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(54) **Automatic vending machine**

Verkaufsautomat

Machine de vente automatique

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EP 0 810 562 B1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This invention relates to an automatic vending machine for tobacco and, particularly, to an automatic vending machine in which commodity racks, each having a plurality of commodity columns, are arranged in two front and rear rows.

2. Background Art

[0002] Fig. 12 shows a conventional automatic vending machine for tobacco. As shown in the figure, this automatic vending machine 100 consists of a vending machine main body 101 and a body door 103 like a hinged door, for opening or closing a front opening 102 in the vending machine main body 101. In the main body 101, a first rack 104 and a second rack 105 are arranged side by side on a front side and a third rack 106 is arranged on a rear side to the full width of the main body 101. A plurality of commodity columns are built in each of these racks 104, 105 and 106 and arranged in a horizontal direction so that different types of commodities A are generally stored in these columns 107. In this case, the third rack 106 is fixed in the main body 101, the second rack 105 can move obliquely forward with the left end of a front portion thereof as a center, and the first rack 104 can slide in a horizontal direction in parallel to the third rack 106. In this case, each commodity column 107 of the third rack 106 extends to the full height of the third rack 106 in a vertical direction and stores mainly regularsized good-selling commodities A (packages of cigarettes). A plurality of commodity columns 107 (not shown) are also built in the first rack 104 and the second rack 105, extend in a vertical direction and store many different types of special-sized, for example, long-sized commodities A (packages of cigarettes).

[0003] In the above configuration, when the commodities A are to be loaded, the second rack 105 is first moved forward to load the commodities A into commodity columns 107 of the third rack 106 behind the second rack 105, and the first rack 104 is then moved to the position of the second rack 105 to load the commodities A into commodity columns 107 of the third rack 106 behind the first rack 104. After the commodities A have been loaded into all the commodity columns 107 of the third rack 106, the first rack 104 and the second rack 105 are returned to their original positions and the commodities A are loaded into the commodity columns 107 of the first and second racks 104 and 105.

[0004] In the above automatic vending machine 100 of the prior art, when the commodities A are loaded into the commodity columns 107 of the first rack 104, the body door 103 interferes the loading work and makes it difficult. Particularly, in the case of an automatic vending machine 100 installed in a corner surrounded by walls, since the body door 103 can open at an angle of only 90°, it stands out toward the front opening 102 in the main body 101 by its thickness, whereby the body door 103 interferes the loading work and makes it difficult to load the commodities A into the commodity columns 107 of a right portion of the first rack 104. If the commodity columns 107 of the right portion of the first rack 104 are omitted, the above problem is solved. However, if so, the storage capacity of the commodities A in the automatic vending machine is reduced. If the first rack 104 is moved to the side of the second rack 105 when loading, the above problem is solved. However, in this case, since the second rack 105 turns and the commodities A cannot be loaded into the second rack 105, when many different types of commodities A are near at hand to be loaded, it is necessary to first select commodities A to be loaded into the first rack 104 from the commodities A at hand. Therefore, it takes more time to load the commodities A and the loading work becomes difficult.

[0005] Meanwhile, when the first rack 104 is moved to load the commodities A into the commodity columns 107 of the third rack 106 located behind the first rack 104, the first rack 104 contacts a stopper and is able to slide. Therefore, the first rack 104 may move toward its original position during the loading work of the commodities A due to the tensile force (remarkable in winter because a vinyl chloride coating material become hard) of a harness for connecting the main body 101 and the first rack 104, the rebound of the first rack 104 when it moves and the inclination of the automatic vending machine 100 itself, thereby making the loading work difficult.

[0006] A conventional vending machine has been disclosed in U.S. Patent No. 3,756,362. It is constituted by a door (12), hinges thereof, and commodity racks (15, 16) within a cabinet (11) and hinges thereof. However, as is apparent in Fig. 1, the door (12) is hardly opened when a left surface of the automatic vending machine is installed along a corner surrounded by walls. There have been problems that even if being improved assumedly so as to open the door (12) 90 degree, since the door can be opened at an angle of only about the angle of 90 degree when being installed on the corner surrounded by walls or the like, the commodity rack (15) in the side of the hinges of the door can not be fully turned due to a thickness stood out toward the interior of the door, when the thickness stood out toward the interior of the door (12) exists, whereby loading work would be difficult or make it difficult to load the commodities into the commodity racks.

[0007] An another conventional vending machine according to prior art has been disclosed in Japanese patent Application Laid-Open Publication No. Hei. 05-089342, in which a main body (1) of the automatic vending machine is provided with commodity storage columns (8A, 8B, 8C) and hinges thereof, and is arranged to be able to rotate with the hinges.

[0008] However, even if an outer door (5) would be

thickened, a standing-out portion in the rear side of the outer door (5) does not interfere with the commodity storage columns (8A, 8B, 8C) due to the existence of an inner door (4). As described above, the structure of the automatic vending machine becomes complicated and the price also is increased, since the inner door (4) is provided.

[0009] Furthermore, referring to the Fig. 7, loading of the commodities into the commodity racks (8A, 88) would be difficult, since an opening angle of the inner door (4) is limited due to this thickness when a thickness stood out toward the interior of the outer door (5) exists.

SUMMARY OF THE INVENTION

[0010] It is an object of the present invention to provide an automatic vending machine which can improve work efficiency at the time of loading commodities without reducing the storage capacity of commodities.

[0011] Aspects of the invention are disclosed in independent claims 1 and 4.

[0012] According to this configuration, since the body door is opened and the commodity rack is turned obliquely forward with a portion on a side opposite to the hinge as a center, the commodity rack can be relieved from the opened body door in a forward direction thereof. In other words, the commodity rack can be turned to a position where it is relieved from the body door when the commodities are to be loaded. Since the commodity rack can be arranged the nearest to the interior side of the hinge of the main body within a range that the commodity rack can be relieved from the body door, the total storage capacity of the commodities is not reduced.

[0013] In the automatic vending machine of the first aspect, it is preferred that coupling means for turning the commodity rack along with the opening of the body door be provided.

[0014] According to this configuration, since the commodity rack can be automatically turned obliquely forward by the coupling means when the body door is opened, time and labor for turning the commodity rack to load the commodities can be eliminated and the loading work of the commodities can be further simplified.

[0015] In the automatic vending machine of the first and second aspects, the commodity racks are preferably configured such that the second rack is arranged next to the first rack, the third rack is arranged behind the first and second racks, the second rack can be turned obliquely forward with a portion on a side opposite to the first rack as a center, and the first rack can slide in parallel to the third rack.

[0016] According to this configuration, to load the commodities into the third rack arranged behind the first rack and the second rack, the second rack is first turned obliquely forward so that the commodities can be loaded into a portion of the third rack located behind the second rack. Subsequently, by sliding the first rack, the commodities can be loaded into a portion of the third rack located behind the first rack. Thereafter, when the first rack and the second rack are returned to their original positions, the commodities can be loaded into the first rack and the second rack simultaneously.

[0017] By limiting the movement of the front rack moved from the fixed position to the relief position by means of the movement limiting means, the movement of the front rack to the fixed position can be prevented even when the inclination of the automatic vending machine or the tensile force of the harness is applied to the front rack at the relief position. Therefore, when the commodities are to be loaded into the commodity columns of the rear rack by moving the front rack to the relief position, the front rack does not interfere the loading work.

[0018] Since the movement limiting means is formed by the magnet and the magnetic body, when the front rack is moved to the fixed position, the magnetic body is adsorbed to the magnet and the front rack does not rebound at the relief position. Further, since one of the magnet and the magnetic body is attached such that it can swing in a direction perpendicular to the adsorption direction, it swings after the other at the moment of adsorption even if the magnet and the magnetic body do not face in parallel to each other and hence, an appropriate adsorption state is obtained. Therefore, even if production differences are produced in the magnet and the magnetic body or they are attached not so accurately, it is possible to make the magnet function properly and carry out the positional limitation of the front rack accurately.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] These and other objects as well as advantages of the present invention will become clear by the following description of a preferred embodiment of the present invention with reference to the accompanying drawings, wherein:

Figs. 1A to 1C are structural diagrams of an vending machine for tobacco according to a first embodiment of the present invention;
Figs. 2A and 2B are transverse sectional views of the vending machine of the first embodiment;
Fig. 3 is a perspective view of a first rack and elements therearound;
Fig. 4 is a front view of the first rack;
Fig. 5 is a partially broken side view of the first rack;
Fig. 6 is a partially broken view of the first rack;
Figs. 7A and 7B are transverse sectional views of an vending machine according to a second embodiment of the present invention;
Fig. 8 is a front view of an vending machine of the second embodiment with a main body door omitted;
Fig. 9 is a longitudinal sectional view of an vending machine of the second embodiment;
Fig. 10 is a front view of movement limiting means

and elements therearound;
Figs. 11A and 11B are plan views showing the operation of the movement limiting means; and
Figs. 12A to 12C are structural diagrams of an vending machine for tobacco of the prior art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Preferred embodiments of the present invention are described hereinunder with reference to the accompanying drawings. This automatic vending machine is for tobacco and Figs. 1A to 1C are structural diagrams thereof. As shown in the figures, this automatic vending machine 1 consists of a vending machine main body 2 and a body door 3 for opening or closing a front opening in the main body 2. The body door 3 is opened or closed like a hinged door with a bracket hinge 4 provided at a right end portion thereof as a center. A first rack 5 and a second rack 6 are arranged side by side in a front portion of the main body 2 and a third rack 7 is arranged to the full width of the main body 2 in a rear portion of the main body 2. A plurality of commodity columns 8 are built in each of the racks 5, 6 and 7 in a horizontal direction to store different types of commodities A. The commodity columns 8 can be built in the first rack 5 and the second rack 6 in a plurality of stages in a vertical direction.

[0021] Each commodity column 8 extends in a vertical direction and the commodities A are loaded from a front opening portion and piled up. A conveyor type vending mechanism 9 is arranged at a lower end portion of the commodity column 8 so that it supports the piled-up commodities A from below. When a vending instruction is issued, the vending mechanism 9 is driven to dispense the commodity A at the lowermost position. The dispensed commodity A is guided to a vending slot 12 through a front shoot 10 or a rear shoot 11.

[0022] As shown in Figs. 2A and 2B, the third rack 7 has a total of 12 commodity columns 8 arranged in a horizontal direction and is fixed in the rear portion of the main body 2. The second rack 6 has a total of 6 commodity columns 8 arranged in a horizontal direction and is located in a front portion of the main body 2. The second rack 6 is rotatably attached to the main body 2 by a pair of upper and lower hinges 13 (see Figs. 1) provided at a left end portion of the main body 2 and turns around the hinges 13 to be brought out obliquely in a forward direction from the main body 2. When the second rack 6 turns to the maximum, substantially a left half portion of the third rack 7 is made open so that the commodities A can be loaded into the commodity columns 8 of the left half portion of the third rack 7. The second rack 6 can be locked when it is at a fixed position in the main body 2 and turns to the maximum.

[0023] The first rack 5 has a total of 4 commodity columns 8 arranged in a horizontal direction and is arranged next to the second rack 6 in the front portion of the main body 2. In this case, the first rack 5 and the second rack 6 are spaced apart from each other to allow the turning of the second rack 6, the first rack 5 is arranged the nearest to the right interior side of the main body 2, and the second rack 6 is arranged the nearest to the left interior side of the main body 2. Therefore, the storage capacity of the commodities A can be increased by eliminating a dead space in the main body 2.

[0024] As shown in Figs. 2 to 6, the first rack 5 consists of a rack main body 14 and a support frame 15 for supporting the track main body 14 and can slide in a horizontal direction, and the rack main body 14 can turn around a left end rear portion thereof with respect to the support frame 15.

[0025] The support frame 15 is a box formed to cover a right side, rear surface and upper and lower sides of the rack main body 14, a pair of rollers 22 are attached to the center top surface of the support frame 15 through a support plate 21, and a bent piece 23 is formed on the front under surface of the support frame 15. The pair of rollers 22 and 22 engage with a guide rail 24 provided on a roof plate of the main body 2 and the bent piece 23 engages with a guide rail portion 25a of a frame 25 provided between the side plates of the main body 2. The first rack 5 can slide in a horizontal direction between the fixed position and the left movement termination position, guided by the upper guide rail and the lower guide rail portion 25a. When the first rack 5 is slided to the left movement termination position, substantially a right half portion of the third rack 7 is opened so that the commodities A can be loaded into the commodity columns 8 of the right half portion of the third rack 7.

[0026] A pair of upper and lower hinges 26 are provided on a left end rear portion of the support frame 15 and the rack main body 14 is attached to the support frame 15 by the hinges 26. A twisted coil spring 27 is installed in each of the hinges 26 and the rack main body 14 is moved and urged in a direction that it is drawn from the main body 2, that is, obliquely forward (see Fig. 3). A pin 28 is provided on the under surface of the rack main body 14 and fitted in an arc guide hole 29 formed in the bottom plate of the support frame 15 (see Fig. 6). The obliquely forward movement termination position (loading position) of the rack main body 14 is limited by the guide hole 29 and is set at a position where the body door 3 does not interfere the loading of the commodities A into the first rack 5.

[0027] Meanwhile, a pusher 30 for pushing a right end portion of the rack main body 14 is attached to the interior side of the body door 3 at a position corresponding to the rack main body 14. The pusher 30 comprises a push roller 31 which contacts an upper end portion of the front surface of the rack main body 14 and an arm 32 for rotatably supporting the push roller 31 and fixing the push roller 31 to the body door 3. When the body door 3 is placed upon the first rack at a loading position, the push roller 31 contacts the rack main body 14 and moves the rack main body 14 to the fixed position where

it faces front against the twisted coil spring 27. When the body door 3 is opened from its closed state, the rack main body 14 moves to a loading position where it faces front half right by the twisted coil spring 27. In other words, coupling means is formed by the twisted coil spring 27 and the pusher 30 and the rack main body 14 moves between the fixed position and the loading position by the opening and closing of the body door 3. The coupling means may be formed by a link.

[0028] With reference to Fig. 2, a method of loading the commodities A is briefly described. The body door 3 is first opened by key operation. Along with the opening of the body door 3, the rack main body 14 of the first rack 5 moves to the loading position. In this state, the commodity columns 8 of the second rack 6 face front and the commodity columns 8 of the first rack faces front half left.

[0029] At this point, a left half portion of the third rack 7 is made open by moving the second rack 6 to a great extent to load the commodities A into the left half portion of the third rack 7. Subsequently, the first rack 5 is slided to the left to make open a right half portion of the first rack 5 and the commodities A are loaded into the right half portion of the third rack 7. After the loading of the commodities A into the third rack 7 is completed, the first rack 5 is moved to the right to its original position and the second rack 6 is returned to its original position. Finally, after the commodities A are loaded into the first rack 5 and the second rack 6, the body door 3 is closed. When the body door 3 is closed, the first rack 5 is thereby pushed and returns to the fixed position. The loading of the commodities A into the first rack 5 and the second rack 6 may be carried out before the third rack 7.

[0030] According to the above embodiment of the present invention, since the second rack 6 can turn and the first rack 5 can slide freely, it is possible to load the commodities A into (the commodity columns 8 of) the third rack 7 located behind the first and second racks 5 and 6. Since the first rack 5 can turn freely, the direction of the first rack 5 (rack main body 14) can be changed so that it can be relieved from the thick body door 3, thereby making it possible to load the commodities A into the first rack 5 with ease without reducing the number of commodity columns 8 of the first rack 5. Particularly, when the body door 3 cannot be opened at an angle of 90i or more according to installation environment, it is possible to load the commodities A without strain and carry out the loading work smoothly. Further, as (the rack main body 15 of) the first rack 5 is turned along with the opening or closing of the body door 4, time and labor for moving the first rack are eliminated, thereby making it possible to carry out the loading work of the commodities A more smoothly.

[0031] In the above embodiment, the first rack may be turned manually. The turning structure of the first rack can be applied to the commodity rack of an automatic vending machine having a single commodity rack, or the commodity rack on a bracket hinge side of an automatic vending machine having two right and left commodity racks.

[0032] A description is subsequently given of a second embodiment of the present invention with reference to Figs. 7 to 9. In the automatic vending machine 1 of this embodiment, the third rack 7 is fixed to the vending machine main body 2 and the second rack 6 can turn freely. However, the first rack 5 can slide only in a horizontal direction.

[0033] In other words, a pair of rollers 42 and 42 are attached to the first rack 5 through a support plate 41 provided on a top surface thereof and engage with a guide rail 43 provided in the main body 2. A bent plate 44 is installed on the under surface of the first rack 5 and engages with a guide rail portion 45a of a frame 45 (support member) provided between the side plates of the main body 2. Thereby, the first rack 5 can slide in a horizontal direction between the fixed position and a relief position (left movement termination position) where the commodities A are loaded into the third rack 7, guided by the guide rail 43 and the guide rail portion 45a. At the relief position, the right direction movement of the first rack 5 is limited by movement limiting means 17.

[0034] As shown in Figs. 8 to 10, the movement limiting means 17 comprises a magnet 51 and a receiving plate 52 which is adsorbed by the magnet 51. The magnet 51 is installed on the side of the frame 45 and the receiving plate 52 is installed on the side of the first rack 5. The receiving plate 52 is formed of a magnetic body such as a steel plate and installed on a front portion of the under surface of the first rack 5 while it is fastened together with the bent plate 44. A contact plate portion 52a of the receiving plate 52 is arranged to face the magnet 51 so that it is adsorbed to the magnet 51 while the first rack 5 is moved to the relief position. The contact plate portion 52a is slightly bent to absorb a hit impact on the first rack 5 when the first rack 5 is hit against the magnet 51 through the receiving plate 52.

[0035] Meanwhile, the magnet 51 consists of a magnet main body 53 formed of a permanent magnet and a holder 54 for holding the magnet main body 53 and is fixed to a distal end portion of the support plate 55 in the holder 54. A pair of front and rear prolonged holes 55a and 55a are formed in the support plate 55 and the support plate 5 is attached to the bracket 57 by two threaded screws 56 and 56 which are loosely fitted in the prolonged holes 55a. Further, the bracket 57 is attached to the above frame 45. Each prolonged hole 55a of the support plate 55 extends in a horizontal direction and the fine movement in left and right directions and fine swing in front and rear directions of the magnet 51 are permitted by the threaded screws 56 which are loosely fitted in the prolonged holes 55a.

[0036] More specifically, as shown in Fig. 11, when the first rack 5 moves to the relief position, the magnet 51 moves back slightly within the movable range allowed by the prolonged holes 54a while it adsorbs the receiving plate 52. At this point, when the magnet main

body 53 of the magnet 51 and the contact plate portion 52a of the contact plate 52 face parallel to each other, the magnet 51 moves backward adsorbing the receiving plate 52. When the main body 53 and the contact plate portion 52a do not face parallel to each other, the magnet 51 swings after the receiving plate 52 and adsorbs the receiving plate 52 while it moves back. Thereafter, when the receiving plate 52 is adsorbed to the magnet 51, the first rack 5 is held immovably at the relief position unless force able to separate the receiving plate 52 from the magnet 51 is applied. By this configuration, production differences in the magnet 51 and the receiving plate 52 and fluctuations in installation accuracy can be absorbed and the receiving plate can be adsorbed to the magnet 51 properly. In other words, the first rack 5 can be held at the relief position without fail.

[0037] The fine movement and fine swing structure in the magnet 51 may be formed between the magnet main body 51 and the holder 54 and between the holder 54 and the support plate 55, or between the holder 54 and the bracket 57 by eliminating the support plate 55. Conversely, the magnet 51 may be fixed and the receiving plate 52 may be made the above fine movement and fine swing structure.

[0038] A brief description is given of how to load the commodities A in the automatic vending machine 1 according to a second embodiment of the present invention with reference to Fig. 7. After the body door 3 is opened, the second rack 6 is turned to a large extent to make open a left half portion of the third rack 7 and the commodities A are loaded into the left half portion of the third rack 7.

Subsequently, the first rack 5 is slided to the left. When the first rack 5 is moved to the relief position, the receiving plate is adsorbed to the magnet 51 and the first rack 5 is held immovably at the relief position. Since a right half portion of the third rack 7 is made open in this state, the commodities A are loaded into the right half portion. Then, the first rack 5 is moved to the fixed position and the second rack 6 is returned to its original position to load the commodities A into the second rack 6 and the third rack 7.

[0039] According to the above second embodiment of the present invention, when the commodities A are to be loaded into the right half portion of the third rack 7, the first rack 5 is held immovably at the relief position by the movement limiting means 17, thereby preventing the first rack from moving to the right due to the tensile force of the harness or the inclination of the main body 2 and eliminating the need for holding the first rack 5 immovably when the commodities A are loaded into the right half portion of the third rack 7. Therefore, the commodities A can be loaded easily and smoothly.

[0040] Although a magnet is used as the movement limiting means in this embodiment, a simple protrusion or groove may be used as the movement limiting means if it can limit the movement of the first rack at the relief position.

[0041] As described above, according to the automatic vending machine claimed in claim 1, since the commodity rack can be turned to a position where it is relieved from the body door when commodities are to be loaded, the body door does not interfere the loading work. Therefore, the loading work efficiency of the commodities can be improved without reducing the storage capacity of the commodities.

[0042] According to the automatic vending machine claimed in claim 4, since the front rack does not interfere the loading work when commodities are loaded into the commodity columns of the rear rack by moving the front rack to the relief position, the loading work efficiency of the commodities can be improved.

Claims

1. An automatic vending machine comprising a vending machine main body (2) for storing commodity racks (5, 6, 7), each incorporating a plurality of commodity columns (8), and a body door (3) for opening or closing around a door hinge (4) a front opening in the vending machine main body (2), a commodity rack (5) being arranged close to the interior surface on the door hinge side of the vending machine main body (2),
   wherein the commodity rack (5) can be rotated obliquely forward around a commodity rack hinge (26) located on the side opposite to the door hinge (4) while the body door (3) is open.

2. The automatic vending machine of claim 1 which further comprises coupling means (27, 30) for turning the commodity rack (5) along with the opening of the body door (3).

3. The automatic vending machine of claim 1 or 2, wherein the commodity rack is a first rack (5), a second rack (6) is arranged next to the first rack (5), a third rack (7) is arranged behind the first rack (5) and the second rack (6), the second rack (6) can turn obliquely forward with a portion (13) on a side opposite to the first rack (5) as a center, and the first rack (5) can slide in parallel to the third rack (7).

4. An automatic vending machine comprising a vending machine main body (2) for storing front racks (5, 6) and a rear rack (7), each incorporating a plurality of commodity columns, and a body door (3) for opening or closing a front opening in the vending machine main body (2), a front rack (5) being smaller in width than the rear rack (7) and is slidable in a horizontal direction between a fixed position and a relief position where it is relieved from the body door, wherein the machine comprises movement limiting means (17) for limiting the movement of the front rack (5) at the relief position.

5. The automatic vending machine of claim 4, wherein the movement limiting means (17) consists of a magnet (51) attached to one of the front rack (5) and the support member of the vending machine main body (2) and a magnetic body (52) attached to the other, and either one of the magnet (51) and the magnetic body (52) is attached such that it can finely swing in a direction perpendicular to an adhering direction.

Patentansprüche

1. Verkaufsautomat mit einem Verkaufsautomat-Hauptgehäuse (2) zum Aufnehmen von Warengestellen (5, 6, 7), die jeweils eine Anzahl von Warenkolonnen (8) aufnehmen, und einer Gehäusetür (3) zum Öffnen oder Schließen einer Frontöffnung in dem Verkaufsautomat-Hauptgehäuse (2) um ein Türgelenk (4), wobei ein Warengestell (5) nahe der Innenfläche der Türgelenkseite des Verkaufsautomat-Hauptgehäuses (2) angeordnet ist,

   wobei das Warengestell (5) um ein Warengestellgelenk (26), das an der zum Türgelenk (4) gegenüberliegenden Seite angeordnet ist, bei geöffneter Gehäusetür (3) schräg nach vorne geschwenkt werden kann.

2. Verkaufsautomat nach Anspruch 1, weiterhin mit Kopplungsmitteln (27, 30), um zusammen mit dem Öffnen der Gehäusetür (3) das Warengestell (5) mitzuschwenken.

3. Verkaufsautomat nach Anspruch 1 oder 2, wobei das Warengestell ein erstes Gestell (5) ist, nach dem ersten Gestell (5) ein zweites Gestell (6) angeordnet ist, hinter dem ersten Gestell (5) und dem zweiten Gestell (6) ein drittes Gestell (7) angeordnet ist, wobei das zweite Gestell (6) mit einem Teil (13) an einer dem ersten Gestell (5) gegenüberliegenden Seite als Mittelpunkt schräg nach vorne schwenken kann, und das erste Gestell (5) parallel zu dem dritten Gestell (7) gleiten kann.

4. Verkaufsautomat mit einem Verkaufsautomat-Hauptgehäuse (2) zum Aufnehmen von vorderen Gestellen (5, 6) und einem rückwärtigen Gestell (7), in denen jeweils eine Anzahl von Warenkolonnen aufgenommen sind, und einer Gehäusetür (3) zum Öffnen oder Schließen einer Frontöffnung in dem Verkaufsautomat-Hauptgehäuse (2), wobei ein vorderes Gestell (5) eine kleinere Breite als das rückwärtige Gestell (7) hat und in einer Horizontalrichtung zwischen einer feststehenden Position und einer Ablöseposition verschiebbar ist, wobei es von der Gehäusetür gelöst ist, wobei das Gerät Bewegungsbegrenzungsmittel (17) aufweist, um die Bewegung des vorderen Gestells (5) in der Ablöseposition zu begrenzen.

5. Verkaufsautomat nach Anspruch 4, wobei die Bewegungsbegrenzungsmittel (17) aus einem Magnet (51) bestehen, der entweder an dem vorderen Gestell (5) oder dem Stützelement des Verkaufsautomat-Hauptgehäuses (2) befestigt ist und am jeweils anderen Element ein magnetischer Körper (52) befestigt ist, und entweder der Magnet (51) oder der magnetische Körper (52) so befestigt ist, dass er in einer Richtung rechtwinklig zu einer Befestigungsrichtung leicht schwingen kann.

Revendications

1. Une machine de vente automatique, comprenant un corps principal de machine de vente (2), pour stocker des étagères pour articles (5, 6, 7), incorporant chacune une pluralité de colonnes d'articles (8), et une porte de corps (3), devant ouvrir ou fermer, par pivotement autour d'une charnière de porte (4), une ouverture avant ménagée dans le corps principal de machine de vente (2), une étagère pour articles (5) étant agencée à proximité de la surface intérieure du côté de charnière de porte du corps principal de machine de vente (2),
   dans laquelle l'étagère pour articles (5) peut être tournée obliquement vers l'avant, autour d'une charnière pour étagère pour articles (26), placée sur le côté opposé de la charnière de porte (4), tandis que la porte de corps (3) est ouverte.

2. La machine de vente automatique selon la revendication 1, comprenant en outre des moyens de couplage (27, 30) pour faire tourner l'étagère pour articles (5) conjointement au mouvement d'ouverture de la porte de corps (3).

3. La machine de vente automatique selon la revendication 1 ou 2, dans laquelle l'étagère pour articles est une première étagère (5), une deuxième étagère (6) étant agencée à la suite de la première étagère (5), une troisième étagère (7) étant agencée derrière la première étagère (5) et la deuxième étagère (6), la deuxième étagère (6) peut tourner obliquement vers l'avant avec une partie (13) sur un côté opposé à la première étagère (5) en tant que centre, et la première étagère (5) peut coulisser parallèlement à la troisième étagère (7).

4. Une machine de vente automatique comprenant un corps principal de machine de vente (2) pour stocker des étagères avant (5, 6) et une étagère arrière (7), incorporant chacune une pluralité de colonnes d'articles, et une porte de corps (3), devant ouvrir ou fermer une ouverture avant dans le corps principal de machine de vente (2), une étagère avant

(5) étant de largeur inférieure à l'étagère arrière (7) et pouvant coulisser en direction horizontale, entre une position fixe et une position en délivrance, à laquelle elle est en saillie de la porte de corps, dans laquelle la machine comprend des moyens de limitation de déplacement (17), devant limiter le déplacement de l'étagère avant (5) à la position en délivrance.

5. La machine de vente automatique selon la revendication 4, dans laquelle les moyens de limitation de déplacement (17) sont formés d'un aimant (51), fixé à l'une de l'étagère avant (5) et de l'organe support du corps principal de machine de vente (2), et un corps magnétique (52) est fixé à l'autre, et l'un, parmi l'aimant (51) et le corps magnétique (52), est fixé de manière à pouvoir osciller finement en une direction perpendiculaire à une direction d'adhésion.

Fig. 1A

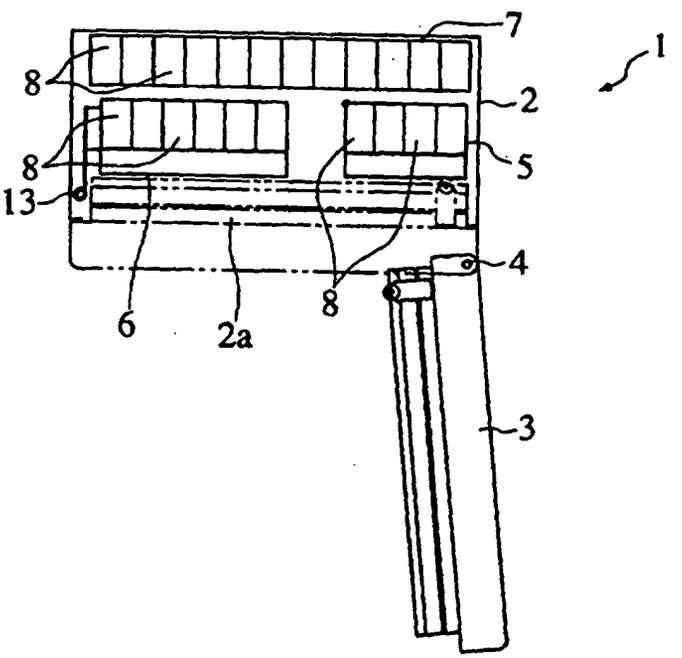


Fig. 1B

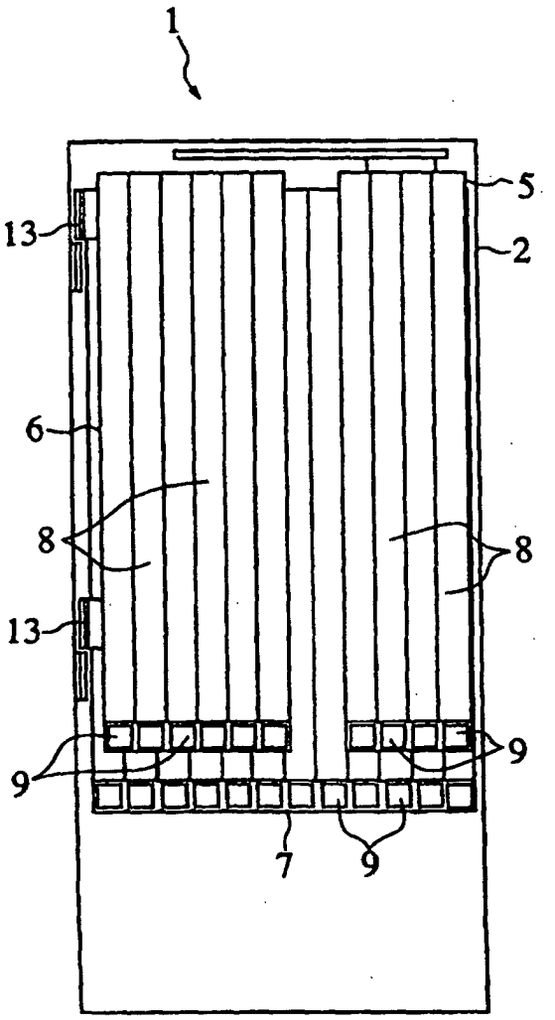


Fig. 1C

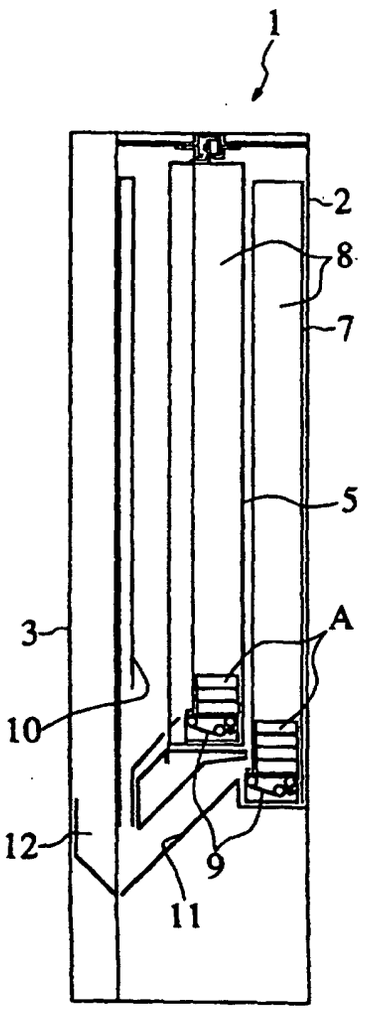


Fig. 2A

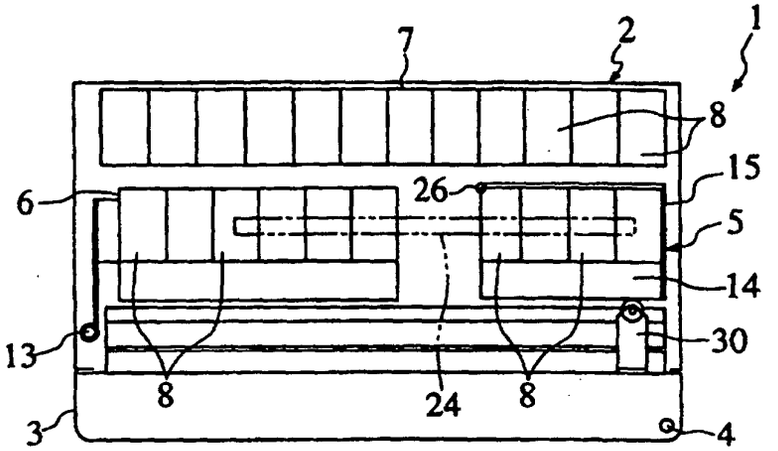


Fig. 2B

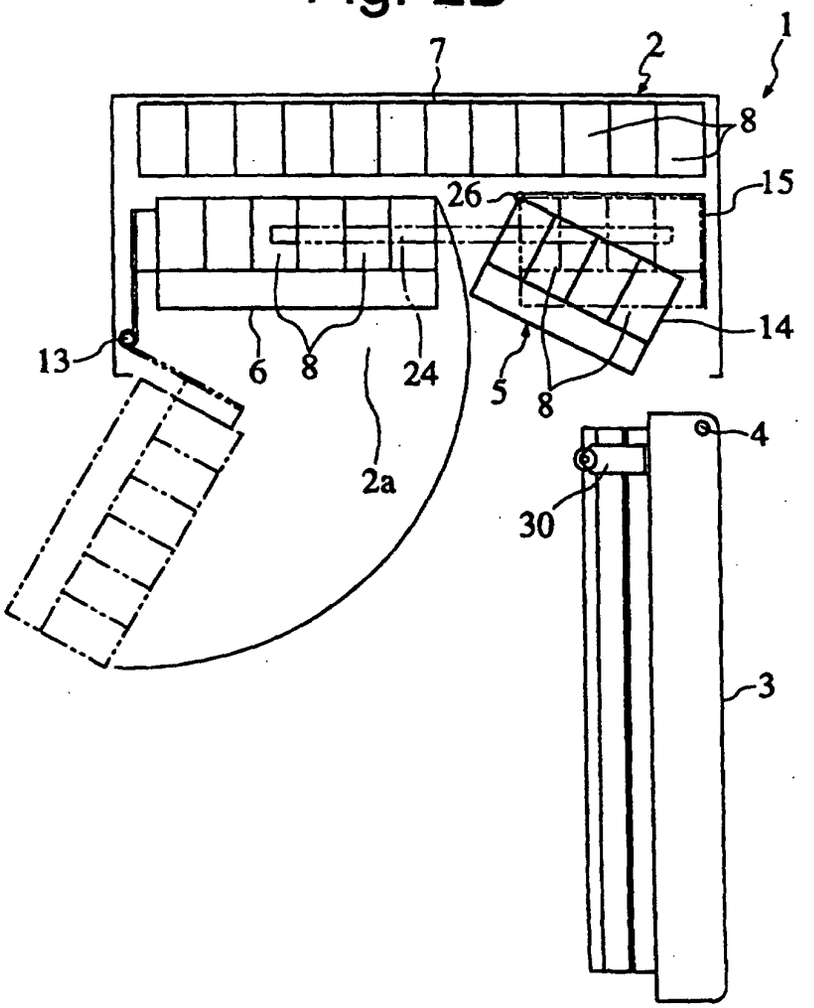


Fig. 3

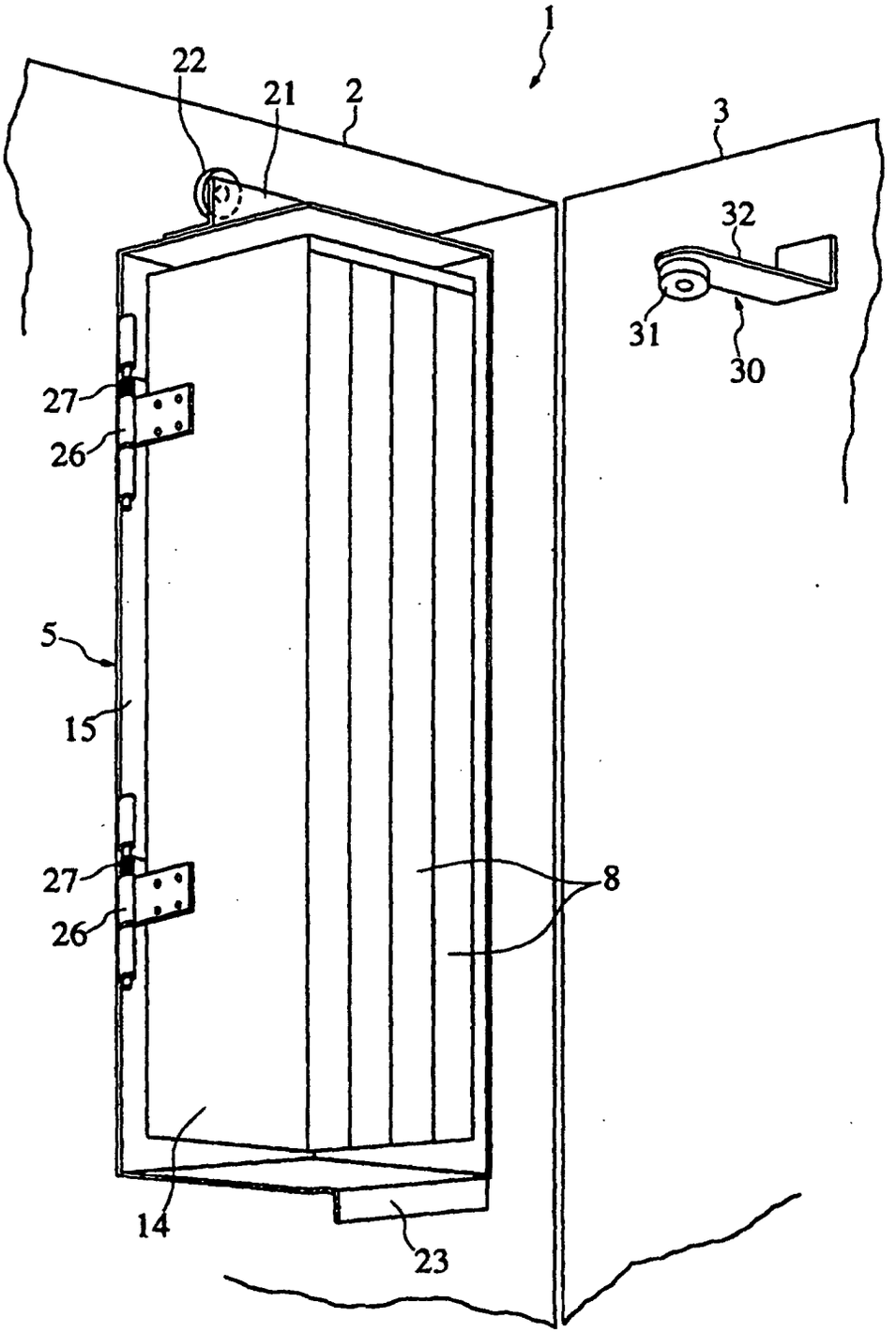


Fig. 4

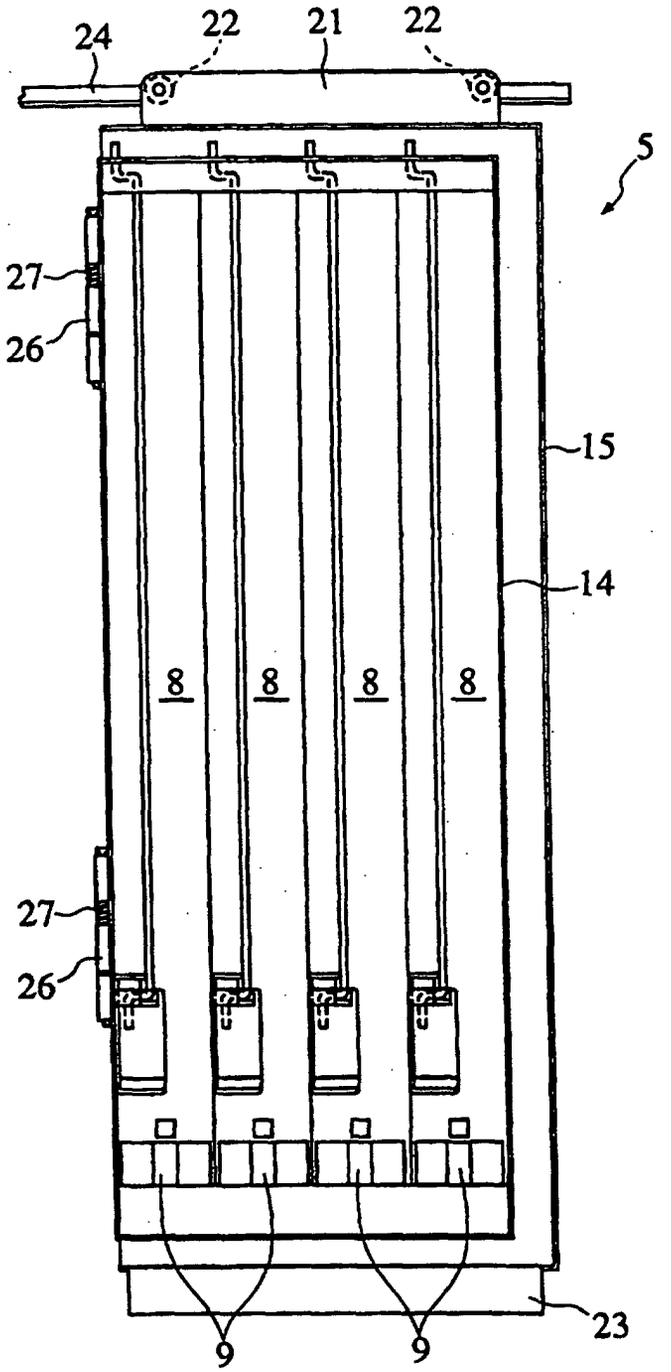


Fig. 5

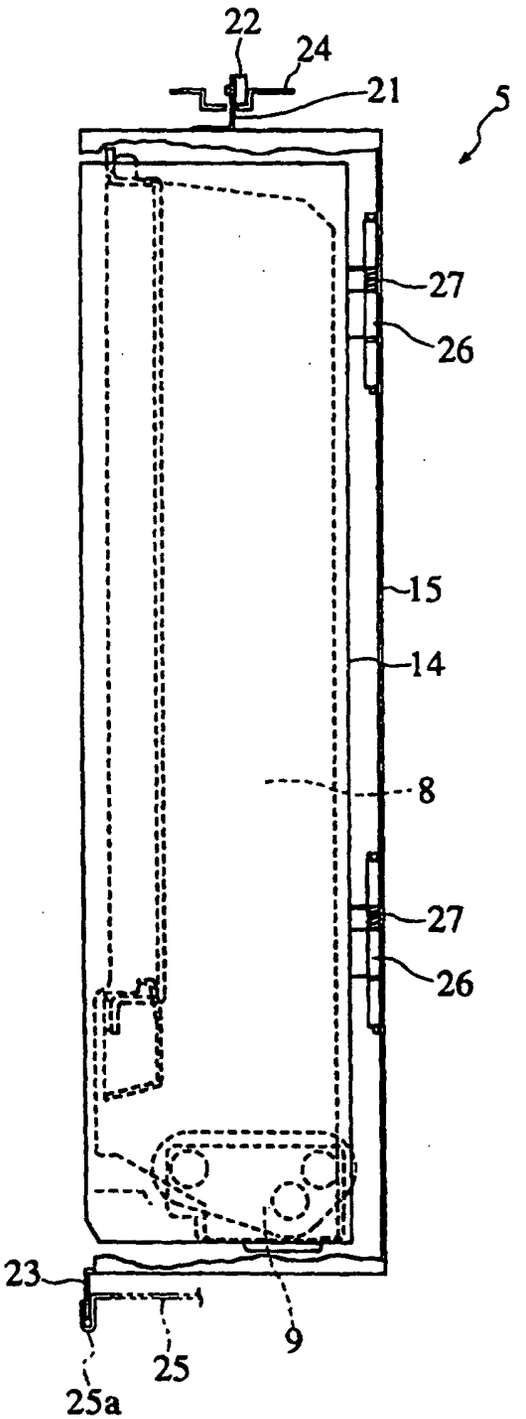


Fig. 6

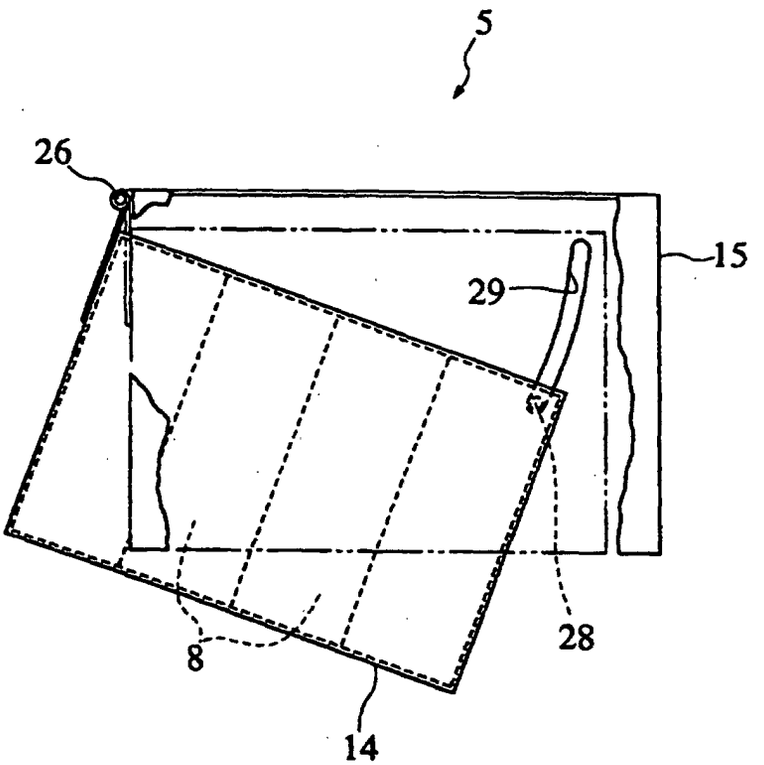


Fig. 7A

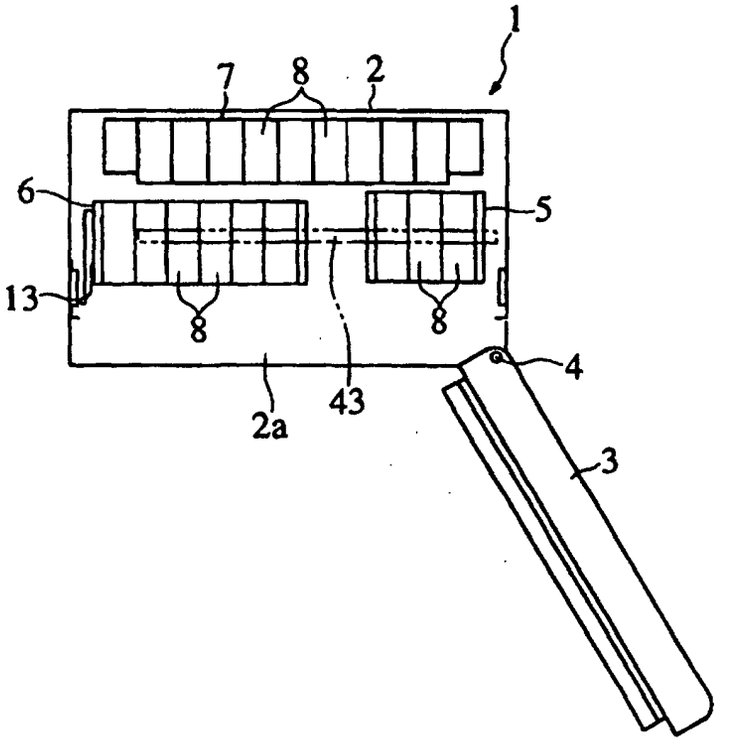


Fig. 7B

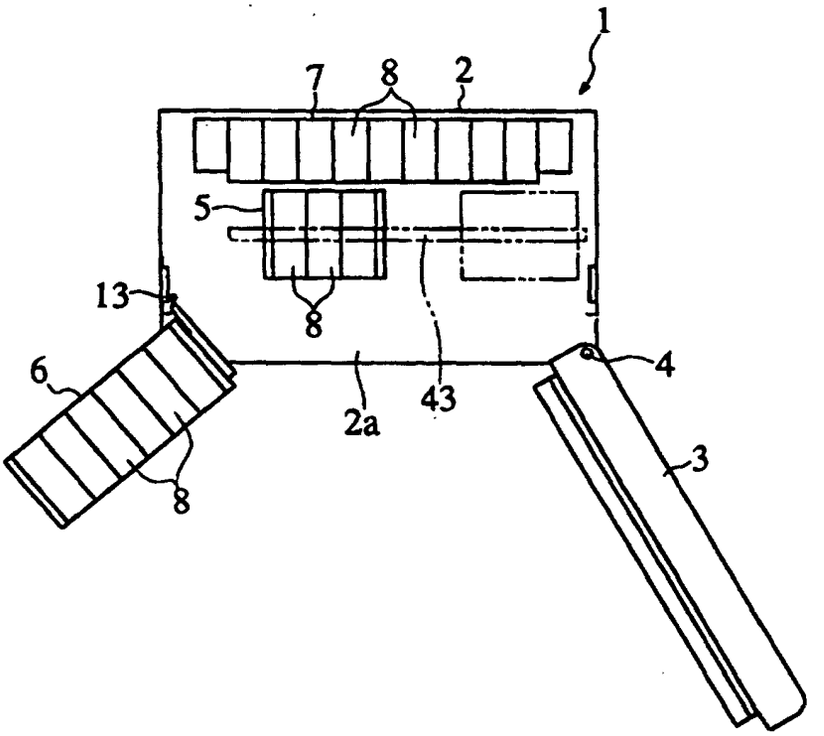


Fig. 8

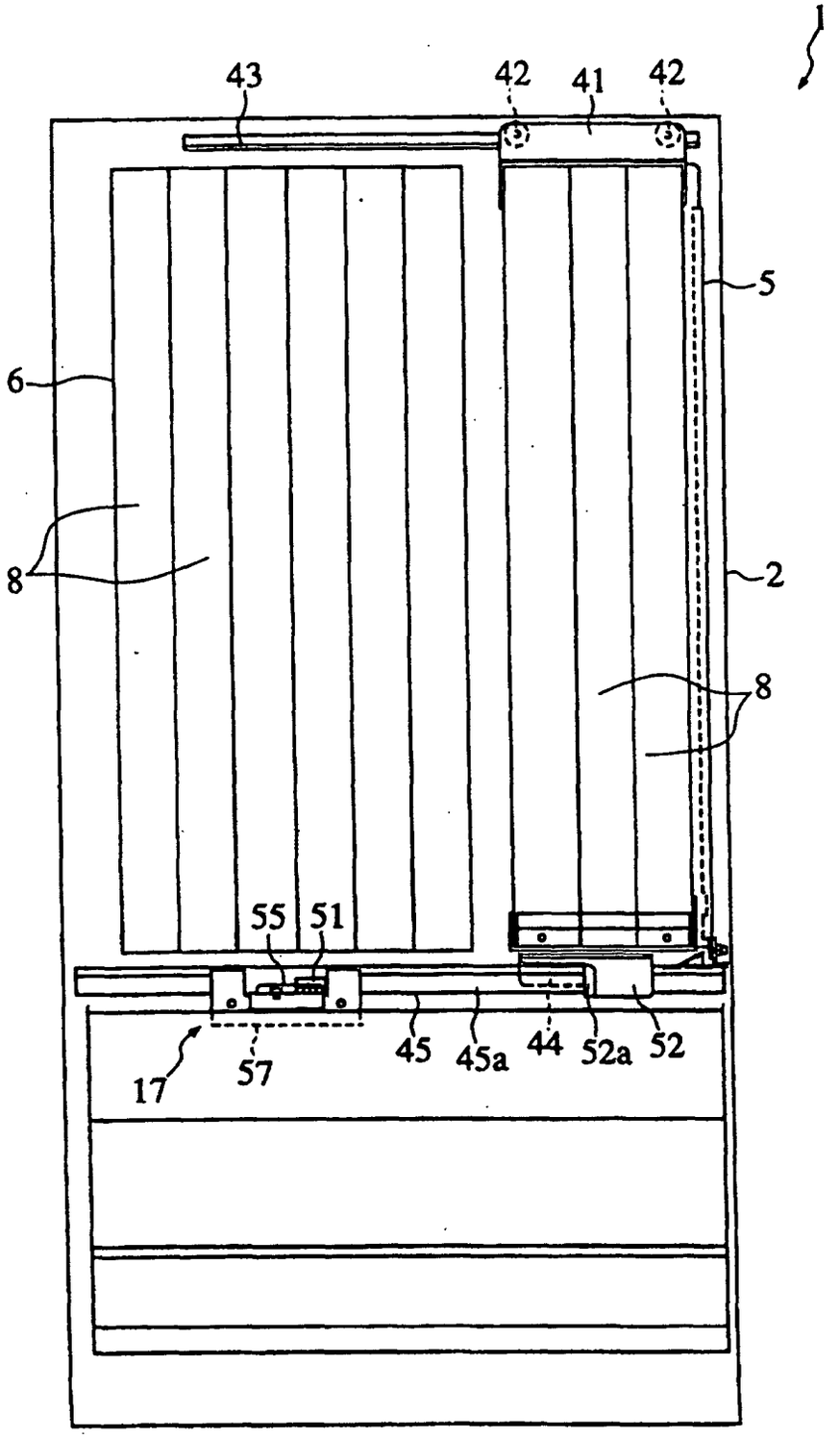


Fig. 9

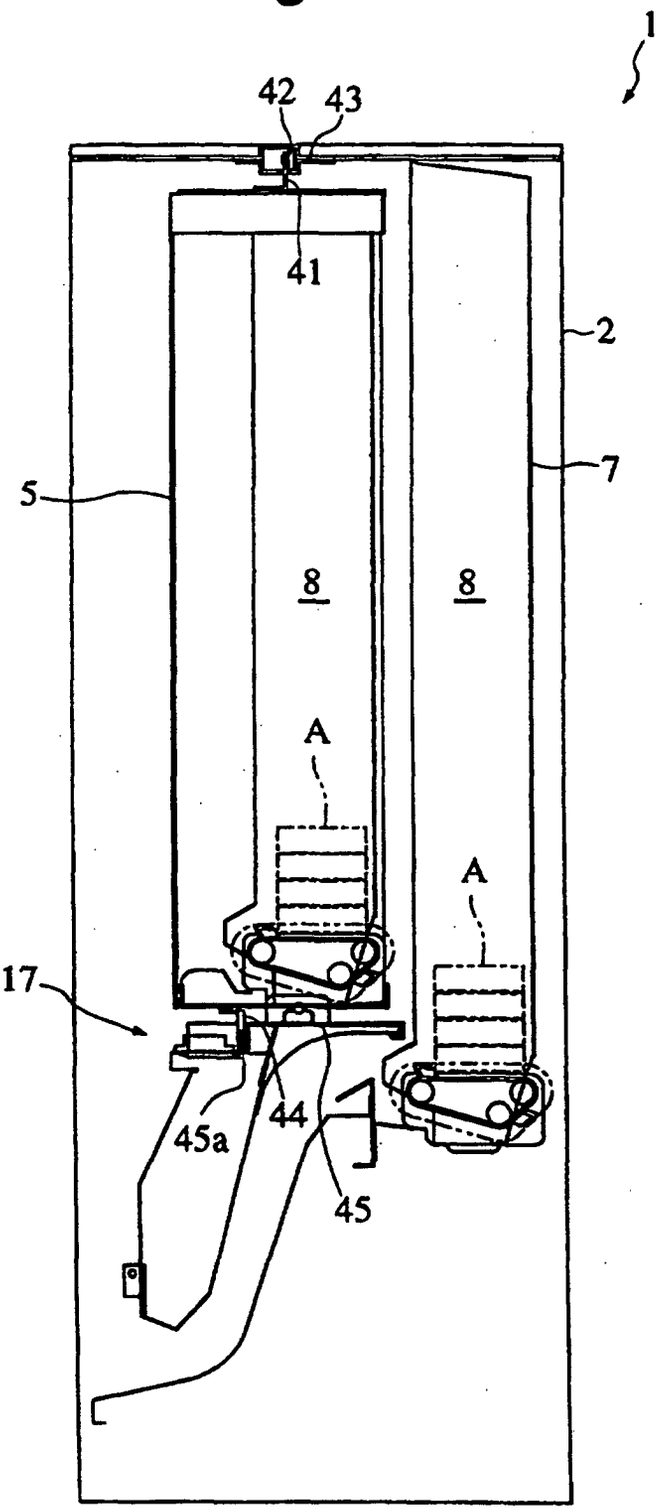


Fig. 10

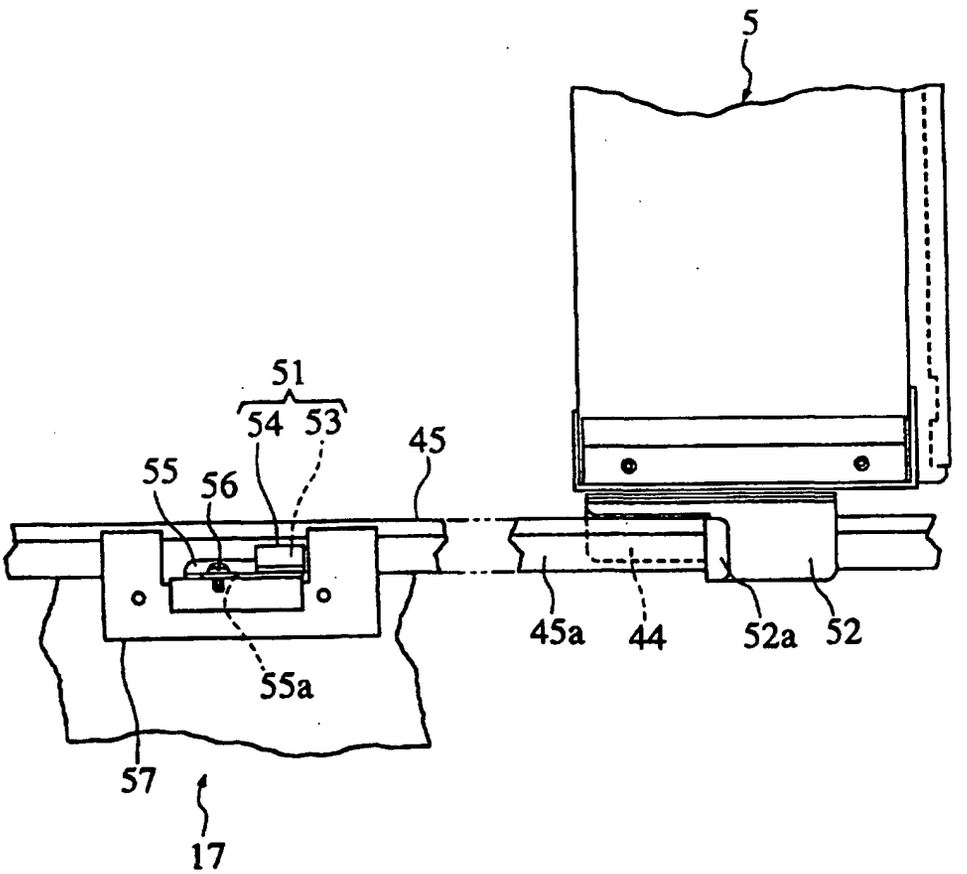


Fig. 11A

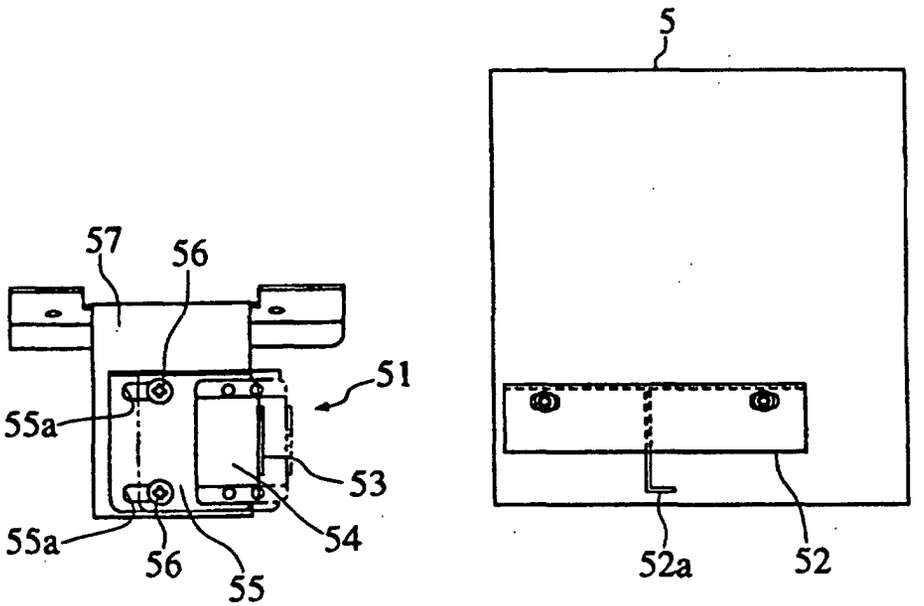


Fig. 11B

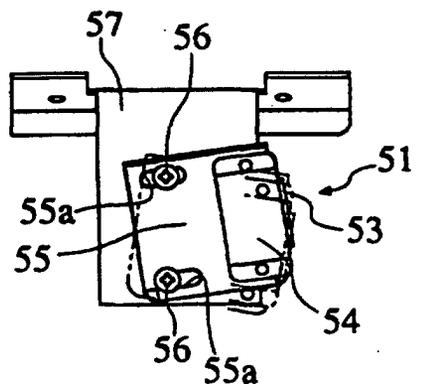


Fig. 12A

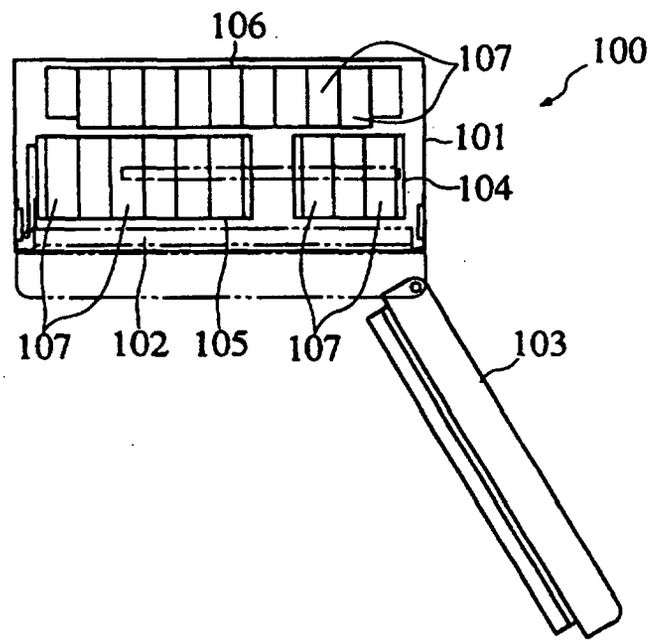


Fig. 12B

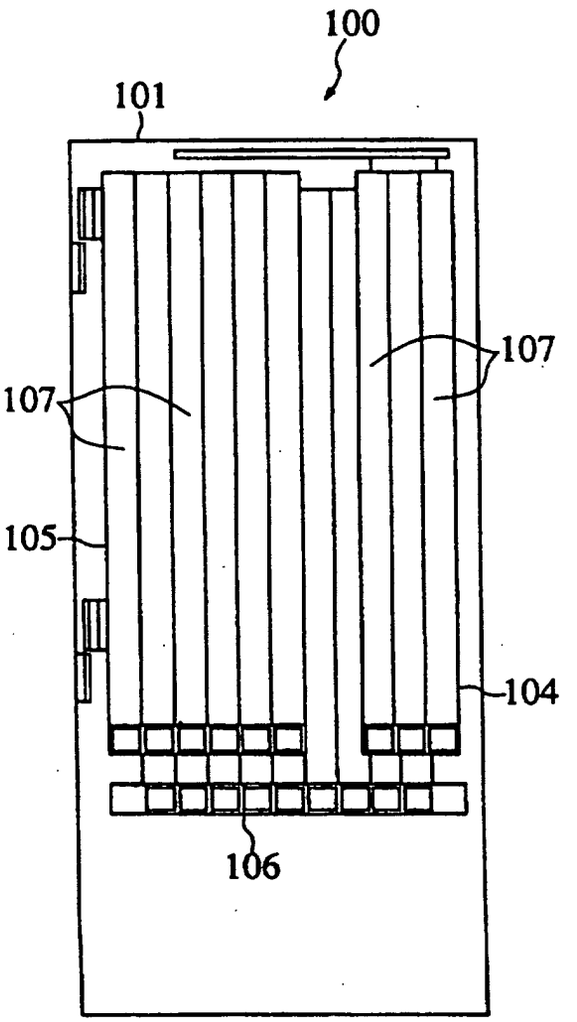


Fig. 12C

