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(54) **PASSBOOK ISSUING DEVICE AND METHOD**

(57) The present invention relates to a passbook issuing apparatus and a passbook issuing method for performing an automatic passbook-balance carry-over in an automated-teller machine and a passbook updating machine and allows the orientation of the head and tail or the front and back of an inserted new passbook to be corrected. When a new-passbook inserting unit 603 inserts one new passbook 602, an insertion-orientation determining unit 608 determines a state of the reading of the magnetic information of the inserted new passbook 602 by a magnetism reading unit 604 and a state of the flipping by at least one of a first flipping unit 605 or a second flipping unit 606. An insertion-orientation controlling unit 609 controls the first and second flipping units 605 and 606 and the head-front turning unit 607 according to a result of the determination by the insertion-orientation determining unit 608 so as to correctly orient the head and tail and the front and back of the inserted new passbook 602.

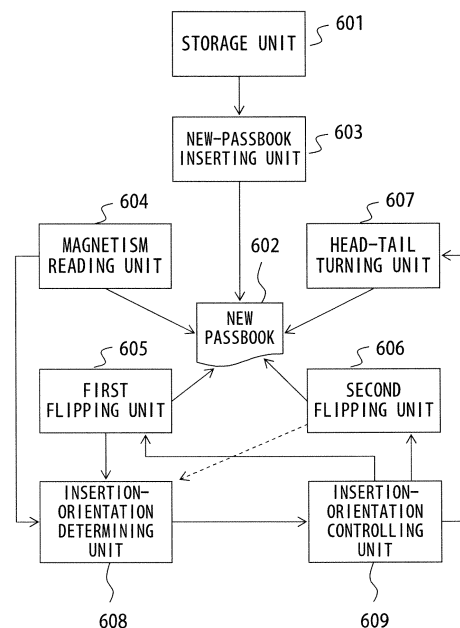


FIG. 6

Description**PRIOR ART DOCUMENT****FIELD****PATENT DOCUMENT**

[0001] The embodiments discussed herein are related to a passbook issuing apparatus and a passbook issuing method for performing an automatic passbook-balance carry-over in an automated-teller machine and a passbook updating machine.

5 **[0008]**

Patent document 1: Japanese Utility Model Application Publication No. H01-16345
 Patent document 2: Japanese Laid-open Patent Publication No. H01-175694
 Patent document 3: Japanese Laid-open Patent Publication No. H10-258589

BACKGROUND

[0002] Automated-teller machines and passbook updating machines provided with a passbook automatic-carry-over function are widespread. When the last page of a passbook inserted in such a machine is used, a new passbook is automatically issued after an automatic carry-over from the old passbook to the new passbook is performed. To achieve this, automated-teller machines and passbook updating machines include a built-in passbook issuing apparatus.

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DISCLOSURE OF THE INVENTION

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[0009] An object of the present invention is to allow the orientation of the head and tail or the front and back of a new passbook inserted from a storage unit to be corrected.

[0003] The passbook issuing apparatus includes at least a cassette that holds new passbooks and an inserter that inserts a new passbook from the cassette when a passbook change is made. One or more cassettes formed of, for example, the two components, a front and a rear, are provided, and an inserter is provided for each of the cassettes.

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[0010] An exemplary aspect provides a passbook issuing apparatus that includes: one or more storage units that hold a new passbook; a new-passbook inserting unit that inserts the new passbook from the storage unit when a passbook change is made; a magnetism reading unit that reads magnetic information attached to at least one of the front cover or the back cover of a passbook; first and second flipping units that respectively flip open the passbook in a first direction and a second direction which is 180 degrees from the first direction; and a head-tail turning unit that rotates the passbook in a plane that includes a passbook page space so as to reverse the head and tail, the passbook issuing apparatus further including: an insertion-orientation determining unit that, when the new-passbook inserting unit inserts one new passbook, determines whether or not the orientation of the head and tail and the orientation of the front and back of the inserted new passbook are correct by determining a state of the reading of the magnetic information of the inserted new passbook by the magnetism reading unit and a state of the flipping by at least one of the first or second flipping unit; and an insertion-orientation controlling unit that controls the first and second flipping units and the head-front turning unit according to the result of the determination so as to correctly orient the head and tail and the front and back of the inserted new passbook.

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[0004] In the inserting of a new passbook from the cassette, the inserter needs to insert the new passbook in a manner such that the head and tail and the front and back of the new passbook are correctly oriented with respect to a relationship with a print head that prints characters in the new passbook. Thus, in a prior art, a bank clerk and so on need to correctly set the orientations of the head and tail and the front and back in order to set the new passbook in a cassette; if the orientation is incorrectly set, a problem occurs wherein, for example, characters to be printed on the front cover are printed on the back cover.

[0005] A prior art is known that provides means for flipping through the pages of a passbook in order to print characters on the front cover page, back cover page, or other pages of the passbook (e.g., the arts described in patent documents 1, 2, and 3).

[0006] Another prior art is known that provides means for rotating or reversing a passbook to correct the orientation when the passbook is inserted in an apparatus in a wrong orientation (e.g., the arts described in patent documents 1 and 2).

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[0007] However, both of these prior arts are designed to process an existing passbook inserted in a machine from outside, and hence they do not provide means for correcting the orientation of a new passbook set in a cassette.

BRIEF DESCRIPTION OF THE DRAWINGS**[0012]**

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FIG. 1 is a typical hardware configuration diagram of a passbook issuing apparatus.
 FIG. 2 is an explanatory diagram of operations of forward-side flipping rollers and reverse-side flipping

rollers.

FIG. 3 is an exemplary diagram of an operation of a head-tail turning unit.

FIG. 4 is an exemplary diagram of a correct insertion orientation of a new passbook.

FIG. 5 is an exemplary diagram of a wrong insertion orientation of a new passbook.

FIG. 6 is a block diagram of the present embodiment.

FIG. 7 is a system configuration diagram of the present embodiment.

FIG. 8 is a flowchart illustrating a controlling process in an ordinary transaction in accordance with a first embodiment.

FIG. 9 is a flowchart illustrating a controlling process (a determining process) in accordance with the first embodiment.

FIG. 10 is a flowchart illustrating a controlling process (a reversed-head-tail addressing process) in accordance with the first embodiment.

FIG. 11 is a flowchart illustrating a controlling process (a back-side addressing process) in accordance with the first embodiment.

FIG. 12 illustrates an exemplary passbook specification in accordance with a second embodiment.

FIG. 13 is a flowchart illustrating a controlling process (pattern 1) in an ordinary transaction in accordance with the second embodiment.

FIG. 14 is a flowchart illustrating a controlling process (pattern 2) in an ordinary transaction in accordance with the second embodiment.

FIG. 15 is a flowchart illustrating a controlling process (a determining process) in accordance with the second embodiment.

FIG. 16 is a flowchart illustrating a controlling process (a reversed-head-tail addressing process) in accordance with the second embodiment.

FIG. 17 is a flowchart illustrating a controlling process (a back-side addressing process) in accordance with the second embodiment.

PREFERRED EMBODIMENTS

[0013] In the following, modes to implement the present invention will be described in detail with reference to the drawings.

FIG. 1 is a typical hardware configuration diagram of a passbook issuing apparatus.

[0014] A cassette F (first and second cassettes) 101 and a cassette R (third and fourth cassettes) 102 are each a storage unit that holds a new passbook 103. The cassette F (first and second cassettes) 101 includes first and second cassette boxes; the orientation of the head and tail of the new passbook 103 is set in a manner such that a close side 116 faces downward, and the orientation of the front and back of the new passbook 103 is set in a manner such that the front cover faces a printing/flipping mechanism unit 107. The cassette R (third and fourth cassettes) 102 includes third and fourth cassette

boxes; the orientation of the head and tail of the new passbook 103 is set in a manner such that the close side 116 faces upward, and the orientation of the front and back of the new passbook 103 is set in a manner such that the front cover faces the printing/flipping mechanism unit 107.

[0015] The inserter F 104 and the inserter R 105 are respectively new-passbook inserting units that take out the new passbooks 103 set in the cassette F (the first and second cassettes) 101 and the cassette R (the third and fourth cassettes) 102 and then insert these passbooks into the printing/flipping mechanism unit 107. The inserter F 104 and the inserter R 105 respectively use pressing plates 115 and central rollers within the cassette F (the first and second cassettes) 101 and pressing plates 115 and central rollers within the cassette R (the third and fourth cassettes) 102 so as to push the new passbooks 103 out of the cassettes toward the printing/flipping mechanism unit 107. When the last page of a passbook inserted into a passbook insertion unit 114 is used, an automatic carry-over from the old passbook to a new passbook is performed. In this case, the inserter F 104 or the inserter R 105 is operated to insert one new passbook 103 into the printing/flipping mechanism unit 107.

[0016] An MS unit 106 provided within the inserter F 104 is a magnetism reading unit that reads the magnetic information attached to at least one of the front cover or the back cover of an existing passbook or a new passbook 103.

[0017] A head-tail turning unit 110 provided within the inserter R 105 is a mechanism that rotates a passbook by, for example, 180 degrees in a plane that includes a passbook page space so as to reverse the head and tail. The head-tail turning unit 110 was originally a mechanism provided to correct the orientation of an existing passbook inserted through the passbook insertion unit 114 when the orientation was incorrect, but, in the present embodiment, the head-tail turning unit 110 also includes a function that corrects the orientation of a new passbook 103.

[0018] The printing/flipping mechanism unit 107 includes forward-side flipping rollers 108, reverse-side flipping rollers 109, a print head 112, and a scanner 113. The forward-side flipping rollers 108 and the reverse-side flipping rollers 109 are respectively first and second flipping units that flip open a passbook in a first direction and a second direction which is 180 degrees from the first direction. The forward-side flipping rollers 108 and the reverse-side flipping rollers 109 were originally mechanisms to print characters on the front cover, the back cover, and the pages of an existing passbook or a new passbook 103, but, in the present embodiment, these rollers also include a function that corrects the orientation of the new passbook 103.

[0019] The print head 112 prints necessary information on a page of a passbook opened by the forward-side flipping rollers 108 or the reverse-side flipping rollers 109.

[0020] According to an external instruction, the scan-

ner 113 scans a necessary page of a passbook and outputs the resultant image data to outside. The scanner 113 is operated to, for example, sense a line on which characters have been printed, sense a page mark, or check printed characters after printing.

[0021] When an automatic carry-over from an old passbook inserted through the passbook insertion unit 114 to a new passbook 103 is performed, a removing unit 111 removes the old passbook from the printing/flipping mechanism unit 107. After a new passbook 103 is issued and sent out of the passbook insertion unit 114, the removing unit 111 returns the removed old passbook via the passbook insertion unit 114 to the user outside.

[0022] An outline of a process of issuing a new passbook 103 performed by a passbook issuing apparatus having the hardware configuration illustrated in FIG. 1 is as follows. First, the apparatus illustrated in FIG. 1 is operated in response to commands transmitted from a host functional block (not particularly illustrated). When an old passbook is inserted through the passbook insertion unit 114, the magnetic information attached to, for example, the back cover of the old passbook is read using the MS unit 106, and characters are printed on a page of the old passbook using the print head 112. When it is detected via, for example, the scanner 113 that characters have been printed on all of the pages of the old passbook, the process shifts to a process of issuing a new passbook 103. First, the front cover of the old passbook is closed, and "VOID (USED)" is printed on the front cover. Next, the old passbook is moved to the removing unit 111. Then, the inserter F 104 or the inserter R 105 is operated, and the cassette F (the first and second cassettes) 101 or the cassette R (the third and fourth cassettes) 102 inserts the new passbook 103 into the printing/flipping mechanism unit 107. Subsequently, the magnetic information attached to, for example, the back cover of the new passbook 103 is read by the MS unit 106; alternatively, the front cover of the new passbook 103 is flipped open by the forward-side flipping rollers 108, and then the scanner 113 reads a passbook classification on the inside of the front cover. When a judgment of "OK" is indicated for the classification, the front cover of the new passbook 103 is closed by the reverse-side flipping rollers 109, and the print head 112 prints characters on the front cover of the new passbook 103. After this, characters are printed on the pages while the pages are being flipped through by the forward-side flipping rollers 108, and the MS unit 106 finally updates the magnetic information attached to, for example, the back cover. Next, the new passbook 103 is provided through the passbook insertion unit 114 to the user outside. Subsequently, the magnetic information attached to, for example, the back cover of the old passbook that has been removed by the removing unit 111 is erased by the MS unit 106, and the old passbook is then returned through the passbook insertion unit 114 to the user outside.

[0023] FIG. 2 is an explanatory diagram of operations of the forward-side flipping rollers 108 and the reverse-

side flipping rollers 109 illustrated in FIG. 1. A passbook 201 is set to be sandwiched between the forward-side flipping rollers 108 and between the reverse-side flipping rollers 109. As illustrated by (a), when the passbook 201 is set in a correct orientation such that a close side (the head) 202 of the passbook 201 is located at the reverse-side flipping rollers 109, an open side (the tail) 203 of the passbook 201 is located at the forward-side flipping rollers 108. In this case, an upper roller of the forward-side flipping rollers 108 rotates in a counterclockwise direction, thereby lifting up a page of the passbook 201 as illustrated by a dashed line 204 in FIG. 2. Meanwhile, as illustrated by (b), when the passbook 201 is set in a wrong orientation such that the close side (the head) 202 of the passbook 201 is located at the forward-side flipping rollers 108, the open side (the tail) 203 is located at the reverse-side flipping rollers 109. In this case, an upper roller of the reverse-side flipping rollers 109 rotates in a clockwise direction, thereby lifting up a page of the passbook 201 as depicted by a dashed line 205 in FIG. 2. An original function of the forward-side flipping rollers 108 and the reverse-side flipping rollers 109 is to correct the orientation of an existing passbook inserted through the passbook insertion unit 114 in FIG. 1 so as to perform the aforementioned flipping operation. In addition, the present embodiment allows the orientation of the new passbook 103 in FIG. 1 to be corrected even when the new passbook 103 is set in a wrong orientation at the forward-side flipping rollers 108 and the reverse-side flipping rollers 109 within the printing/flipping mechanism unit 107, as indicated by the passbook 201 in FIG. 2(b). Such a situation occurs when the head and tail of the new passbook 103 are set in a wrong orientation in the cassette F (the first and second cassettes) 101 or the cassette R (the third and fourth cassettes) 102, as will be described hereinafter.

[0024] FIG. 3 is an exemplary diagram of an operation of the head-tail turning unit 110 in FIG. 1. This operation is a function of rotating the passbook 201 in a plane that includes a passbook page space so as to reverse the head and tail of the passbook 201 when the close side (head) 202 is set in a wrong orientation, i.e., when the head and tail are set in a wrong orientation, as illustrated in, for example, FIG. 3(b). As a result, as illustrated by FIG. 3(a), the close side (the head) 202 is corrected to be set in a correct orientation, i.e., the head and tail are corrected to be set in a correct orientation. An original function of the head-tail turning unit 110 is to correct a wrong orientation of an existing passbook inserted through the passbook insertion unit 114 in FIG. 1. In addition, the present embodiment allows the orientation of the new passbook 103 inserted by the inserter F 104 or the inserter R 105 in FIG. 1 to be corrected when the orientations of the head and tail and/or the front and back of the new passbook 103 are wrong.

[0025] FIG. 4 is an exemplary diagram of a correct insertion orientation of a new passbook. As illustrated in FIG. 4(a), while the new passbook 103 is being inserted

into the printing/flipping mechanism unit 107 by the cassette F (the first and second cassettes) 101, the close side 116 needs to face, for example, the right end of FIG. 4 (face the printing/flipping mechanism unit 107). Meanwhile, as illustrated in FIG. 4(b), while the new passbook 103 is being inserted into the printing/flipping mechanism unit 107 from the cassette R (the third and fourth cassettes) 102, an open side (the tail) 401 needs to face, for example, the left end of FIG. 4 (face the printing/flipping mechanism unit 107). That is, while the new passbook 103 is being inserted into the printing/flipping mechanism unit 107, the close side (the head) 116 (or the open side (the tail) 401) of the new passbook 103 needs to be controlled in a manner such that the close side (the head) 116 (or the open side (the tail) 401) is always identically orientated with respect to the print head 112. In the cases of both FIG. 4(a) and (b), the magnetic information attached to, for example, the back cover of the new passbook 103 is positioned as illustrated by a dashed line 402 at an upper portion of the back side of FIG. 4; only such positioning allows the MS unit 106 in FIG. 1 to read the magnetic information normally.

[0026] As illustrated in FIG. 1, the state of FIG. 4(a) is achieved when the new passbook 103 is set in the cassette F (the first and second cassettes) 101 in a manner such that, for the orientation of the head and tail, the close side 116 faces downward and, for the orientation of the front and back, the front cover faces the printing/flipping mechanism unit 107. The state of FIG. 4(b) is achieved when the new passbook 103 is set in the cassette R (the third and fourth cassettes) 102 in a manner such that, for the orientation of the head and tail, the close side 117 faces upward and, for the orientation of the front and back, the front cover faces the printing/flipping mechanism unit 107. However, in an actual banking operation, a bank clerk may fail to set the new passbook 103 in the cassette F (the first and second cassettes) 101 or the cassette R (the third and fourth cassettes) 102 in a correct orientation.

[0027] FIG. 5 is an exemplary diagram of a wrong insertion orientation of the new passbook 103.

[0028] FIG. 5(a) depicts a state in which the orientations of the head and tail and the front and back of both the new passbook 103 inserted from the cassette F (the first and second cassettes) 101 and the new passbook 103 inserted from the cassette R (the third and fourth cassettes) 102 are reversed. This state will hereinafter be referred to as a "reversed head-tail setting (back-side setting) state". In the reversed head-tail setting (back-side setting) state, the close side 116 of the new passbook 103 is positioned at a left side of the drawing, and hence the forward-side flipping rollers 108 in FIG. 1 are incapable of performing a flipping operation. Meanwhile, the magnetic information 402 of the new passbook 103 is positioned at an upper portion of the front side of FIG. 4, and hence the MS unit 106 in FIG. 1 is incapable of reading the magnetic information 402 normally.

[0029] FIG. 5(b) depicts a state in which only the ori-

entations of the head and tail of both the new passbook 103 inserted from the cassette F (the first and second cassettes) 101 and the new passbook 103 inserted from the cassette R (the third and fourth cassettes) 102 are reversed. The orientations of the front and back are correct. This state will hereinafter be referred to as a "reversed head-tail setting (front-side setting) state". In the reversed head-tail setting (front-side setting) state, the close side 116 of the new passbook 103 is positioned at a left side of the drawing, and hence the forward-side flipping rollers 108 in FIG. 1 are incapable of performing a flipping operation. Meanwhile, the magnetic information 402 of the new passbook 103 is positioned at a lower portion of the back side of FIG. 4, and hence the MS unit 106 in FIG. 1 is incapable of reading the magnetic information 402 normally.

[0030] FIG. 5(c) depicts a state in which only the orientations of the front and back of both the new passbook 103 inserted from the cassette F (the first and second cassettes) 101 and the new passbook 103 inserted from the cassette R (the third and fourth cassettes) 102 are reversed. The orientations of the head and tail are correct. This state will hereinafter be referred to as a "back-side setting state". In the back-side setting state, the close side 116 of the new passbook 103 is positioned at a right side of the drawing, i.e., correctly positioned, and hence the forward-side flipping rollers 108 in FIG. 1 are capable of performing a flipping operation. However, the magnetic information 402 of the new passbook 103 is positioned at a lower portion of the front side of FIG. 4, and hence the MS unit 106 in FIG. 1 is incapable of reading the magnetic information 402 normally.

[0031] In accordance with the discussions above, the inability of the MS unit 106 to read the magnetic information 402 normally when the new passbook 103 is inserted into the printing/flipping mechanism unit 107 may lead to the determination that a wrong setting state, i.e., any of the reversed head-tail setting (the back-side setting) state in FIG. 5(a), the reversed head-tail setting (the front-side setting) state in FIG. 5(b), and the back-side setting state in FIG. 5(c), has occurred.

[0032] The inability of the MS unit 106 to read the magnetic information 402 normally occurring concurrently with the inability of the forward-side flipping rollers 108 to perform a flipping operation when the new passbook 103 is inserted into the printing/flipping mechanism unit 107 may lead to the determination that a wrong setting state, i.e., any of the reversed head-tail setting (the back-side setting) state in FIG. 5(a) and the reversed head-tail setting (the front-side setting) state in FIG. 5(b), has occurred.

[0033] In addition, the inability of the MS unit 106 to read the magnetic information 402 normally occurring concurrently with the forward-side flipping rollers 108 being able to perform the flipping operation when the new passbook 103 is inserted into the printing/flipping mechanism unit 107 may lead to the determination that the back-side setting state in FIG. 5 (c) has occurred.

[0034] An embodiment of a passbook issuing apparatus that is based on the aforementioned knowledge has the following block configuration. FIG. 6 is a block diagram of an embodiment of a passbook issuing apparatus.

[0035] A storage unit 601 holds a new passbook 602. The storage unit 601 corresponds to, for example, the cassette F (the first and second cassettes) 101 and/or the cassette R (the third and fourth cassettes) 102 in FIG. 1.

[0036] A new-passbook inserting unit 603 inserts the new passbook 602 from the storage unit 601 when a passbook change is made. The new-passbook inserting unit 603 corresponds to, for example, the inserter F 104 and/or the inserter R 105 in FIG. 1.

[0037] A magnetism reading unit 604 reads magnetic information attached to at least one of the front cover or the back cover of a passbook. The magnetism reading unit 604 corresponds to, for example, the MS unit 106 in FIG. 1.

[0038] A first flipping unit 605 and a second flipping unit 606 respectively flip open a passbook in a first direction and a second direction which is 180 degrees from the first direction. The first flipping unit 605 and the second flipping unit 606 correspond to, for example, the forward-side flipping rollers 108 and the reverse-side flipping rollers 109 in FIG. 1.

[0039] A head-tail turning unit 607 rotates a passbook in a plane that includes a passbook page space so as to reverse the head and tail. The head-tail turning unit 607 corresponds to, for example, the head-tail turning unit 110 in FIG. 1.

[0040] When the new-passbook inserting unit 603 inserts one new passbook 602, an insertion-orientation determining unit 608 determines a state of the reading of the magnetic information of the inserted new passbook 602 by the magnetism reading unit 604 and a state of the flipping by at least one of the first flipping unit 605 or the second flipping unit 606. In this way, the insertion-orientation determining unit 608 determines whether the orientation of the head and tail and the orientation of the front and back of the inserted new passbook 602 are correct. The insertion-orientation determining unit 608 is achieved as, for example, a function of firmware connected to the hardware in FIG. 1 (e.g., an element 703 in FIG. 7, which will be described hereinafter).

[0041] According to the result of the determination made by the insertion-orientation determining unit 608, an insertion-orientation controlling unit 609 controls the first flipping unit 605, the second flipping unit 606, and the head-tail turning unit 607 so as to correctly orient the head and tail and the front and back of the inserted new passbook 602. The insertion-orientation controlling unit is achieved as, for example, a function of firmware connected to the hardware in FIG. 1 (e.g., an element 703 in FIG. 7, which will be described hereinafter).

[0042] In the aforementioned configuration, the storage unit 601 may accept the insertion of the new passbook 602 regardless of the orientation of the head and

tail or the front and back.

[0043] For example, the insertion-orientation determining unit 608 determines that the magnetism reading unit 604 cannot read magnetic information attached to a first side of the inserted new passbook 602. Accordingly, the insertion-orientation determining unit 608 determines that at least one of the orientation of the head and tail or the orientation of the front and back of the inserted new passbook 602 is incorrect (e.g., the state illustrated in FIG. 5(a), (b), or (c)).

[0044] After the aforementioned determination with the magnetism reading unit 604, the insertion-orientation determining unit 608 further determines, for example, whether the first flipping unit 605 can flip open the inserted new passbook 602. Accordingly, the insertion-orientation determining unit 608 determines whether only the front and back of the inserted new passbook 602 are correctly oriented (e.g., the state illustrated in FIG. 5(c)) or whether at least the head and tail of the inserted new passbook 602 are correctly oriented (e.g., the state illustrated in FIG. 5(a) or (b)).

[0045] In addition, when, for example, the insertion-orientation determining unit 608 determines that at least the head and tail of the inserted new passbook 602 are incorrectly oriented after the aforementioned determination with the first flipping unit 605, the insertion-orientation controlling unit 609 performs the following operation. In particular, the insertion-orientation controlling unit 609 controls the head-tail turning unit 607 so as to reverse the orientation of the head and tail of the inserted new passbook 602, and, then, the insertion-orientation determining unit 608 determines that the magnetism reading unit 604 can read the magnetic information attached to the first side of the inserted new passbook 602, or the insertion-orientation determining unit 608 determines a classification on the inside cover. Accordingly, the insertion-orientation determining unit 608 determines that the incorrect orientation that was seen for only the head and tail of the inserted new passbook 602 has been corrected.

[0046] Meanwhile, the insertion-orientation determining unit 608 determines that the orientations of the head and tail and the front and back of the inserted new passbook 602 are incorrect, for example, when it is determined that the magnetism reading unit 604 cannot read magnetic information after the aforementioned head-tail turning operation or by determining a classification on the inside cover. In this case, for example, the insertion-orientation controlling unit 609 controls the head-tail turning unit 607 so as to reverse the orientation of the head and tail of the inserted new passbook 602 and controls the first flipping unit 605 or the second flipping unit 606 so as to flip through the pages of the inserted new passbook 602 to the front cover. In this way, the insertion-orientation controlling unit 609 corrects the orientations of both the head and tail and the front and back of the inserted new passbook 602.

[0047] The insertion-orientation determining unit 608 performs the following operation when, for example, the

insertion-orientation determining unit 608 first determines that the magnetism reading unit 604 cannot read the magnetic information attached to the first side of the inserted new passbook 602, then determines that the first flipping unit 605 can flip open the inserted new passbook 602, and finally determines that the orientation of only the front and back of the inserted new passbook 602 is incorrect. In particular, the insertion-orientation controlling unit 609 controls the first flipping unit 605 or the second flipping unit 606 so as to flip through the pages of the inserted new passbook 602 to the front cover and controls the head-tail turning unit 607 so as to reverse the orientation of the head and tail of the inserted new passbook 602. In this way, the insertion-orientation controlling unit 609 corrects the orientation of the front and back of the inserted new passbook 602.

[0048] In the aforementioned configuration illustrated in FIG. 6, magnetic information may be attached to only the back cover of the new passbook 602.

[0049] Alternatively, magnetic information may be attached to both the front cover and the back cover of the new passbook 602. In this case, the magnetism reading unit 604 may use two reading units to separately read the magnetic information on the front cover and the back cover of the new passbook 602.

[0050] In the following, descriptions will be given of details of first and second embodiments, which achieve a block configuration of the embodiment of the aforementioned passbook issuing apparatus as a specific controlling process for passbook issuance.

[0051] FIG. 7 is a system configuration diagram that achieves controlling processes of the first and second embodiments, which will be described hereinafter. An APL (application) 701 reports, to middleware 702, a designated passbook and an outlined instruction to transmit, for example, a print telegram or an MS (magnetic information) write telegram. In the control of the present embodiment, the middleware 702 basically issues and transmits various commands to PPR (passbook printer) firmware 703. Then, the PPR firmware 703 performs a mechanical operation via a PPR-machine control board (e.g., motor, sensor, and magnet) 704, which has the hardware configuration illustrated in FIG. 1, and the result is fed back from the PPR firmware 703 to the middleware 702.

[0052] For example, using the following procedure, a controlling process is achieved of determining whether the forward-side flipping rollers 108 in FIG. 1 can perform a flipping operation (determining whether the back-side setting state has occurred or whether the reversed head-tail setting (the back-side setting) state or the reversed head-tail setting (the front-side setting) state has occurred).

1. The middleware 702 transmits an issuance command (NSs 1 to 4).
2. The middleware 702 transmits a front-cover flip command (AT front cover).

3. When the process by the PPR firmware 703 succeeds, the middleware 702 returns a response to the APL 701 and waits for a next instruction. When the process by the PPR firmware 703 does not succeed, the middleware 702 transmits a reverse-flip command (AT reverse).

4. The middleware 702 transmits an inside-cover check command (AT reverse). When a bulge cannot be made by the firmware, the page is judged to be an inside cover. When the page is not an inside cover (when a bulge is sensed), the firmware repeats flipping.

5. The middleware 702 transmits a front-cover close command (AT front-cover close).

6. An ordinary transaction starts.

[0053] During each operation, when a mechanical operation is not completed, the middleware 702 transmits that state to the APL 701 and determines that a mechanical-operation error has occurred.

[0054] In the following, descriptions will be given in detail of a first embodiment of a controlling process for passbook issuance, which is based on the aforementioned basic operation. In each controlling process, commands and responses are transmitted or received as described above; however, detailed command-level operations are not described hereinafter because they can be readily appreciated from the aforementioned examples.

[0055] FIG. 8 is a flowchart illustrating a controlling process in an ordinary transaction in accordance with the first embodiment, the controlling process being performed when the new passbook 103 (FIG. 1) is inserted into the printing/flipping mechanism unit 107 depicted in FIG. 1 in a manner such that the head and tail and the front and back of the new passbook 103 are correctly oriented. The controlling process of the flowchart is, for example, an operation wherein a CPU (central processing unit) (not particularly illustrated) executes the middleware 702 in FIG. 7 stored in a memory (not particularly illustrated). FIG. 1 and FIG. 8 will be referenced hereinafter on an as-needed basis.

[0056] First, the MS unit 106 is controlled to read the magnetic information of the new passbook 103 (step S101).

[0057] The forward-side flipping rollers 108 are controlled to flip open the front cover of the new passbook 103 (step S102).

[0058] The scanner 113 is controlled to recognize a passbook classification by checking an inside-cover mark on the inside cover that has been flipped open (step S103).

[0059] The reverse-side flipping rollers 109 are controlled to close the front cover of the new passbook 103 (step S104).

[0060] The print head 112 is controlled to print characters on the front cover of the new passbook 103 (step S105).

[0061] The forward-side flipping rollers 108 are con-

trolled to flip open the front cover of the new passbook 103 (step S106).

[0062] The print head 112 is controlled to print characters on the inside cover, the forward-side flipping rollers 108 are then controlled to flip to one inner page, and, finally, the print head 112 is controlled to print characters on the inner page (step S107).

[0063] When the printing on the passbook is completed, the MS unit 106 is controlled to write magnetic information on the back cover of the new passbook 103 (step S108).

[0064] The passbook insertion unit 114 is controlled to return the new passbook 103 to the user (step S109).

[0065] FIG. 9, FIG. 10, and FIG. 11 are flowcharts illustrating a controlling process for the passbook issuance in accordance with the first embodiment. The controlling processes of the flowcharts are, for example, operations wherein a CPU (not particularly illustrated) executes the middleware 702 in FIG. 7 stored in a memory (not particularly illustrated). FIG. 1 and FIG. 9 will be referenced hereinafter on an as-needed basis.

[0066] FIG. 9 is a flowchart illustrating a controlling process (a determining process) in accordance with the first embodiment.

[0067] An instruction to issue a new passbook 103 is given to the cassette F (the first and second cassettes) 101 or the cassette R (the third and fourth cassettes) 102 (step S201). Consequently, the inserter F 104 or the inserter R 105 takes out one new passbook 103 from the cassette F (the first and second cassettes) 101 or the cassette R (the third and fourth cassettes) 102 and inserts this new passbook 103 into the printing/flipping mechanism unit 107.

[0068] Next, the MS unit 106 is controlled to make an attempt to read the magnetic information of the inserted new passbook 103 so as to check whether the magnetic information is present (step S202). This controlling process achieves the function of the insertion-orientation determining unit 608 in FIG. 6 to determine whether the magnetism reading unit 604 can read the magnetic information attached to a first side of the inserted new passbook 602.

[0069] A determination made in step S202 that the magnetic information is present may lead to the determination that both the head and tail and the front and back of the inserted new passbook 103 are correctly oriented, and if so an ordinary transaction process is performed (step S203). This process is the controlling process illustrated in FIG. 8.

[0070] A determination made in step S202 that magnetic information is not present leads to the determination that at least one of the orientation of the head and tail and the orientation of the front and back of the inserted new passbook 103 is incorrect (e.g., the state indicated by FIG. 5(a), (b), or (c)).

[0071] Subsequently, the forward-side flipping rollers 108 are controlled to determine whether the inserted new passbook 103 can be flipped open (step S204). This con-

trolling process achieves the function of the insertion-orientation determining unit 608 in FIG. 6 to determine whether the first flipping unit 605 can flip open the inserted new passbook 602 after the determination is made using the magnetism reading unit 604.

[0072] A determination made in step 204 that the passbook cannot be flipped open leads to the determination that the passbook is in the reversed head-tail setting (the back-side setting) state in FIG. 5(a) or the reversed head-tail setting (the front-side setting) state in FIG. 5(b), and hence the controlling process indicated by the flowchart in FIG. 10 is performed.

[0073] Meanwhile, a determination made in step S204 that the passbook can be flipped open leads to the determination that the passbook may possibly be in the back-side setting state depicted in FIG. 5(c). In this case, it is further determined whether or not a page mark of a page that has been flipped to is located on a left side (step S205). For example, a page mark is usually positioned on a left side. However, due to a user specification, a page mark is not always seen on the inside of the front cover or the inside of the back cover, and hence the forward-side flipping rollers 108 flip to an inner page several times so as to confirm that the page marks are located on the left side. When the page mark is not positioned on the left side, the passbook is judged to be in the back-side setting illustrated in FIG. 5(c), thereby performing the controlling process indicated by the flowchart in FIG. 11.

[0074] When the page mark is positioned on the left side, the new passbook 103 is judged to be correctly oriented, the reverse-side flipping rollers 109 are controlled to close the front cover (step S206), and the ordinary transaction process in step S203 is then performed.

[0075] FIG. 10 is a flowchart illustrating a controlling process performed when it is determined that a passbook cannot be flipped open in step S204 in FIG. 9 and that the passbook is in the reversed head-tail setting (the back-side setting) state in FIG. 5(a) or the reversed head-tail setting (the front-side setting) state in FIG. 5(b).

[0076] First, the head-tail turning unit 607 is controlled to turn the head and tail of the new passbook 103 (step S207). Consequently, the state of FIG. 5(a) or (b) is achieved, and the new passbook 103 rotates 180 degrees in a plane that includes a passbook page space of the new passbook 103. Accordingly, when the new passbook 103 is in the reversed head-tail setting (the back-side setting) state in FIG. 5(a), the close side 116 is located on a right side of FIG. 5, and the magnetic information 402 is located at a lower part of the front side of FIG. 5. Meanwhile, when the new passbook 103 is in the reversed head-tail setting (the front-side setting) state in FIG. 5(b), the close side 116 is located on a right side of FIG. 5, and the magnetic information 402 is located at an upper part of the back side of FIG. 5.

[0077] Next, the MS unit 106 is controlled to make an attempt to read the magnetic information of the inserted new passbook 103 so as to check whether the magnetic

information is present (step S208).

[0078] Accordingly, when the head and tail of the new passbook 103 that is in the reversed head-tail setting (the front-side setting) state of FIG. 5(b) are turned, the magnetic information 402 is located at an upper part of the back side of FIG. 5, i.e., a state that is the same as the state of FIG. 4 (a) or (b) is achieved, thereby determining in step S208 that the magnetic information is present. That is, the state of numeral 1001 in FIG. 10 is achieved. Subsequently, the ordinary transaction process in step S203 in FIG. 9 is performed.

[0079] The aforementioned processes, i.e., the head-tail turning process in step S207 and the controlling process of determining whether magnetic information is present in step S208, achieve the following function. That is, a function is achieved wherein the insertion-orientation controlling unit 609 in FIG. 6 controls the head-tail turning unit 607 so as to reverse the orientation of the head and tail of the inserted new passbook 602, and then the insertion-orientation determining unit 608 determines that the magnetic information attached to the first side of the new passbook 602 is readable. This leads to a determination that the inserted new passbook 602, which was incorrect only in terms of the orientation of the head and tail, has been corrected in a manner such that the head and tail are correctly oriented.

[0080] Meanwhile, when the head and tail of the new passbook 103 that is in the reversed head-tail setting (the back-side setting) state of FIG. 5 (a) are turned, the magnetic information 402 is located at a lower part of the front side of FIG. 5, thereby determining in step S208 that the magnetic information is not present.

[0081] In this case, the head-tail turning unit 607 is first controlled to turn the head and tail in step S207 and then to further turn the head and tail, thereby returning the passbook to the original state (step S209). Hence, the passbook returns to the reversed head-tail setting (the back-side setting) state of FIG. 5(b).

[0082] Next, the reverse-side flipping rollers 109 are controlled to repeatedly perform an operation to flip through an inside back cover and inner pages until an inside front cover is detected (the loop process of step S210→step S211→step S210).

[0083] When it is determined that the inside cover has been reached, the front cover is finally closed (step S211→step S212). In the detecting of an inside front cover, when a bulge (e.g., 205 in FIG. 2) of a page cannot be made in inner-page flipping control, the page is judged to be the inside cover. Consequently, the passbook is switched from the reversed head-tail setting (the back-side setting) state of FIG. 5(a) to the normal state of FIG. 4 (a) or (b), i.e., the state indicated as 1002 in FIG. 10. Subsequently, the ordinary transaction process in step S203 in FIG. 9 is performed.

[0084] The aforementioned controlling process of steps S209 to S212 achieves the functions of the insertion-orientation controlling unit 609 in FIG. 6 to reverse the orientation of the head and tail of the new passbook

602 and to control the first flipping unit 605 or the second flipping unit 606 so as to flip through the pages of the inserted new passbook 602 to the front cover. This corrects both of the orientations of the head and tail and the front and back of the inserted new passbook 602.

[0085] FIG. 11 is a flowchart illustrating a controlling process performed when the following conditions are satisfied: a passbook is judged to be able to be flipped open in step S204 in FIG. 9; the page mark is not judged to be on the left side in step S205; the passbook is judged to be in the back-side setting state of FIG. 5(c).

[0086] First, the forward-side flipping rollers 108 are controlled to repeatedly perform an operation to flip through inner pages until an inside front cover is detected (the loop process of step S213→step S214→step S213). In the detecting of an inside front cover, when a bulge (e.g., 204 in FIG. 2) of a page cannot be made in inner-page flipping control, the page is judged to be the inside cover.

[0087] Subsequently, when the inside cover is detected, the forward-side flipping rollers 108 are controlled to close the front cover (step S215).

[0088] Next, the head-tail turning unit 607 is controlled to turn the head and tail of the new passbook 103 (step S216).

[0089] Then, the MS unit 106 is controlled to check whether the magnetic information of the new passbook 103 is present (step S217).

[0090] Consequently, the new passbook 103 may return from the back-side setting state of FIG. 5(c) to the state of FIG. 4(a) or (b), leading to the determination that the magnetic information is present in step S217. That is, the passbook is in the state indicated as numeral 1101 in FIG. 11. Subsequently, the ordinary transaction process in step S203 in FIG. 9 is performed.

[0091] The aforementioned controlling process of steps S213 to S217 achieves the functions of the insertion-orientation controlling unit 609 in FIG. 6 to flip through the pages of the new passbook 602 to the front cover and to reverse the orientation of the head and tail of the new passbook 602. This corrects the orientation of the front and back of the inserted new passbook 602.

[0092] When magnetic information is not detected in step S217, the apparatus stops due to a judgment of an apparatus abnormality (step S218).

[0093] FIG. 12 illustrates an exemplary passbook specification in a second embodiment of a controlling process for passbook issuance. In the second embodiment, magnetic information (a magnetic stripe) 1201 and magnetic information (a magnetic stripe) 1202 are respectively attached to the front cover and the back cover of the new passbook 103 (FIG. 1). This allows one passbook to be used as, for example, both an ordinary-deposit passbook and a term-deposit passbook. For example, the pages that start from the front cover correspond to an ordinary-deposit passbook, and the pages that start from the back cover correspond to a term-deposit passbook. In the second embodiment, the MS unit 106 in FIG.

1 further includes mechanisms such as an MS 1 and an MS 2 in FIG. 12 that use two reading units to respectively read the magnetic information 1201 and the magnetic information 1202 attached to the front cover and the back cover of a new passbook.

[0094] In the second embodiment, when the new passbook 103 with the aforementioned mechanism is inserted in an incorrect orientation, the orientation may be corrected as in the case of the first embodiment.

[0095] FIG. 13 is a flowchart illustrating a controlling process (pattern 1) for an ordinary transaction performed in the second embodiment when the new passbook 103 (FIG. 1) is inserted into the printing/flipping mechanism unit 107 in FIG. 1 in a manner such that the head and tail and the front and back are correctly oriented. The controlling process of this flowchart is, for example, an operation wherein a CPU (not particularly illustrated) executes the middleware 702 in FIG. 7 that is stored in a memory (not particularly illustrated).

[0096] The controlling process illustrated by the flowchart in FIG. 13 is an extended version of the controlling process in accordance with the first embodiment illustrated by the flowchart in FIG. 8. Note that, in FIG. 13, those steps of performing the same processes as those performed in FIG. 8 are indicated using the same step numbers as those used in FIG. 8. In the following, FIG. 1, FIG. 8, and FIG. 13 will be referenced on an as-needed basis.

[0097] The processes of step S101', steps S102 to S107, and step S108' are substantially the same as those of steps S101 to S108 in FIG. 8. However, in the reading of magnetic information in step S101', and in the writing of magnetic information in step S108', a magnetism reading unit MS1 from among two magnetism reading units is used as indicated in FIG. 13. In these processes, characters are printed on the front cover and on inner pages associated with a front-cover-side item, and magnetic information is written. That is, in step S101', the magnetism reading unit MS1 is controlled to read the magnetic information of a new passbook 103. After all of the printing in the passbook is completed, in step S108', the magnetism reading unit MS1 is controlled to write magnetic information on the back cover of the new passbook 103.

[0098] The processes of steps S301 to S308, which are the processes of printing on a back cover and on inner pages associated with a back-cover-side item and of writing magnetic information, are similar to those of steps S101', steps 102 to S107, and step S108', with the only exception being that the order of the processes is reversed relative to those of steps S101', steps 102 to S107, and step S108'.

[0099] That is, first, a second reading unit MS2 of the MS unit 106 is controlled to read the magnetic information of the new passbook 103 (step S301).

[0100] The reverse-side flipping rollers 109 are controlled to flip open the back cover of the new passbook 103 (step S302).

[0101] The scanner 113 is controlled to recognize a

passbook classification (e.g., term deposit) by checking an inside-cover mark on the inside back cover that has been flipped open (step S303).

5 **[0102]** The forward-side flipping rollers 108 are controlled to close the back cover of the new passbook 103 (step S304).

[0103] The print head 112 is controlled to print characters on the back cover of the new passbook 103 (step S305). The printing is performed in a discharge direction and is thus inverted.

10 **[0104]** The reverse-side flipping rollers 109 are controlled to flip open the back cover of the new passbook 103 (step S306).

[0105] The print head 112 is controlled to print characters on the inside back cover, the reverse-side flipping rollers 109 are then controlled to flip to one inner page, and, finally, the print head 112 is controlled to print characters on the inner page (step S307). The printing is also performed in a discharge direction and is thus inverted.

20 **[0106]** When the printing on the passbook is completed, the second reading unit MS2 of the MS unit 106 is controlled to write magnetic information on the front cover of the new passbook 103 (step S308).

[0107] After the aforementioned processes, the passbook insertion unit 114 is controlled to return the new passbook 103 to the user (step S309).

[0108] FIG. 14 is a flowchart illustrating a controlling process (pattern 2) for an ordinary transaction performed in the second embodiment when the new passbook 103 is inserted into the printing/flipping mechanism unit 107 in FIG. 1 in a manner such that the head and tail and the front and back are correctly oriented. The controlling process of this flowchart is, for example, an operation wherein a CPU (not particularly illustrated) executes the middleware 702 in FIG. 7 that is stored in a memory (not particularly illustrated).

[0109] In the controlling process (pattern 1) for the ordinary transaction in FIG. 13, the two reading units MS1 and MS2 are used for two items so as to print characters on a passbook and to write magnetic information. By contrast, the controlling process (pattern 2) for the ordinary transaction in FIG. 14 is an embodiment wherein the MS unit 106 in FIG. 1 includes only one reading unit MS, as in the case of the first embodiment. However, the number of pieces of the magnetic information on a passbook is two, as indicated by numerals 1201 and 1202 in FIG. 12. In FIG. 14, the steps of performing the same processes as those in FIG. 8 are indicated using the same step numbers as those in FIG. 8. FIG. 1, FIG. 8, and FIG. 14 will be referenced hereinafter on an as-needed basis.

[0110] The processes of steps S101 to S108 are substantially the same as those of steps S101 to S108 in FIG. 8. In these processes, characters are printed on the front cover and on inner pages associated with a front-cover-side item, and magnetic information is written.

[0111] Next, in step S108, under a condition in which the back cover faces upward, the head-tail turning unit 607 is controlled to turn the head and tail of the new

passbook 103.

[0112] The processes of steps S401 to S408, which are the processes of printing on a back cover and on inner pages associated with a back-cover-side item and of writing magnetic information, are similar to those of steps S101 to S108 with the only exception being that the order of the processes is reversed with respect to those of steps S101 to S108.

[0113] That is, first, a reading unit MS of the MS unit 106 is controlled to read the magnetic information of the new passbook 103 (step S401).

[0114] The forward-side flipping rollers 109 are controlled to flip open the back cover of the new passbook 103 (step S402).

[0115] The scanner 113 is controlled to recognize a passbook classification (e.g., term deposit) by checking an inside-cover mark on the inside back cover that has been flipped open (step S403).

[0116] The reverse-side flipping rollers 109 are controlled to close the back cover of the new passbook 103 (step S404).

[0117] The print head 112 is controlled to print characters on the back cover of the new passbook 103 (step S405).

[0118] The forward-side flipping rollers 108 are controlled to flip open the back cover of the new passbook 103 (step S406).

[0119] The print head 112 is controlled to print characters on the inside back cover, the forward-side flipping rollers 108 are then controlled to flip to one inner page, and, finally, the print head 112 is controlled to print characters on the inner page (step S407).

[0120] When the printing on the passbook is completed, the reading unit MS of the MS unit 106 is controlled to write magnetic information on the front cover of the new passbook 103 (step S408).

[0121] After the aforementioned processes, the passbook insertion unit 114 is controlled to return the new passbook 103 to the user (step S409).

[0122] FIG. 15, FIG. 16, and FIG. 17 are flowcharts illustrating a controlling process for the passbook issuance in accordance with the second embodiment. The controlling processes of the flowcharts are, for example, operations wherein a CPU (not particularly illustrated) executes the middleware 702 in FIG. 7 stored in a memory (not particularly illustrated). The operations in FIG. 15, FIG. 16, and FIG. 17, related to the second embodiment, are substantially the same as the operations in FIG. 9, FIG. 10, and FIG. 11, related to the first embodiment. Note that, in FIG. 15, FIG. 16, and FIG. 17, the steps of performing the same controlling processes as those performed in FIG. 9, FIG. 10, and FIG. 11 are indicated using the same step numbers as those used in FIG. 9, FIG. 10, and FIG. 11. FIG. 1, FIG. 9, FIG. 10, FIG. 11, FIG. 15, FIG. 16, and FIG. 17 will be referenced hereinafter on an as-needed basis.

[0123] FIG. 15 is a flowchart illustrating a controlling process (a determining process) in accordance with the

second embodiment. The flowchart of FIG. 15 is different from the flowchart of FIG. 9 of the first embodiment in the sense that steps S202, S203, and S205 in FIG. 9 have respectively been replaced with steps S501, S502, and S503 in FIG. 15. Another difference is that, in step S504, an inside cover is opened by flipping a front cover or a back cover using the forward-side flipping rollers 108 or the reverse-side flipping rollers 109, and, in step S505, an item on the opened inside cover is identified. This is because, for the new passbook 103 with a plurality of items, the front-side setting (normal) state and the back-side setting state cannot be distinguished from each other by checking whether magnetic information is present because the magnetic information is provided on both the front cover and the back cover. The item for the front cover (ordinary deposit) is typically different from the item for the back cover (term deposit), and hence determining the item indicated on an inside cover allows a determination to be made as to which of the front cover and the back cover is being referenced.

[0124] In the first embodiment, one reading unit (MS) of the MS unit 106 in FIG. 1 is used to check whether magnetic information is present in step S202 of FIG. 9. In the second embodiment, by contrast, the MS1 from among the two reading units MS1 and MS2 in FIG. 12 that form the MS unit 106 in FIG. 1 is used to check whether magnetic information is present in step S501 of FIG. 15. In addition, in step S504, an inside cover is opened by flipping the front cover or the back cover using the forward-side flipping rollers 108 or the reverse-side flipping rollers 109, and, in step S505, an item indicated on the opened inside cover is checked. When the item is judged to be associated with the front cover in the determination in step S505, step S502 is performed, and, when the item is judged to be associated with the back cover in the determination in step S505, the flowchart of FIG. 17 is performed.

[0125] For the first embodiment, details of the controlling process in the ordinary transaction of step S203 of FIG. 9 were indicated with reference to the flowchart of FIG. 8; however, details of the controlling process in the ordinary transaction of step S502 in FIG. 15 are indicated with reference to any of the aforementioned flowcharts of FIG. 13 and FIG. 14.

[0126] In addition, in the first embodiment, after the new passbook 103 is judged to have been flipped open by the forward-side flipping rollers 108 in step S204 of FIG. 9, the passbook is judged to be in the back-side setting state when a page mark is found to not be located on a left side in step S205. In the second embodiment, by contrast, after the new passbook 103 is judged to have been flipped open by the forward-side flipping rollers 108 in step S204 of FIG. 15, the following judgment is made. That is, the passbook is judged to be in the back-side setting state when the magnetism reading unit MS2 from among the two magnetism reading units of the MS unit 106 in FIG. 1 confirms that magnetic information is present in step S503. This is because, in the case of a

new passbook 103 with a plurality of items, a page mark is detected on a left side even when the passbook is in the back-side setting state because page marks are located on both sides.

[0127] FIG. 16 is a flowchart illustrating a controlling process performed in the second embodiment when it is determined in step S204 of FIG. 15 that the passbook cannot be flipped open and that the passbook is in the reversed head-tail setting (the back-side setting) state of FIG. 5(a) or the reversed head-tail setting (the front-side setting) state of FIG. 5(b). The flowchart of the second embodiment is different from the flowchart of the first embodiment illustrated in FIG. 10 in the sense that, instead of the checking for the presence/absence of magnetism in step S208, a process is performed of opening an inside cover by flipping a front cover or a back cover using the forward-side flipping rollers 108 or the reverse-side flipping rollers 109 in step S504 so as to check the item indicated on the opened inside cover in step S505. This is because, for the new passbook 103 with a plurality of items, the reversed head-tail setting (the front-side setting) state and the reversed head-tail setting (the back-side setting) state cannot be distinguished from each other by checking whether magnetic information is present because magnetic information is provided on both the front cover and the back cover. The item for the front cover (ordinary deposit) is typically different from the item for the back cover (term deposit), and hence determining the item indicated on an inside cover allows a determination to be made as to which of the front cover and the back cover is being referenced. The other controlling processes are substantially the same as those of the flowchart of FIG. 10 in accordance with the first embodiment. Accordingly, even in the case of a new passbook 103 with a plurality of items, a determination may be made as to which of the reversed head-tail setting (the front-side setting) state and the reversed head-tail setting (the back-side setting) state the new passbook 103 is in.

[0128] FIG. 17 is a flowchart illustrating a controlling process performed when all of the following three conditions are satisfied: the passbook is judged to be able to be flipped open in step S204 of FIG. 15; magnetism is judged to be present as a result of the reading by the reading unit MS2 in step S503; and the passbook is judged to be in the back-side setting state of FIG. 5(c). The processes of the flowchart of the second embodiment are also substantially the same as those of the first embodiment illustrated in FIG. 11, with the only exception being that, instead of the checking for the presence/absence of magnetism in step S217, it is checked in step S506 whether magnetism is present using one magnetism reading unit MS1 from among the two magnetism reading units of the MS unit 106 in FIG. 1. Accordingly, even in the case of a new passbook 103 with a plurality of items, the back-side setting state may be detected.

Claims

1. A passbook issuing apparatus including one or more storage units that hold a new passbook, a new-passbook inserting unit that inserts the new passbook from the storage unit when a passbook change is made, a magnetism reading unit that reads magnetic information attached to at least one of a front cover or a back cover of the passbook, first and second flipping units that respectively flip open the passbook in a first direction and a second direction which is 180 degrees from the first direction, and a head-tail turning unit that rotates the passbook in a plane that includes a passbook page space so as to reverse a head and a tail the passbook issuing apparatus comprising:

an insertion-orientation determining unit configured to, when the new-passbook inserting unit inserts one new passbook, determine whether an orientation of a head and tail and an orientation of a front and back of the inserted new passbook are correct by determining a state of the reading of the magnetic information of the inserted new passbook by the magnetism reading unit and a state of the flipping by at least one of the first or second flipping unit; and

an insertion-orientation controlling unit configured to control the first and second flipping units and the head-front turning unit according to a result of the determination so as to correctly orient the head and tail and the front and back of the inserted new passbook.

2. The passbook issuing apparatus according to claim 1, wherein the storage unit accepts the insertion of the new passbook regardless of the orientation of the head and tail or the front and back.
3. The passbook issuing apparatus according to claim 1, wherein when the insertion-orientation determining unit determines that the magnetism reading unit is incapable of reading the magnetic information attached to the first side of the inserted new passbook, the insertion-orientation determining unit determines that at least one of the orientation of the head and tail or the orientation of the front and back of the inserted new passbook is incorrect.
4. The passbook issuing apparatus according to claim 3, wherein after the determination in claim 3 is made, the insertion-orientation determining unit further determines whether the first flipping unit is capable of flipping open the inserted new passbook, so as to determine whether only the orientation of the front and back of

the inserted new passbook is correct or whether at least the orientation of the head and tail of the inserted new passbook is correct.

5. The passbook issuing apparatus according to claim 4, wherein
after the determination in claim 4 is made, when the insertion-orientation determining unit determines that at least the orientation of the head and tail of the inserted new passbook is incorrect, the insertion-orientation controlling unit controls the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook, and then the insertion-orientation determining unit determines that the magnetism reading unit is capable of reading the magnetic information attached to the first side of the inserted new passbook or recognizes an item indicated on an inside cover, thereby determining that the orientation of the head and tail of the inserted new passbook has been corrected.
6. The passbook issuing apparatus according to claim 4, wherein
after the determination in claim 4 is made, when the insertion-orientation determining unit determines that at least the orientation of the head and tail of the inserted new passbook is incorrect, the insertion-orientation controlling unit controls the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook, and then the insertion-orientation determining unit determines that the magnetism reading unit is incapable of reading the magnetic information attached to the first side of the inserted new passbook or recognizes an item indicated on an inside cover, thereby determining that both the orientation of the head and tail and the orientation of the front and back of the inserted new passbook are incorrect.
7. The passbook issuing apparatus according to claim 6, wherein
when the insertion-state determining unit determines that both the orientation of the head and tail and the orientation of the front and back of the inserted new passbook are incorrect, the insertion-orientation controlling unit controls the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook and controls the first or second flipping unit to flip through pages of the inserted new passbook to the front cover, thereby correcting both the orientation of the head and tail and the orientation of the front and back of the inserted new passbook.
8. The passbook issuing apparatus according to claim 4, wherein
after the determination in claim 4 is made, when the insertion-orientation determining unit determines

that only the orientation of the front and back of the inserted new passbook is incorrect, the insertion-orientation controlling unit controls the first or second flipping unit to flip through pages of the inserted new passbook to the front cover and controls the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook, thereby correcting the orientation of the front and back of the inserted new passbook.

9. The passbook issuing apparatus according to claim 1, wherein
the magnetic information is attached to only the back cover of the new passbook.
10. The passbook issuing apparatus according to claim 1, wherein
the magnetic information is attached to both the front cover and the back cover of the new passbook.
11. The passbook issuing apparatus according to claim 10, wherein
the magnetism reading unit uses two reading units to separately read the magnetic information on the front cover and the magnetic information on the back cover of the new passbook.
12. A passbook issuing method for which an apparatus is used, the apparatus including one or more storage units that hold a new passbook, a new-passbook inserting unit that inserts the new passbook from the storage unit when an old-passbook change is made, a magnetism reading unit that reads magnetic information attached to at least one of a front cover or a back cover of the passbook, first and second flipping units that respectively flip open the passbook in a first direction and a second direction which is 180 degrees from the first direction, and a head-tail turning unit that rotates the passbook in a plane that includes a passbook page space so as to reverse a head and a tail, the passbook issuing method comprising:

when the new-passbook inserting unit inserts one new passbook, determining whether an orientation of a head and tail and an orientation of a front and back of the inserted new passbook are correct by determining a state of the reading of the magnetic information of the inserted new passbook by the magnetism reading unit and a state of the flipping by at least one of the first or second flipping units; and
controlling the first and second flipping units and the head-front turning unit according to a result of the determination so as to correctly orient the head and tail and the front and back of the inserted new passbook.

13. The passbook issuing method according to claim 12, wherein the storage unit accepts the insertion of the new passbook regardless of the orientation of the head and tail or the front and back.

14. The passbook issuing method according to claim 12, comprising:

when the magnetism reading unit is judged to be incapable of reading the magnetic information attached to the first side of the inserted new passbook, determining that at least one of the orientation of the head and tail or the orientation of the front and back of the inserted new passbook is incorrect.

15. The passbook issuing method according to claim 14, comprising:

after the determining in claim 14, further determining whether the first flipping unit is capable of flipping open the inserted new passbook, so as to determine whether only the orientation of the front and back of the inserted new passbook is correct or whether at least the orientation of the head and tail of the inserted new passbook is correct.

16. The passbook issuing method according to claim 15, comprising:

after the determining in claim 15, when at least the orientation of the head and tail of the inserted new passbook is determined to be incorrect, controlling the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook, and then the insertion-orientation determining unit determining that the magnetism reading unit is capable of reading the magnetic information attached to the first side of the inserted new passbook, thereby determining that the orientation of the head and tail of the inserted new passbook has been corrected.

17. The passbook issuing method according to claim 15, comprising:

after the determining in claim 15, when at least the orientation of the head and tail of the inserted new passbook is determined to be incorrect, controlling the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook, and then determining that the magnetism reading unit is incapable of reading the magnetic information attached to the first side of the inserted new passbook, thereby determining that both the orientation of the head

and tail and the orientation of the front and back of the inserted new passbook are incorrect.

18. The passbook issuing method according to claim 17, comprising:

when both the orientation of the head and tail and the orientation of the front and back of the inserted new passbook are determined to be incorrect, controlling the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook and controlling the first or second flipping unit to flip through pages of the inserted new passbook to the front cover, thereby correcting both the orientation of the head and tail and the orientation of the front and back of the inserted new passbook.

19. The passbook issuing method according to claim 15, comprising:

after the determining in claim 15, when only the orientation of the front and back of the inserted new passbook is determined to be incorrect, controlling the head-tail turning unit to reverse the orientation of the head and tail of the inserted new passbook and controlling the first or second flipping unit to flip through pages of the inserted new passbook to the front cover, thereby correcting the orientation of the front and back of the inserted new passbook.

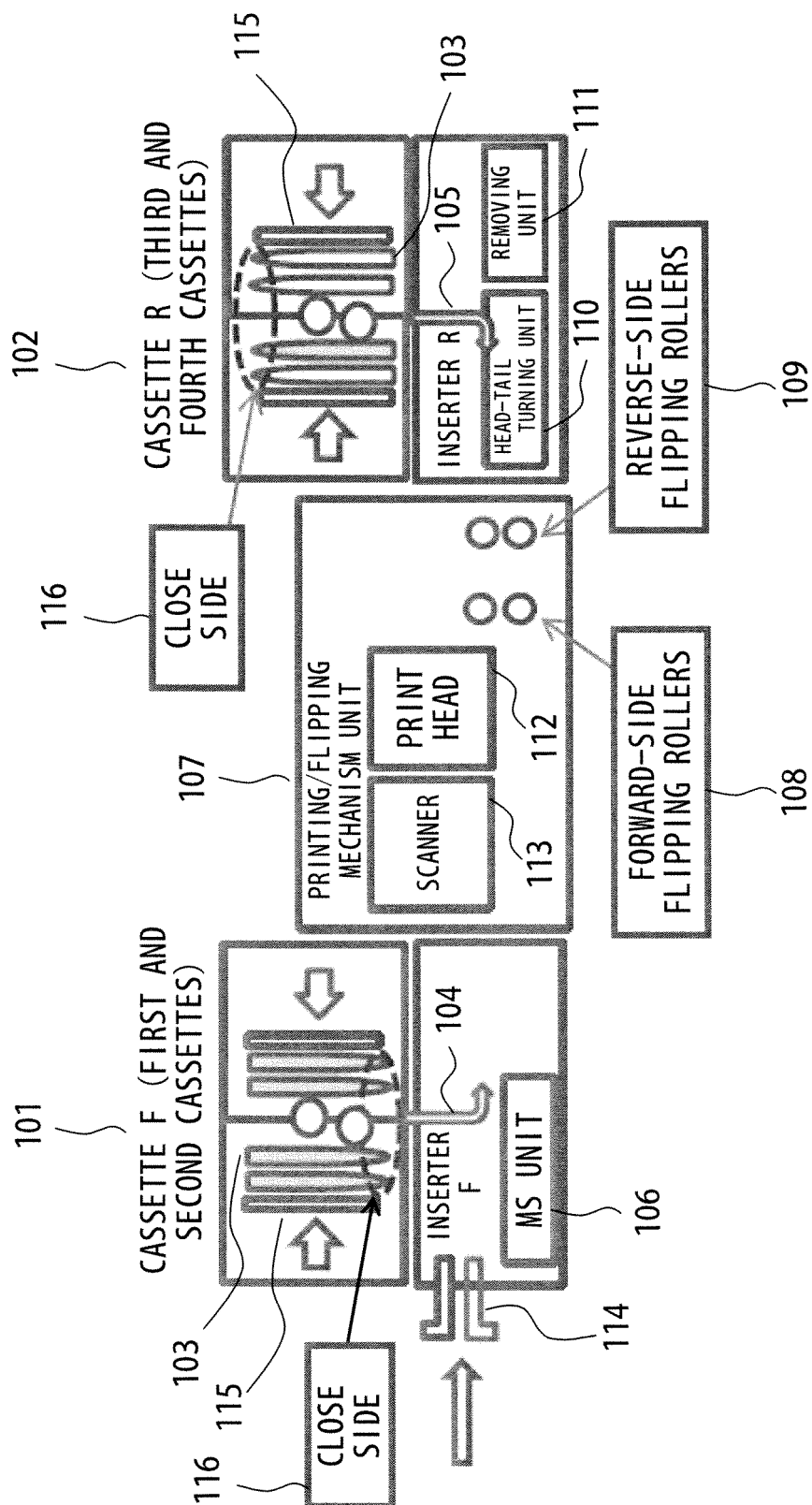


FIG. 1

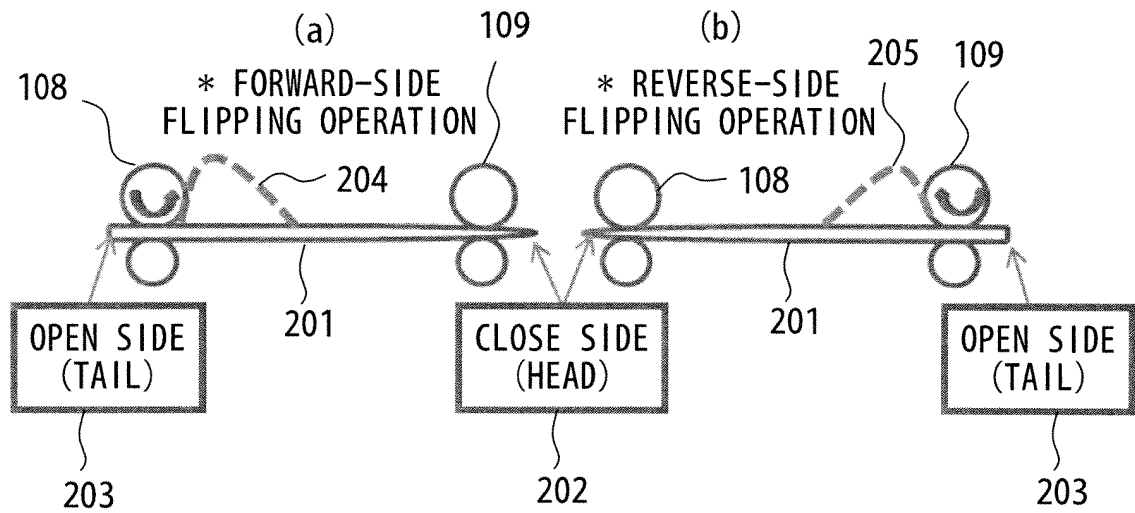


FIG. 2

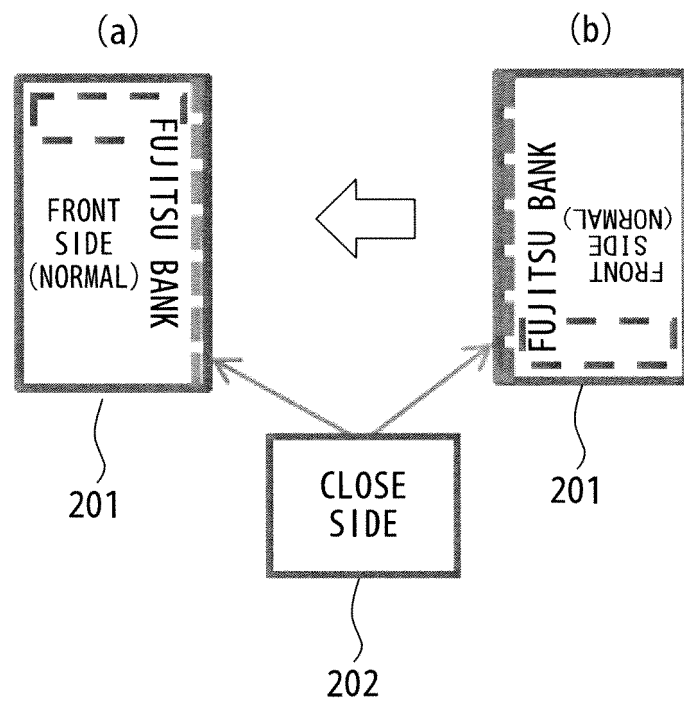


FIG. 3

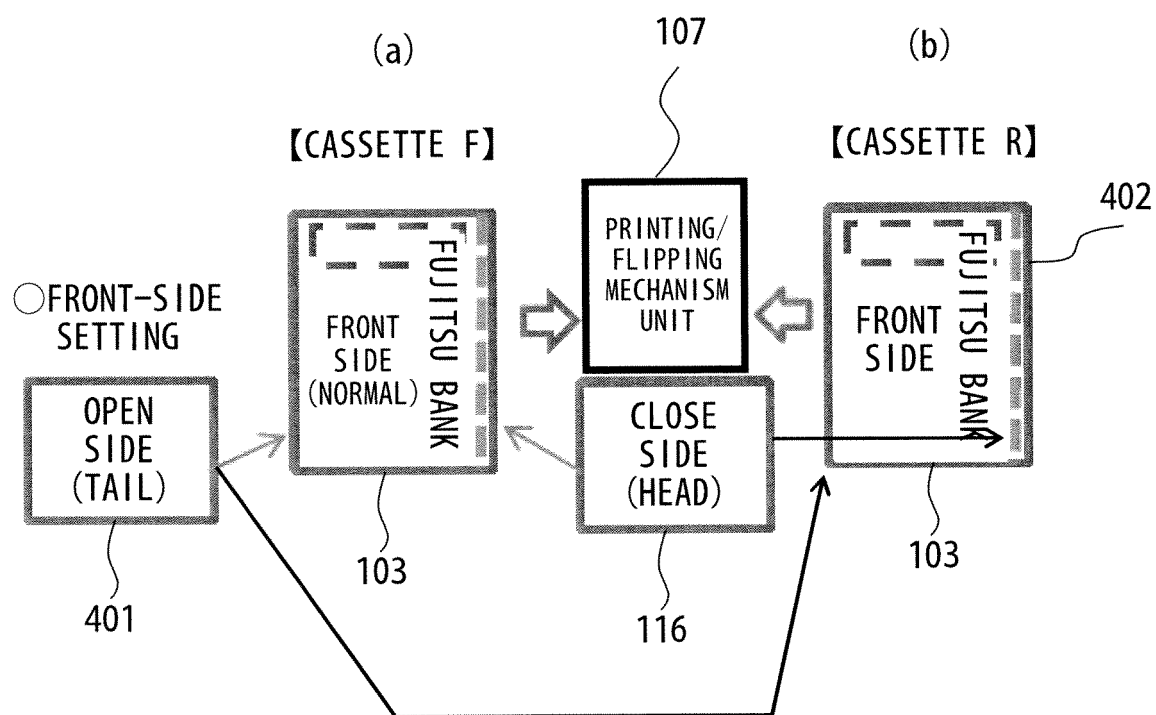


FIG. 4

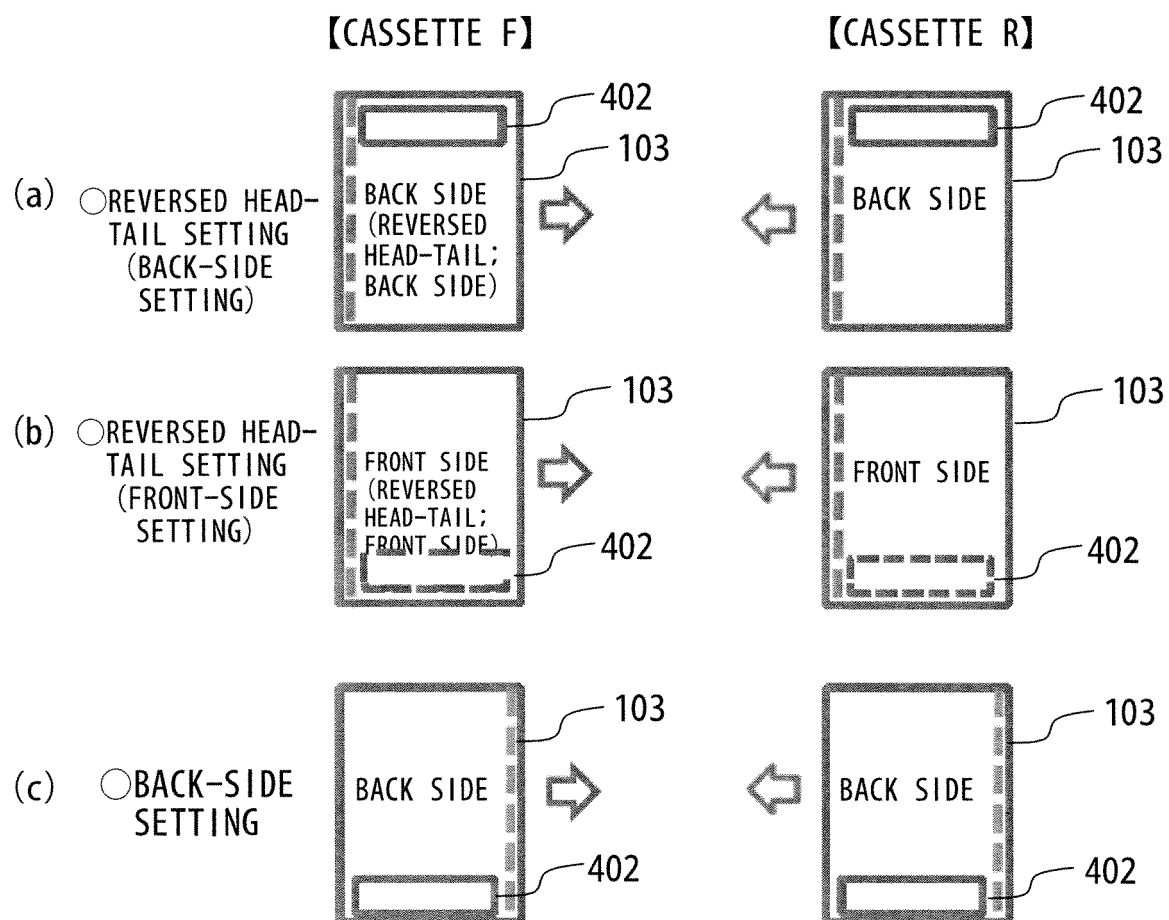


FIG. 5

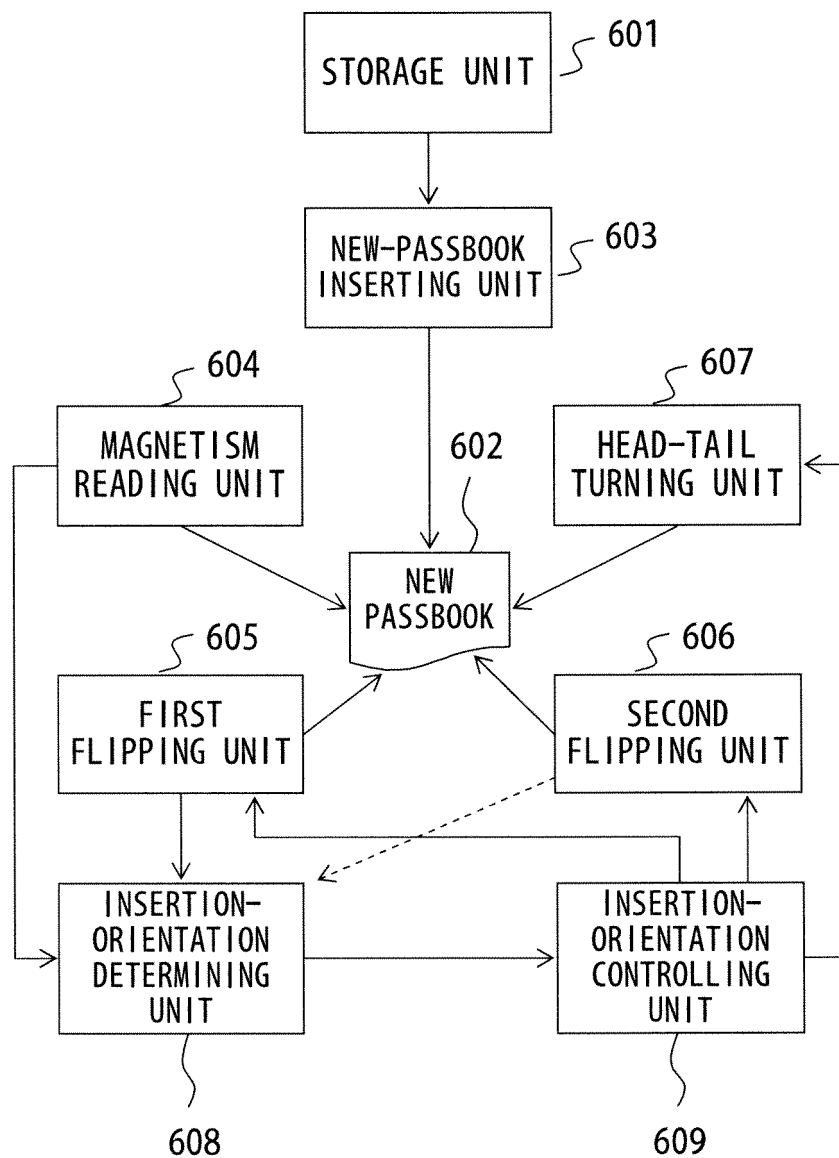


FIG. 6

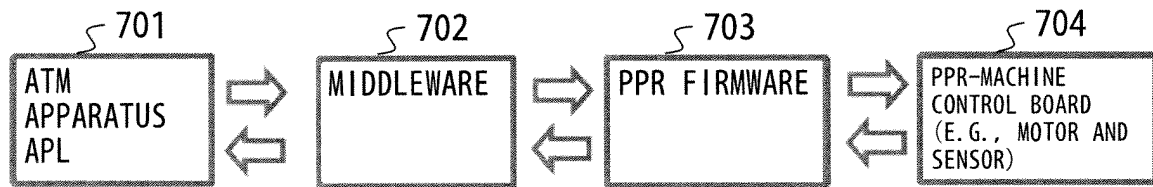


FIG. 7

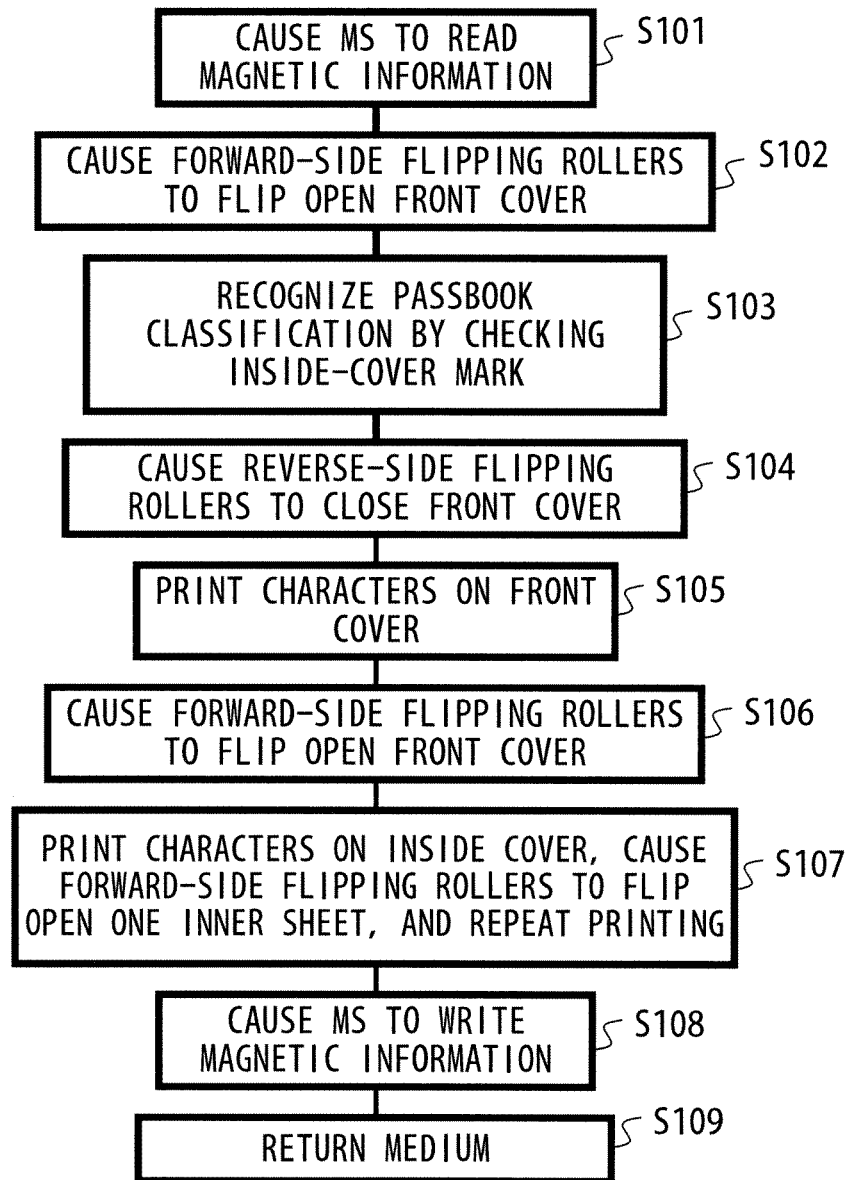
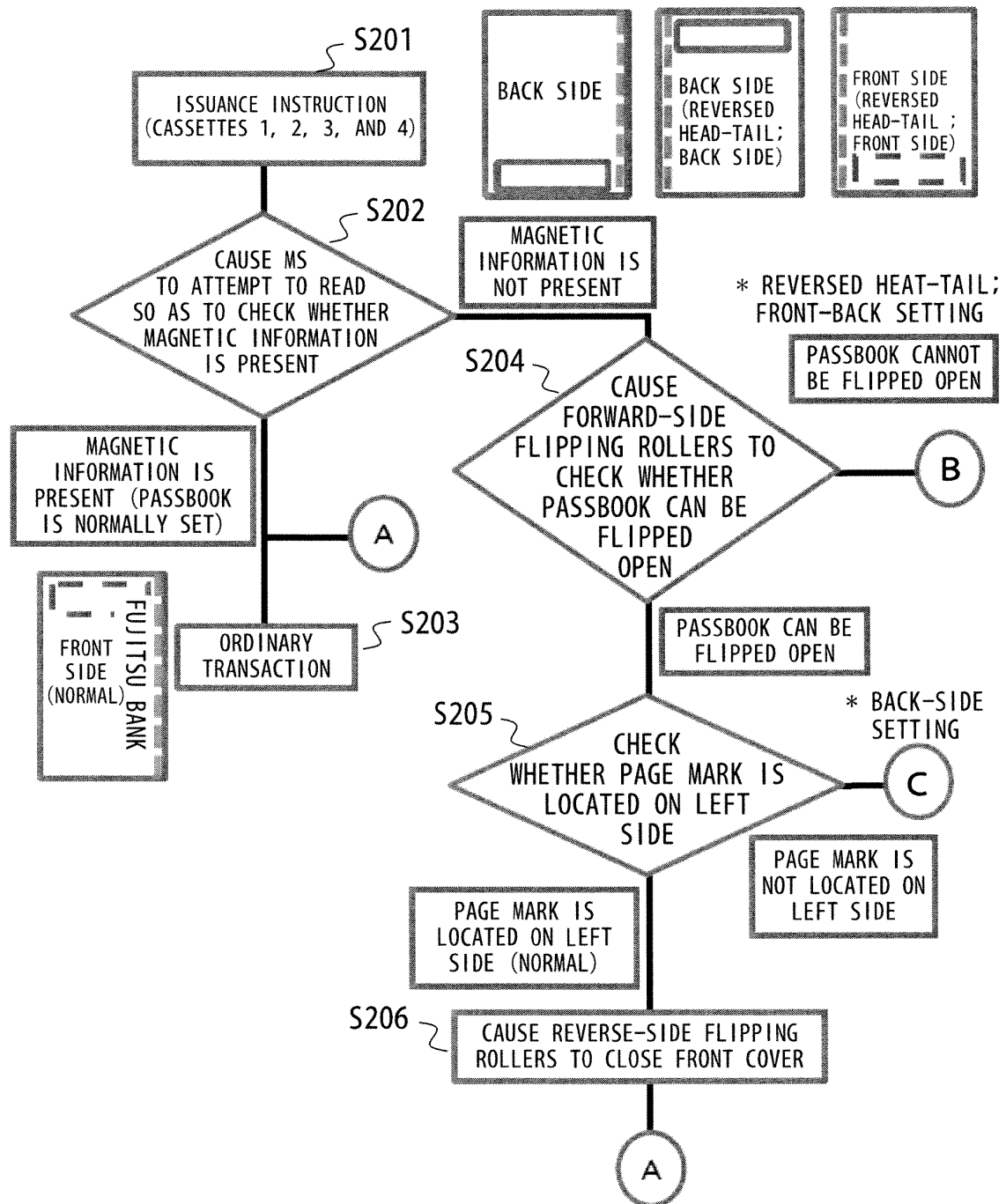


FIG. 8



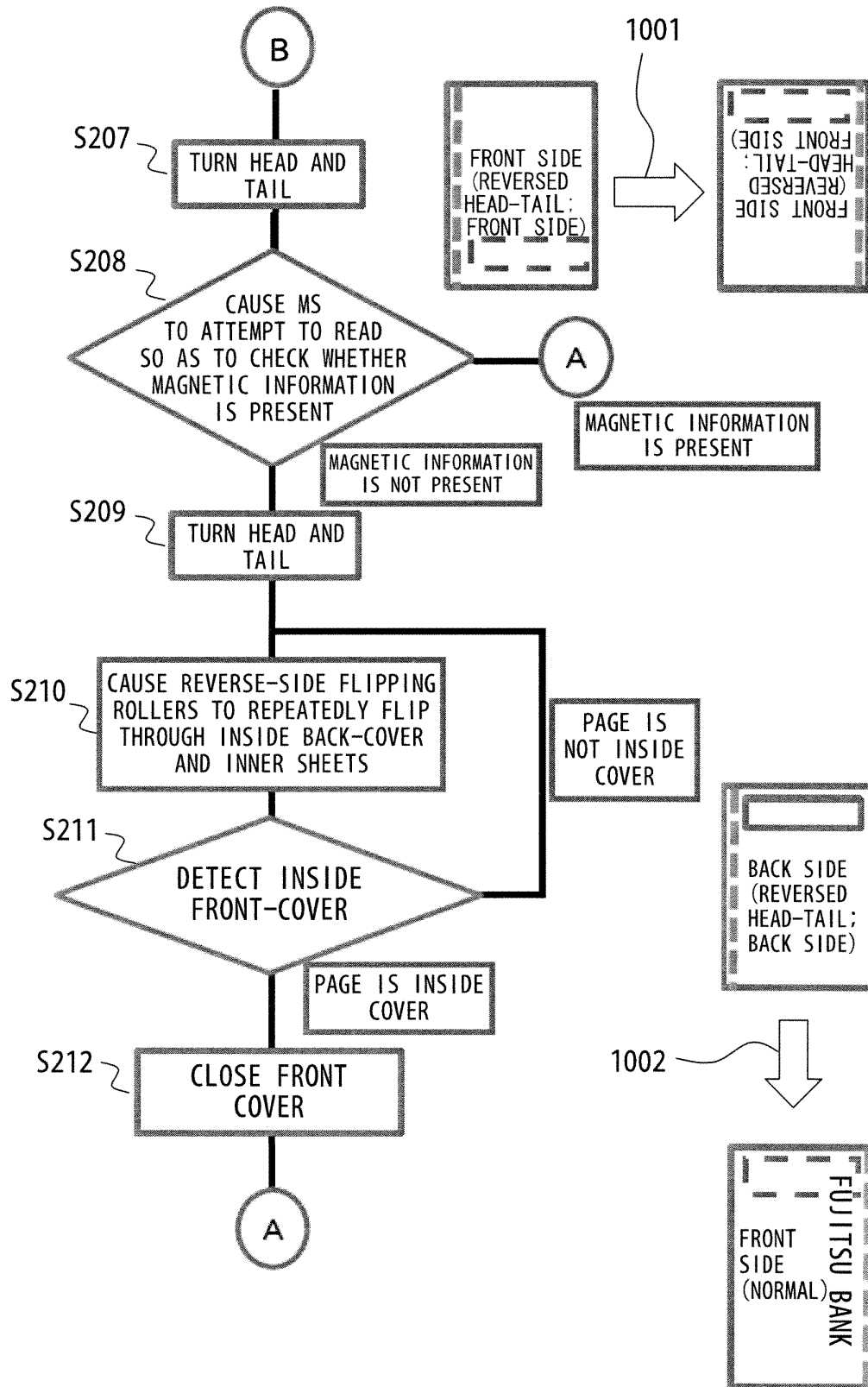


FIG. 10

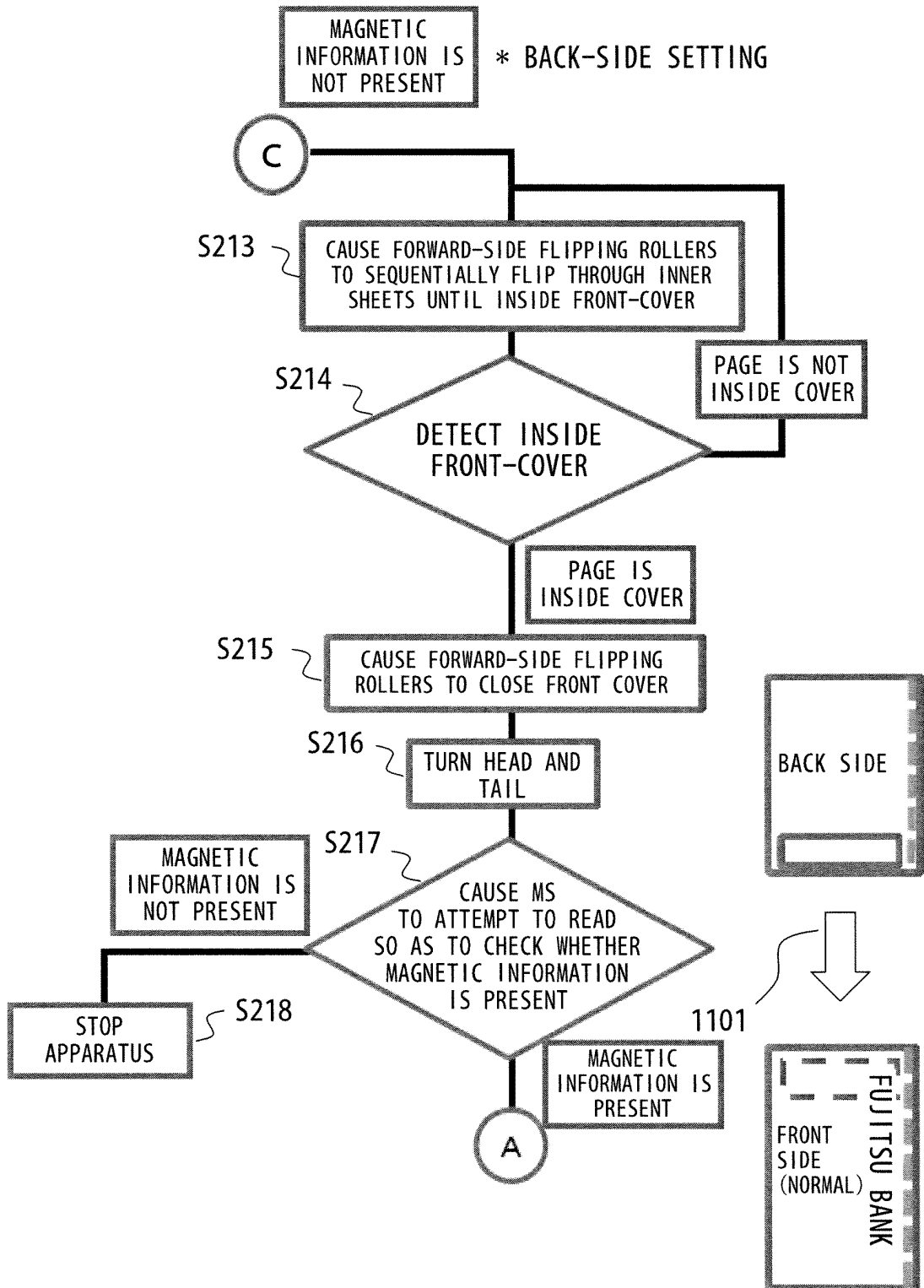


FIG. 11

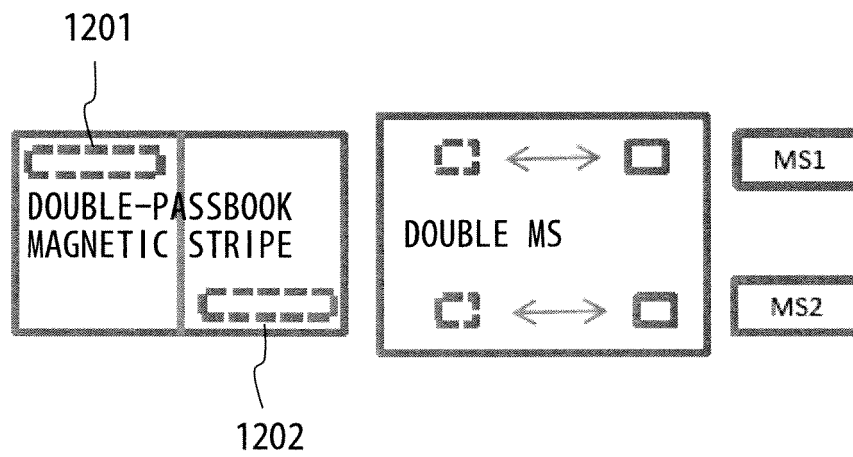


FIG. 12

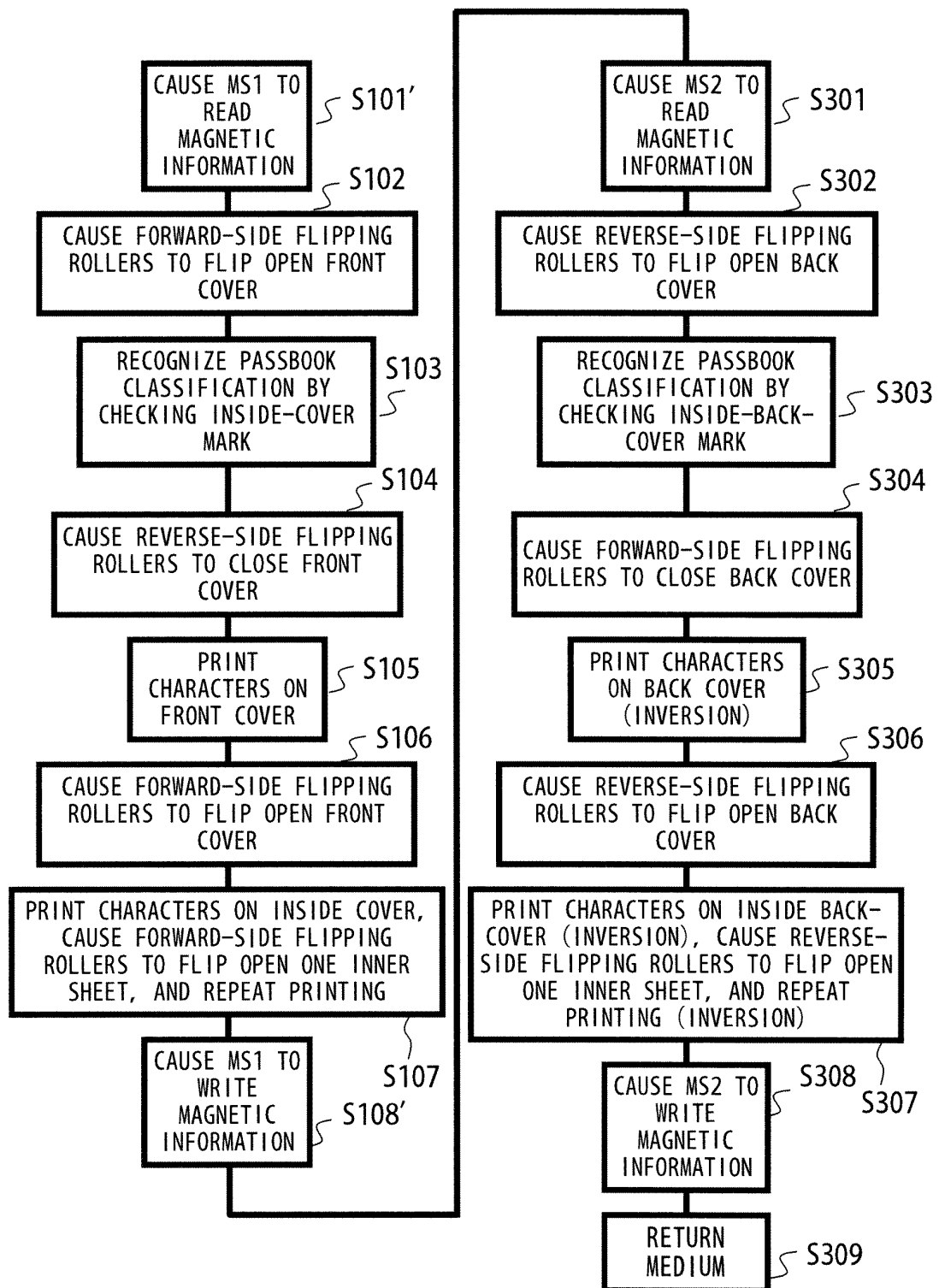


FIG. 13

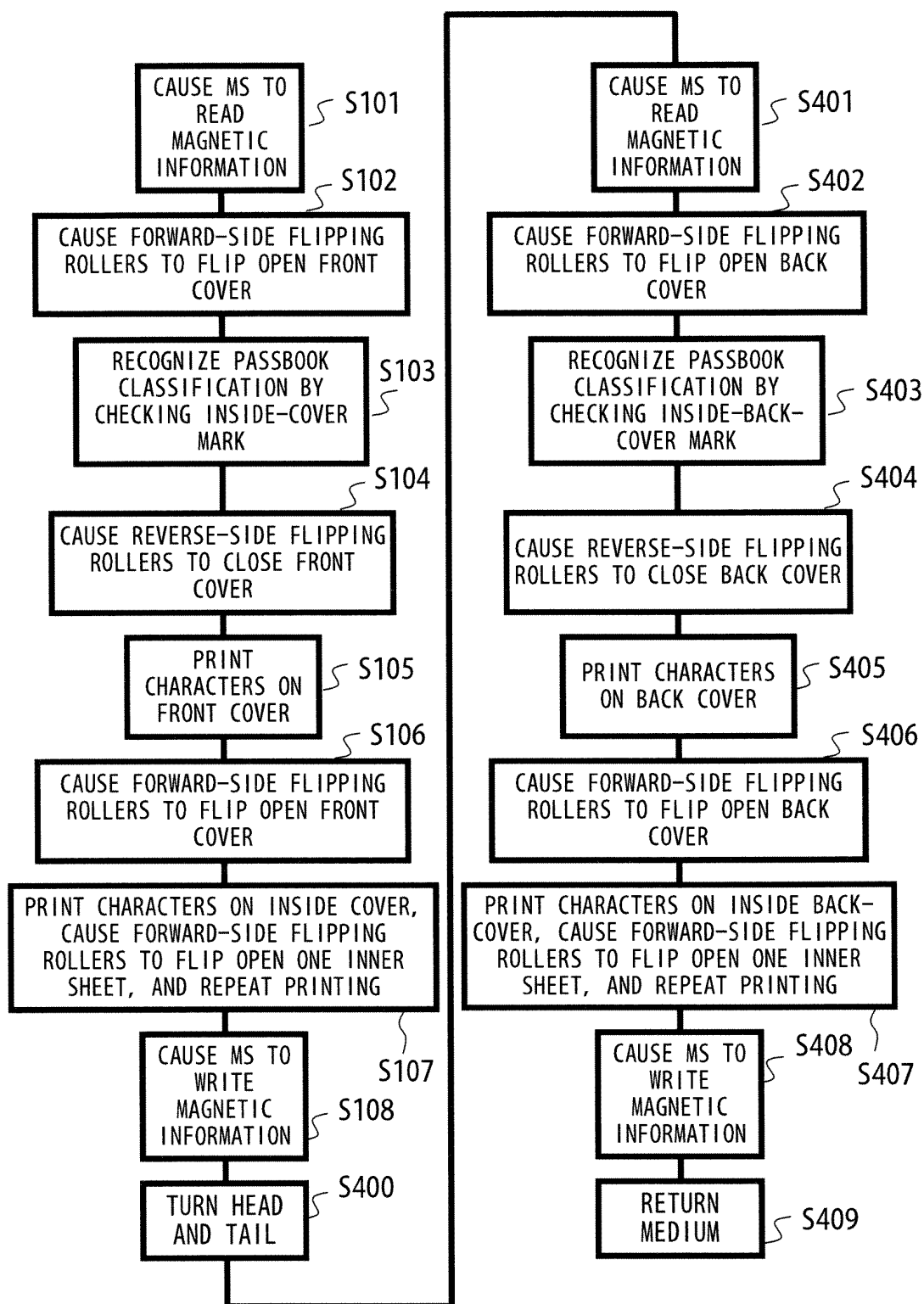


FIG. 14

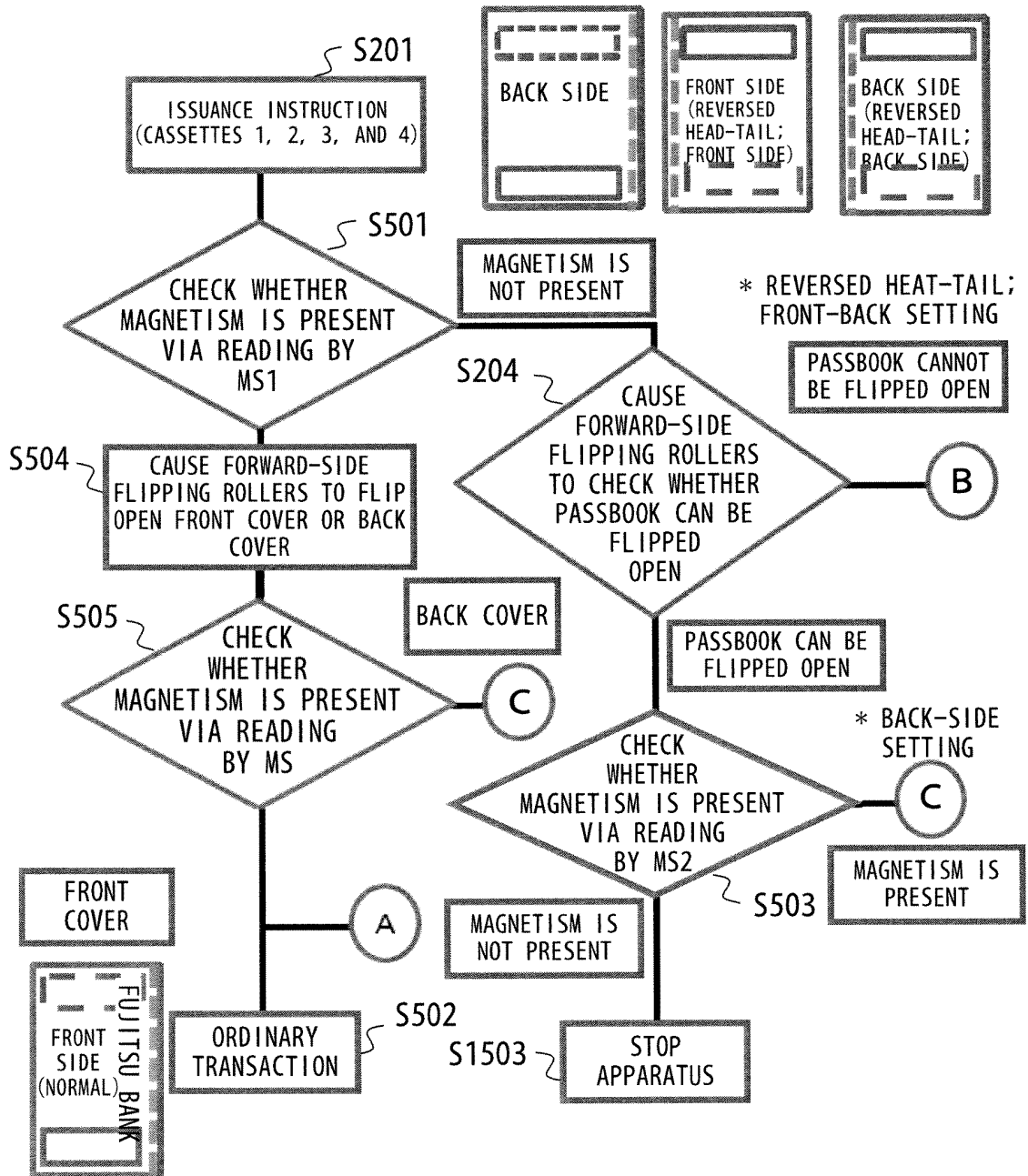


FIG. 15

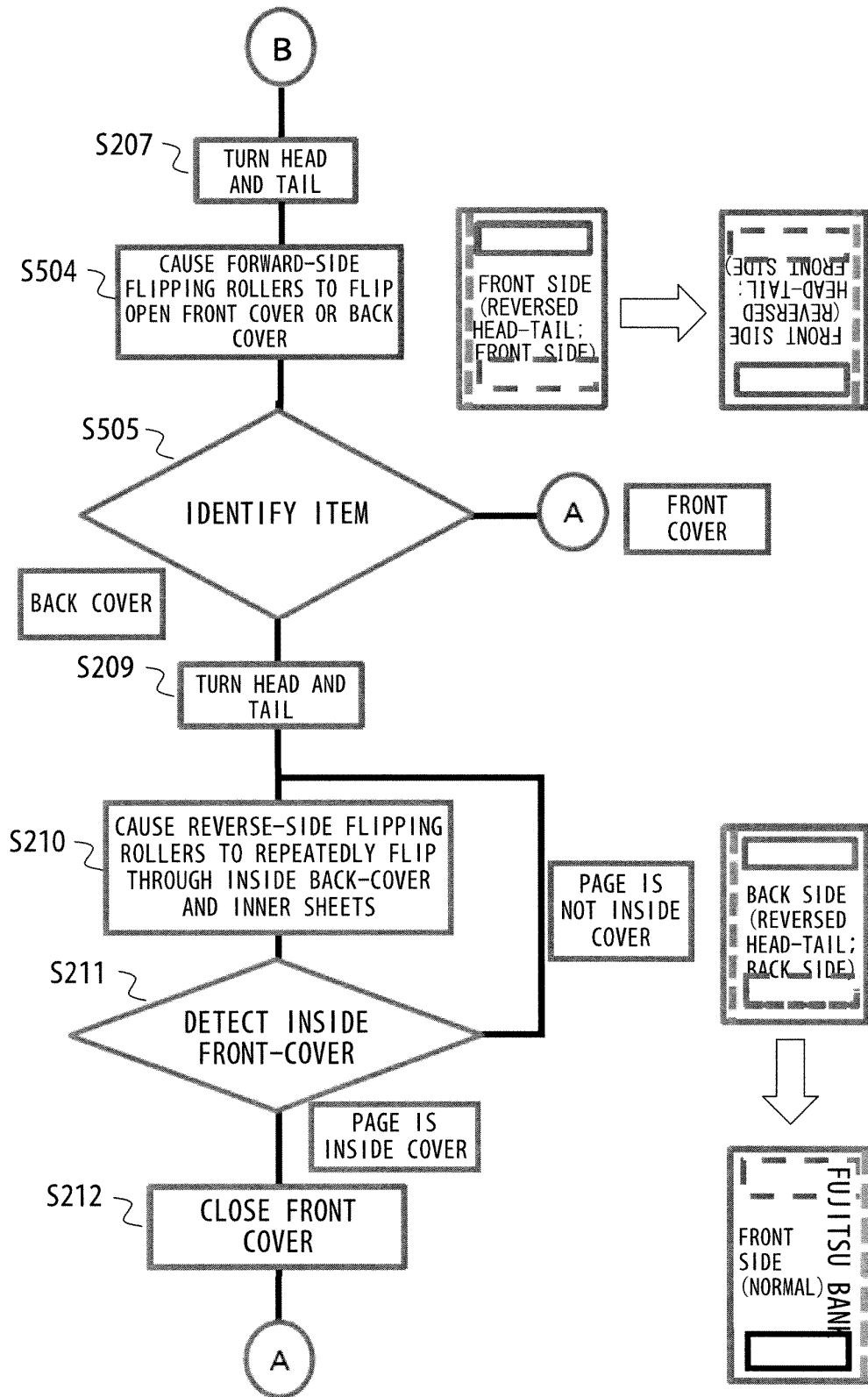


FIG. 16

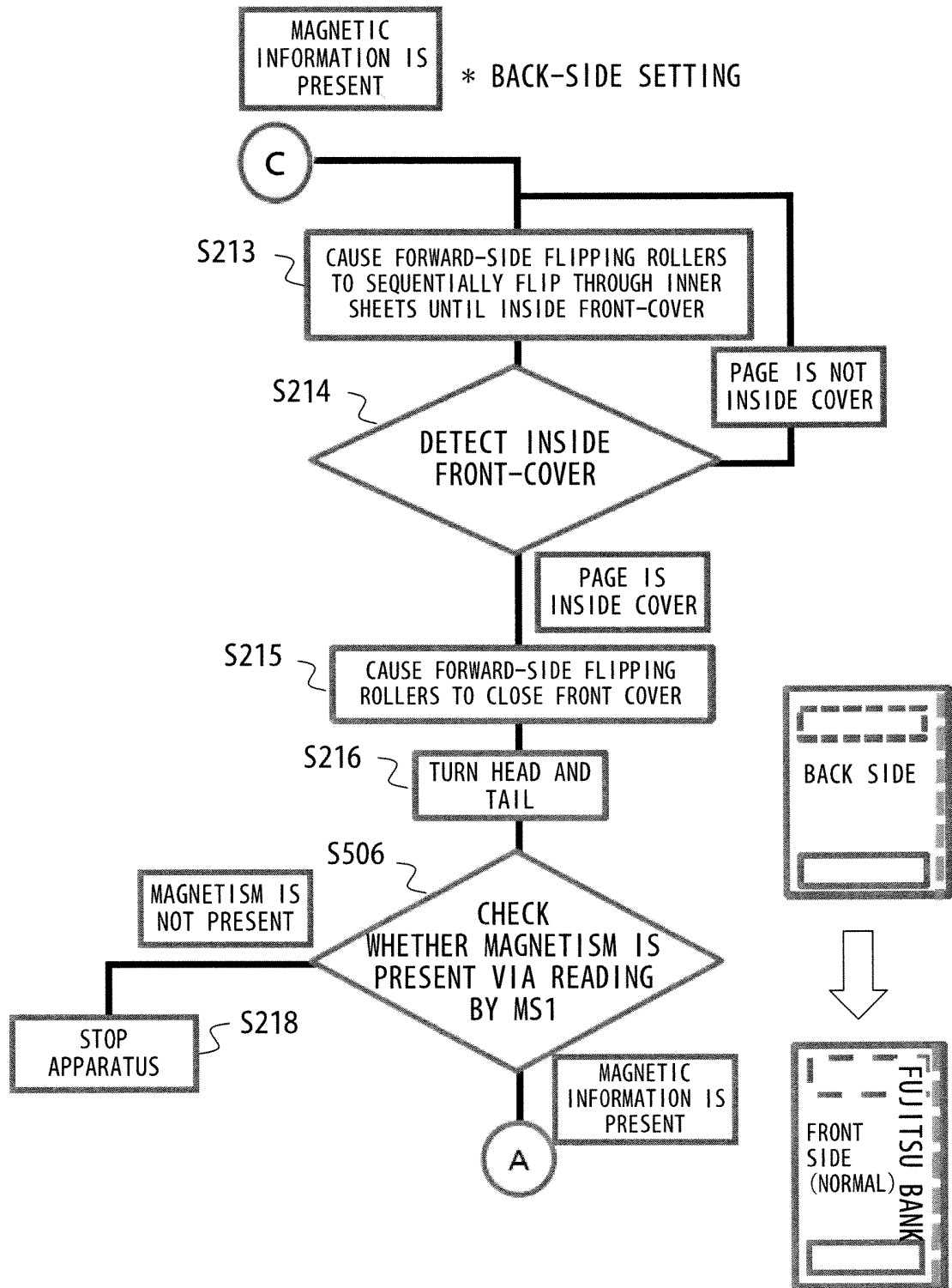


FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/069847

A. CLASSIFICATION OF SUBJECT MATTER

G07D9/00 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G07D9/00, B42D9/04, B41J13/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2011

Kokai Jitsuyo Shinan Koho 1971-2011 Toroku Jitsuyo Shinan Koho 1994-2011

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-15356 A (Hitachi, Ltd.), 18 January 2002 (18.01.2002), entire text; all drawings (Family: none)	1-19
A	JP 1-175694 A (Omron Tateisi Electronics Co.), 12 July 1989 (12.07.1989), entire text; all drawings (Family: none)	1-19
A	JP 2000-293734 A (Fujitsu Ltd.), 20 October 2000 (20.10.2000), entire text; all drawings (Family: none)	1-19

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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Date of the actual completion of the international search
29 September, 2011 (29.09.11)

Date of mailing of the international search report
11 October, 2011 (11.10.11)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/069847

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-282290 A (Oki Electric Industry Co., Ltd.), 20 November 2008 (20.11.2008), entire text; all drawings (Family: none)	1-19

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP H0116345 B [0008]
- JP H01175694 B [0008]
- JP H10258589 B [0008]