cassettes installed on the door to a packing unit is formed in the door, it is inconvenient that the tablet cassettes should be detached from the door in order to clean the transfer passage.

Disclosure of Invention

Technical Problem

[15] Accordingly, there is disclosed a tablet cabinet of a medicine packing machine, which can contain a larger number of tablet cassettes and allows a user to easily clean a transfer passage, thus maintaining the medicine packing machine clean.

Technical Solution

[16] According to an aspect, there is provided a tablet cabinet of a medicine packing machine, in which a variety of tablets are classified and stored according to kinds of the tablets, the tablet cabinet including: a cabinet body having an inner space, whose at least one side is open; a plurality of tablet cassettes, each including a tablet case storing

one kind of tablets, and a tablet discharging unit for discharging the tablets stored in the tablet case according to a prescription signal; and a plurality of drawers arranged in tiers in the cabinet body and capable of being drawn out of or pushed into the cabinet body, wherein in each drawer, a plurality of tablet cassettes are arranged in two lines on the drawer along a direction in which the drawer is drawn out of the cabinet body, a plurality of additional tablets cassettes are arranged in a direction perpendicular to the direction in which the drawer is drawn out, in a head portion of the drawer, and a transfer passage is formed in a center portion of the drawer in such a manner that tablets discharging from the tablet cassettes are dropped down through the transfer passage.

Advantageous Effects

[17] The following advantages can be obtained.

[18] First, since a plurality of drawers are provided in a tablet cabinet in such a manner to be drawn out while sliding against a cabinet body, a plurality of tablet cassettes are disposed in two lines on each drawer, and also additional tablet cassettes are disposed on the head portion of the drawer, the tablet cabinet can contain a large number of tablet cassettes.

[19] Second, since tablet cassettes storing tablets in frequent use are arranged on the head portion of each drawer, a user can easily supply the tablets in frequent use without drawing out the drawer.

[20] Third, since transfer passages for transferring tablets discharged from the tablet cassettes to a packing unit are formed in drawers that can be drawn out of a tablet cabinet, a user can easily clean the transfer passages and maintain the medicine packing machine clean.

[21] Fourth, in the case where a handle is provided in the form of a cave in the front end of each drawer, a separate handle is not needed.

[22] Fifth, in the case where a detector for detecting the identification numbers of tablet cases coupled with tablet discharging units installed in each drawer is provided, tablets can be packed correctly according to a prescription even when a user places any tablet case at a wrong location.

[23] Sixth, in the case where display units are provided in tablet dispensing unit installed in the head portion of each drawer, a user can recognize the identification numbers of tablet cases arranged in the head portion of the drawer, through the display units.

Brief Description of the Drawings

[24] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention, and together with the description serve to

explain the principles of the invention.

[25] FIG. 1 is a front view showing a tablet cabinet of a medicine packing machine, according to an embodiment;

[26] FIG. 2 is a perspective view of the tablet cabinet illustrated in FIG. 1;

[27] FIG. 3 is a perspective view showing a drawer including a plurality of tablet cassettes, drawn out from the tablet cabinet illustrated in FIG. 2;

[28] FIG. 4 is a perspective view showing only the drawer illustrated in FIG. 3;

[29] FIG. 5 is a plan view of the drawer illustrated in FIG. 4;

[30] FIG. 6 is a view for explaining a process in which tablets are transferred through transfer passages in the tablet cabinet where a plurality of drawers, each drawer having the structure illustrated in FIG. 3, are arranged in tiers; and

[31] FIG. 7 is a view for explaining an example in which display units are provided on tablet cassettes of drawers disposed in the front part of the tablet cabinet illustrated in FIG. 2.

Mode for the Invention

[32] The invention is described more fully hereinafter with reference to the accompanying drawings, in which exemplary embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the exemplary embodiments set forth herein. Rather, these exemplary embodiments are provided so that this disclosure is thorough, and will fully convey the scope of the invention to those skilled in the art. In the drawings, the size and relative sizes of layers and regions may be exaggerated for clarity. Like reference numbers in the drawings denote like elements.

[33] FIG. 1 is a front view showing a tablet cabinet 100 of a medicine packing machine 10, according to an embodiment.

[34] Referring to FIG. 1, the medicine packing machine 10 selectively discharges medicines in the form of tablets under the control of a computer which receives data containing a doctor's prescription, and causes a packing unit 12 to pack tablets fallen down in a hopper 11 in a packing paper for a dose of medicine.

[35] Here, the packing unit 12 can include a conveyer for conveying the packing paper, a sealing unit for sealing packing papers to make medicine packages, a printer for printing information related to the medicine on the packing papers, etc.

[36] The medicine packing machine 10 includes a tablet cabinet 100 in which various tablets are classified and stored according to the kinds of the tablets. Referring to FIG. 2, the tablet cabinet 100 includes a cabinet body 110 and a plurality of drawers 120.

[37] The cabinet body 110 has an inner space, and at least one side of the cabinet body 110 is open. For example, the cabinet body 110 is in the form of an empty box whose

one side is open. One or more vertical supports 111 can be formed in the inner space of the cabinet body 110.

- [38] If the drawers 120 are arranged in a plurality of rows and columns in the inner space of the cabinet body 110, each vertical support 111 can be formed between the columns of the drawers 120. Guide units 130 (which will be described later with reference to FIG. 3) are formed in correspondence to the vertical supports 111 so that the drawers 120 can slide through the guide units 130 against the cabinet body 110.
- [39] The guide units 130 guide the drawers 120 to slide against the cabinet body 110 when the drawers 120 are drawn out of the cabinet body 110. In the current embodiment, each guide unit 130 can be constructed as shown in FIG. 3.
- [40] Referring to FIG. 3, each guide unit 130 is installed in pairs in each drawer 130. That is, the guide unit 130 includes a first guide member 131 fixed on the drawer 130, a second guide member 132 fixed on the cabinet body 110 or on the vertical support 111, and a third guide member 133 whose one side slides against the first guide member 131 and whose other side slides against the second guide member 132.
- [41] Due to the structure of the guide unit 130, the drawer 120 can be fixedly supported when more than half the entire length of the drawer 120 is drawn out of the cabinet body. That is, both sides of the third guide member 133 can slide freely against the first and second guide members 131 and 132. Accordingly, when the drawer 120 is drawn out of the cabinet body 110, a portion of the third guide member 133 is drawn out against the second guide member 132 and supports both the first and second guide members 131 and 132, thus fixedly supporting the drawer 120 drawn out.
- [42] Also, since the drawer 120 contains a plurality of tablet cassettes 140 therein, the tablet cassettes 140 can be drawn out together with the drawer 120 when the drawer 120 is drawn out of the cabinet body 110. Each tablet cassette 140 includes a tablet case 141 and a tablet discharging unit 142 coupled with the tablet case 141. Each tablet case 141 contains a single kind of tablets. The tablet discharging unit 142 is controlled to discharge the tablets contained in the tablet case 141 according to a prescription signal corresponding to a doctor's prescription.
- [43] The tablet discharging unit 142 includes a door disposed near an opening through which tablets are discharged, and a driver for driving the door to open or close the opening in response to the prescription signal, which are not shown in the drawing. Here, the driver can be controlled by an apparatus controller for controlling the entire operation of the medicine packing machine 10 (see FIG. 1).
- [44] According to the current embodiment, the drawer 120 has a structure where the plurality of tablet cassettes 140 can be arranged in the direction in which the drawer 120 is drawn out of the cabinet body 110. Also, on the head portion of the drawer 120, a plurality of additional tablet cassettes are arranged in a line in a direction per-

pendicular to the direction in which the drawer 120 is drawn out.

[45] For example, the drawer 120 is constructed as shown in FIG. 4. Referring to FIG. 4, the drawer 120 can include a drawer base 121 and a cassette support 122 protruded upward from the drawer base 121. Here, referring to FIGS. 3 and 4, the cassette support 122 includes a front support part 122a for supporting tablet cassettes 140 arranged in a line on the head part of the drawer 120, a center support part 122b for supporting tablet cassettes 140 arranged along the length direction of the drawer 120, and a rear support part 122c for supporting tablet cassettes 140 arranged on the rear part of the drawer 120.

[46] Also, a plurality of screw coupling members 123 are formed in the drawer 120 so that the tablet discharging units 142 of the tablet cassettes 140 are screw-coupled to the drawer base 121 while being supported by the cassette support 122.

[47] As described above, since the drawer 120 is configured in such a manner that a plurality of tablet cassettes 140 are arranged in two lines on the drawer 120 and additional tablet cassettes 140 are arranged on the head portion of the drawer 120, a large number of tablet cassettes can be accommodated in the cabinet body 110, compared to an existing structure where tablet cassettes are placed only in two lines on the sides of a drawer in the length direction of the drawer.

[48] Also, as illustrated in FIG. 2, the tablet cases 141 of the tablet cassettes 140 disposed in the front portion of the drawer 120 can be easily detached/attached from/to the tablet cassettes 140, without drawing the drawer 120 out of the cabinet body 110. Accordingly, if tablet cassettes 140 for storing tablets in frequent use are arranged in the head portion of the drawer 120, a user can easily supply the tablets in the tablet cases 141 without drawing out the drawer 120.

[49] Returning to FIG. 4, a transfer passage 124 is formed in the center of the drawer 120 so that tablets discharged from the tablet cassettes 140 fall down through the transfer passage 124. The transfer passage 124 is open to a plurality of discharge passages 125 formed in correspondence to the openings of the tablet cassettes 140.

[50] Here, the transfer passage 124 can be formed inside the cassette support 122. Also, the transfer passage 124 can be in a T shape, when viewed downward from the top, so that tablets discharged from all the tablet cassettes 140 disposed on the drawer 120 can fall down.

[51] According to the current embodiment, when the drawers 120 are arranged in tiers, as illustrated in FIG. 5, the transfer passage 124 is in a T shape, as viewed downward from the top, and the top and bottom of the transfer passage 124 are open. The structure of the transfer passage 124 is aimed to cause all the transfer passages of the drawers 120 to be open to each other when the drawers 120 are all inserted into the cabinet body 110, as illustrated in FIG. 6. Accordingly, a tablet P passing through all

the transfer passages 124 from the top tier to the bottom tier can be dropped down into the hopper 11 (see FIG. 1).

[52] As described above, since the transfer passage 124 is formed in the drawer 120, the transfer passage 124 will be exposed to the outside when a user draws out the drawer 120. Accordingly, the user can easily clean the transfer passage 124 and thus maintain the medicine packing machine 10 clean.

[53] Again returning to FIG. 4, the drawer 120 can have a handle 126. The handle 126 allows a user to easily draw the drawer 120 out of the cabinet body 110 and also push the drawer 120 into the cabinet body 110.

[54] Here, a separate handle member can be attached to the end of the drawer base 121. However, in the current embodiment, the handle 126 may be a cave formed in the end portion of the drawer base 121. Accordingly, the handle 126 is not protruded from the drawer base 121. Thus, when a door such as a glass door 112 (see FIG. 1) is pivotably provided in front of the cabinet body 110, the space between the drawers 120 and the glass door 112 can be minimized.

[55] Referring to FIGS. 2 and 3, the tablet cabinet 100 according to the current embodiment can further include detectors (not shown) for detecting the identification numbers of the tablet cases 141 coupled with the tablet discharging units 142. Here, each detector can be provided for each tablet cassette 140 in order to detect the identification number of a tablet case 141 to be placed in the corresponding tablet discharging unit 142.

[56] Information acquired from the detectors can be sent to the apparatus controller for controlling the medicine packing machine 10. Accordingly, the apparatus controller can correctly recognize where what kinds of tablets are stored.

[57] Also, when a user puts down a tablet case 141 at a wrong location in the cabinet body 110, the corresponding detector detects the identification number of the tablet case 141 at the wrong location, and sends the result of the detection to the apparatus controller. Accordingly, the apparatus controller recognizes the kind of tablets in the tablet case 141 placed at the wrong location, thereby allowing the tablets to be accurately packed according to the corresponding prescription. The detector may be a reader for reading a radio frequency identification (RFID) tag or a barcode.

[58] Referring to FIG. 7, each tablet discharging unit 142 disposed in the head portion of a drawer 120 can further include a display unit 143. The display unit 143 is controlled to display the identification number of the corresponding tablet case 141 based on information received from a detector.

[59] That is, the identification numbers of the tablet cases 141 disposed in the head portion of the drawer 120 are detected by the detectors and transferred to the apparatus controller, and the apparatus controller controls the display units 143 to display the

identification numbers. The display units 143 may be disposed on the front sides of the tablet discharging units 142 so that a user can easily view the identification numbers of the tablet cases 141. The display units 143 may be LED digit displays.

[60] The display units 143 can perform the following function. For example, if tablets contained in tablet cases 141 disposed in the head portion of a drawer 120 are tablets in frequent use, a process of detaching the tablet cases 141 from the corresponding tablet discharging units 142 and then again attaching the tablet cases 141 to the tablet discharging units 142 to supply tablets in the tablet cases 141 will be frequently repeated. During this process, although a user makes a mistake of putting down any tablet case at a wrong location, he or she can easily recognize the mistake through a display unit 143.

[61] Also, when a user tries to remove one of tablet cases disposed on the head portion of a drawer, and place another tablet case having a different identification number in the empty space, he or she can determine through a display unit whether the tablet case is correctly disposed.

[62] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Industrial Applicability

[63] As described above, a tablet cabinet according to the present invention can be applied to a medicine packing machine for packing a variety of tablets for a dose of medicine based on a prescription.

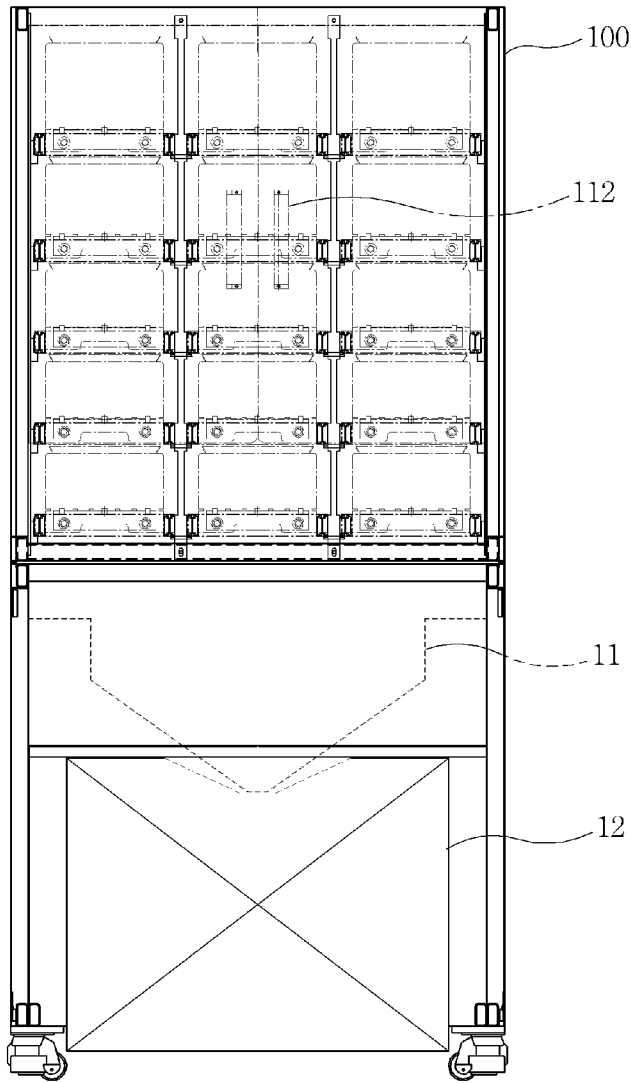
Claims

- [1] A tablet cabinet of a medicine packing machine, in which a variety of tablets are classified and stored according to kinds of the tablets, the tablet cabinet comprising:
a cabinet body having an inner space, whose at least one side is open;
a plurality of tablet cassettes, each including a tablet case storing one kind of tablets, and a tablet discharging unit for discharging the tablets stored in the tablet case according to a prescription signal; and
a plurality of drawers arranged in tiers in the cabinet body and capable of being drawn out of or pushed into the cabinet body,
wherein in each drawer, a plurality of tablet cassettes are arranged in two lines on the drawer along a direction in which the drawer is drawn out of the cabinet body, a plurality of additional tablets cassettes are arranged in a direction perpendicular to the direction in which the drawer is drawn out, in a head portion of the drawer, and a transfer passage is formed in a center portion of the drawer in such a manner that tablets discharging from the tablet cassettes are dropped down through the transfer passage.
- [2] The tablet cabinet of claim 1, wherein tablet cases of the additional tablet cassettes disposed in the head portion of the drawer are detached from or attached to the additional tablet cassettes without drawing out the drawer.
- [3] The tablet cabinet of claim 2, further comprising: a detector detecting an identification number of a tablet case coupled with the tablet discharging unit, wherein a tablet discharging unit disposed in the head portion of the drawer comprises a display unit for displaying an identification number of a tablet case coupled with the tablet discharging unit, based on information acquired from the detector.
- [4] The tablet cabinet of claim 1, wherein a top and bottom of the transfer passage of the drawer are open, and the transfer passage is in a T shape, as viewed downward from the top.
- [5] The tablet cabinet of claim 4, wherein, in the drawer, a plurality of discharge passages are formed in correspondence to a plurality of discharge openings through which tablets are discharged from the plurality of tablet cassettes, and the discharge passages are open to the transfer passage.
- [6] The tablet cabinet of claim 1, wherein the drawer slides against the cabinet body by a pair of guide units, and each guide unit comprises a first guide member fixed to the drawer, a second guide member fixed to the cabinet body, and a third guide member whose one side is movably coupled with the first guide member and whose the other side slides with the first guide member.

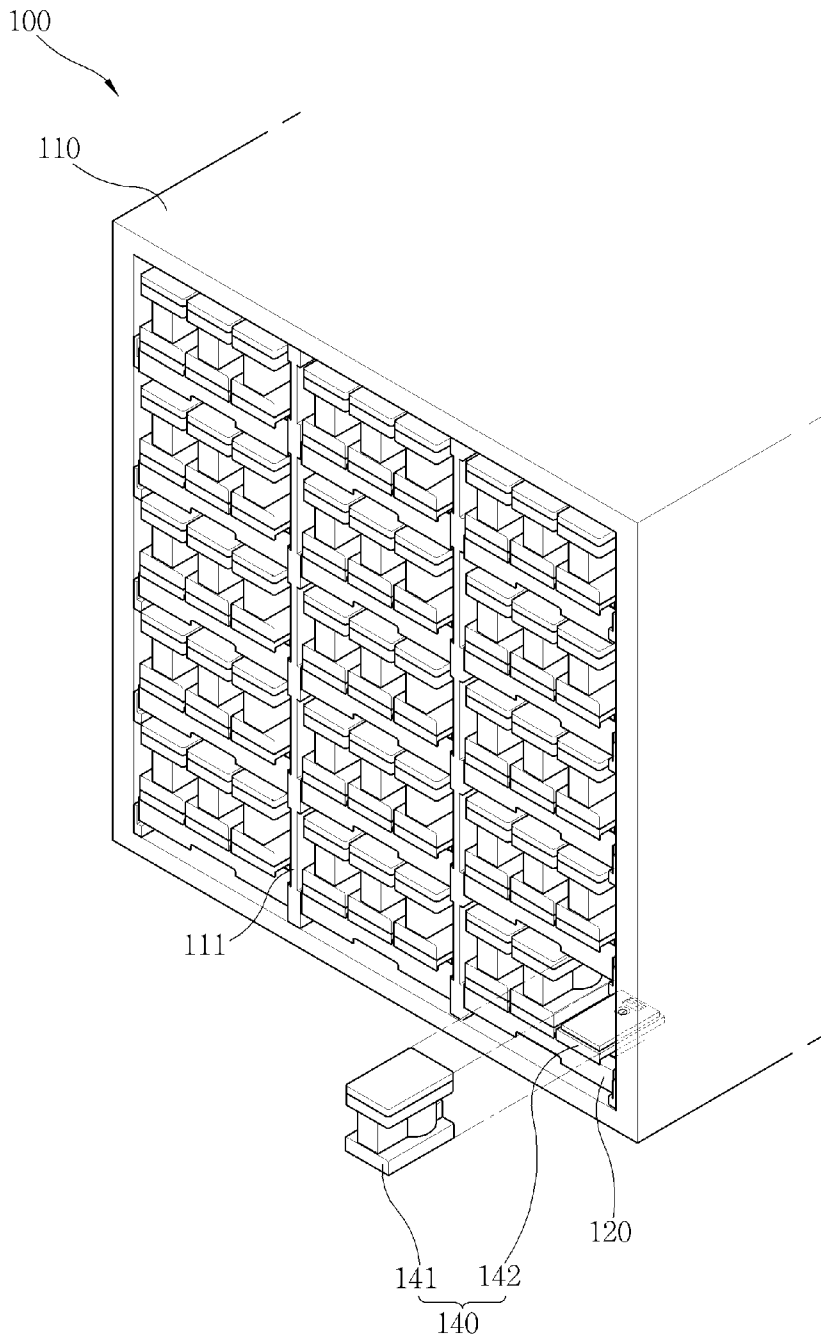
- [7] The tablet cabinet of claim 1, wherein a handle is formed in a front end of the drawer.
- [8] The tablet cabinet of claim 7, wherein the handle is a cave formed in the front end of the drawer.

[Fig. 1]

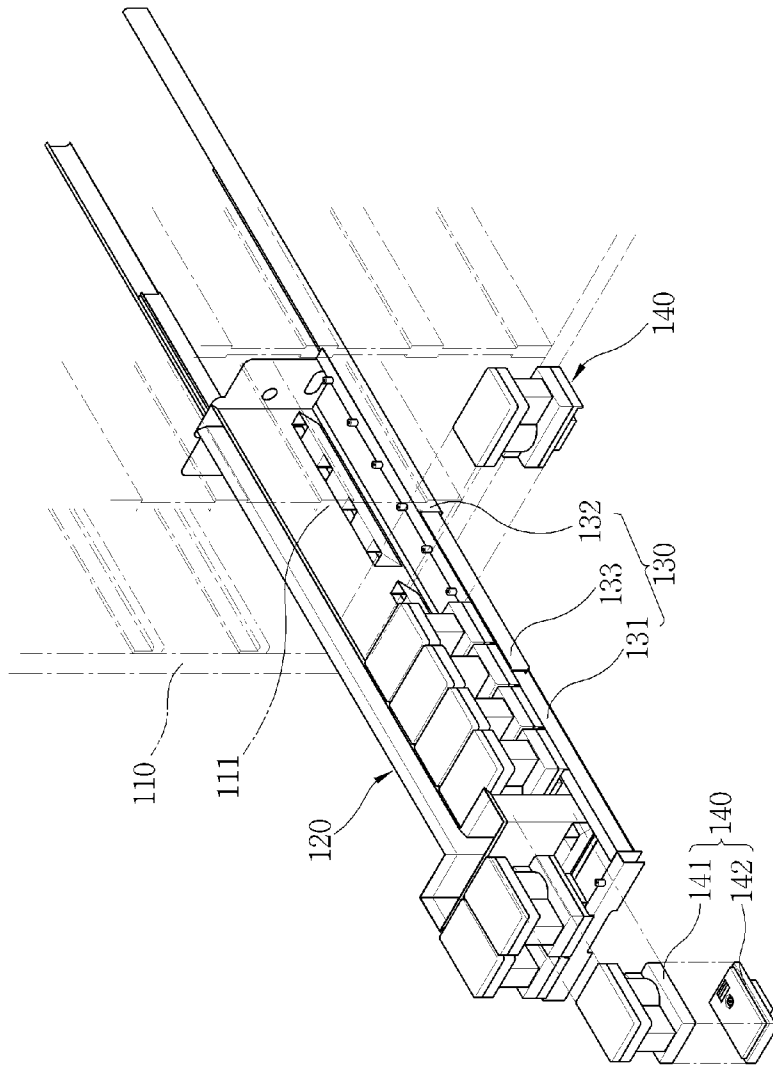
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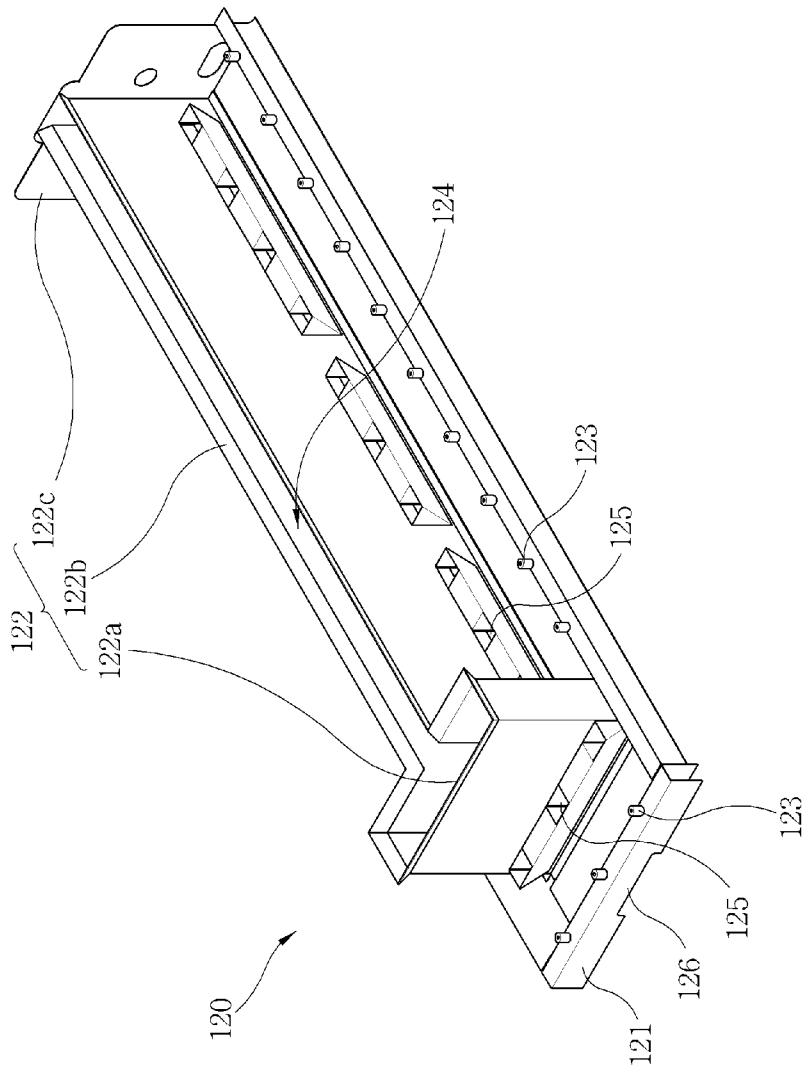
[Fig. 2]



[Fig. 3]

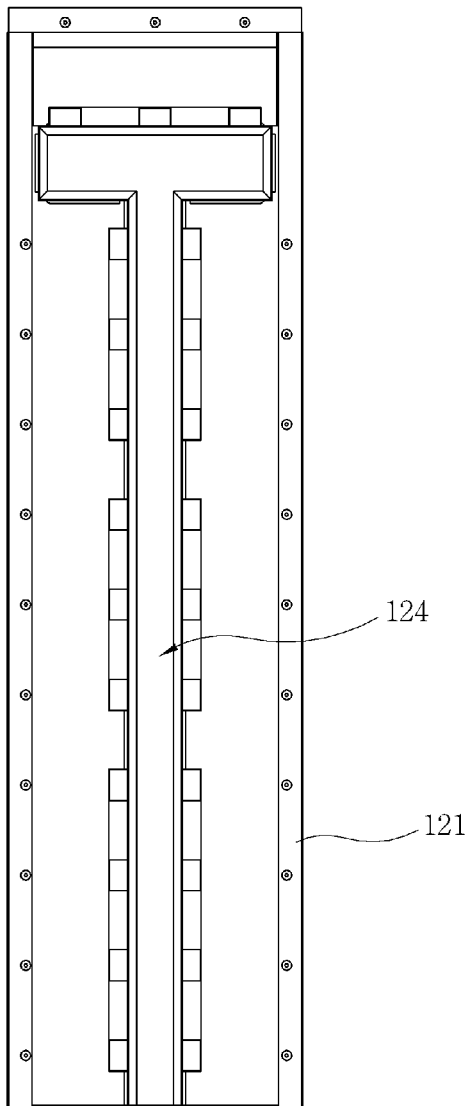


[Fig. 4]

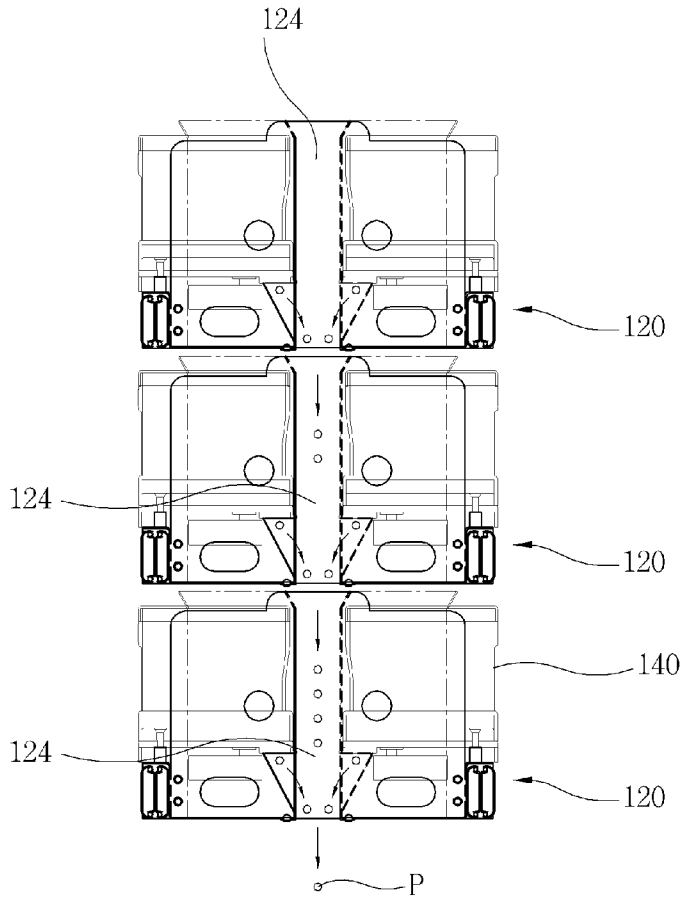


[Fig. 5]

120



[Fig. 6]



[Fig. 7]

