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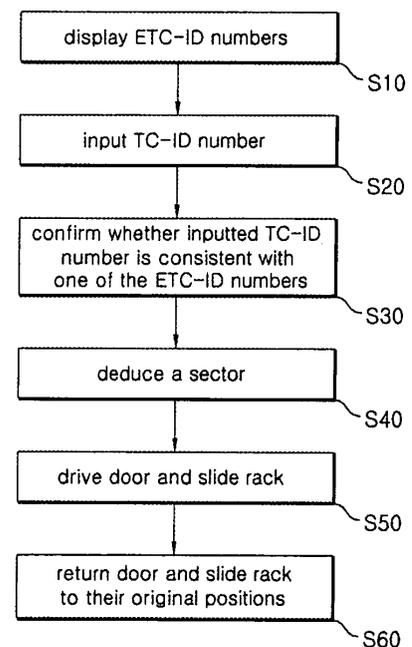
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(54) **Method and apparatus for driving slide racks of tablet automatic packing machine**

(57) A method and apparatus for driving slide racks of a tablet automatic packing machine are disclosed. The apparatus includes a plurality of slide racks appeared as doors are opened inside of a main body and a plurality of tablet cassettes installed in the doors and the plurality of slide racks. The apparatus is operated such that, when tablets are exhausted in tablet cassettes installed in the slide rack, the slide rack is automatically withdrawn by operations of a remote control device. The method and apparatus can prevent unnecessary operations of a motor such that, when tablets are exhausted in a tablet cassette, only a sector including the empty tablet cassette can be withdrawn under control of the control unit, in which the sector is one of a plurality of sectors included in one of a plurality of slide racks, thereby easily confirming a corresponding tablet cassette.

Fig. 1



## Description

### BACKGROUND OF THE INVENTION

#### Field of the Invention

**[0001]** The present invention relates to a tablet automatic packing machine, and more particularly to an apparatus for driving slide racks of a tablet automatic packing machine, in which a plurality of slide racks appeared as doors are opened are included inside of a main body and a plurality of tablet cassettes are installed in the doors and the plurality of slide racks, and a method for driving slide racks of a tablet automatic packing machine, in which, when tablets are exhausted in tablet cassettes installed in the slide rack, the slide rack is automatically withdrawn by operations of a remote control device.

#### Description of the Related Art

**[0002]** A prior art tablet automatic packing machine includes a plurality of tablet cassettes which are installed in the front of a door thereof and both sides of slide racks thereof. When prescription data is inputted into a control unit, corresponding tablet cassettes dispense tablets through a hopper under control of the control unit based on dosage units. After that, the dispensed tablets are contained in pouches on which dosage and administration information is printed by a printing unit. Each opening of the pouches containing the tablets is successively sealed by heat in a sealing unit while the pouches are conveyed.

**[0003]** During operation of the tablet automatic packing machine, if tablets are exhausted in a tablet cassette in the slide rack, a user should open the door and withdraw the slide rack to confirm the tablet cassette identification number of the tablet cassette. After that, the user refills the tablets in the tablet cassette.

**[0004]** As such, in the prior art tablet automatic packing machine, in order to refill the tablets in the tablet cassette, a user must withdraw every tablet cassette to locate tablet cassettes in which tablets are exhausted and find out the tablet cassette identification number thereof. After that, the tablet cassette is refilled with tablets. Therefore, the prior art tablet automatic packing machine has disadvantages in that it takes a great deal of time to refill the tablets in a corresponding tablet cassette as the door and the slide racks in which a plurality of tablet cassettes, such as approximately 100, are installed should be withdrawn directly and, after refilling, returned to their original positions.

### SUMMARY OF THE INVENTION

**[0005]** Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide an apparatus for driv-

ing slide racks of a tablet automatic packing machine capable of easily withdrawing a slide rack including a tablet cassette in which tablets are exhausted, an empty tablet cassette, as the slide rack is confirmed and withdrawn by a remote control device, and a method therefor.

**[0006]** It is another object of the present invention to provide an apparatus for driving slide racks of a tablet automatic packing machine capable of withdrawing a slide rack corresponding to a sector including a tablet cassette in which tablets are exhausted, an empty tablet cassette, thereby preventing unnecessary operations of a motor, wherein the slide rack is one of a plurality of slide racks each of which is divided into a plurality of sectors, the sector is one of the plurality of sectors and includes a predetermined number of tablet cassettes including the empty tablet cassette.

**[0007]** In accordance with an aspect of the present invention, the above and other objects can be accomplished by the provision of a method for driving slide racks of a tablet automatic packing machine comprising the steps of: confirming tablet cassette identification numbers of tablet cassettes in which tablets are exhausted, empty tablet cassette identification numbers, in a control unit and displaying the empty tablet cassette identification numbers on a display; inputting tablet cassette identification number from the outside in the control unit; deducing a sector based on confirmation of whether there is a corresponding tablet cassette identification number in the control unit, in which the sector is in one of a plurality of sectors previously allocated in one of a plurality of slide racks in the control unit; and withdrawing a slide rack corresponding to the deduced sector including the empty tablet cassette corresponding to the corresponding empty tablet cassette identification number as a motor drives a slide rack corresponding to the deduced sector.

**[0008]** Preferably, the method may further comprise a step of dividing each slide rack into a plurality of sectors and a step of inputting tablet cassette identification numbers into the control unit, wherein the tablet cassette identification numbers correspond to tablet cassettes included in each sector, respectively.

**[0009]** Preferably, the method may further comprise the step of returning a door and the slide rack to their original positions according to a return signal.

**[0010]** Preferably, the method may further comprise a step of performing power ON/OFF operations for supplying/breaking power to a tablet automatic packing machine including a door and the slide rack according to power ON/OFF signals inputted from the outside.

**[0011]** Preferably, the method may further comprise a step of a step of stopping drive operations of the door and the slide racks in the event that an emergency stop signal is inputted from the outside.

**[0012]** In accordance with another aspect of the present invention, there is provided an apparatus for driving slide racks of a tablet automatic packing machine

including doors installed on the front thereof and a plurality of slide racks each of which installs a plurality of tablet cassettes inside a main body thereof, the apparatus comprising: a control unit for storing tablet cassette identification numbers included in one of a plurality of sectors, wherein each of the plurality of slide racks is divided into the plurality of sectors; an inputting unit for inputting empty tablet cassette identification numbers into the control unit; a driving unit for inserting/ejecting slide rack and for opening/closing the door, which includes the tablet cassette corresponding to tablet cassette identification number inputted by the inputting unit in the control unit; and a sensing unit for sensing and inputting an inserting/ejecting position of the slide rack to the control unit, wherein the sensing unit is installed at the upper side of the slide rack.

**[0013]** Preferably, the inputting unit may include a remote signal receiving unit formed in the front of the main body such that the remote signal receiving unit can receive signals for tablet cassettes through a remote control device and input the signals to the control unit.

**[0014]** Preferably, the inputting unit may include a touch screen electrically connected to the control unit such that tablet cassette identification numbers of tablet cassettes to be withdrawn is inputted to the control unit, wherein the touch screen is connected to the main body.

**[0015]** Preferably, the sensing unit may include at least more than one proximity sensor at the upper side of each the slide rack, which are evenly spaced from one another, and sensing plates sensed by the proximity sensors, which are installed at the rear part of the slide rack, wherein the sensing unit senses and inputs the inserting/ejecting positions of the slide rack to the control unit.

**[0016]** Preferably, the control unit may compare inputted tablet cassette identification number with the tablet cassette identification numbers in each of the plurality of sectors, which are stored in the control unit, and deduces a sector if the inputted tablet cassette identification number is consistent with one of the tablet cassette identification numbers to withdraw the deduced sector to the outside.

**[0017]** Preferably, the control unit may include further comprises a display for displaying the empty tablet cassette tablet identification numbers by the control unit and tablet cassette identification numbers inputted through the inputting unit, wherein the display is formed in the front of the main body.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0018]** The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a schematic block diagram in flowchart de-

scribing a method for driving a slide rack of tablet automatic packing machine according to the present invention;

Fig. 2 is a flow chart describing a method for driving a slide rack of a tablet automatic packing machine according to the present invention;

Fig. 3 is a front view of an apparatus for driving a slide rack of tablet automatic packing machine according to the present invention;

Fig. 4 is a cross-sectional front view of Fig. 3;

Fig. 5 is an enlarged view of portion A of Fig. 4;

Fig. 6 is an enlarged view of portion B of Fig. 4;

Fig. 7 is a cross-sectional top view of Fig. 3;

Fig. 8a is a view illustrating operation of the apparatus for driving a slide rack according to the present invention;

Fig. 8b is a cross-sectional top view illustrating a state in which doors are opened;

Fig. 8c is a cross-sectional top view illustrating a state in which a slide rack is withdrawn;

Fig. 9 is a front view of an apparatus for driving a slide rack of a tablet automatic packing machine according to another embodiment of the present invention;

Fig. 10 is an enlarged view of a primary part of Fig. 9; and

Fig. 11 is a view illustrating operation of the primary part of Fig. 9.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0019]** With reference to the attached drawings, a detailed description of the embodiment of the present invention is described below.

**[0020]** Fig. 1 is a schematic block diagram, in flowchart describing a method for driving a slide rack of a tablet automatic packing machine according to the present invention.

**[0021]** As shown in Fig. 1, when confirming tablet cassette identification of a tablet cassette in which tablets are exhausted, which is hereinafter referred to as empty tablet cassette identification (ETC-ID) numbers, the control unit stores the ETC-ID numbers (referred to as stored ETC-ID numbers) and displays them on a display (referred to as displayed ETC-ID numbers) in step S10. Tablet cassette identification (TC-ID) numbers based on the displayed ETC-ID numbers are inputted to the control unit in order from the outside via predetermined inputting means in step S20. One of the TC-ID numbers inputted from the outside (referred to as inputted TC-ID number) is compared with the stored ETC-ID numbers in the control unit to confirm whether the inputted TC-ID number is consistent with one of the stored ETC-ID numbers in step S30. If the inputted TC-ID number is consistent with one of them, a tablet cassette corresponding to the stored ETC-ID number (or the inputted TC-number) is confirmed whether the tablet cassette is

in one of sectors previously allocated in each of a plurality of slide racks, this process is referred to as a sector deducing step, in step S40. After that, only the deduced sector is withdrawn from a main body of the tablet automatic packing machine as a motor operates in step S50. A door and the slide racks, which are previously operated, are returned to their original positions as the motor operates in step S60.

**[0022]** More specifically, in the displaying step S10, a control unit serves to display ETC-ID numbers on a display to make a user recognize them.

**[0023]** In the inputting step S20, TC-ID numbers based on ETC-ID numbers displayed on the display are inputted into the control unit by a remote control device or via a touch screen connected to a main body of the tablet automatic packing machine.

**[0024]** In the confirming step S30, the control unit determines whether the inputted TC-ID number inputted from the outside is consistent with the stored ETC-ID numbers corresponding to tablet cassettes in which tablets are exhausted, which are installed in slide racks.

**[0025]** Namely, when a user incorrectly inputs a TC-ID number which does not correspond to an ETC-ID number of any tablet cassette installed in the slide rack, with reference to the displayed ETC-ID numbers, the control unit displays an error message on the display or sounds an alarm through a speaker to inform the user that the inputted TC-ID number is not correct and another TC-ID number should be re-input thereto. Therefore, the confirming step does not proceed to a next step until a correct TC-ID number consistent with one of the ETC-ID numbers is inputted thereto.

**[0026]** When a TC-ID number inputted by the user is consistent with one of the ETC-ID numbers of tablet cassettes in which tablets are exhausted, the confirming step proceeds to the next step.

**[0027]** In the sector deducing step S40, each of a plurality of slide racks is divided into a plurality of sectors, each of which includes predetermined TC-ID numbers corresponding respectively to tablet cassettes, which are stored in the control unit associated with the sector. A sector including a corresponding TC-ID number is deduced in the control unit, in which the control unit stores the TC-ID numbers associated with the sectors.

**[0028]** More specifically, before performing power ON/OFF operations, each slide rack is divided into a plurality of sectors such that each sector includes a predetermined numbers of TC-ID numbers and the TC-ID numbers associated with sectors are inputted into the control unit, which is referred to as a sector dividing step. Therefore, if a TC-ID number is inputted and consistent with an ETC-ID number in the control unit, a position of a sector associated with a corresponding tablet cassette is deduced among the divided sectors.

**[0029]** In the door and slide rack driving step S50, the control unit drives a drive unit for doors and slide racks to withdraw a slide rack corresponding to the deduced sector to the outside, consequently the empty tablet cas-

sette corresponding to the ETC-ID number associated with the deduced sector can be withdrawn to the outside.

**[0030]** In the return-driving step S60, when the slide rack corresponding to the deduced sector is withdrawn to the outside, a user searches for an empty tablet cassette to refill corresponding tablets therein. After that, the user inputs a return signal into the control unit via a remote control device such that the control unit drives the door and slide rack to return to their original positions.

**[0031]** Also, according to the present invention, power ON/OFF operations for driving the tablet automatic packing machine including the door and the slide rack are performed by the remote control device. Also, the power ON/OFF operations may be performed by a touch screen connected to the main body of the tablet automatic packing machine.

**[0032]** Meanwhile, the door and the slide rack may stop being driven by an emergency stop signal inputted in remote control fashion, for example, a remote control device and a touch screen, which is needed in processes for opening/closing and installing/ejecting the door and the slide rack.

**[0033]** Fig. 2 is a flow chart describing a method for driving a slide rack of tablet automatic packing machine according to the present invention.

**[0034]** As shown in Fig. 2, in order to refill tablets in an empty tablet cassette a power key button of a remote control device or a power key touch part of a touch screen connected to the main body is activated to supply power to the tablet automatic packing machine in step S01.

**[0035]** When a power ON signal is inputted to the control unit via the power key button of the remote control device or the power key touch part of the touch screen, the control unit supplies power to the tablet automatic packing machine in step S02.

**[0036]** The control unit confirms whether tablets are exhausted in respective tablet cassettes via determination means connected thereto in step S03.

**[0037]** The control unit displays the ETC-ID numbers on a display installed on a front side of the tablet automatic packing machine and on a touch screen connected to the main body so that a user can easily recognize the ETC-ID numbers in step S10.

**[0038]** A TC-ID number with reference to the displayed ETC-ID numbers is inputted to the control unit by the remote control unit or via the touch screen to refill tablets in the tablet cassette corresponding to one of the ETC-ID numbers in step S20.

**[0039]** The control unit inputs and displays the currently inputted TC-ID number on the display or the touch screen to inform the user that the currently inputted TC-ID number is correctly input thereto in step S21.

**[0040]** The control unit determines whether the inputted TC-ID number is consistent with one of the ETC-ID numbers previously stored therein in step S30.

**[0041]** If the inputted TC-ID number is not consistent with one of the stored ETC-ID numbers, a message "RE-INPUT" is shown on the touch screen or the display. Thus, according to negative determination, the loop is returned to step S20 for inputting a TC-ID number.

**[0042]** If the inputted TC-ID number is consistent with one of the stored ETC-ID numbers, the control unit deduces a corresponding sector of a slide rack in step S40. Here, each of a plurality of slide racks is divided into a plurality of sectors each of which includes predetermined TC-ID numbers corresponding respectively to tablet cassettes, which are stored in the control unit associated with the sectors.

**[0043]** In order that the sector of the slide rack deduced by the control unit can be withdrawn to the outside, the control unit drives the door and the slide rack such that only the sector of the slide rack containing the empty tablet cassette can be withdrawn to the outside.

**[0044]** When the empty tablet cassette corresponding to the inputted TC-ID number is withdrawn to the outside as the door and the slide rack are driven, a user can refill corresponding tablets therein. After that, the control unit confirms whether another TC-ID number corresponding to another empty tablet cassette is inputted thereto by a remote control device or a touch screen in step S51.

**[0045]** If another TC-ID number is inputted thereto, the control unit repeatedly performs the steps S10 to S51 until all the empty tablet cassettes are refilled.

**[0046]** After completion of tablet-refill tablets in the tablet cassettes, a return signal is inputted to the control unit via the remote control device or the touch screen in step S61.

**[0047]** The control unit inputting the return signal drives the door and the slide rack to be placed at their original positions, respectively, in step 60.

**[0048]** After that, an OFF signal is inputted into the control unit via the remote control device and the touch screen in step S71.

**[0049]** The control unit inputting the OFF signal breaks power to the tablet automatic packing machine to terminate its operation in step 70.

**[0050]** Fig. 3 is a front view of an apparatus for driving a slide rack of a tablet automatic packing machine according to the present invention, and Fig. 4 is a cross-sectional front view of Fig. 3.

**[0051]** As shown in the drawings, the tablet automatic packing machine includes a pair of doors 2 at upper front side of a main body 1 and a plurality of slide racks 3 installed inside the main body 1 as shown by opening the doors.

**[0052]** A plurality of tablet cassettes 4 are installed at the front side of the doors 2 and both sides of the slide racks 3. Corresponding tablet cassettes 4 discharge tablets to a hopper 6 according to a control of a control unit 5 inputting prescription data based on dosage units. The tablets discharged via the hopper 6 are contained in pouches on which dosage and administration information is printed by a printing unit 7. The pouches con-

taining the tablets are moving and successively sealed by heat in a sealing unit 8.

**[0053]** Also, the doors 2 are implemented to be manually opened or closed by grips attached thereto or to be automatically opened or closed by an additional driving unit.

**[0054]** The slide racks 3 include driving units installed at the lower sides thereof, respectively, such that they are automatically inserted or ejected from the inside to the outside of the main body, and sensing units 30 installed at the upper sides thereof such that their displacements can be sensed.

**[0055]** An inputting unit 10, such as a remote control signal receiving unit 11, formed on the front of the main body 1 receives wireless signals such as signals for TC-ID numbers from a remote control device to input them to the control unit 5,

**[0056]** The control unit 5 inputting the signals for TC-ID numbers from the remote controlling signal receiving unit 11 display the TC-ID numbers on a display 40 installed on the front side of the main body 1 such that a user can easily recognize that a currently inputted TC-ID is correctly input thereto via a remote control device. The display 40 may be implemented with various types of displays such as a segment type display, an LCD, etc.

**[0057]** In addition, the display 40 displays ETC-ID numbers confirmed by the control unit 5 such that a user can easily recognize the empty tablet cassettes therefrom.

**[0058]** Fig. 5 is an enlarged view of portion A of Fig. 4, and Fig. 6 is an enlarged view of portion B of Fig. 4.

**[0059]** As shown in the drawings, the slide rack 3 includes the sensing unit 30 at the upper side thereof and the driving unit 20 at the lower side.

**[0060]** Here, the sensing unit 30 includes at least more than one proximity sensor 31 at the upper side of each slide rack 3 and a sensing plate 32 sensed by the proximity sensor 31, which is installed at a rear end of each slide rack 3.

**[0061]** The sensing unit 30 operates such that, when the sensing plate 32 passes by the proximity sensor 31 as the slide rack 3 moves together with the sensing plate 32, the proximity sensor 31 senses the sensing plate 32 and thusly sensed information is inputted to the control unit. Therefore, the control unit can recognize the positions of the slide racks 3.

**[0062]** The driving unit 20 includes a motor 21 installed at the lower surface of the slide rack 3, and a rack 23 installed inside rail 3a such that the rack 23 gears cogs of a gear 22.

**[0063]** The driving unit 20 operates such that, when a motor 21 is driven according to a control of the control unit, the gear 22 fixed to shaft of the motor 21 rotates to make the slide rack 3 shift along the rack 23 within the rail 3a

**[0064]** Fig. 7 is a cross-sectional top view of Fig. 3.

**[0065]** As shown in the drawing, a pair of doors 2 are

installed at the front side of the main body 1 inside of which a plurality of slide racks 3 are contained. The proximity sensors 31, for example, n (positive integer), are arranged to be evenly spaced from one another at the upper side of the main body 1 corresponding to each of the slide racks 3. Each slide rack 3 has n-1 sectors (positive integer).

**[0066]** The doors 2 are implemented to be manually opened or closed by pulling grips attached thereto or to be automatically opened or closed by a driving unit controlled by the control unit.

**[0067]** The driving unit 20 automatically opening the doors is implemented with hydraulic cylinders 24 each of which both ends are rotatably and hingably fixed to the door 2 and the main body 1. Here, it will be easily appreciated that the driving unit 20 according to the present invention is not limited to the hydraulic cylinders 24, but implemented with various opening/closing means.

**[0068]** The door 2 has a receiving groove 2a formed inside thereof to accept a remote control unit when the door 2 is manually opened/closed.

**[0069]** Fig. 8a is a view illustrating a state wherein the apparatus for driving a slide rack according to the present invention operates, Fig. 8b is a cross-sectional top view illustrating a state in which doors are opened, and Fig. 8c is a cross-sectional top view illustrating a state in which a slide rack is withdrawn.

**[0070]** As shown in the drawings, when a user inputs TC-ID numbers corresponding to empty tablet cassettes using a remote control device R, the remote control signal receiving unit 11 receives signals for the TC-ID numbers to input them to the control unit 5.

**[0071]** The control unit 5 inputting the signals for the TC-ID numbers displays the TC-ID numbers on the display 40 to make a user recognize them and deduce a sector of corresponding slide rack 3.

**[0072]** Here, the sector is defined such that each of slide racks 3 are a plurality of sectors and a plurality of tablet cassettes installed at each of the slide racks 3 are divided into groups of tablet cassettes of predetermined numbers, thereby corresponding each sector to each group. A sector including a specific tablet cassette can be withdrawn.

**[0073]** For example, there are three slide racks in the tablet automatic packing machine, if a first slide rack has 60 tablet cassettes installed therein, the first slide rack can be divided into three sectors such that a sector S1 includes 20 tablet cassettes allocated TC-ID numbers 1 to 20, respectively, a sector S2 includes 20 tablet cassettes allocated TC-ID numbers 21 to 40, respectively, and a sector S3 includes 20 tablet cassettes allocated TC-ID numbers 41 to 60.

**[0074]** Similarly, a second slide rack having 60 tablet cassettes allocated respectively to TC-ID numbers 61 to 120 can be divided into three sectors S4, S5 and S6 each of which has 20 tablet cassettes. Also, a third slide rack having 60 tablet cassettes allocated respectively to

TC-ID numbers 121 to 180 can be divided into three sectors S7, S8 and S9 each of which has 20 tablet cassettes.

**[0075]** As such, under a state wherein each sector includes 20 tablet cassettes, if a user inputs a TC-ID number, for example, 115, to the control unit through the remote control device, the control unit 5 displays the inputted TC-ID number on a display 40 and then deduces a sector S6 including a tablet cassette corresponding to the inputted TC-ID number, 115.

**[0076]** The control unit 5 drives the hydraulic cylinder 24 to open the doors 2 in order to withdraw the deduced sector S6 and operates the driving unit 20 of the second slide rack 3, thereby drawing the sector S6 in which a tablet cassette corresponding to the inputted TC-ID number, 115, is installed.

**[0077]** Namely, the control unit 5 recognizes displacement of the second slide rack 3 by the sensing unit 30, thus the control unit 5 operates the driving unit 20 to withdraw only the sector S6 including corresponding tablet cassette.

**[0078]** In other words, the slide rack 3 is driven to withdraw only the deduced sector S6 to the outside such that the sensing plate 32 is moved from the last proximity sensor to the first proximity sensor of four proximity sensors 31 aligned at the upper side of the second slide rack 3.

**[0079]** As such, when the sector S6 of the second slide rack 3 is withdrawn, the tablet cassette corresponding to the TC-ID number, 115, is refilled with corresponding tablets by a user. After refilling the tablet cassette, the user inputs a return signal to the control unit 5 via the remote control device such that the doors 2 and the slide rack 3 are returned to their original positions under the control of the control unit.

**[0080]** Fig. 9 is a front view of an apparatus for driving a slide rack of a tablet automatic packing machine according to another embodiment of the present invention, Fig. 10 is an enlarged view of a primary part of Fig. 9, and Fig. 11 is a view illustrating a state wherein the primary part of Fig. 9 operates.

**[0081]** As shown in the drawings, the tablet automatic packing machine includes doors 2 installed in the front of the main body 1 thereof, inside of which a plurality of slide racks (not shown) are installed, a plurality of tablet cassettes 4 installed in the doors and the slide racks, and an input unit 10 electrically connected to a control unit 5, in which the inputting unit 10 is installed at one side of the main body 1.

**[0082]** Here, the inputting unit 10 is implemented with a touch screen 12 such that it inputs TC-ID number and send the inputted TC-ID number to the control unit 5.

**[0083]** As shown in Fig. 10, the touch screen 12 is composed of a number input portion 121, a power ON/OFF input portion 122, an emergency stop input portion 123, a return signal input portion 124, an input number display portion 125, etc. Therefore, the control unit 5 inputs a corresponding signal from the touch screen 12

as a corresponding portion of the touch screen 12 is touched by a user.

**[0084]** Here, the number input portion 121 serves to input TC-ID numbers corresponding to empty tablet cassettes to the control unit 5. The power ON/OFF inputting portion 122 serves to input power ON/OFF signals to the control unit 5 such that the control unit 5 performs power ON/OFF operations for supplying power to the tablet automatic packing machine. The emergency stop input portion 123 serves to input an emergency stop signal to the control unit 5 to perform an emergent stop operation of the driving unit 20. The return signal input portion 124 serves to input a return signal to the control unit such that the door 2 and slide rack (not shown) return to their original positions after the tablet cassettes 4 are refilled with tablets. The inputting number display portion 125 displays inputted TC-ID numbers to make a user sure that his/her currently inputted TC-ID numbers are correct.

**[0085]** According to the TC-ID numbers inputted to the control unit 5 via the touch screen 12, the control unit 5 controls the side rack (not shown) to be withdrawn or returned through the driving unit 20 based on a position of the slide rack sensed by the sensing unit 30.

**[0086]** As apparent from the above description, the method and apparatus for driving slide racks of the tablet automatic packing machine according to the present invention has an advantage in that, since the door and the slide racks can be controlled by a remote control device or a touch screen, endeavor for manually opening the doors and withdrawing/replacing the slide racks, which install tablet cassettes of over 100, can be reduced to refill tablets in the tablet cassettes.

**[0087]** Also, the method and apparatus according to the present invention can make a user easily confirm position of the empty tablet cassettes.

**[0088]** In addition, the method and apparatus can prevent unnecessary operations of a motor such that only a sector including an empty tablet cassette is withdrawn, in which the sector is one of a plurality of sectors included in one of a plurality of slide racks, thereby preventing consumption time of operation time.

**[0089]** Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

## Claims

1. A method for driving slide racks of a tablet automatic packing machine comprising the steps of:

confirming tablet cassette identification numbers of tablet cassettes in which tablets are exhausted, empty tablet cassette identification

numbers, in a control unit and displaying the empty tablet cassette identification numbers on a display;

inputting tablet cassette identification number from the outside to the control unit;

deducing a sector based on confirmation of whether there is a corresponding tablet cassette identification number in the control unit, in which the sector is in one of a plurality of sectors previously allocated in one of a plurality of slide racks in the control unit; and

withdrawing a slide rack corresponding to the deduced sector including the empty tablet cassette corresponding to the corresponding empty tablet cassette identification number as a motor drives the deduced sector.

2. The method as set forth in claim 1, further comprising:

returning a door and the slide rack to their original positions according to a return signal.

3. The method as set forth in claim 1, further comprising:

performing power ON/OFF operations for supplying/breaking power to a tablet automatic packing machine including a door and the slide rack according to power ON/OFF signals inputted from the outside.

4. The method as set forth in claim 3, further comprising:

dividing each slide rack into a plurality of sectors; and  
inputting tablet cassette identification numbers into the control unit, wherein the tablet cassette identification numbers correspond to tablet cassettes included in each sector, respectively.

5. The method as set forth in claim 1, further comprising:

stopping drive operations of the door and the slide racks according to an emergency stop signal inputted from the outside.

6. An apparatus for driving slide racks of a tablet automatic packing machine including doors installed on the front thereof and a plurality of slide racks each of which includes a plurality of tablet cassettes inside a main body thereof, the apparatus comprising:

a control unit for storing tablet cassette identification numbers included in one of a plurality

of sectors, wherein each of the plurality of slide racks is divided into the plurality of sectors;  
 an inputting unit for inputting empty tablet cassette identification numbers into the control unit;

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a driving unit for inserting/ejecting a slide rack and for opening/closing the door, which includes the tablet cassette corresponding to the tablet cassette identification number inputted by the inputting unit in the control unit; and  
 a sensing unit for sensing and inputting a inserting/ejecting position of the slide rack to the control unit, wherein the sensing unit installed at the upper side of the slide rack.

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7. The apparatus as set forth in claim 6, wherein the inputting unit includes a remote signal receiving unit formed in the front of the main body such that the remote signal receiving unit can receive signals for tablet cassettes through a remote control device to input them to the control unit. 20
8. The apparatus as set forth in claim 6, wherein the inputting unit includes a touch screen electrically connected to the control unit such that it can input tablet cassette identification numbers to be withdrawn to the control unit, wherein the touch screen is connected to the main body. 25
9. The apparatus as set forth in claim 6, wherein the sensing unit includes at least more than one proximity sensor at the upper side of each slide rack, which are evenly spaced from one another, and sensing plates sensed by the proximity sensors, which are installed at the rear part of the slide rack, wherein the sensing unit senses and inputs the inserting/ejecting positions of the slide rack to the control unit. 30  
35
10. The apparatus as set forth in claim 6, wherein the control unit includes inputted tablet cassette identification number with the tablet cassette identification numbers in each of the plurality of sectors, which are stored in the control unit, and deduces a sector if the inputted tablet cassette identification number is consistent with one of the tablet cassette identification numbers to withdraw the deduced sector to the outside. 40  
45
11. The apparatus as set forth in claim 6, further comprising a display for displaying the empty tablet cassette tablet identification numbers by the control unit and tablet cassette identification numbers inputted through the inputting unit, wherein the display is formed in the front of the main body. 50  
55

Fig.1

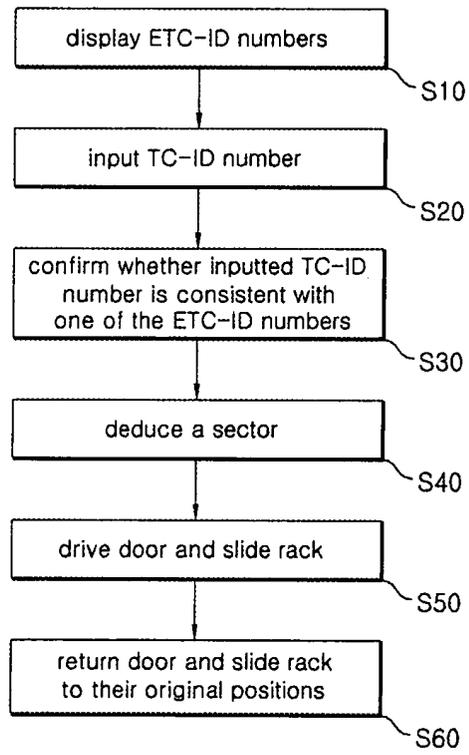


Fig.2

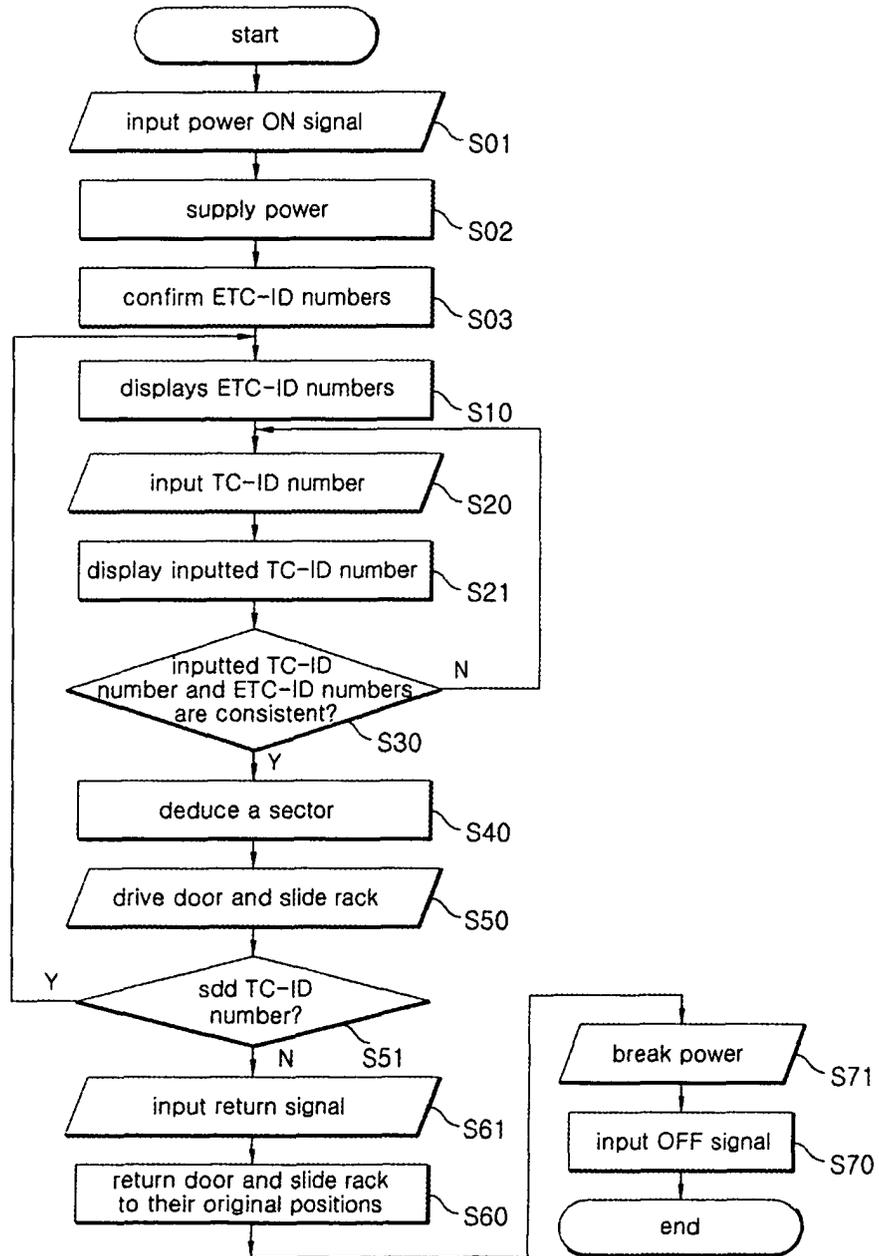


Fig.3

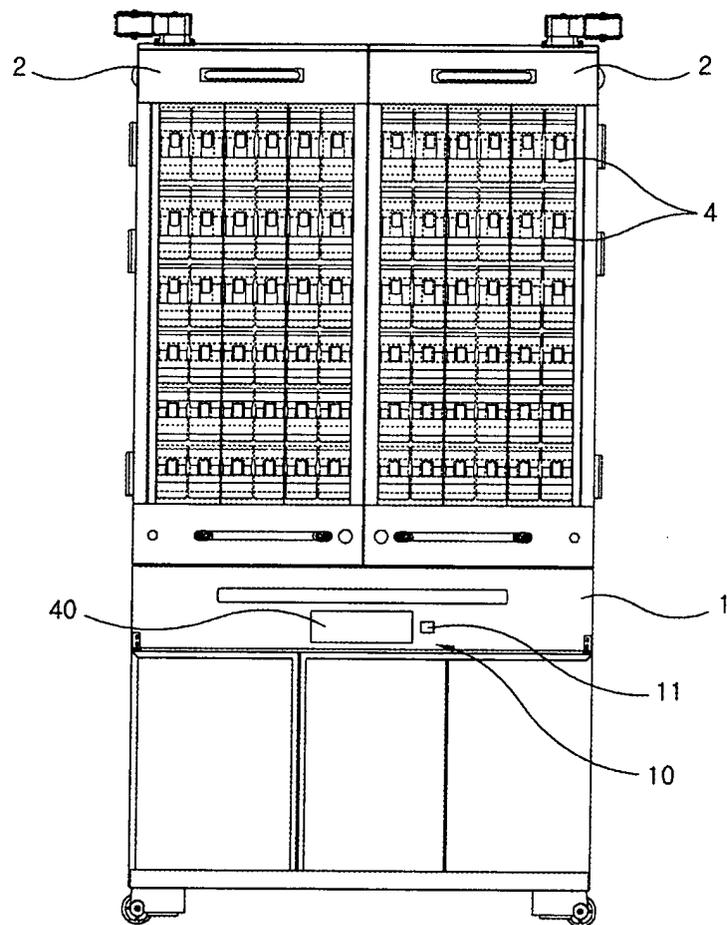


Fig.4

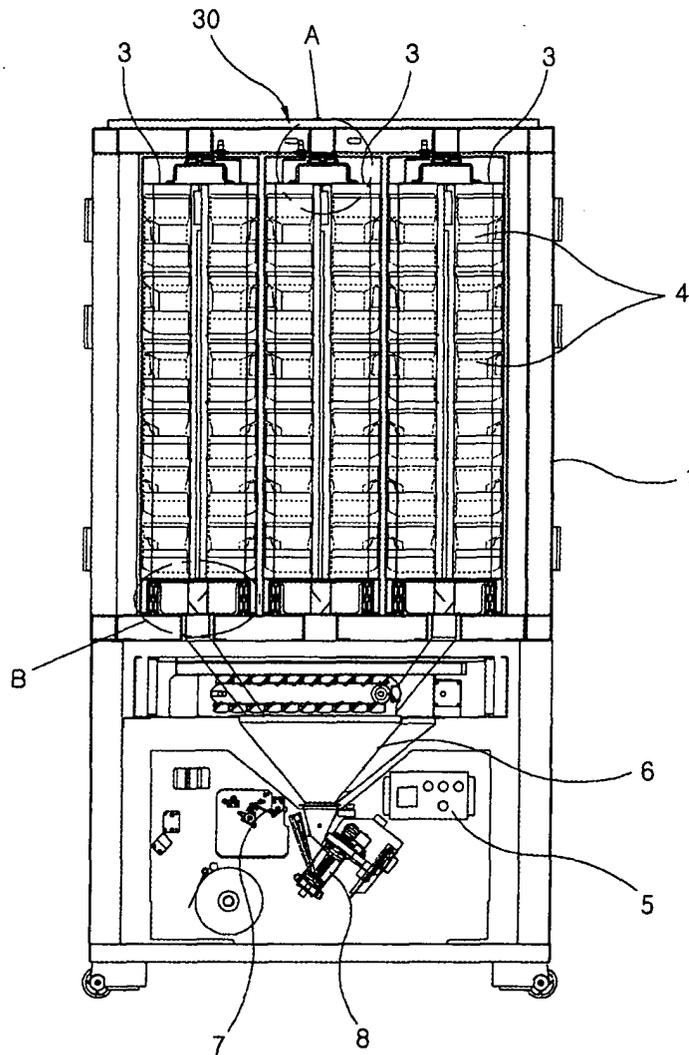


Fig.5

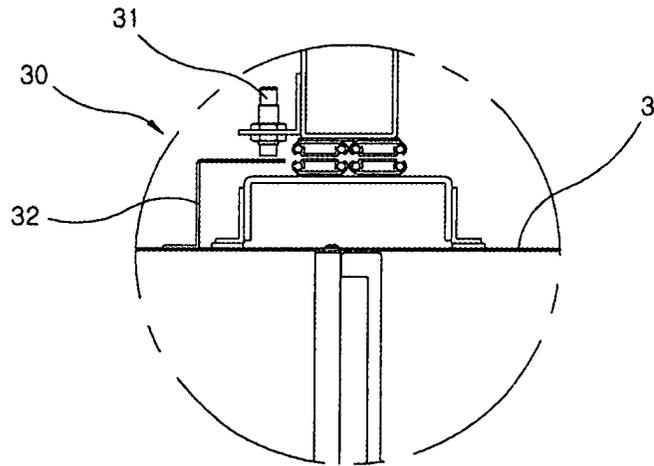


Fig.6

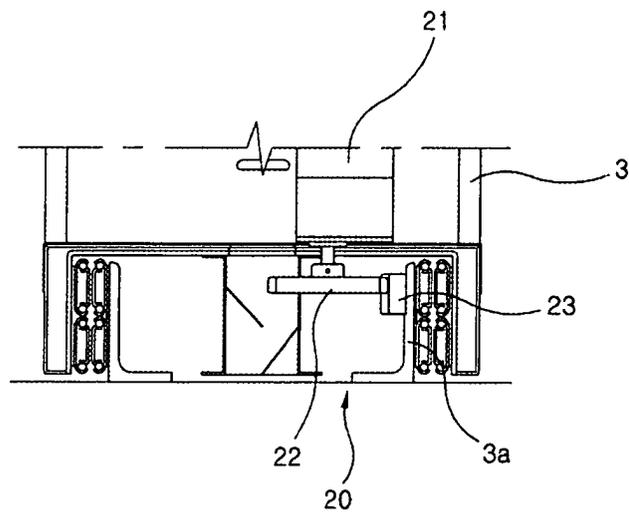


Fig.7

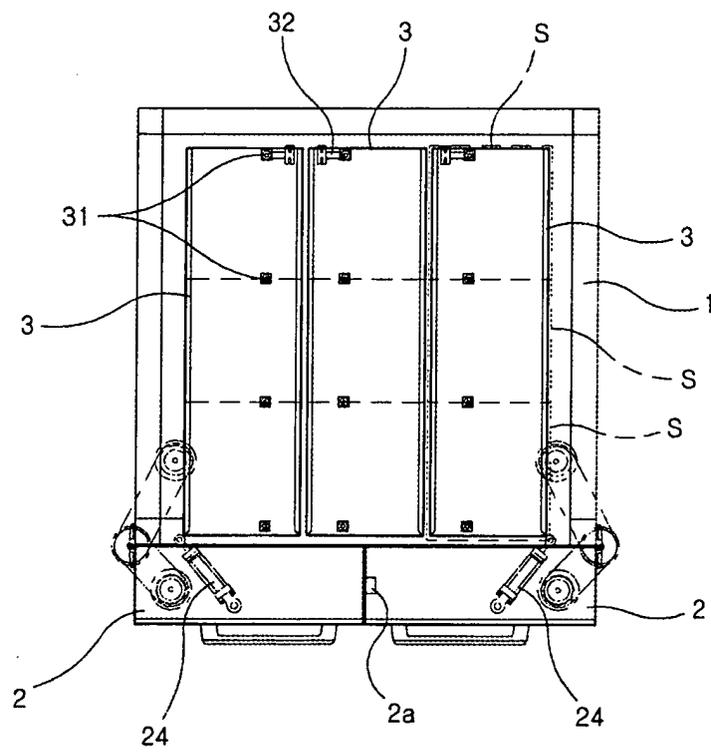


Fig.8a

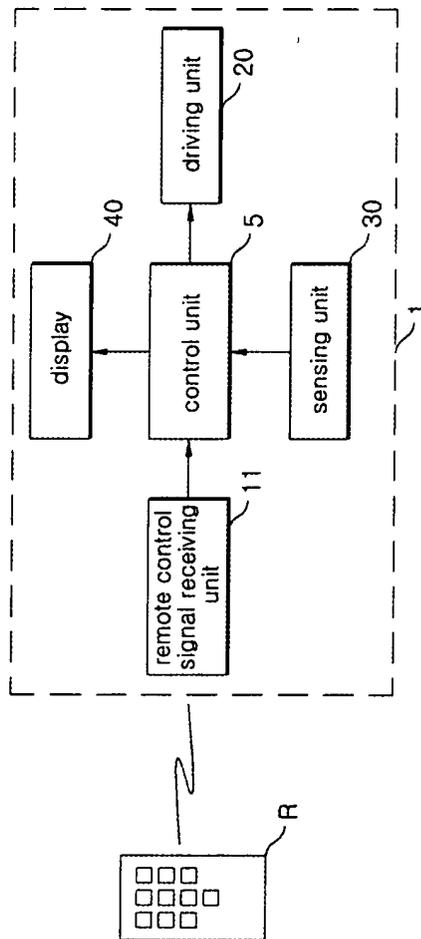


Fig.8b

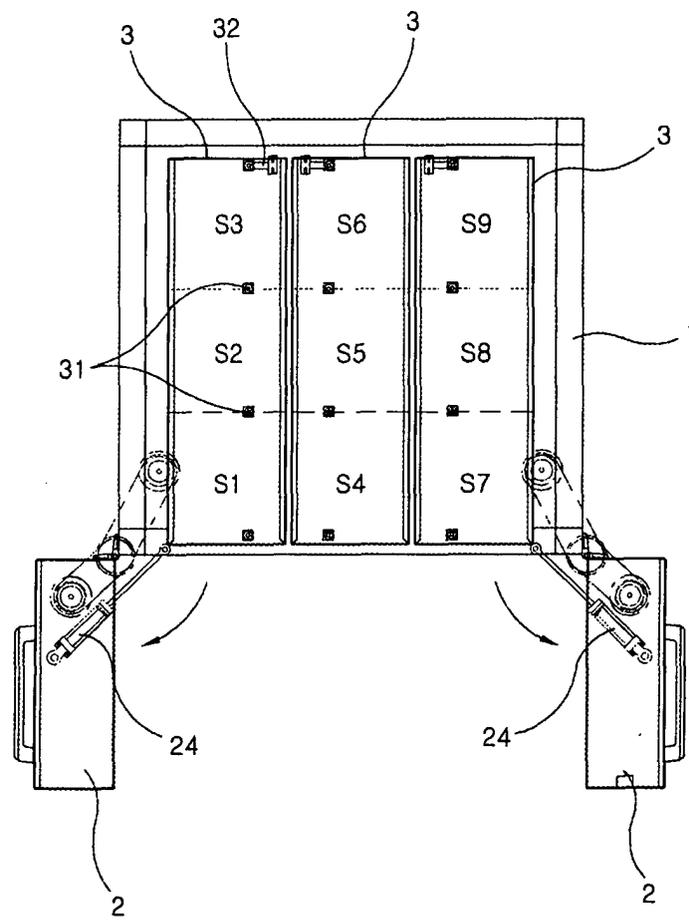


Fig.8c

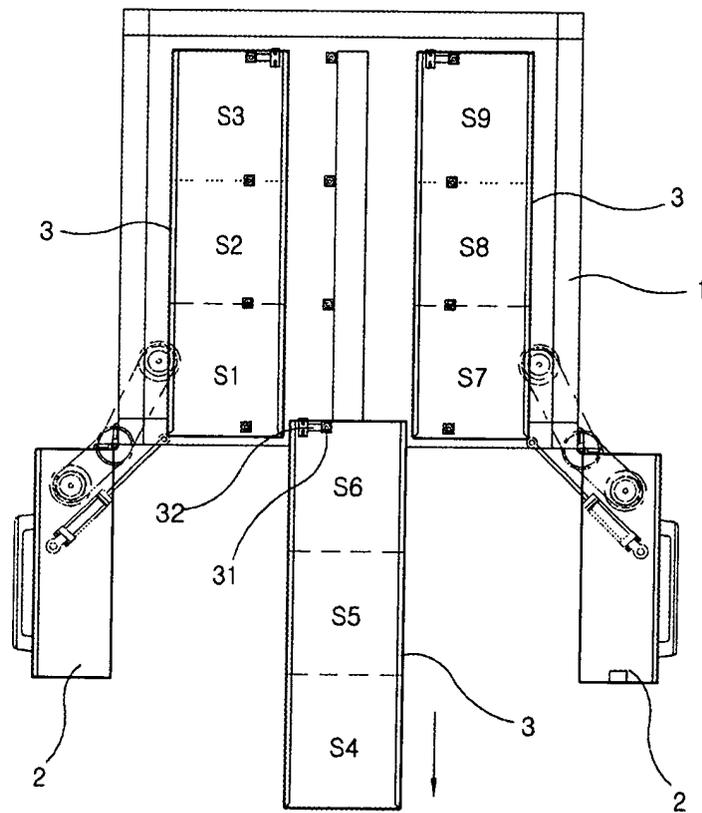


Fig.9

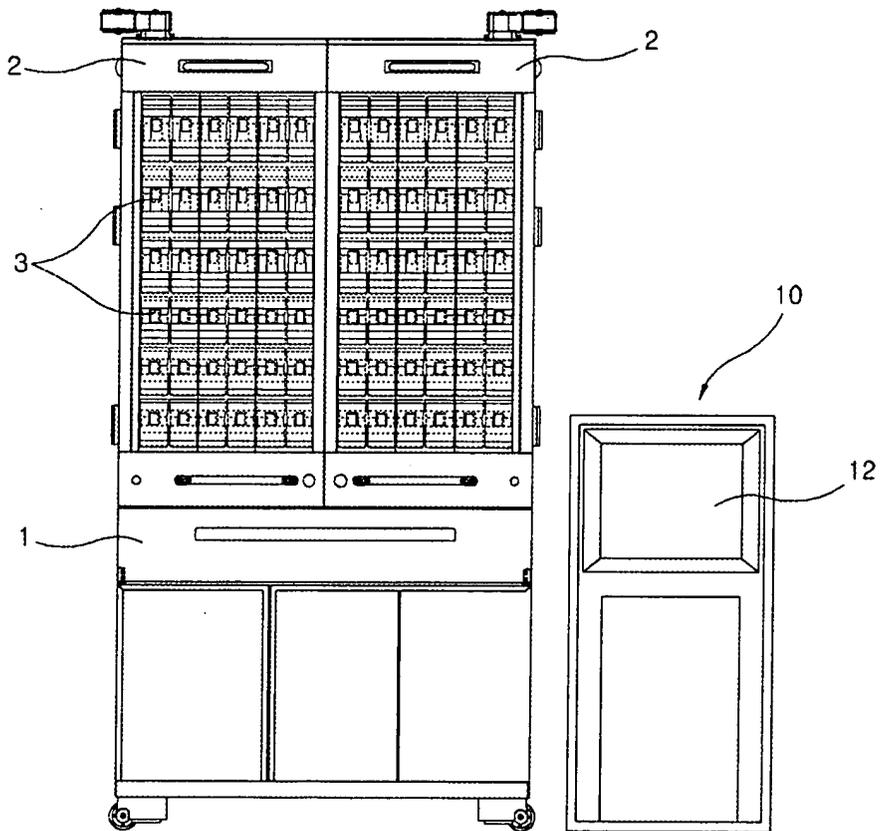


Fig.10

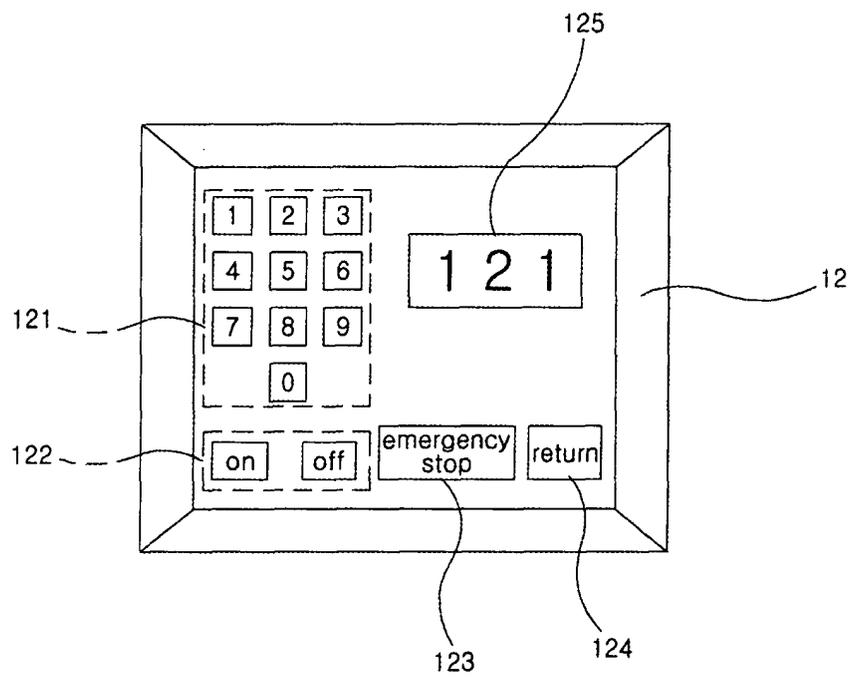
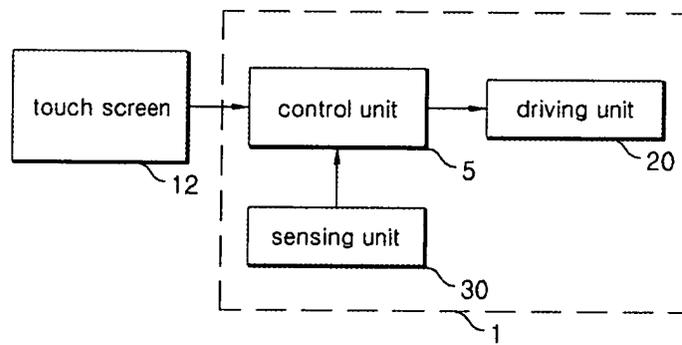


Fig.11





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A	US 6 109 774 A (HOLMES ET AL) 29 August 2000 (2000-08-29) * abstract * * column 2, line 34 - line 50 * -----	1-11	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G07F A61J
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 June 2005	Examiner Diepstraten, M
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