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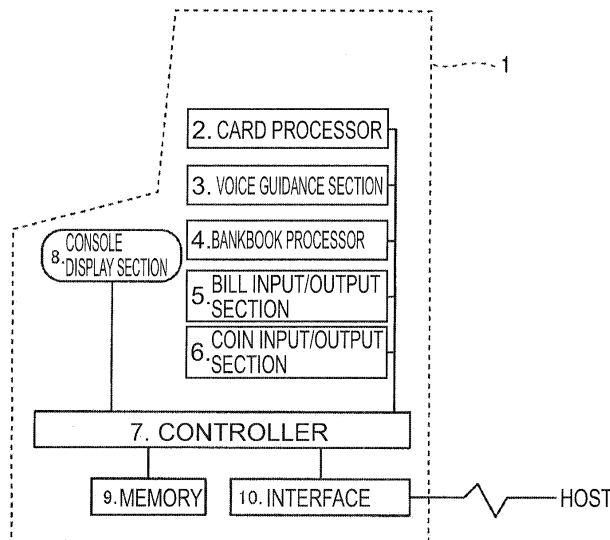**Tokyo 105-8460 (JP)**

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(54) **AUTOMATIC TRANSACTION DEVICE**

(57)   An automatic transaction apparatus includes: a console display section that displays a screen that guides a client to perform an operation required to select a transaction and make a transaction and the like; and a data reader that takes a transaction medium of the client, which is inserted through a medium insertion/discharge port, and that reads data from a magnetic stripe formed at the transaction medium, wherein a length of an end of the transaction medium, which projects from the medium insertion/discharge port when the transaction medium is discharged, is controlled to be a length that is greater than or equal to a minimum length required for the client to draw out the transaction medium with fingers and that is smaller than or equal to a thickness of a skimming device which is attached to the medium insertion/discharge port.

FIG.1

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Description

Technical Field

[0001] The invention relates to an automatic transaction apparatus which performs a transaction by using a transaction medium such as a card by a client.

Background Art

[0002] An automatic transaction apparatus which performs various transactions according to operations by a client is installed in a sales office of a financial institution or a convenience store.
Such an automatic transaction apparatus allows a client to insert a card when transacting; reads card data of an account number, a branch number, and the like from a magnetic stripe formed at the card by a card reader while conveying the transaction card; discharges the card upon completion of the transaction; and returns the card to the client. In recent years, there have been increased crimes that card data is read from a card of a client performing a transaction by a skimming device attached to a card insertion/discharge port of a card reader of an automatic transaction apparatus use the data illegally.
[0003] When a skimming device is installed at a card insertion/discharge port provided in an automatic transaction apparatus, most of the skimming device can read account data from a card without any recognition by a client since it is so precisely fabricated that it cannot be apparently distinguished from a normal card insertion port which is originally provided in the automatic transaction apparatus.
Hence, a financial institution takes means for detecting a skimming device which is illegally installed as countermeasures for preventing any illegal acquirement of account data by the skimming device.
[0004] As one of the countermeasures, there has been proposed an automatic transaction apparatus in which a flicker having light sources of plural colors is disposed around a card insertion inlet (see, e.g., Japanese Patent Application Laid-Open (JP-A) No. 2007-279877). When a client selects a transaction in an input and display unit, a control unit of the automatic transaction apparatus selectively determines one of plural kinds of prepared light emitting patterns, and alternately displays a light state still image and an extinguish state still image of the lighting flicker with a light emitting color of the determined light emitting pattern at the input/display unit. Moreover, the control unit allows the flicker disposed around the card insertion port to emit light so as to alternately repeat lighting and extinguishing with the light emitting color of the determined light emitting pattern, thereby making the client verify whether or not the light emitting pattern of the flicker based on the image matches with the light emitting pattern of the flicker around the card insertion/discharge port. In this manner, even if the skimming device provided with a light emitting function is installed in

the card insertion/discharge port, the presence of the skimming device can be recognized based on the difference of the light emitting patterns.
[0005] There has been proposed a system in which an imaging device provided with a lens with an auto focusing control function is installed at a position where a card insertion unit of an ATM (an automatic teller machine, an automatic transaction machine) can be imaged from the top in front (see, e.g., Japanese Patent Application Laid-Open (JP-A) No. 2008-225670). In this system, when a skimming device is installed in the card insertion unit, the imaging device detects a change in focal distance to a skimming device, and transmits imaging distance information from an auto focusing control unit which drives the auto focusing control function to a calculating unit. The calculating unit determines that the skimming device is installed when the imaging distance information falls within a predetermined range, thereby issuing an alarm.

SUMMARY OF INVENTION

Technical Problem

[0006] However, in the prior art, the flicker having the light sources of plural colors needs to be disposed at the card insertion inlet of the automatic transaction apparatus or the imaging device having the auto focus function needs to be installed at the position where the card insertion port can be imaged. As a consequence, mechanical parts or devices need to be additionally provided, thereby taking time and cost required for the provision.

Solution To Problem

[0007] An automatic transaction apparatus according to the invention includes a console display section that displays a screen that guides a client to perform an operation required to select a transaction and make a transaction and the like; and a data reader that takes a transaction medium of the client, which is inserted through a medium insertion/discharge port, and that reads data from a magnetic stripe formed at the transaction medium. The automatic transaction apparatus controls a length of an end of the transaction medium, which projects from the medium insertion/discharge port when the transaction medium is discharged, is controlled to be a length that is greater than or equal to a minimum length required for the client to draw out the transaction medium with fingers and that is smaller than or equal to a thickness of a skimming device which is attached to the medium insertion/discharge port.

Advantageous Effects Of Invention

[0008] According to the invention, it is possible to allow a client who is an owner of a transaction medium such as a card for using for a transaction to certainly recognize an installation of a skimming device without additionally

providing mechanical parts or devices and taking any time and cost required for the provision, and thus any illegal utilization of data can be prevented.

BRIEF DESCRIPTION OF DRAWINGS

[0009] FIG. 1 is a block diagram illustrating an ATM in an exemplary embodiment according to the invention.

> FIG. 2 is a perspective view showing an outside appearance of the ATM according to the invention.
> FIGS. 3A to 3C are side views showing an inside structure of a card processor.
> FIG. 4 is a side view showing an example in which a skimming device is attached.
> FIG. 5 is a diagram illustrating an example of a screen prompting card extraction.
> FIG. 6 is a diagram illustrating an example of a screen at which a projection length of a card end is selected.

DESCRIPTION OF EMBODIMENTS

[0010] A description will be given below of an automatic transaction apparatus (hereinafter referred to as an ATM) according to the invention with reference to the attached drawings.

[0011] FIG. 1 is a block diagram illustrating an ATM 1 in an exemplary embodiment according to the invention. In FIG. 1, the ATM 1 is an automatic transaction apparatus installed in a sales office and etc. of a financial institution. The ATM 1 includes a card processor (i.e., a reader) 2, a voice guidance section 3, a bankbook processor (i.e., another reader) 4, a bill input/output section 5, a coin input/output section 6, a console display section 8, a memory (i.e., a storage) 9, an interface 10, and a controller 7 which controls the components.

[0012] FIG. 2 is a perspective view showing an outside appearance of the ATM 1. An attendant unit which includes a substantially horizontal or slightly inclined flat unit which is set in an upper front section and an elevation unit is provided. The elevation unit includes a card insertion/discharge port 2a, a speaker 3a, and a bankbook insertion/discharge port 4a; and the flat unit includes a bill input/output port 5a, a coin input/output port 6a, and a console display section 8.

[0013] The card insertion/discharge port 2a, the speaker 3 a, the bankbook insertion/discharge port 4a, the bill input/output port 5a, and the coin input/output port 6a are arranged in a manner corresponding to the card processor 2, the voice guidance section 3, the bankbook processor 4, the bill input/output section 5, and the coin input/output section 6 described in FIG.1, respectively. The card processor 2 reads card data (transaction data) such as an account number from a magnetic stripe (a magnetic data storage) of a card which is a transaction medium of a client to be inserted through the card insertion/discharge port 2a, and writes predetermined data as

required. The bankbook processor 4 reads bankbook data (transaction data) such as an account number from a magnetic stripe (a magnetic data storage) of a client bankbook to be inserted through the bankbook insertion/discharge port 4a, and prints transaction contents, data which has not been printed yet, and the like in a print column of the bankbook.

[0014] The card processor 2 may be a card reader which only reads card data from a magnetic stripe of a card. The bill input/output section 5 performs receiving (depositing) processing which screens input bills which a client inputs into the bill input/output port 5a, counts them and accommodates them in a bill accommodation section; and paying (withdrawal, dispensing) processing which feeds bills of a bill type and an amount designated by the client from the bill accommodation section, screens and counts them, and then, dispenses them through the bill input/output port 5a. The coin input/output section 6 performs receiving processing which screens coins which the client inputs into the coin input/output port 6a, counts them and accommodates them in a coin accommodation section; and paying processing which feeds coins of a coin type and an amount designated by the client from the coin accommodation section, screens and counts them, and then, dispenses them through the coin input/output port 6a.

[0015] The voice guidance section 3 outputs a message and the like which guides a client to perform an operation as a guidance voice from the speaker 3 a. The console display section 8 displays a screen in which a message which guides the client to perform an operation is arranged and various kinds of input keys. The client can input information which is defined to an input key by depressing an input key on a touch panel with a finger. Moreover, the console display 8 may display input information and the like.

[0016] The memory 9 stores input data and the like at the time of a transaction as well as a control program for controlling operation of the apparatus. Moreover, the memory 9 stores a transaction selection screen, a guidance screen in each processing step for each transaction, an input screen and the like.

The controller 7 controls the card processor 2, the voice guidance section 3, the bankbook processor 4, the bill input/output section 5, the coin input/output section 6, the console display section 8 and the like based on the control program stored in the memory 9. Moreover, the controller 7 has a function of displaying the screen stored in the memory 9 at the console display section 8 at any time so as to conduct various kinds of transactions. In conducting the transactions, the controller 7 communicates with a host computer serving as an upper level apparatus via the interface 10, and transmits and receives required information thereto and therefrom.

[0017] The host computer is installed in a center or the like of the financial institution, and is equipped with a function of managing, as account data, a client name, an account number, a secret identification number, data of

a transaction history which has not been printed yet, a balance and the like.

FIGS. 3A to 3C are side views showing an inside structure of the card processor 2. A straight conveyance path 10 extends toward the rear (the inside of the apparatus) from the card insertion/discharge port 2a. The conveyance path 10 is formed as a space defined by a pair of upper and lower guide plates.

[0018]   A detecting sensor 11 is a card detector which includes a light emitting element and a light receiving element which are disposed opposite upper and lower sides while sandwiching the conveyance path 10 therebetween and arranged in the vicinity of the card insertion/discharge port 2a in the card processor 2.

A plurality of pairs of conveyance rollers 12a to 12d and pressure rollers 13a to 13d which forms a conveyance unit are provided such that each pair are disposed opposite upper and lower sides.

[0019]   The conveyance rollers 12a to 12d are driven via gears, belts and the like, not shown, by a stepping motor (a drive source), not shown, and rotationally nip and hold the card between the pressure rollers 13a to 13d and the conveyance rollers 12a to 12d to convey the card.

A magnetic head 14 which performs reading processing which reads magnetic data recorded on a magnetic stripe of the card, described later, and the like, is disposed at a predetermined position of the conveyance path 3, for example, at a position between the conveyance rollers 12b and 12c. Above the magnetic head 14, a pressure roller 15 which presses the card on the magnetic head 14 is arranged.

[0020]   A card 16 which is used as a transaction medium by a client who performs a transaction in the ATM 1 has a magnetic stripe, in which the card data such as the account number of the client, a branch number and the like are magnetically recorded.

Next, explanation will be made of an operation of the above-described configuration.

Operations by the components described below are controlled by the controller 7 based on programs (software) stored in the memory 9.

[0021]   When a client coming to a sales office of a financial institution stands at front of the ATM 1, and selects a transaction at the transaction selection screen displayed on the console display section 8, the controller 7 performs processing in accordance with a program for the selected transaction.

When a withdrawal transaction, for example, is selected, a screen which prompts insertion of the card is displayed at the console display section 8. According to this, the client inserts the card 16 into the card insertion/discharge port 2a of the card processor 2, as shown in FIG. 3A. When the detecting sensor 11 detects the end of the card 16, the conveyance rollers 12a to 12d are driven via the gear, belts and the like, not shown, by the stepping motor (the drive source), not shown, and thus, the conveyance rollers 12a to 12d rotate in a direction in which the card

is taken in.

[0022]   When the end of the card 16 is inserted between the conveyance roller 12a and the pressure roller 13a, the card 16 is taken into the card processor 2 and conveyed by the conveyance rollers 12a to 12d rotating, as shown in FIG. 3B, and the magnetic head 14 reads the card data such as the account number of the client, the branch number and the like from the magnetic stripes formed at the card 16.

The card 16 after the card data has been read is further conveyed while being nipped and held between the conveyance rollers 12b and 12c and the pressure rollers 13b and 13c until the card 16 passes through between the magnetic head 14 and the pressure roller 15. When the card 16 is nipped and held between the conveyance rollers 12c and 12d and the pressure rollers 13c and 13d, the controller 7 stops the stepping motor, thereby stopping the rotation of the conveyance rollers 12a to 12d.

[0023]   Thus, the card 16 stops while being nipped and held between the conveyance rollers 12c and 12d and the pressure rollers 13c and 13d, and stands by.

Thereafter, when the client inputs the secret identification number and the withdrawal amount in accordance with the screen displayed at the console display section 8, the controller 7 transmits the secret identification number and the withdrawal amount which are input by the client and the card data to the host computer via the interface 10. When information which expresses allowance of the transaction is received from the host computer, the controller 7 performs dispensing of money of the withdrawal amount with the bill input/output unit 5 and/or the coin input/output unit 6, to dispenses cash to the client from the bill input/output port 5a and/or the coin input/output port 6a.

[0024]   At the same time, the controller 7 drives the stepping motor, not shown, so as to rotate the conveyance rollers 12a to 12d in a direction in which the card is discharged.

Consequently, the card 16 is conveyed toward the card insertion/discharge port 2a. When the detecting sensor 11 detects of the end of the card 16, the controller 7 drives the stepping motor by a predetermined pulse after a time point of the detection of the card by the detecting sensor 11, and then stops the stepping motor, and thereby controlling such that the end of the card 16 stops while projecting by a predetermined length from the card insertion/discharge port 2a, as shown in FIG. 3C.

[0025]   The predetermined length in this case may be the minimum value (e.g., about 1 mm) which is required for a client to draw out the card 16 with fingers. The predetermined length may be greater than or equal to the minimum value required which is required for a client to draw out the card 16 with fingers and smaller than or equal to a thickness of a skimming device, described later, (a length in a direction in which the card is inserted and/or discharged).

In general, the projection length of the card end from the card insertion/discharge port 2a at the time of the card

discharge is set to about 28 mm such that the client easily can draw out the card 16 with the fingers.

[0026] However, in this case, when the skimming device is attached (disposed, fixed) at the card insertion/ discharge port 2a, the end of the card 16 projects also from the skimming device, and therefore, the client misses the existence of the skimming device.

FIG. 4 is a side view exemplifying a skimming device 17 attached to the card insertion/discharge port 2a. The skimming device 17 has a through hole 17a communicating with the card insertion/discharge port 2a.

[0027] The skimming device 17 is provided with therein a magnetic head which reads card data when the card 16 passes the through hole 17a, a memory which stores the read card data, a transmitter which transmits the card data to the outside via a radio, and the like.

The above-described skimming device 17 is so precisely configured such that the client cannot recognize that the skimming device 17 is attached or that the skimming device 17 is a part of the card insertion/discharge port 2a, and further, the thickness thereof is suppressed to about 10 mm.

[0028] Hence, if the projection length of the end of the card 16 from the card insertion/discharge port 2a during the card discharge is about 28 mm, the end of the card 16 projects outward of the through hole 17a of the skimming device 17, as indicated by a broken line in FIG. 4, and thus, the client draws out the card 16 without recognizing the existence of the skimming device 17 and then goes away.

In contrast, in the exemplary embodiment, the projection length of the end of the card 16 from the card insertion/ discharge port 2a is controlled to be a length which is greater than or equal to the minimum length required for the client to draw out the card 16 with the fingers and which is smaller than or equal to the thickness of the skimming device 17, described later. Accordingly, the end of the card 16 remains in the through hole 17a of the skimming device 17, as indicated by a solid line in FIG. 4, and therefore, the client cannot draw out the card 16. In this manner, the client can recognize the existence of the skimming device 17.

[0029] At this time, a specific message may be displayed on the screen in the console display section 8, or a voice may be output from the speaker 3a.

FIG. 5 is a diagram illustrating an example of a screen which prompts card extraction to be displayed on the console display section 8 during card discharge. As illustrated in FIG. 5, during card discharge, a screen is displayed including a message prompting card extraction that states "PLEASE EXTRACT THE CARD" together with a warning message such as "IF YOU CANNOT EXTRACT THE CARD, PLEASE NOTIFY A NEARBY STAFF MEMBER BECAUSE THERE IS A POSSIBILITY THAT A SKIMMING DEVICE IS ILLEGALLY AT-TACHED". Moreover, the client is notified of a similar message from the speaker 3a by the voice guidance section 3, and then, the client can notify a nearby staff mem-

ber that the card 16 cannot be extracted.

[0030] In this manner, the staff member can immediately detach the skimming device 17 so as to take an action to prevent damage from spreading.

At this time, an input which expresses that a processing which detaches the skimming device 17 is input by depressing a verification button 18 displayed at the screen, and then the transaction is completed.

In this case, since there is a possibility that the card data is read during the card insertion and the read data is transmitted to the outside, if the skimming device 17 is detached, the account number of the client is changed and the card data is rewritten after the card 16 is drawn out.

[0031] If a skimming device 17 is not attached, the client draws out the card 16 with fingers the end of the card 16 projecting by the predetermined length from the card insertion/discharge port 2a, and then the transaction is completed.

Note that, if no staff member resides near the ATM 1, the ATM 1 is installed at an unattended branch or the like, the client may notify a staff member or the like by a handset for notification of a staff member provided at the ATM 1.

[0032] In the above-described exemplary embodiment, since the projection length of the end of the card 16 from the card insertion/discharge port 2a during the card discharge is controlled to be a length which is greater than or equal to the minimum length required for a client to draw out the card 16 with the fingers and which is smaller than or equal to the thickness of the skimming device 17, if the skimming device 17 is attached to the card insertion/discharge port 2a, the client cannot draw out the card 16. Thus, it is possible to prevent any illegal utilization of the data by ensure that the client recognizes the attachment of the skimming device 17 without adding any mechanical parts and/or devices and increasing any time and/or cost required for the addition.

[0033] Note that, although the card discharge has been exemplified at the time of withdrawal transaction in the above-described exemplary embodiment, the invention may be applied to all of cases in which the card 16 taken in the card processor 2 is discharged. In addition, also in the case in which the bankbook as well as the card 16 is used as transaction media, similar effects can be achieved by the similar control during the discharge.

The length of the end of the card 16 projecting from the card insertion/discharge port 2a during the card discharge in the above-described exemplary embodiment (the projection length) according to the invention is not limited to the above value, and it may be set in the following manner.

[0034] For example, the length of the end of the card projecting from the card insertion/discharge port 2a during the card discharge is set to the minimum value required for a client to draw out the card 16 with the fingers, and, when the end of the card 16 projects from the card insertion/discharge port 2a, the console display section

8 displays a screen which makes the client to verify whether or not the end of the card 16 projects.

Whether or not the end of the card 16 projects is input by depressing "Yes" and "No" buttons displayed at the screen. If the "Yes" button expressing the projection is depressed, the end of the card 16 is made to project from the card insertion/discharge port 2a until the end of the card 16 projects by a length which facilitates drawing out (e.g., 20 mm), and the client draws out the card 16. In contrast, if the "No" button expressing no projection is depressed, the similar processing as described above is performed by displaying the screen for prompting card extraction illustrated in FIG. 5.

[0035] Furthermore, when the verification screen for verifying whether or not the end of the card 16 projects is displayed at the console display section 8, as described above and if the "Yes" button expressing the projection is depressed, the projection length of the end of the card 16 from the card insertion/discharge port 2a may be determined according to a desirable value of the client.

[0036] In a method in this case, data of the projection length is recorded in the magnetic stripe of the card 16, the data of the projection length is also read when the card data is data, and the projection length may be controlled, and/or data of the projection length is registered in advance in the host computer, the data of the projection length is acquired from the host computer anytime and the projection length may be controlled.

Additionally, a projection length selecting screen which selects the projection length may be displayed at the console display section 8 such that the client may select the projection length.

[0037] FIG. 6 is a diagram illustrating an example of a screen at which the projection length of the card 16 is selected. As illustrated in FIG. 6, selection buttons 19a to 19c which selects projection lengths of, for example, "1 cm," "2 cm," and "3 cm" are displayed together with a message of "END OF CARD PROJECTS. PLEASE SELECT PROJECTION LENGTH BY DEPRESSING BUTTON BELOW" or the like for prompting the selection. The client depresses any one of the selection buttons 19a to 19c, so that the end of the card 16 is controlled to project from the card insertion/discharge port 2a according to the selected projection length.

Claims

1. An automatic transaction apparatus comprising:

   a console display section that displays a screen that guides a client to perform an operation required to select a transaction and make a transaction and the like; and
   a data reader that takes a transaction medium of the client, which is inserted through a medium insertion/discharge port, and that reads data from a magnetic stripe formed at the transaction medium,
   wherein a length of an end of the transaction medium, which projects from the medium insertion/discharge port when the transaction medium is discharged, is controlled to be a length that is greater than or equal to a minimum length required for the client to draw out the transaction medium with fingers and that is smaller than or equal to a thickness of a skimming device which is attached to the medium insertion/discharge port.

2. The automatic transaction apparatus of claim 1, wherein when the end of the transaction medium projects from the medium insertion/discharge port, a verification screen that verifies whether or not the end of the transaction medium is visible is displayed, and if an input expressing that the end of the transaction medium is visible is input at the verification screen, the end of the transaction medium is made to project further.

3. The automatic transaction apparatus of claim 2, wherein data of a projection length if the end of the transaction medium is made to project further is recorded in the magnetic stripe of the transaction medium, and the end of the transaction medium is made to project based on the data of the projection length.

4. The automatic transaction apparatus of claim 2, wherein data of a projection length if the end of the transaction medium is made to project further is registered in an upper level apparatus, and the data of the projection length is acquired from the upper level apparatus to make the end of the transaction medium project.

5. The automatic transaction apparatus of claim 2, wherein a projection length selection screen for selecting a projection length when the end of the transaction medium is made to project further is displayed at the console display section, and the end of the transaction medium is made to project based on a projection length that is selected at the projection length selecting screen by the client.
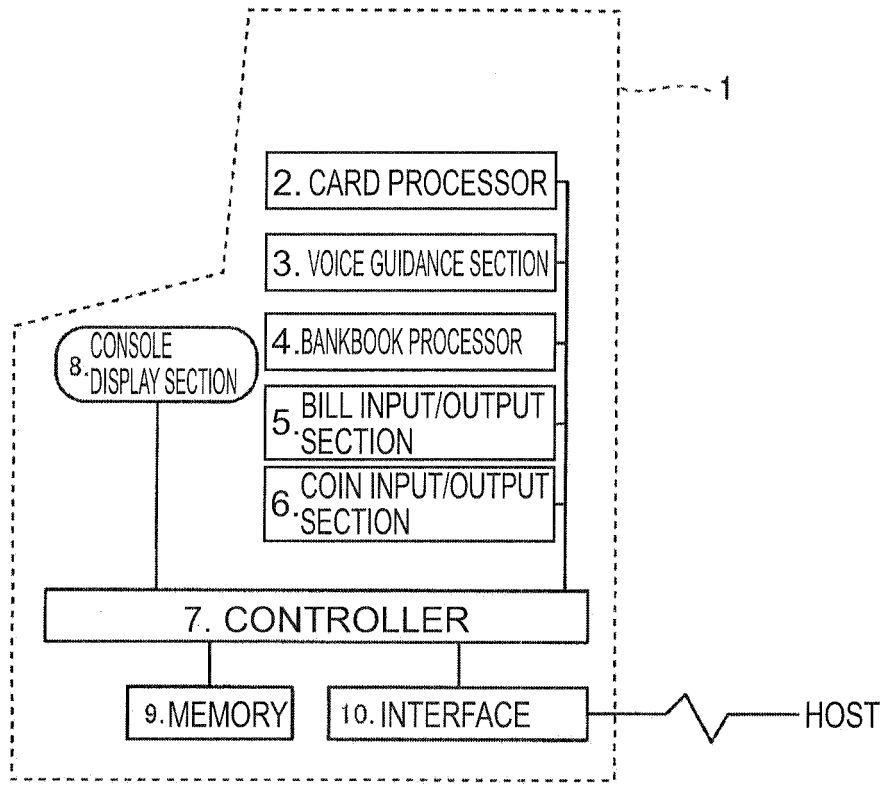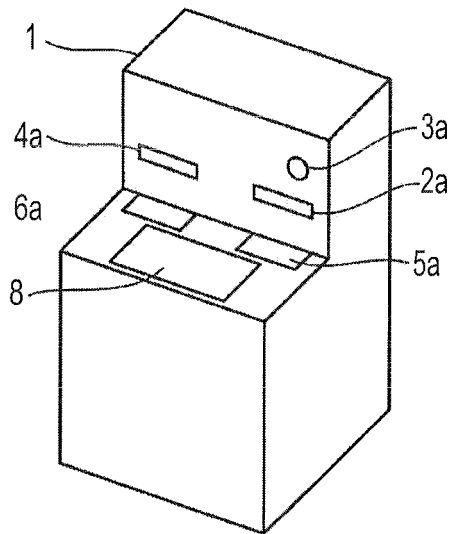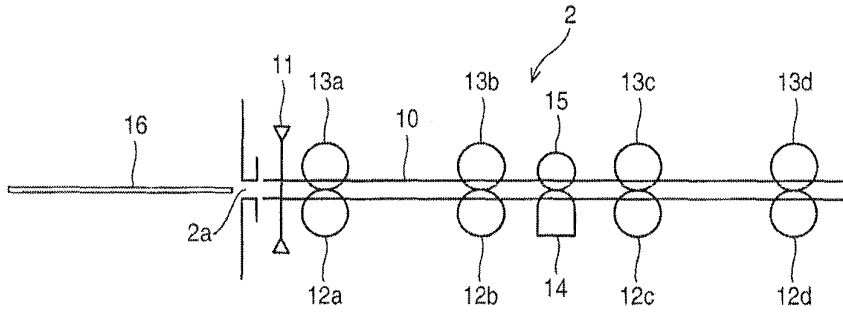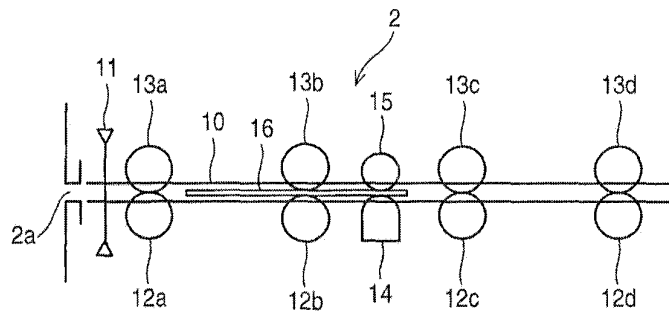
FIG.1

FIG.2

FIG.3A

FIG.3B

FIG.3C
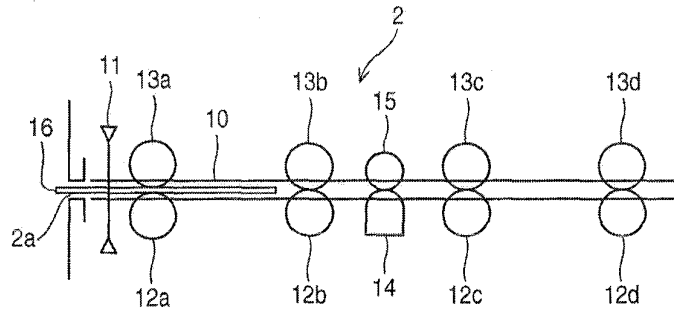
FIG.4

FIG.5

PLEASE EXTRACT THE CARD.
IF YOU CANNOT EXTRACT THE CARD,
PLEASE NOTIFY A NEARBY STAFF MEMBER
BECAUSE THERE IS A POSSIBILITY THAT A
SKIMMING DEVICE IS ILLEGALLY
ATTACHED.

VERIFY ──18

FIG.6

END OF CARD IS TO BE PROJECTED.
PLEASE SELECT PROJECTION LENGTH BY
BUTTON BELOW.

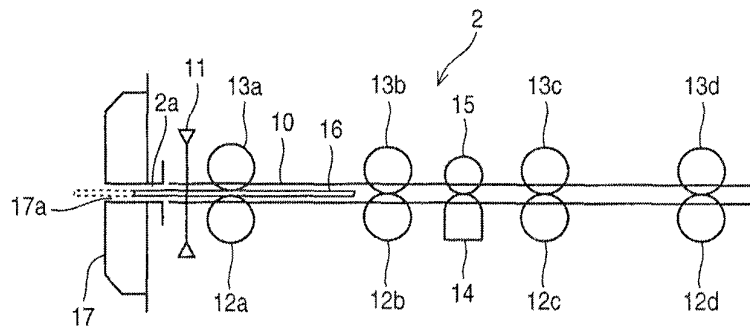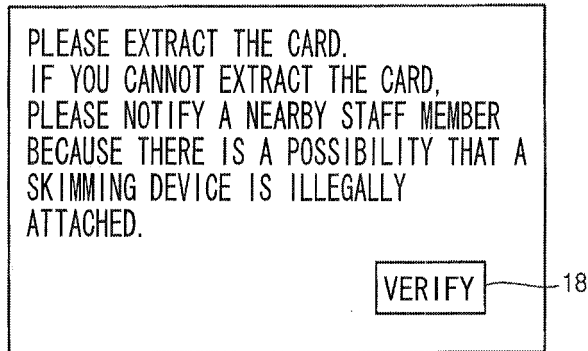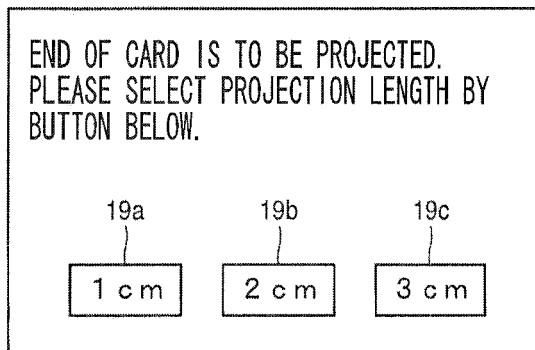19a   19b   19c

1 cm   2 cm   3 cm

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2009/062802

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

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   1996-2009
Kokai Jitsuyo Shinan Koho   1971-2009   Toroku Jitsuyo Shinan Koho   1994-2009

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 2000-076390 A (Anritsu Corp.), 14 March, 2000 (14.03.00), Par. Nos. [0003], [0032]; Fig. 4 (Family: none)	1-5
A	JP 2007-279877 A (Hitachi-Omron Terminal Solutions, Corp.), 25 October, 2007 (25.10.07), Par. Nos. [0004], [0053] to [0055]; Fig. 3 (Family: none)	1-5
A	JP 2008-225670 A (Takami HASEGAWA, Micro Vision Co., Ltd.), 25 September, 2008 (25.09.08), Par. Nos. [0003], [0062] (Family: none)	1-5

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

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 July, 2009 (29.07.09)	11 August, 2009 (11.08.09)

Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

International application No.
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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 2006-260189 A (Hitachi-Omron Terminal Solutions, Corp.), 28 September, 2006 (28.09.06), Par. Nos. [0022] to [0023] & US 2006/0211288 A1	1-5
A	JP 2004-171205 A (Omron Corp.), 17 June, 2004 (17.06.04), Par. Nos. [0049] to [0052] & US 2004/0094628 A1 & EP 1422654 A2	1-5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2007279877 A **[0004]**

- JP 2008225670 A **[0005]**