



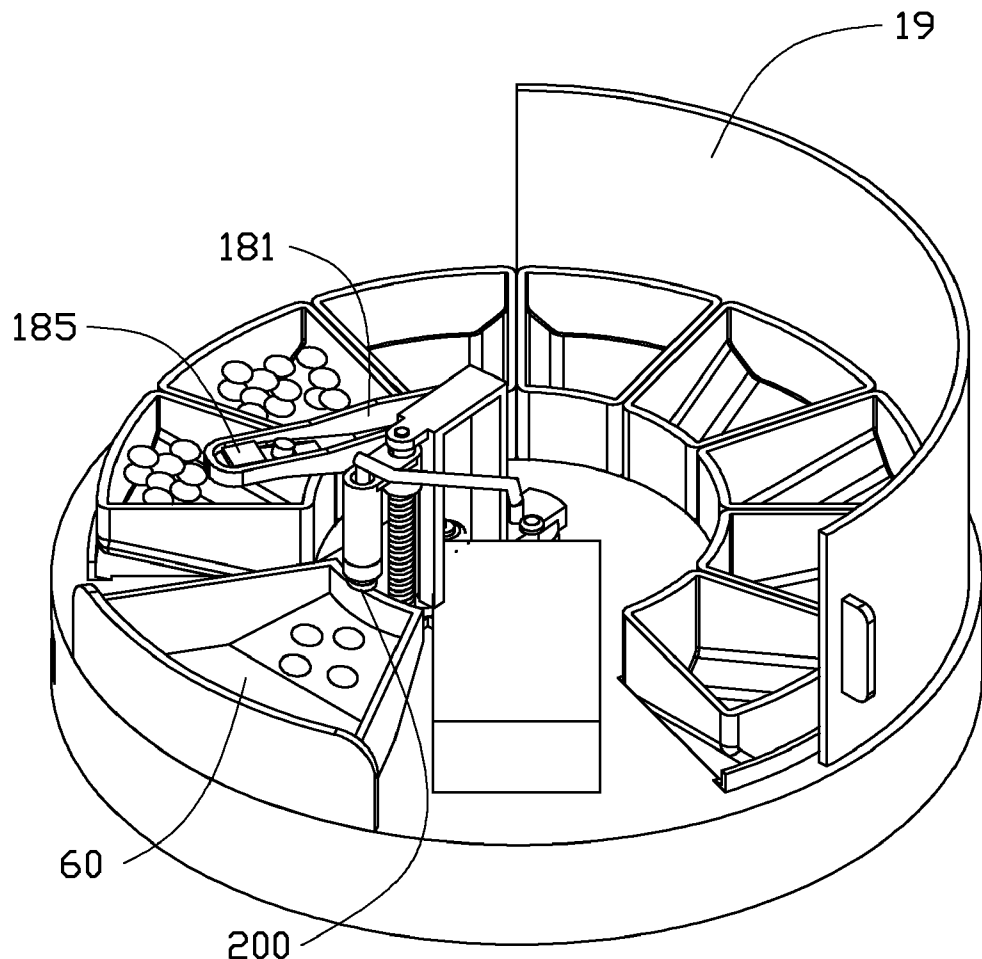
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(19) **United States**(12) **Patent Application Publication**
LAI(10) **Pub. No.: US 2014/0097194 A1**(43) **Pub. Date: Apr. 10, 2014**(54) **AUTOMATIC PILL DISPENSER****Publication Classification**(71) Applicant: **HON HAI PRECISION INDUSTRY CO., LTD.**, New Taipei (TW)(51) **Int. Cl.**
B65D 83/04 (2006.01)(72) Inventor: **KUO-MING LAI**, New Taipei (TW)(52) **U.S. Cl.**
CPC **B65D 83/0454** (2013.01)
USPC **221/13**(21) Appl. No.: **13/928,350**(57) **ABSTRACT**(22) Filed: **Jun. 26, 2013**

An automatic pill dispenser includes a chassis, a top cover located on the chassis, a fetch box, a pill box, and a pill fetching device. The pill fetching device includes a rotation arm and a picker. The rotation arm can move into the pill box to fetch a pill and move the picker from the pill box to the fetching box.

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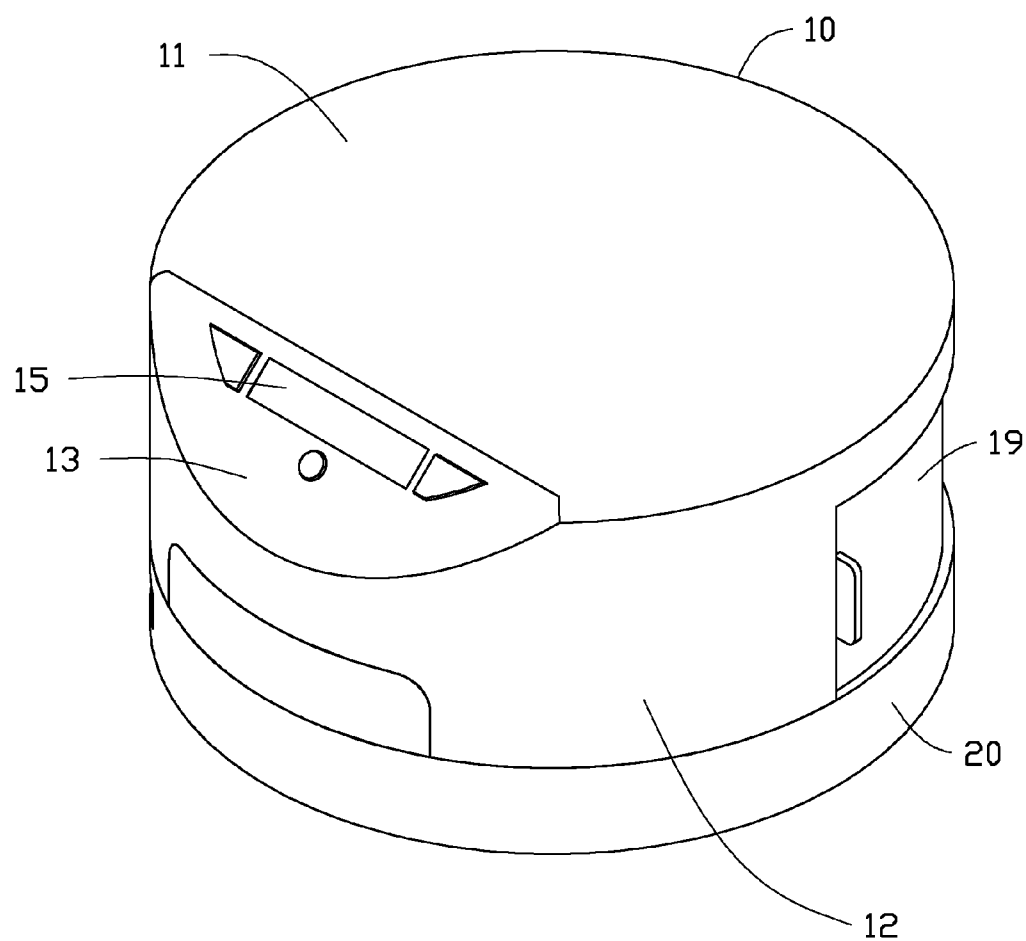


FIG. 1

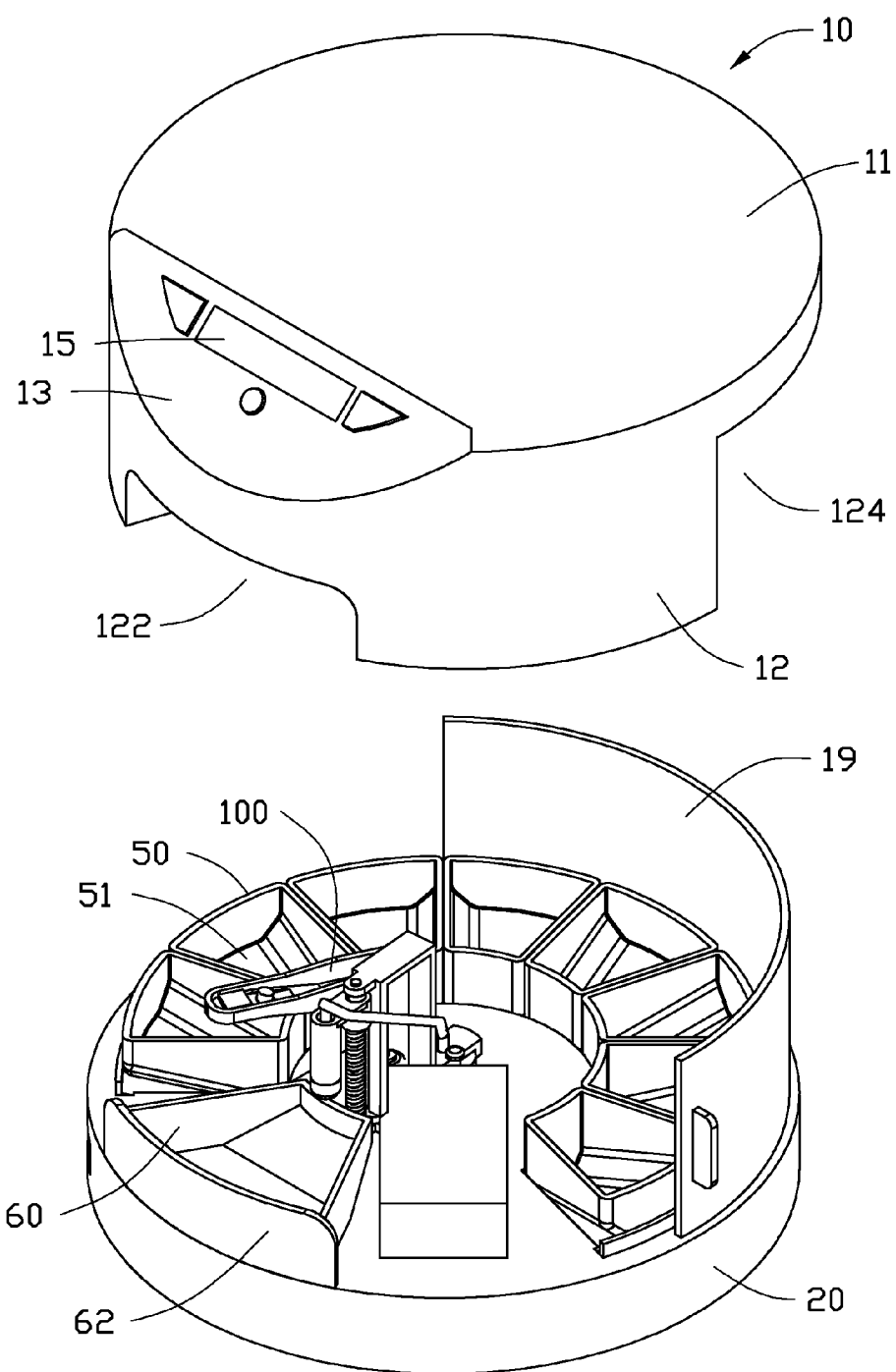


FIG. 2

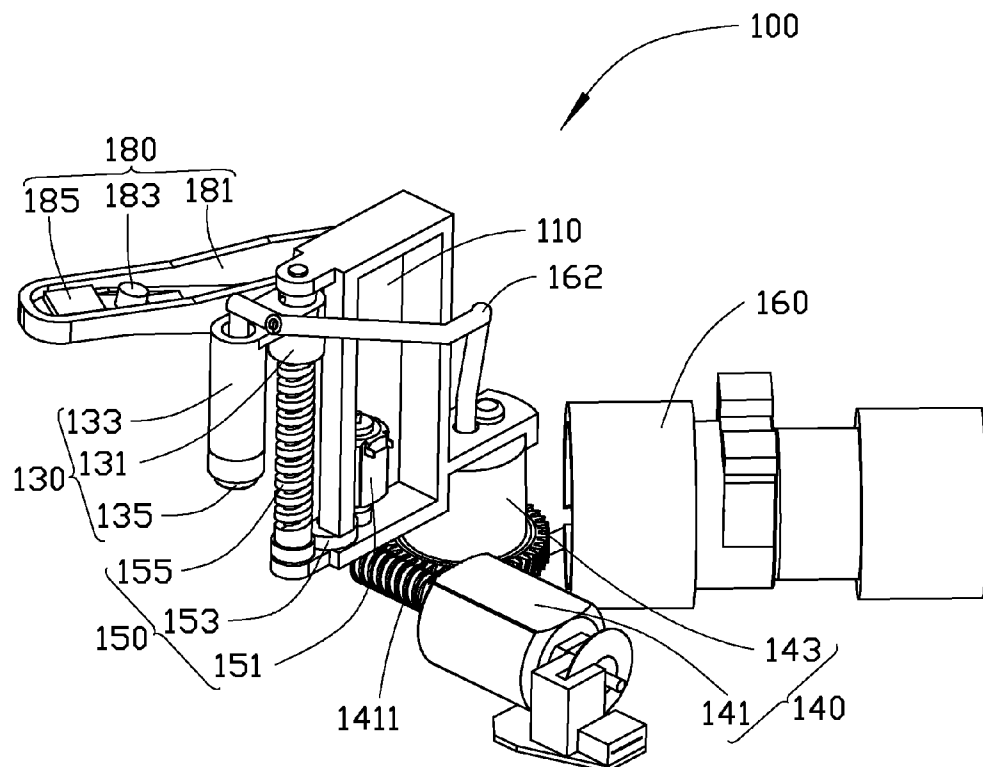


FIG. 3

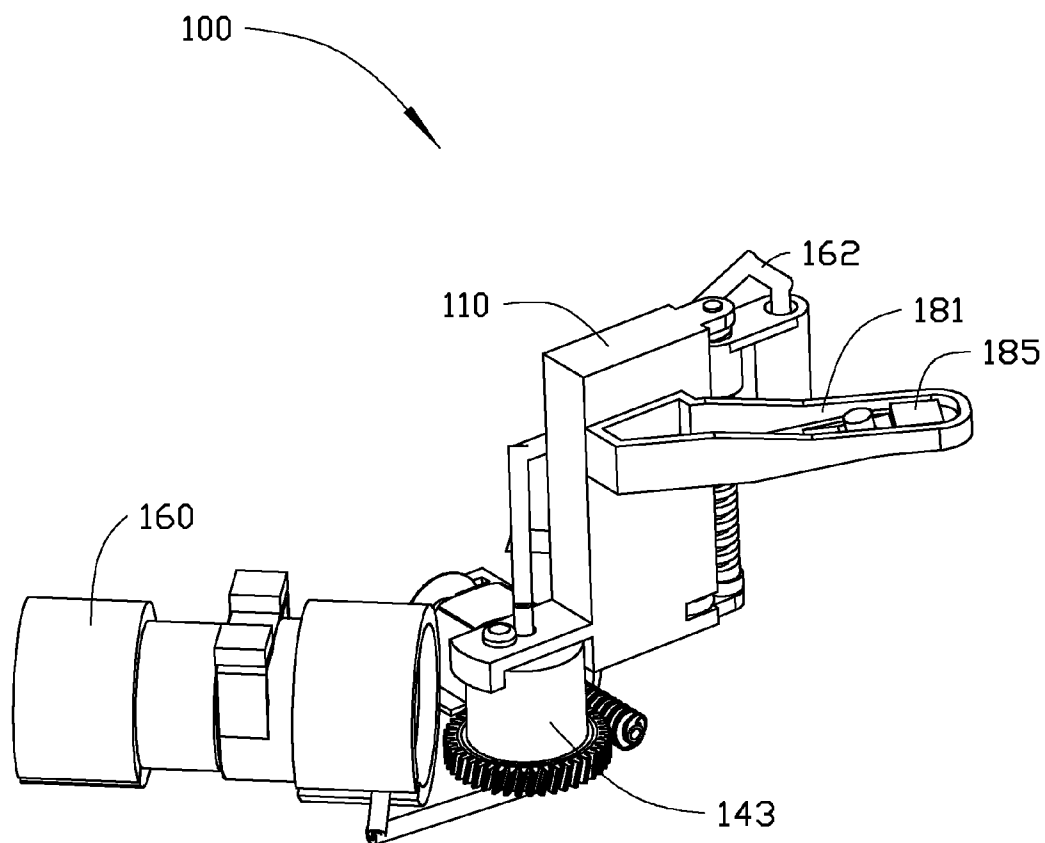


FIG. 4

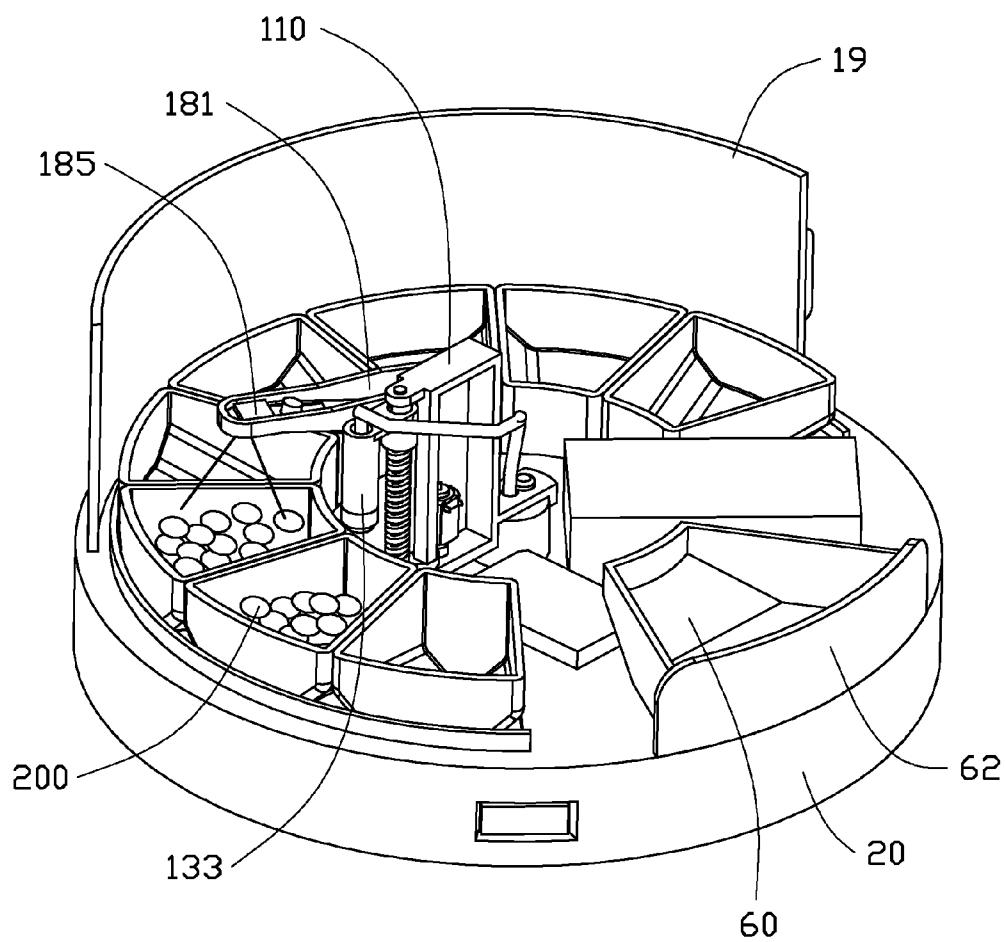


FIG. 5

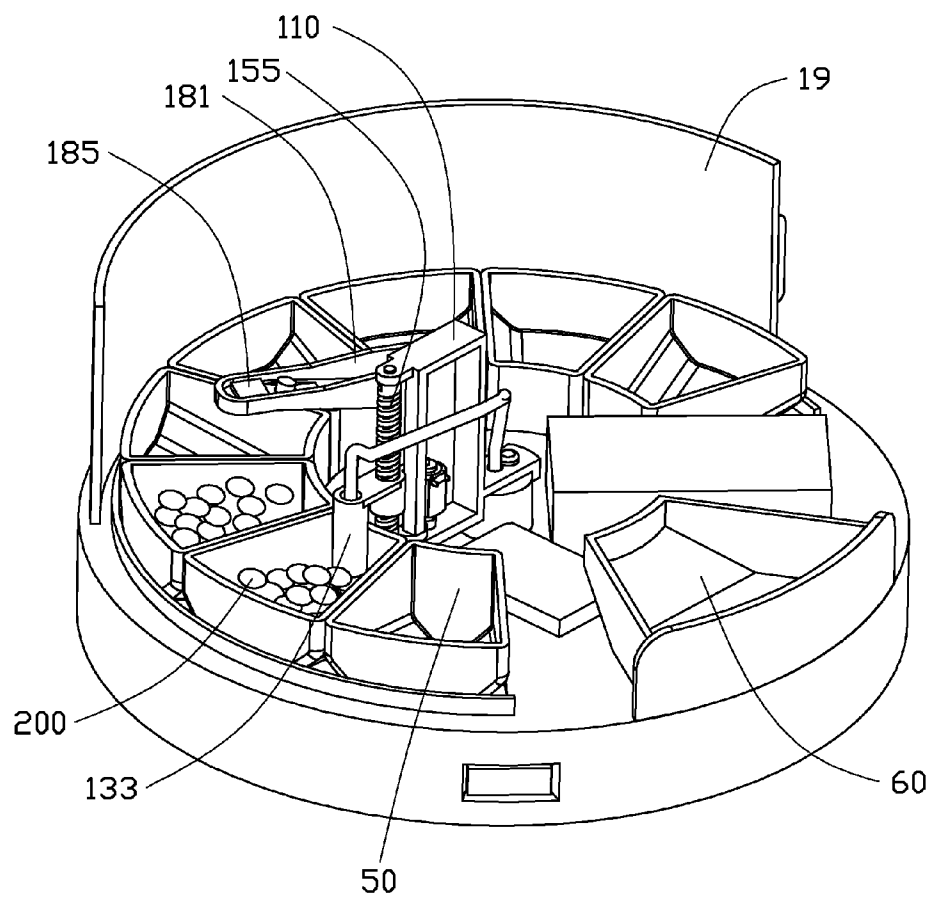


FIG. 6

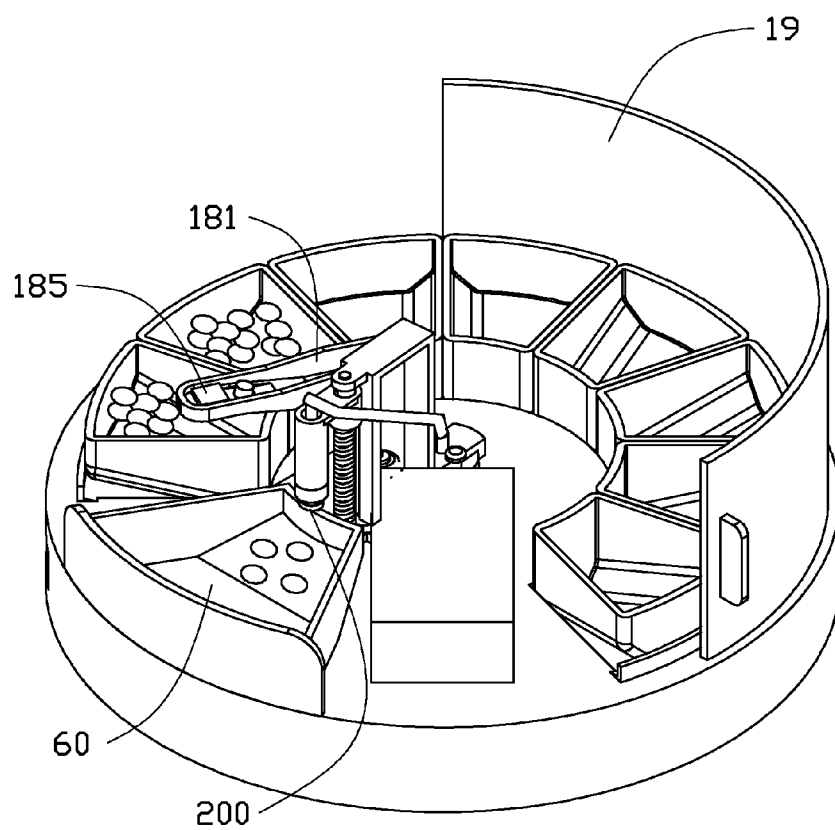


FIG. 7

AUTOMATIC PILL DISPENSER

BACKGROUND

[0001] 1. Technical Field

[0002] The disclosure generally relates to pill dispensing apparatuses, especially to an automatic pill dispenser.

[0003] 2. Description of Related Art

[0004] It is common for the elderly or infirm to ingest many different pills according to a schedule. The scheduling can be complex and involve taking medications in different amounts at differing times. Such complexities can be difficult to remember and can result in dangerous mistakes. Accordingly, it is an object to provide new and novel method and apparatus for accurately dispensing varying doses of medications at varying prescribed times.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Many aspects of the embodiments can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the embodiments. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

[0006] FIG. 1 is an assembled, isometric view of an automatic pill dispenser in one embodiment.

[0007] FIG. 2 is an exploded, isometric view of the automatic pill dispenser of FIG. 1.

[0008] FIG. 3 is an isometric view of a pill fetching device of the automatic pill dispenser of FIG. 2.

[0009] FIG. 4 similar to FIG. 5, but the pill fetching device is shown from another aspect.

[0010] FIG. 5 is a partial assembled view of the pill fetching device of FIG. 2.

[0011] FIG. 6 and FIG. 7 are two isometric views of the pill fetching device of FIG. 5 shown in different working states.

DETAILED DESCRIPTION

[0012] The disclosure is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings in which like references indicate similar elements. It should be noted that references to “an” or “one” embodiment in this disclosure are not necessarily to the same embodiment, and such references mean “at least one.”

[0013] FIG. 1 and FIG. 2 illustrate one embodiment of an automatic pill dispenser. The automatic pill dispenser includes a top cover 10, a chassis 20, a plurality of pill boxes 50, a fetch box 60, and a pill fetching device 100.

[0014] The top cover 10 is substantially columnar. A cross section of the top cover 10 is substantially circular. The top cover 10 defines a top wall 11, an annular sidewall 12, and an operating wall 13 oblique to the top wall 11. An operation panel 15 is located on the operating wall 13 to control the pill fetching device 100. The operation panel 15 may include buttons and a display for display user interface. A processor and a storage may be connected to the operation panel 15. The sidewall 12 defines a pill positioning opening 124 for positioning the plurality of pill boxes 50 and a pill fetching opening 122 for positioning the fetching box 60. A moveable door 19 is located on the top cover 10 to cover the pill positioning opening 124.

[0015] Each pill box 50 is substantially trapezoidal. The width of each box 50 is reduced from an outer side to an inner

side. Each pill box 50 includes an oblique bottom wall 51 to centralize the pills 200. The fetching box 60 is substantially trapezoidal. The fetching box 60 includes a baffle 62 for covering the pill fetching opening 122.

[0016] FIG. 3 and FIG. 4 illustrate the pill fetching device 100. The pill fetching device 100 includes a rotation arm 110, a picker 130, a lifting structure 150, a driving structure 140, an image fetching structure 180, a tube 162, and a pump 160.

[0017] The driving structure 140 includes a driving motor 141 and a driving pole 143. The driving motor 141 can drive a driving worm 1411. The driving pole 143 is rotatable about a first vertical axis. The driving worm 1411 meshes with the driving pole 143. The rotation arm 110 is connected to be rotated by the driving pole 143.

[0018] The lifting structure 150 includes a lifting motor 151, a lifting gear 153, and a lifting worm 155. The lifting gear 153 is driven by the lifting motor 151. The lifting gear meshes with the lifting worm 155. When the lifting motor 151 operates, the lifting worm 155 then rotates about a second vertical axis. The lifting worm 155 includes an outer thread.

[0019] The picker 130 includes a mounting portion 131, a body 133, and a gasket 135 located on a bottom surface of the body 133. The mounting portion 131 meshes with the lifting worm 155. When the lifting worm 155 rotates about the second vertical axis, the mounting portion 131 can move along the second vertical axis. The tube 162 extends to the gasket through the body 133.

[0020] The tube 162 is plastic and flexible. The tube 162 is connected to the pump 160.

[0021] The image fetching structure 180 includes a bracket 181, a camera 185 located on the bracket 181, and a photo flash 183. The image fetching structure 180 can detect if there are pills located in the pill box 50 and may further detect what is the type of the pills in the pill box 50.

[0022] In assembly, the plurality of pill positioning boxes 50 and the fetching box 60 are located on the chassis 20. The pill fetching device 100 is located on the chassis 20. The operation panel 15 is mounted to the operation wall 13. The top cover 10 is mounted to the chassis 20. The door 19 is located on the pill positioning opening 124. The plurality of pills 19 can be positioned in the plurality of pill boxes 50 through the pill fetching opening 124.

[0023] FIG. 5 to FIG. 7 illustrate pill fetching states of the automatic pill dispenser. When fetching the pills 200, the image fetching structure 180 can automatically detect if there are pills located in the pill box 50 before fetching the pills. The driving motor 141 drives the rotation arm 110 to rotate to one of the plurality of pill boxes 50. The lifting motor 151 sets the picker 130 into the pill box 100. The picker 130 sucks one of pills 200 from the pill boxes 50 through the tube 162. The picker 130 is lifted up by the lifting motor 151 and is rotated to the fetching box 60 by the rotation arm 110. The pump 160 is powered off to release the pill 200 from the picker 130. The pill 200 drops into the fetching box 60.

[0024] The plurality of pill boxes 50 can store different types of pills 200, so that the picker 130 can fetch desired types of pills 200 from different pill boxes 50. The automatic pill dispenser can automatically fetch predetermined pills from the pill boxes 50 to the pill fetching box 60 so that users do not have to remember which pill to take. Varying doses of medications and varying prescribed times can be predefined in the automatic pill dispenser through the operation panel 15.

[0025] It is to be understood, however, that even though numerous characteristics and advantages have been set forth

in the foregoing description of embodiments, together with details of the structures and functions of the embodiments, the disclosure is illustrative only and changes may be made in detail, especially in the matters of shape, size, and arrangement of parts within the principles of the disclosure to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. An automatic pill dispenser comprising:
 - a chassis;
 - a top cover located on the chassis;
 - a fetch box;
 - a pill box; and
 - a pill fetching device, comprising a rotation arm and a picker, and the rotation arm being configured to move into the pill box to fetch a pill and move the picker from the pill box to the fetching box.
2. The automatic pill dispenser of claim 1, further comprising a driving device for driving the rotation arm, wherein the driving device comprises a driving motor and a driving pole, the driving motor is configured to drive the driving pole to rotate, and the driving pole is connected to the rotation arm.
3. The automatic pill dispenser of claim 1, further comprising a lifting device for lifting the picker; wherein the lifting device comprises a lifting motor, a lifting gear and a lifting worm; the picking comprises a body and a mounting portion; the lifting gear meshes with the lifting worm; the lifting gear is driven by the lifting motor; and the mounting portion is configured to move along the lifting worm.
4. The automatic pill dispenser of claim 1, wherein the picker comprises a gasket to contact the pill.
5. The automatic pill dispenser of claim 1, wherein a top surface and an operating surface is defined in the top cover, an operating panel is located on the operating surface, and the operating surface is oblique to the top surface.
6. The automatic pill dispenser of claim 1, wherein a cross section of the pill box is substantially trapezoidal.
7. The automatic pill dispenser of claim 1, wherein the pill box comprises an oblique bottom wall.
8. The automatic pill dispenser of claim 1, further comprising an image fetching device, wherein the image fetching device comprises a bracket and a camera, located on the bracket to detect the pill.
9. The automatic pill dispenser of claim 1, wherein a pill position opening is defined in the top cover, and the top cover further comprises a moveable door for covering the pill position opening.

10. The automatic pill dispenser of claim 1, wherein a pill fetching opening is defined in the top cover for removing the fetching box.

11. An automatic pill dispenser comprising:
 - a chassis;
 - a top cover located on the chassis;
 - a fetch box;
 - a pill box; and
 - a pill fetching device, comprising a rotation arm and a picker, the picker being configured to suck pill from the pill box, and the rotation arm being configured to rotate the picker from the pill box to the fetching box.
12. The automatic pill dispenser of claim 11, further comprising a driving device for driving the rotation arm, wherein the driving device comprises a driving motor and a driving pole, the driving motor is configured to drive the driving pole to rotate, and the driving pole is connected to the rotation arm.
13. The automatic pill dispenser of claim 11, further comprising a lifting device for lifting the picker; wherein the lifting device comprises a lifting motor, a lifting gear and a lifting worm; the picking comprises a body and a mounting portion, the lifting gear meshes with the lifting worm; the lifting gear is driven by the lifting motor; and the mounting portion is configured to move along the lifting worm.
14. The automatic pill dispenser of claim 11, wherein the picker comprises a gasket to contact the pill.
15. The automatic pill dispenser of claim 11, wherein a top surface and an operating surface is defined in the top cover, an operating panel is located on the operating surface, and the operating surface is oblique to the top surface.
16. The automatic pill dispenser of claim 11, wherein a cross section of the pill box is substantially trapezoidal.
17. The automatic pill dispenser of claim 11, wherein the pill box comprises an oblique bottom wall.
18. The automatic pill dispenser of claim 11, further comprising an image fetching device, wherein the image fetching device comprises a bracket, and a camera located on the bracket.
19. The automatic pill dispenser of claim 11, wherein a pill position opening is defined in the top cover, the pill box is configured to be removed from the pill position opening, and the top cover further comprises a moveable door for covering the pill position opening.
20. The automatic pill dispenser of claim 11, wherein a pill fetching opening is defined in the top cover for removing the fetching box.

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