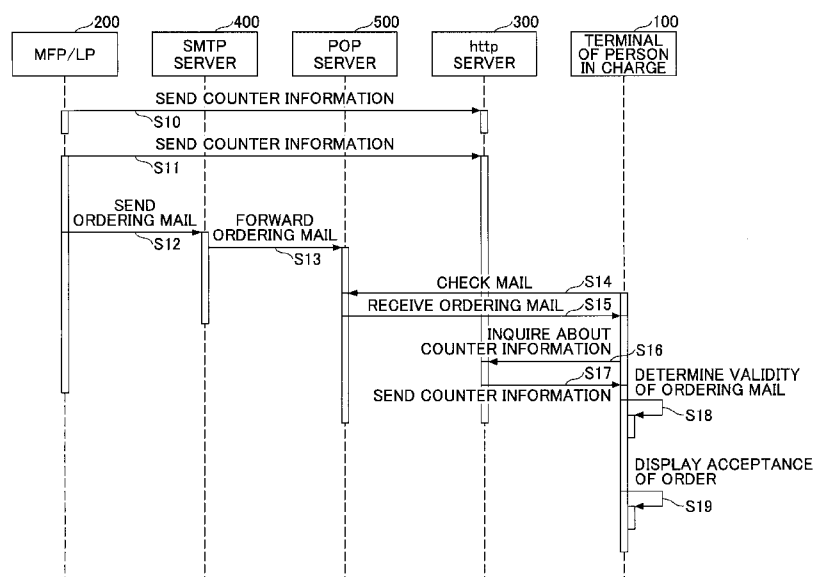




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(54) **Title:** SYSTEM, INFORMATION PROCESSING APPARATUS AND INFORMATION PROCESSING METHOD

[Fig. 8]



(57) **Abstract:** A system includes at least one apparatus coupled to a device that uses a consumable article. The system includes an accumulation unit configured to accumulate information relating to the consumable article; and a determination unit configured to determine whether an order instruction for the consumable article is valid based on the information relating to the consumable article accumulated in the accumulation unit, when the order instruction for the consumable article is received.

Description

Title of Invention: SYSTEM, INFORMATION PROCESSING APPARATUS AND INFORMATION PROCESSING METHOD

Technical Field

[0001] The disclosure herein generally relates to a system, an information processing apparatus and an information processing method.

Background Art

[0002] Conventionally, there have been systems each including a device that uses consumables or replacement parts and a terminal of a person in charge of management (in the following, referred to as a “terminal of a person in charge”) coupled to the device via a network. In a case where a consumable or a replacement part becomes “near depletion”, the device of the system reports to the terminal of the person in charge of management information on a consumable article.

[0003] For example, a printer which sends an order sheet attached to an electric mail to a terminal when a remaining amount of the consumable that the printer uses becomes less than or equal to a predetermined value (See, for example, Patent Document 1).

Citation List

Patent Literature

[0004] PTL 1: Japanese Laid-Open Patent Publication No. 2001-175719

Summary of Invention

Technical Problem

[0005] However, in the related art, it may be impossible to determine whether an order instruction received by the terminal of the person in charge of management order includes the correct content received from the device or is an order instruction that includes incorrect content received through, for example, tampering or spoofing by others.

[0006] Accordingly, the present embodiments aim at determining validity of a received order instruction more accurately.

Solution to Problem

[0007] According to an aspect of the invention, a system includes at least one apparatus coupled to a device that uses a consumable article. The system includes an accumulation unit configured to accumulate information relating to the consumable article; and a determination unit configured to determine whether an order instruction for the consumable article is valid based on the information relating to the consumable article accumulated in the accumulation unit, when the order instruction for the consumable

article is received.

[0008] According to another aspect of the invention, an information processing apparatus is coupled to a device that uses a consumable article. The apparatus includes an acquisition unit configured to acquire information relating to the consumable article from an apparatus that accumulates information relating to the consumable article, when an order instruction for the consumable article is received; and a determination unit configured to determine whether the order instruction for the consumable article is valid based on the information relating to the consumable article acquired by the acquisition unit.

[0009] According to yet another aspect of the invention, an information processing method includes acquiring information from a first apparatus relating to a consumable article used in a device. The first apparatus is coupled to the device and accumulates the information relating to the consumable article, when an order instruction for the consumable article is received. The method further includes determining whether the order instruction for the consumable article is valid based on the acquired information relating to the consumable article.

[0010] According to yet another aspect of the invention, a system includes at least one apparatus coupled to a device that uses a consumable article. The system includes an accumulation unit configured to accumulate information relating to the consumable article; and a display unit configured to display information relating to validity of an order instruction for the consumable article based on the information relating to the consumable article accumulated in the accumulation unit, when the order instruction for the consumable article is received.

Advantageous Effects of Invention

[0011] According to embodiments of the present invention, the validity of a received order instruction can be determined more precisely.

Brief Description of Drawings

[0012] [fig.1]FIG. 1 is a diagram depicting an example configuration of a management system according to a first embodiment.

[fig.2]FIG. 2 is a diagram depicting an example configuration of an MFP/LP according to the first embodiment.

[fig.3]FIG. 3 is a diagram depicting an example configuration of a terminal of a person in charge according to the first embodiment.

[fig.4]FIG. 4 is a diagram depicting an example data structure of a device information DB according to the first embodiment.

[fig.5]FIG. 5 is a diagram depicting an example mail for ordering toner according to the first embodiment.

[fig.6]FIG. 6 is a diagram depicting an example configuration of an http server according to the first embodiment.

[fig.7]FIG. 7 is a diagram depicting an example data structure of a counter information DB according to the first embodiment.

[fig.8]FIG. 8 is a sequence diagram depicting an example of processing of accepting an ordering mail according to the first embodiment.

[fig.9]FIG. 9 is a flowchart depicting an example flow of processing of determining validity according to the first embodiment.

[fig.10]FIG. 10 is a diagram depicting an example configuration of a management system according to a second embodiment.

[fig.11]FIG. 11 is a diagram depicting an example configuration of an http server according to the second embodiment.

[fig.12]FIG. 12 is a sequence diagram depicting an example of processing of accepting an ordering mail according to the second embodiment.

[fig.13]FIG. 13 is a diagram depicting an example hardware configuration of the MFP/LP according to the embodiment.

[fig.14]FIG. 14 is a diagram depicting an example software configuration of the MFP/LP according to the embodiment.

[fig.15]FIG. 15 is a diagram depicting an example hardware configuration of the terminal of a person in charge according to the embodiment.

Description of Embodiments

[0013] In the following, embodiments of the present invention will be described with reference to the accompanying drawings. In the specification and drawings, the same reference numeral is assigned to components having essentially the same function, and duplicate explanation will be omitted.

[0014] <<First embodiment>>

[0015] (First configuration of management system)

[0016] FIG. 1 is a diagram of an example of a first configuration of the management system. With reference to FIG. 1, the management system 1 according to the first embodiment will be described. As shown in FIG. 1, the management system 1 includes a terminal of a person in charge 100, a Multifunction Peripheral/Laser Printer (MFP/LP) 200, an http (hypertext transfer protocol) server 400 and a POP (post office protocol) server 500. An SMTP (simple mail transfer protocol) server 400 is coupled to the http server 300 and the POP server 500 via a network 5 for a communications connection.

[0017] The MFP/LP 200 is a multifunctional peripheral device provided with a plurality of functions, such as a printing function, a scanning function, a facsimile function, a copying function and the like. The MFP/LP 200 manages articles that are replaced

under predetermined conditions such as consumables and replacement parts. In the following, the articles to be replaced, such as consumables and replacement parts will be referred to as consumable articles.

- [0018] In a case where the consumable article satisfies the predetermined condition, the MFP/LP 200 generates a mail to notify the person in charge of management to order the consumable article from a vendor. In the following, the mail to notify the person in charge of management to order the consumable article from a vendor will be referred to as an ordering mail. In the ordering mail, a reason to order the consumable article is stated. For example, the MFP/LP 200 generates an ordering mail, stating that “cyan toner almost empty”, in a case where the remaining amount of cyan toner is less than 20%. Then, the MFP/LP 200 sends the created ordering mail to the terminal of the person in charge 100. The ordering mail is an example of an ordering instruction.
- [0019] Moreover, the MFP/LP 200 periodically sends to the http server 300 information on a time for replacement of consumable articles, such as a remaining amount of consumable and a period of use of replacement parts. In the following, the information on a time for replacement of consumable articles will be referred to as counter information. For example, the counter information is remaining amounts (%) of the respective color toners.
- [0020] The SMTP server 400 transfers the ordering mail received from the MFP/LP 200 to the POP server 500 via the network 5. In the SMTP server, a mail account for the MFP/LP 200 is set in advance.
- [0021] The POP server 500 sends the ordering mail received from the SMTP server 400 to the terminal of the person in charge 100. In the POP server, a mail account for the terminal of the person in charge 100 is set in advance.
- [0022] The http server 300 manages the counter information received from the MFP/LP 200. For example, the http server 300 stores the counter information reported from the MFP/LP 200 in a storage area in combination with a reporting date and time in the form of a log.
- [0023] When the ordering mail is received, the terminal of the person in charge 100 accesses the http server 300, and determines validity of the ordering mail based on the counter information stored in the http server 300. According to the determination, it is possible to find an incorrect ordering instruction by a spoofing mail or a falsified mail.
- [0024] As described above, the terminal of the person in charge 100 determines validity of an ordering mail, based on counter information acquired via a safe route, which is different from a transmission route of the ordering mail. Because in a case where an outgoing mail address is fraudulent, the ordering mail is not valid, therefor further check for the validity of the ordering mail may be omitted.
- [0025] (Configuration of MFP/LP)

- [0026] Next, respective apparatuses included in the management system 1 will be described with reference to FIGs. 2 to 8.
- [0027] FIG. 2 is a diagram of an example configuration of the MFP/LP. The MFP/LP 200 includes a basic function unit 210, a device usage information management unit 220 and a network control unit 230. Moreover, the network control unit 230 includes a mail transmission function unit 231 and an https communication function unit 232.
- [0028] The MFP/LP 200 is an apparatus for specifying a consumable article which satisfies a predetermined condition and sending an ordering mail to the terminal of the person in charge 100. For example, in a case where a remaining amount of magenta toner becomes 19%, which is less than a threshold set at, for example, 20%, the MFP/LP 200 determines that a consumable article is magenta toner, and sends an ordering mail. The means for reporting a consumable article to the terminal of the person in charge 100 is not limited to an ordering mail. For example, the MFP/LP 200 may write an ordering instruction into a log file stored in the terminal of the person in charge.
- [0029] The basic function unit 210 processes basic functions such as a printing function, a scanning function, a copying function or a projecting function, which the MFP/LP is provided with.
- [0030] The device usage information management unit 220 generates an ordering mail in a case where counter information satisfies a predetermined condition. For example, when the remaining amount of magenta toner becomes 19%, which is less than a threshold set at, for example, 20%, the device usage information management unit 220 generates an ordering mail which states “magenta toner near depletion”. Then, the device usage information management unit 220 sends the generated ordering mail to the mail transmission function unit 231.
- [0031] Moreover, the device usage information management unit 220, periodically acquires counter information. For example, the device usage information management unit 220 acquires respective remaining amounts of black, cyan, magenta and yellow toner at 12 o'clock every day. Then, the device usage information management unit 220 sends the acquired counter information to the https communication function unit 232.
- [0032] Furthermore, the device usage information management unit 220 may send counter information at any time interval. For example, the device usage information management unit 220 may send counter information every 3 days, every 12 hours, every 6 hours, or every hour.
- [0033] Moreover, the device usage information management unit 220 may send counter information by using an encrypted communication such as the SSL (secure sockets layer). Accordingly, tampering or spoofing by others on a communication path can be prevented, and it is possible to send counter information to the http server 300 safely.
- [0034] The network control unit 230 controls transmission of the ordering mail and the

counter information received from the device usage information management unit 220. The mail transmission function unit 231 sets a destination of the ordering mail to the terminal of the person in charge 100, and sends the ordering mail to the SMTP server 400. Moreover, the https communication function unit 232 sends the counter information to the http server 300.

[0035] (Configuration of terminal of person in charge)

[0036] FIG. 3 is a diagram of an example configuration of the terminal of the person in charge. The terminal of the person in charge 100 includes a control unit 110, a device information DB (database) 120, a display unit 130 and a network I/F (interface) 140. Moreover, the control unit 110 includes a reception unit 111, an acquisition unit 112 and a determination unit 113.

[0037] The terminal of the person in charge 100 is an apparatus that accesses the http server 300 and determines the validity of an ordering mail, when an ordering mail is received. The display unit 130 displays a result of determination for the validity of the ordering mail. Moreover, the network I/F 140 is an interface that controls communication with other apparatus.

[0038] The device information DB 120 is a database that stores a predetermined condition, which is used for determining validity of an ordering mail received from an apparatus such as the MFP/LP 200, in association with each consumable article. The predetermined condition stored in the device information DB 120 corresponds to the predetermined condition set for the MFP/LP 200. For example, in a case where a threshold of 20% is set for magenta toner in the MFP/LP 200, the device information DB 120 may store the predetermined condition of the threshold of 20% for magenta toner. The threshold is an example of a predetermined condition.

[0039] In the above description, a case where the predetermined condition stored in the device information DB 120 is the same as the predetermined condition set for the MFP/LP 200 is described, but this is not limiting. The predetermined condition stored in the device information DB 120 may be changed based on a frequency of update for the counter information DB 320.

[0040] The case where the predetermined condition stored in the device information DB 120 is changed will be described using a specific example. For example, assume that the threshold of remaining amount of magenta toner stored in the MFP/LP 200 is "20%". In this case, and in the case where the counter information DB 320 is updated every day, because after the counter information DB 320 is updated until an ordering mail is sent the remaining amount of magenta toner decreases, the threshold value stored in the device information DB 120 may be set to, for example, "21%".

[0041] FIG. 4 is a diagram of an example data structure of the device information DB. The device information DB 120 associates consumable articles with threshold values of the

consumable articles. For example, the device information DB 120 associates the remaining amount of black toner (%) with a threshold value “20”, the remaining amount of magenta toner (%) with a threshold value “20”, the remaining amount of cyan toner (%) with a threshold value “20”, and the remaining amount of yellow toner (%) with a threshold value “20”. The data structure of the device information DB 120 shown in FIG. 4 is an example, and it is not limited to the above-described storage format if respective items are associated in the same way as above.

- [0042] Moreover, a full color counter is a number which is incremented when full color print processing is performed. That is, the full color counter is a number of pages in which the full color print processing is performed. Moreover, a monochrome counter is a number which is incremented when monochrome print processing is performed. That is, the monochrome counter is a number of pages in which the monochrome print processing is performed.
- [0043] The reception unit 111 receives an ordering mail. Specifically, the reception unit 111 periodically accesses the POP server 500, and acquires a mail sent to the terminal of the person in charge 100.
- [0044] The acquisition unit 112 accesses the http server 300, in the case where the received mail includes an ordering mail, and acquires counter information corresponding to a consumable article included in the ordering mail. In a case of acquiring counter information, at first, the acquisition unit 112 determines whether the received mail is an ordering mail. For example, the acquisition unit 112 determines whether it is an ordering mail according to whether a subject field of the received mail includes a character string of “Order Toner Cartridge”. The string “Order Toner Cartridge” is input in the subject field of the ordering mail by the MFP/LP 200 when the remaining amount of toner of each color becomes small.
- [0045] Subsequently, in a case where the received mail is determined to be an ordering mail, the acquisition unit 112 specifies a type of the consumable article by searching for a character string related to the consumable article in the ordering mail. For example, the acquisition unit 112 searches a character string of “cyan toner near-depletion” in the ordering mail, and thereby specifies that the type of the consumable article is “cyan toner”.
- [0046] FIG. 5 is a diagram of an example of an ordering mail for toner. As shown in FIG. 5, in a field of “subject”, a character string “Order Toner Cartridge” indicating an ordering mail for toner is described. Moreover, a field of “device status” includes a character string of “cyan toner near-depletion”. Character strings that the acquisition unit 112 searches for is not limited to the above. For example, the acquisition unit 112 may further search for a character string “cyan toner empty”.
- [0047] Moreover, the acquisition unit 112 may search for a combination of a plurality of

character strings in the case of specifying the consumable article reported by the ordering mail. For example, the acquisition unit 112 may search for a combination of two words of “cyan” and “toner” in the case of searching for cyan toner.

- [0048] Subsequently, the acquisition unit 112 accesses the http server 300, and acquires counter information corresponding to the specified consumable article from the latest counter information stored in the http server 300. For example, in a case where the specified consumable article is “cyan toner”, the acquisition unit 112 acquires counter information “19%” indicating a remaining amount of cyan toner from the latest counter information stored in the http server 300. A data structure of the counter information DB that stores counter information in the http server 300 will be described later.
- [0049] The determination unit 113 compares the counter information acquired from the http server 300 with the threshold value corresponding to the consumable article, to determine validity of the ordering mail. Specifically, at first, the determination unit 113 acquires a threshold value corresponding to the consumable article from the device information DB 120. Subsequently, the determination unit 113 compares the threshold value acquired from the device information DB 120 with the counter information acquired from the http server 300, to determine validity of the ordering mail.
- [0050] For example, in a case of receiving an ordering mail for cyan toner, the determination unit 113 acquires the threshold “20%” for cyan toner from the device information DB 120. Subsequently, the determination unit 113 determines that the ordering mail related to cyan toner is valid, because the remaining amount of cyan toner acquired from the http server 300, “19%”, is less than the threshold value “20%”.
- [0051] In contrast, in a case of receiving an ordering mail for yellow toner, the determination unit 113 acquires the threshold “20%” for yellow toner from the device information DB 120. Subsequently, the determination unit 113 determines that the ordering mail related to yellow toner is invalid, because the remaining amount of yellow toner acquired from the http server 300 “28%” is greater than the threshold value “20%”.
- [0052] Then, the determination unit 113 displays a result of determination related to the validity of the ordering mail on the display unit 130. In the case of determining that the ordering mail is valid, the determination unit 113 may display an order slip on the display unit 130.
- [0053] (First configuration of http server)
- [0054] FIG. 6 is a diagram of a first example configuration of the http server. The http server 300 includes a control unit 310, a counter information DB 320 and a network I/F 330. Moreover, the control unit 310 includes an acceptance unit 311 and an input unit 312.
- [0055] The http server 300 is an apparatus that manages counter information received from the MFP/LP 200. The network I/F 330 is an interface that controls communication with

other apparatus

- [0056] The counter information DB 320 is a database that stores counter information received from the MFP/LP 200 in association with a reporting date and time.
- [0057] FIG. 7 is a diagram of an example data structure of the counter information DB. The counter information DB 320 associates the reporting date and time, a device model and number, and the counter information with each other. The reporting date and time indicates a date and time when the counter information is reported to the http server 300. The device model and number is a number for identifying the device that reports the counter information. A full color counter is a number of pages in which the MFP/LP performs full color print processing. That is, the full color counter is incremented each time full color print processing is performed. Moreover, the monochrome counter is a number of pages in which the monochrome print processing is performed. That is, a monochrome counter is incremented each time monochrome print processing is performed. The remaining amount of black toner (%) is a remaining amount of black toner in the MFP/LP 200. The remaining amount of cyan toner (%) is a remaining amount of cyan toner in the MFP/LP 200. The remaining amount of magenta toner (%) is a remaining amount of magenta toner in the MFP/LP 200. The remaining amount of yellow toner (%) is a remaining amount of yellow toner in the MFP/LP 200.
- [0058] For example, the counter information DB 320, as the latest history, associates the date and time of record “2014/01/06 12:00” with the device model and number “Z123-456789”, the full color counter “1567”, the monochrome counter “588”, the remaining amount of black toner (%) “62”, the remaining amount of cyan toner (%) “19”, the remaining amount of magenta toner (%) “55” and the remaining amount of yellow toner (%) “28”.
- [0059] The data structure of the device information DB 120, shown in FIG. 7, is an example, and it is not limited to the above-described storage format if respective items are associated in the same way as above. For example, in FIG. 7, the counter information DB 320 stores counter information related to a plurality of consumable articles in a record. But, counter information related to a consumable article may be stored in a record.
- [0060] The acceptance unit 311 accepts counter information from the MFP/LP 200. For example, the counter information includes a reporting date and time, a device model and number, and counter information related to each consumable article. The reporting date and time may be a date and time when the acceptance unit 311 accepts the counter information.
- [0061] The input unit 312 stores the counter information received from the MFP/LP 200 in the counter information DB 320.
- [0062] (First sequence of acceptance of ordering mail)
- [0063] FIG. 8 is a first sequence diagram of processing of accepting an ordering mail. That

is, FIG. 8 illustrates a flow of communication performed among the MFP/LP 200, the SMTP server 400, the POP server 500, the http server 300 and the terminal of the person in charge 100 upon accepting the ordering mail.

- [0064] The MFP/LP 200 periodically sends counter information to the http server 300 (steps S10 and S11). For example, the MFP/LP 200 sends remaining amounts of toners of the respective colors to the http server 300 at 12 o'clock every day. Then, the http server 300 updates the counter information DB 320 based on the received counter information.
- [0065] In a case where the consumable article satisfies a predetermined condition, the MFP/LP 200 sends an ordering mail to the SMTP server 400 (step S12). Subsequently, the SMTP server 400 forwards the ordering mail to the POP server 500 (step S13).
- [0066] The terminal of the person in charge 100 periodically checks a mail received by the POP server 500 by using a mail reception function (step S14). For example, the terminal of the person in charge 100 checks a mail received by the POP server 500 every minute. In a case where the mail received by the POP server 500 includes an ordering mail addressed to the terminal of the person in charge 100, the terminal of the person in charge 100 receives the ordering mail (step S15).
- [0067] In a case of receiving an ordering mail, the terminal of the person in charge 100 accesses the http server 300 and inquires about counter information of the consumable article (step S16). The http server 300 acquires the counter information of the consumable article, which is acquired from a record in the counter information DB 320 corresponding to the latest history, and sends it to the terminal of the person in charge 100 (step S17).
- [0068] The terminal of the person in charge 100 compares the counter information sent from the http server 300 with a threshold corresponding to the consumable article, and thereby determines validity of the ordering mail (step S18). In a case of determining the ordering mail to be valid, the terminal of the person in charge 100 displays a screen for accepting an order on the display unit 130 (step S19).
- [0069] (Flow of processing of determining validity)
- [0070] FIG. 9 is a flowchart of an example flow of determining validity. The terminal of the person in charge 100 periodically checks a mail received by the POP server 500 by using the mail reception function (step S20). In a case where no mail addressed to the person in charge arrives (step S20: NO), the terminal of the person in charge 100 checks mail again after predetermined time has elapsed. In contrast, in a case where a mail addressed to the person in charge arrives (step S20: YES), the terminal of the person in charge 100 receives the mail (step S21).
- [0071] The terminal of the person in charge 100 determines whether there is an ordering mail in received mails (step S22). For example, the terminal of the person in charge

100 determines an ordering mail by checking whether a subject field of the received mail includes a character string of "Order Toner Cartridge".

- [0072] In a case where there is an ordering mail in the received mails (step S22: YES), the terminal of the person in charge 100 acquires counter information of a consumable article from the latest history of the http server 300 (step S23). For example, in a case where the ordering mail includes a character string of "cyan toner near-depletion", the terminal of the person in charge 100 acquires the remaining amount (%) of cyan toner from the latest history of the counter information DB 320 that the http server 300 has.
- [0073] The terminal of the person in charge 100 determines a validity of the mail based on a comparison of the counter information of the consumable article with a threshold of the consumable article (step S24). For example, the terminal of the person in charge 100 determines the ordering mail to be valid because the acquired remaining amount of cyan toner "19%" is less than the threshold of cyan toner "20%".
- [0074] In a case of determining that the ordering mail is a valid mail (step S25: YES), the terminal of the person in charge 100 displays ordering information for the consumable article (step S26). For example, the terminal of the person in charge 100 displays an order slip of the consumable article on the display unit 130. In contrast, in a case of determining that the ordering mail is invalid mail (step S25: NO), the terminal of the person in charge 100 displays on the display unit 130 that the ordering mail is invalid mail (step S27).
- [0075] As described above, according to the management system 1 of the first embodiment of the present invention, because the terminal of the person in charge 100 uses counter information acquired through a safe route, different from a route through which an ordering instruction is sent, to determine the validity of the ordering instruction, it is possible to confirm the validity of the ordering instruction.
- [0076] In the above description, the determination of validity of an ordering mail is performed so as to find an improper ordering instruction by a tampered mail or a spoofed mail. But, the present embodiment is not necessarily limited to the case where the improper ordering instruction is performed intentionally. For example, even in a case where a certain fault occurs in a device for performing an ordering instruction, such as the MFP/LP, and an improper ordering instruction is performed by the device in which the fault occurs, or in a case where an improper ordering instruction is performed due to a user's misoperation for the device, the determination of validity (adequacy) of the ordering mail according to the present embodiment is performed, and thereby an improper ordering instruction can be found.
- [0077] Moreover, in the above description, the terminal of the person in charge acquires a remaining amount of toner from the http server 300, and determines that the ordering mail is valid in a case where the remaining amount is lower than the threshold, and in

other cases determines that the ordering mail is invalid. However, other condition for determination can be considered. For example, in a case where a remaining amount is greater than or equal to the threshold, instead of determining immediately that the ordering mail is invalid, the ordering mail may be determined to be invalid for the first time when the case where the remaining amount is greater than or equal to the threshold upon receiving an ordering mail continues for a prescribed number of times. Furthermore, the prescribed number of times may be variable depending on the device, such as the MFP/LP, that is a transmission source of the ordering mail. Specifically, for example, a default value is assumed to be 3 times. After the state, in which a remaining amount is greater than or equal to the threshold upon receiving an ordering mail from a certain single device, is determined to be invalid successively 3 times, the prescribed number of times for the certain single device may be decreased to 2 or 1. According to the above-described configuration, it is possible to avoid impairing convenience for a user by immediately determining that an ordering instruction is invalid in a case where an invalid ordering instruction is performed unintentionally due to the user's misoperation, a fault in the device or the like. Furthermore, the device, in which the ordering instruction is once determined to be invalid, can be determined to be invalid in the early stage from next time. Therefore, it is possible to prevent sending an article in response to an invalid order.

[0078] Moreover, in the above description, in a case where an ordering mail is determined to be an invalid mail, the terminal of the person in charge displays that the ordering mail is an invalid mail. Furthermore, for example, in the case where the ordering mail is determined to be an invalid mail, the terminal of the person in charge may store a number of times thereof, display ordering information without displaying that it is an invalid mail until the number of times reaches a predetermined value, and for the first time when it reaches the predetermined values display that it is an invalid mail. Furthermore, the number of times may be variable depending on the device such as the MFP/LP in the same way as above.

[0079] <<Second embodiment>>

[0080] (Second configuration of management system)

[0081] FIG. 10 is a diagram of an example second configuration of a management system. With reference to FIG. 10, a management system 2 according to the second embodiment will be described. As shown in FIG. 10, the management system includes a terminal of the person in charge 100, an MFP/LP 200, an http server 350, an SMTP server 400. Moreover, the SMTP server 400 is coupled to the http server 350 via a network 5 for a communications connection.

[0082] The MFP/LP 200 sends an ordering mail to the http server 350. The SMTP server 400 forwards the ordering mail received from the MFP/LP 200 to the http server 350

via the network 5. The http server 350 stores the received ordering mail.

[0083] Moreover, the MFP/LP 200 periodically sends counter information to the http server 350. The http server 350 holds the accepted counter information in combination with a reporting date and time in a form of history.

[0084] In a case of receiving an ordering mail, the http server 350 determines a validity of the ordering mail based on the latest counter information, which is stored at the http server 350. The http server 350 displays on a display unit 130 of the terminal of the person in charge 100 a determination result regarding the validity of the ordering mail.

[0085] (Second configuration of http server)

[0086] FIG. 11 is a diagram of a second example configuration of the http server. The http server 350 includes a control unit 360, a counter information DB 370, a device information DB 371, a mail storage region 372 and a network I/F 380. Moreover, the control unit 360 includes an acceptance unit 361, an input unit 362, a reception unit 363, a determination unit 364 and a transmission unit 365.

[0087] The network I/F 380 is an interface that controls communication with another apparatus. Moreover, the mail storage region 372 is a storage region that stores received mails. In addition, an example data structure of the counter information DB 370 is shown in FIG. 4. Moreover, an example data structure of the device information DB 371 is shown in FIG. 7.

[0088] The acceptance unit 361 accepts counter information from the MFP/LP 200. For example, the counter information includes a reporting date and time, a device mode and number, and counter information regarding each consumable article.

[0089] The input unit 362 stores the accepted counter information into the counter information DB 370. For example, the input unit 362 stores the accepted counter information into the counter information DB 370 as latest history data.

[0090] The reception unit 363 receives the ordering mail. The reception unit 363 stores the ordering mail in the mail storage region 362.

[0091] The determination unit 364 specifies a consumable article based on the received ordering mail. The determination unit 364 acquires counter information corresponding to the specified consumable article from the counter information DB 370. Moreover, the determination unit 364 acquires a threshold corresponding to the specified consumable article from the device information DB 371.

[0092] The determination unit 364 compares the counter information acquired from the counter information DB 370 with the threshold acquired from the device information DB 371, and thereby determines a validity of the ordering mail. In a case of determining that the ordering mail is valid, the determination unit 364 attaches an order slip of the consumable article to the ordering mail. In contrast, in a case of determining that the ordering mail is invalid, the determination unit 364 adds a description in-

dicating that the ordering mail may have been tampered with or spoofed. In addition, the processing in the case where the ordering mail is valid and the processing in the case where the ordering mail is invalid, as described above, are examples, and are not limited to the above.

- [0093] The transmission unit 365 sends the ordering mail, to which the determination result is input, to the terminal of the person in charge 100. The transmission unit 365 may display a screen for displaying the determination result on the display unit 130 of the terminal of the person in charge 100 instead of sending the ordering mail to the terminal of the person in charge 100.
- [0094] (Second sequence of acceptance of ordering mail)
- [0095] FIG. 12 is a second sequence diagram of processing of accepting an ordering mail. That is, FIG. 12 illustrates a flow of communication performed among the MFP/LP 200, the SMTP server 400, the http server 350 and the terminal of the person in charge 100 upon accepting the ordering mail.
- [0096] The MFP/LP 200 periodically sends counter information to the http server 350 (steps S30 and S31). The http server 350 updates the counter information DB 370 based on the received counter information.
- [0097] Moreover, in a case where the consumable article satisfies a predetermined condition, the MFP/LP 200 sends an ordering mail to the SMTP server 400 (step S32). Subsequently, the SMTP server 400 forwards the ordering mail to the http server 350 (step S33).
- [0098] The http server 350 compares the counter information acquired from the counter information DB 370 with a threshold acquired from the device information DB 371, and thereby determines a validity of the ordering mail (step S34).
- [0099] In a case of determining that the ordering mail is valid, the http server 350 attaches an order slip for the consumable article to the ordering mail. In contrast, in a case of determining that the ordering mail is invalid, the http server 350 adds a description indicating that the ordering mail may have been tampered with or spoofed. Then the http server 350 stores the ordering mail in the mail storage region 372.
- [0100] The terminal of the person in charge 100 periodically checks mails received by the http server 350 by using the mail reception function (step S35). In a case where there is an ordering mail in the mail storage region 372, the terminal of the person in charge 100 receives the ordering mail (step S36). Then, the terminal of the person in charge 100 displays the ordering mail on the display unit 130 (step S37). In a case where the ordering mail is determined to be valid, the terminal of the person in charge 100 may further display the order slip attached to the ordering mail on the display unit 130.
- [0101] As described above, according to the management system 2 of the second embodiment of the present invention, because the http server 350 determines a validity of

ordering instruction using counter information periodically sent separately from the ordering instruction, it is possible to confirm the validity of the ordering instruction.

[0102] <<Third embodiment>>

[0103] (Other embodiment)

[0104] In the first and second embodiments, validity of an ordering mail is determined based on counter information stored in the http server 300 or the http server 350. However, the present invention is not limited to them. For example, in a case of receiving an ordering mail, the terminal of the person in charge 100 directly may refer to a status regarding the consumable article of the MFP/LP 200, and thereby determine a validity of the ordering mail. For example, in a case of receiving an ordering mail regarding toner magenta, the terminal of the person in charge 100 refers to a status of the remaining amount of toner magenta of the MFP/LP 200, and determines a validity of the ordering mail based on whether the remaining amount of toner magenta is less than the threshold.

[0105] Moreover, in the first and second embodiments, examples where a terminal of the person in charge 100 manages a MFP/LP 200 are described. However, the present invention is not limited to them. The terminal of the person in charge 100 may manage a plurality of MFP/LPs 200.

[0106] In the above case, the terminal of the person in charge 100 acquires counter information as follows. In the counter information DB 320, counter information is held in a record for each device model and number. At first, the terminal of the person in charge 100 refers a field of device information of the ordering mail to specify the device model and number. Subsequently, the terminal of the person in charge 100 specifies a record in the counter information DB 320 corresponding to the specified device model and number. Then, the terminal of the person in charge 100 acquires counter information corresponding to the consumable article from the specified record.

[0107] Moreover, in the first and second embodiments, an amount of consumable is counter information. But, the present invention is not limited to this. For example, a value indicating a period of use of a replacement part may be counter information. For example, a period of use (hours) of a print head may be counter information.

[0108] Moreover, in the first and second embodiments, an object to be managed by the management system is the MFP/LP 200. However, the present invention is not limited to this. The management system may manage another apparatus that handles consumables or replacement parts.

[0109] As described above, the management system is described with reference to embodiments. However, the present invention is not limited to this. Various variation and modifications may be made without departing from the scope of the invention as set forth in the accompanying claims.

[0110] (Hardware configuration of MFP/LP)

[0111] FIG. 13 is a diagram of an example hardware configuration of the MFP/LP according to the present embodiment. As shown in FIG. 13, the MFP/LP 200 includes a main body 10 provided with various functions such as copying function, scanning function, facsimile function and printing function, and an operation unit 20 for accepting a user's operation. Accepting the user's operation is a concept including acceptance of information input according to the user's operation (including signals or the like indicating coordinate values on a screen). The main body 10 and the operation unit 20 are coupled to each other via a dedicated communication path 31 for a communications connection. For the communication path 31, for example, a path based on the USB (Universal Serial Bus) specifications may be employed. But, any standard, wired or wireless, may be employed.

[0112] The main body 10 can perform an operation according to the operation accepted by the operation unit 20. Moreover, the main body 10 can communicate with an external apparatus, such as a client PC (personal computer), and can also operate according to an instruction received from the external apparatus.

[0113] At first, a hardware configuration of the main body 10 will be described. As shown in FIG. 13, the main body 10 includes a CPU 11, a ROM (read-only memory) 12, a RAM (random access memory) 13, an HDD (hard disc drive) 14, a communication I/F 15, a connection I/F 16 and an engine unit 17, which are connected with each other via a system bus 18.

[0114] The CPU 11 totally controls an operation of the main body 10. The CPU 11 executes a program stored in the ROM 12, the HDD 14 or the like in the RAM 13 as a work area, and thereby controls an entire operation of the main body 10, and enables the above-described various functions, such as copying function, the scanning function, the facsimile function and the printing function. In addition, the CPU 11 performs processing of the basic function unit 210 and the device usage information management unit 220, as shown in FIG. 2.

[0115] The communication I/F 15 is an interface for coupling to the network 5. The connection I/F 16 is an interface for communicating with the operation unit 20 via the communication path 31. The engine unit 17 is hardware for enabling the copying function, the scanning function, the facsimile function and the printing function, and for performing general-purpose information processing and processing other than communication. For example, a scanner (image readout unit) for scanning an image of a document to readout it, a plotter (image formation unit) for performing printing on a sheet material such as a paper, a facsimile unit for performing a facsimile communication or the like is provided. Furthermore, a specific optional device such as a finisher for sorting printed sheet materials or an ADF (auto document feeder) for auto-

matically feeding document may be provided.

- [0116] Next, a hardware configuration of the operation unit 20 will be described. As shown in FIG. 13, the operation unit 20 includes a CPU 21, a ROM 22, a RAM 23, a flash memory 24, a communication I/F 25, a connection I/F 26, an operation panel 27 and an external connection I/F 28, which are connected with each other via a system bus 29.
- [0117] The CPU 21 totally controls an operation of the operation unit 20. The CPU 21 executes a program stored in the ROM 22, the flash memory 24 or the like in the RAM 23 as a work area, and thereby controls an entire operation of the operation unit 20, and enables various functions, which will be described later, such as displaying information (image) according to an input accepted from the user. In addition, the CPU 21 performs processing of the network control unit 230, as shown in FIG. 2.
- [0118] The communication I/F 25 is an interface for coupling to the network 5. The connection I/F 26 is an interface for communicating with the main body 10 via the communication path 31.
- [0119] The operation panel 27 accepts various inputs depending on the user's manipulation and displays various information (e.g. information depending on the accepted manipulation, information indicating an operation status of the MFP/LP 200, information indicating setup state or the like). In the present example, the operation panel 27 is configured with a liquid crystal display (LCD) device installing a touch panel function. But, the present invention is not limited to this. For example, it may be configured with an organic EL (electro luminescence) display device installing the touch panel function. Furthermore, in addition to this or instead of this, an operation unit such as hardware keys or a display unit such as a lamp may be provided.
- [0120] The external connection I/F 28 is an interface for coupling to an IC card reader 3.
- [0121] (Software configuration of MFP/LP)
- [0122] FIG. 14 is a block diagram of an example software configuration of the MFP/LP according to the present embodiment. As shown in FIG. 14, the main body 10 includes an application layer 41, a service layer 42 and an OS (operating system) layer 43. The application layer 41, the service layer 42 and the OS layer 43 are substantially various software stored in the ROM 12 or the HDD 14. The CPU executes the software, and thereby various functions are provided.
- [0123] The software of the application layer 41 is application software (in the following, may be simply referred to as "application") for causing a hardware resource to operate, to provide a predetermined function. For example, the application includes a copying application for providing the copying function, a scanning application for providing the scanning function, a facsimile application for providing the facsimile function, a printing application for providing the printing function or the like.
- [0124] The software of the service layer 42 is software interposed between the application

layer 41 and the OS layer 43, and for providing to the application an interface for using a hardware resource included in the main body 10. More specifically, it is a software for providing a function of accepting an operation request for the hardware resource and performing arbitration for the operation request. The operation request accepted by the service layer 42 includes reading out by a scanner, printing by a plotter or the like.

[0125] A function of interface by the service layer 42 is provided not only to the application layer 42 of the main body 10, but also to the application layer 51 of an operation layer 51 of the operation unit 20. That is, the application layer 51 (“application”) of the operation unit 20 can also enable a function using the hardware resource of the main body 10 (for example, the engine unit 17) via the interface function of the service layer 42.

[0126] Software of the OS layer 43 is basic software for providing basic control of the hardware included in the main body 10. The software of the service layer 42 converts requests for using the hardware resource from various applications into commands interpretable for the OS layer 43, and forwards them to the OS layer 43. Then, the command is executed by the software of the OS layer 43, and thereby the hardware resource operates according to the request by the application.

[0127] Similarly, the operation unit 20 includes the application layer 51, a service layer 52 and an OS layer 53. A hierarchical structure of the application layer 51, the service layer 52 and the OS layer 53 included in the operation unit 20 is the same as that of the main body 10. However, a function provided by application of the application layer 51 and a type of operation request that the service layer 52 can accept are different from those of the main body 10. The application of the application layer 51 may be software for causing the hardware included in the operation unit 20 to operate to provide a predetermined function. However, it is software for providing a function of a UI (user interface) for performing a manipulation and a display regarding the function which the main body 10 is mainly provided with (copying function, scanning function, facsimile function or printing function).

[0128] A wireless LAN AP (Local Area Network Access Point) 70 is an access point that receives a processing request for copying, scanning, sending facsimile, printing or the like from a user terminal.

[0129] In the present embodiment, in order to maintain independence of functions, the software of the OS layer 43 in the main body 10 may be different from the software of the OS layer 53 in the operation unit 20. That is, the main body 10 and the operation unit 20 may operate independently from each other by separate operating systems. For example, Linux (trademark registered) may be used for the software of the OS layer 43 in the main body 10 whereas Android (trademark registered) may be used for the software of the OS layer 53 in the operation unit 20.

- [0130] As described above, in the MFP/LP 200 according to the present embodiment, because the main body 10 and the operation unit 20 operate by separate operating systems, communication between the main body 10 and the operation unit 20 is not interprocess communication within the common apparatus, but is performed as communication between different apparatuses. An operation of transferring information accepted by the operation unit 20 (content of instruction from a user) to the main body 10, an operation of reporting an event from the main body 10 to the operation unit 20 and the like correspond to the above-described communication. Here, the operation unit 20 performs command communication to the main body 10, and thereby uses the function of the main body 10. Moreover, the event reported from the main body 10 to the operation unit 20 includes a status of execution of an operation in the main body 10, a content set in the main body 10 or the like.
- [0131] Moreover, in the present embodiment, because an electric power supply to the operation unit 20 is performed through the communication path 31 from the main body 10, power supply control for the operation unit 20 may be performed separately (independently) from a power supply control for the main body 10.
- [0132] (Hardware configuration of terminal of person in charge)
- [0133] FIG. 15 is a diagram of an example hardware configuration of the terminal of the person in charge. The terminal of the person in charge 100 includes a CPU 81, a ROM 82, a RAM 83, an HDD 84, an operation unit 85, a display unit 86, a drive device 87, a NIC (network interface card) 88 and a recording medium 89.
- [0134] The CPU 81 is a processor for performing entire control of the terminal of the person in charge 100. The CPU 81 enables functions of respective processing units of the control unit 110. That is, the CPU 81 enables functions of the reception unit 111, the acquisition unit 112 and the determination unit 113, shown in FIG. 3. The CPU 81 executes programs of an operating system, application, various services or the like, stored in the HDD 84 or the like, and thereby enables various functions of the terminal of the person in charge. The ROM 82 stores various programs and data or the like used by the programs. The RAM 83 is used as a storage area for loading programs, a work area for the loaded program or the like. The HDD 84 stores various information, programs and the like.
- [0135] The operation unit 85 is hardware for accepting a manipulation of input from a user, and, for example, a keyboard, a mouse, a touch panel or the like.
- [0136] The display unit 86 is hardware for performing display for the user, and, for example, a monitor, a liquid crystal display or the like. The display unit 130 shown in FIG. 3 is an example of the display unit 86.
- [0137] The drive device 87 reads out a program from a recording medium 89 that stores the program. The program read out by the drive device 87 is, for example, installed in the

HDD 84. The NIC 88 is a communication interface for connecting the terminal of the person in charge 100 to a network, and performing transmission/reception of data. The network I/F 140 is an example of the NIC 88.

[0138] The recording medium 89 is a non-volatile recording medium. An example of the recording medium 89 includes a magnetic recording medium, an optical disk, a magneto-optical recording medium, a non-volatile memory and the like. The recording medium 89 includes data included in the device information DB 120.

[0139] Although the present invention has been described with reference to embodiments, the present invention is not limited to these embodiments, but various variations and modifications may be made without departing from the scope of the invention as set forth in the accompanying claims.

[0140] The present application is based on and claims the benefit of priority of Japanese Priority Application No. 2015-056203 filed on March 19, 2015, the entire contents of which are hereby incorporated by reference.

Industrial Applicability

[0141] The present invention can be applied to a system, an information processing apparatus and an information processing method.

Reference Signs List

[0142] 1,2 management system
5 network
10 main body
11,21,81 CPU
12,22,82 ROM
13,23,83 RAM
14,84 HDD
15,25 communication I/F
16,26 connection I/F
17 engine unit
18,29 system bus
20,85 operation unit
24 flash memory
27 operation panel
28 external connection I/F
31 communication path
41,51 application layer
42,52 service layer
43,53 OS layer

70 wireless LAN AP
86,130 display unit
87 drive device
88 NIC
89 recording medium
100 terminal of person in charge
110,310,360 control unit
111,363 reception unit
112 acquisition unit
113,364 determination unit
120,371 device information DB
140,330,380 network I/F
200 MFP/LP
210 basic function unit
220 device usage information management unit
230 network control unit
231 mail transmission function unit
232 https communication function unit
300,350 http server
311,361 acceptance unit
312,362 input unit
320,370 counter information DB
365 transmission unit
372 mail storage region
400 SMTP server
500 POP server

Claims

- [Claim 1] A system including at least one apparatus coupled to a device that uses a consumable article, the system comprising:
an accumulation unit configured to accumulate information relating to the consumable article; and
a determination unit configured to determine whether an order instruction for the consumable article is valid based on the information relating to the consumable article accumulated in the accumulation unit, when the order instruction for the consumable article is received.
- [Claim 2] The system according to claim 1,
wherein the at least one apparatus includes a first apparatus that includes the accumulation unit, and a second apparatus that includes the determination unit, the second apparatus being different from the first apparatus.
- [Claim 3] The system according to claim 1 or 2,
wherein the determination unit is configured to determine whether the order instruction is valid according to whether the information relating to the consumable article satisfies a predetermined condition corresponding to the consumable article.
- [Claim 4] The system according to any one of claims 1 to 3 further comprising:
a specifying unit configured to specify characteristics of the consumable article, the characteristics being included in the order instruction,
wherein the determination unit is configured to determine whether the order instruction is valid based on the information relating to the consumable article corresponding to the characteristics specified by the specifying unit.
- [Claim 5] The system according to claim 4,
wherein the determination unit is configured to search for a character string related to the consumable article in the order instruction, to specify the characteristics of the consumable article.
- [Claim 6] The system according to any one of claims 1 to 5,
wherein the device is an image forming apparatus that uses a consumable or a replacement part that is the consumable article, and
wherein the information relating to the consumable article is information on a time for replacement of the consumable article.
- [Claim 7] An information processing apparatus coupled to a device that uses a

consumable article, the apparatus comprising:

an acquisition unit configured to acquire information relating to the consumable article from an apparatus that accumulates information relating to the consumable article, when an order instruction for the consumable article is received; and

a determination unit configured to determine whether the order instruction for the consumable article is valid based on the information relating to the consumable article acquired by the acquisition unit.

[Claim 8] The information processing apparatus according to claim 7, wherein the apparatus that accumulates the information relating to the consumable article is different from the information processing apparatus.

[Claim 9] The information processing apparatus according to claim 7 or 8, wherein the determination unit is configured to determine whether the order instruction is valid according to whether the information relating to the consumable article acquired by the acquisition unit satisfies a predetermined condition corresponding to the consumable article.

[Claim 10] The information processing apparatus according to any one of claims 7 to 9 further comprising:
a specifying unit configured to specify a characteristics of the consumable article, the characteristics being included in the order instruction,
wherein the determination unit is configured to determine whether the order instruction is valid based on the information relating to the consumable article corresponding to the characteristics specified by the specifying unit.

[Claim 11] The information processing apparatus according to claim 10, wherein the determination unit is configured to search for a character string related to the consumable article in the order instruction, to specify the characteristics of the consumable article.

[Claim 12] The information processing apparatus according to any one of claims 7 to 11,
wherein the device is an image forming apparatus that uses a consumable or a replacement part that is the consumable article, and
wherein the information relating to the consumable article is information on a time for replacement of the consumable article.

[Claim 13] An information processing method comprising:
acquiring information relating to a consumable article used in a device

from a first apparatus, that is coupled to the device and accumulates the information relating to the consumable article, when an order instruction for the consumable article is received; and
determining whether the order instruction for the consumable article is valid based on the acquired information relating to the consumable article.

[Claim 14] The information processing method according to claim 13, wherein a second apparatus, in which the order instruction for the consumable article is determined to be valid is different from the first apparatus that accumulates the information relating to the consumable article.

[Claim 15] The information processing method according to claim 13 or 14, wherein the order instruction is determined to be valid according to whether the information relating to the consumable article satisfies a predetermined condition corresponding to the consumable article.

[Claim 16] The information processing method according to any one of claims 13 to 15 further comprising:
specifying characteristics of the consumable article, the characteristics being included in the order instruction,
wherein the order instruction is determined to be valid based on the information relating to the consumable article corresponding to the specified characteristics.

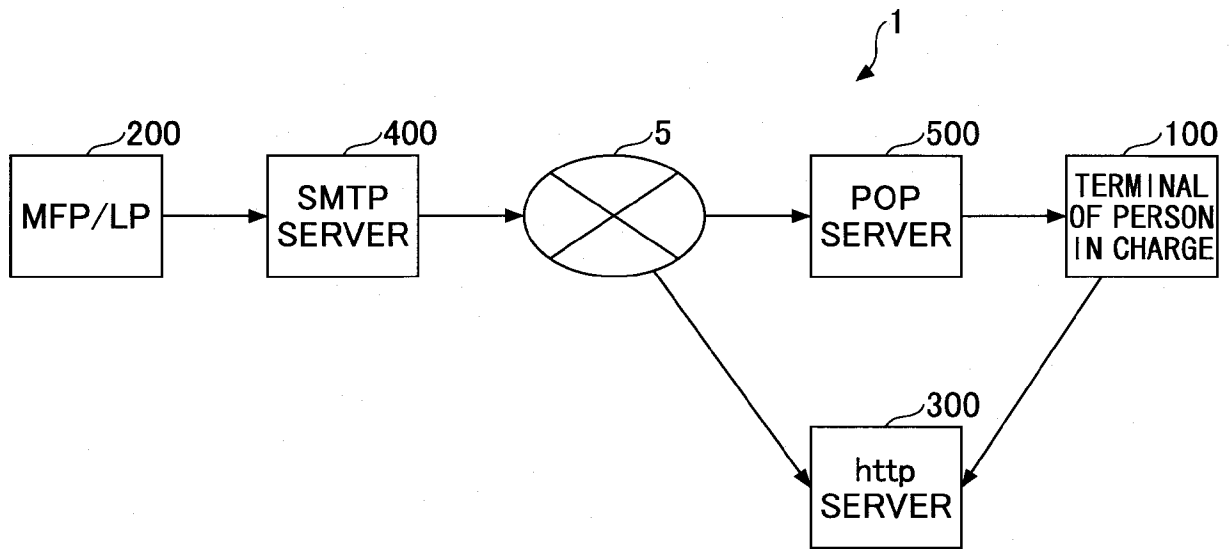
[Claim 17] The information processing method according to claim 16, wherein the characteristics of the consumable article is specified by searching for a character string related to the consumable article in the order instruction.

[Claim 18] The information processing method according to any one of claims 13 to 17,
wherein the device is an image forming apparatus that uses a consumable or a replacement part that is the consumable article, and
wherein the information relating to the consumable article is information on a time for replacement of the consumable article.

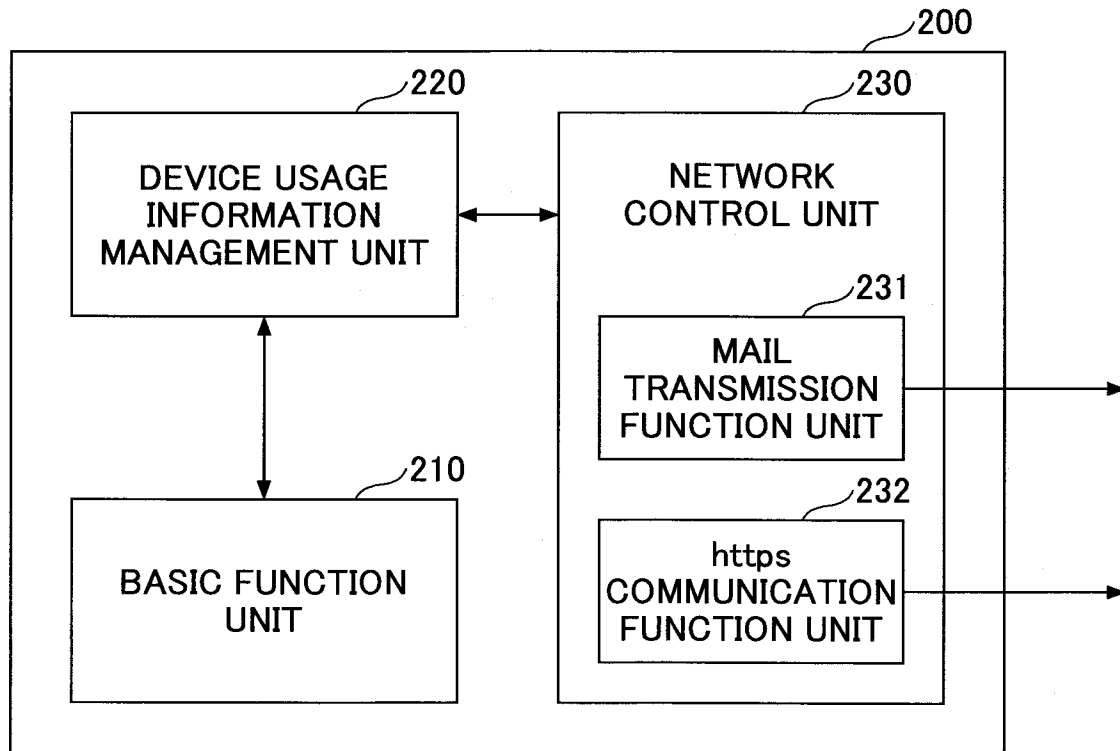
[Claim 19] A system including at least one apparatus coupled to a device that uses a consumable article, the system comprising:
an accumulation unit configured to accumulate information relating to the consumable article; and
a display unit configured to display information relating to validity of an order instruction for the consumable article based on the information

relating to the consumable article accumulated in the accumulation unit, when the order instruction for the consumable article is received.

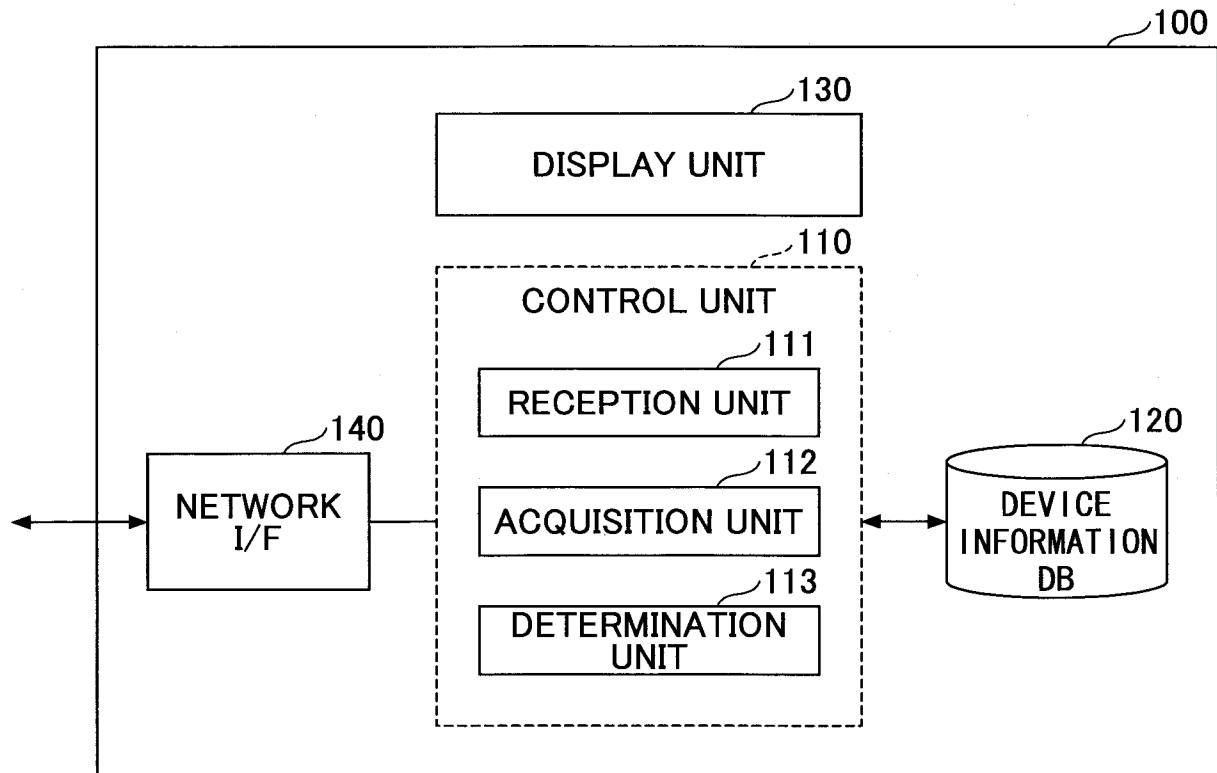
[Fig. 1]



[Fig. 2]



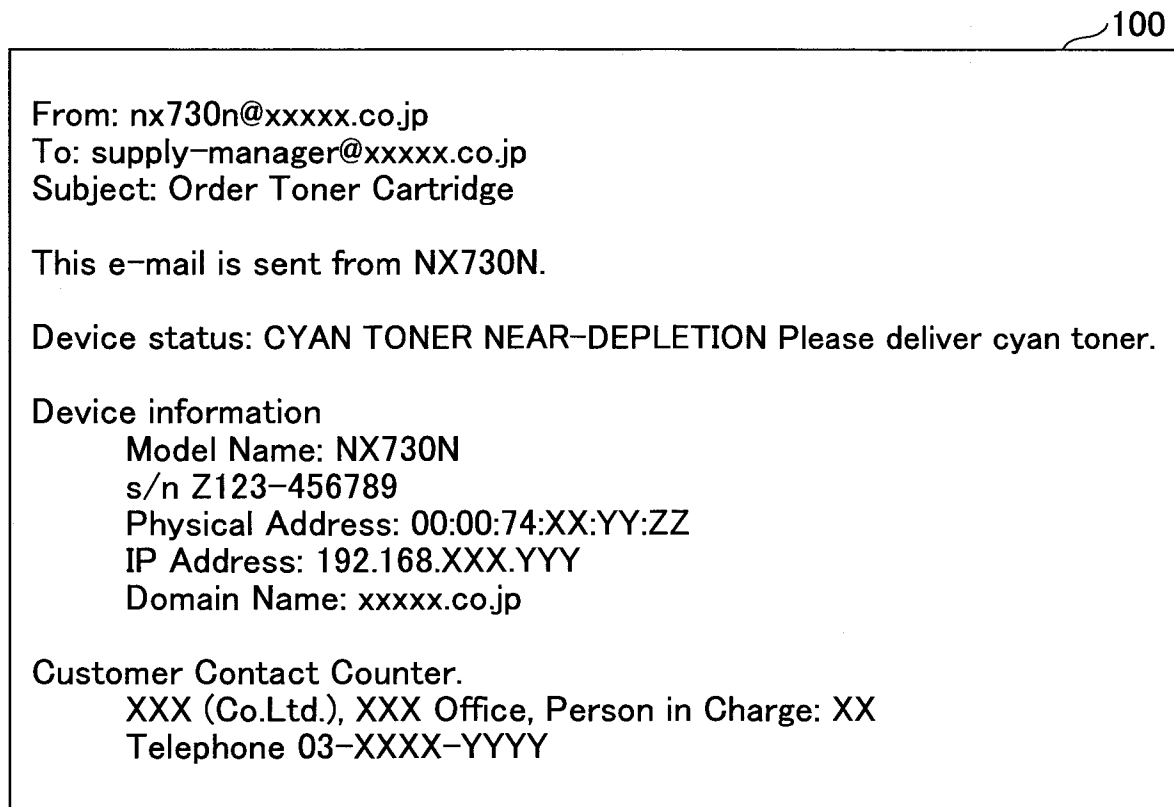
[Fig. 3]



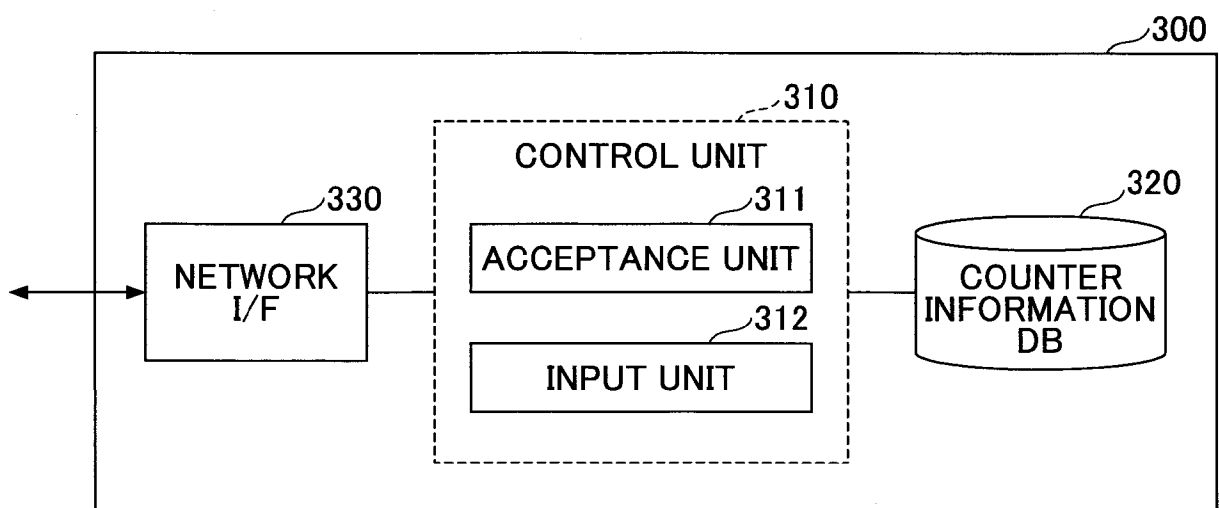
[Fig. 4]

CONSUMABLE ARTICLE	THRESHOLD
FULL COLOR COUNTER	1700
MONOCHROME COUNTER	1000
REMAINING AMOUNT OF BLACK TONER (%)	20
REMAINING AMOUNT OF CYAN TONER (%)	20
REMAINING AMOUNT OF MAGENTA TONER (%)	20
REMAINING AMOUNT OF YELLOW TONER (%)	20

[Fig. 5]



[Fig. 6]

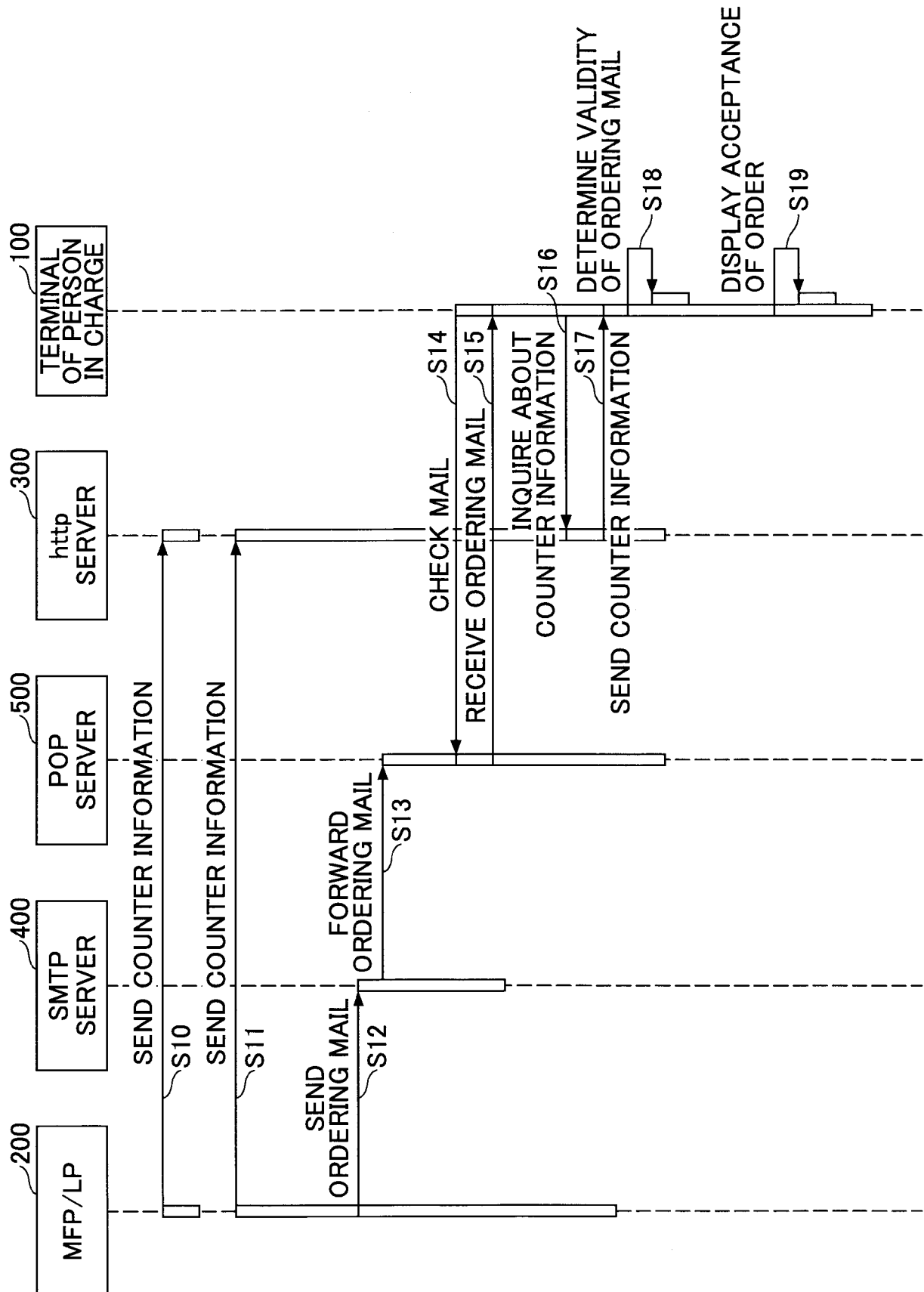


[Fig. 7]

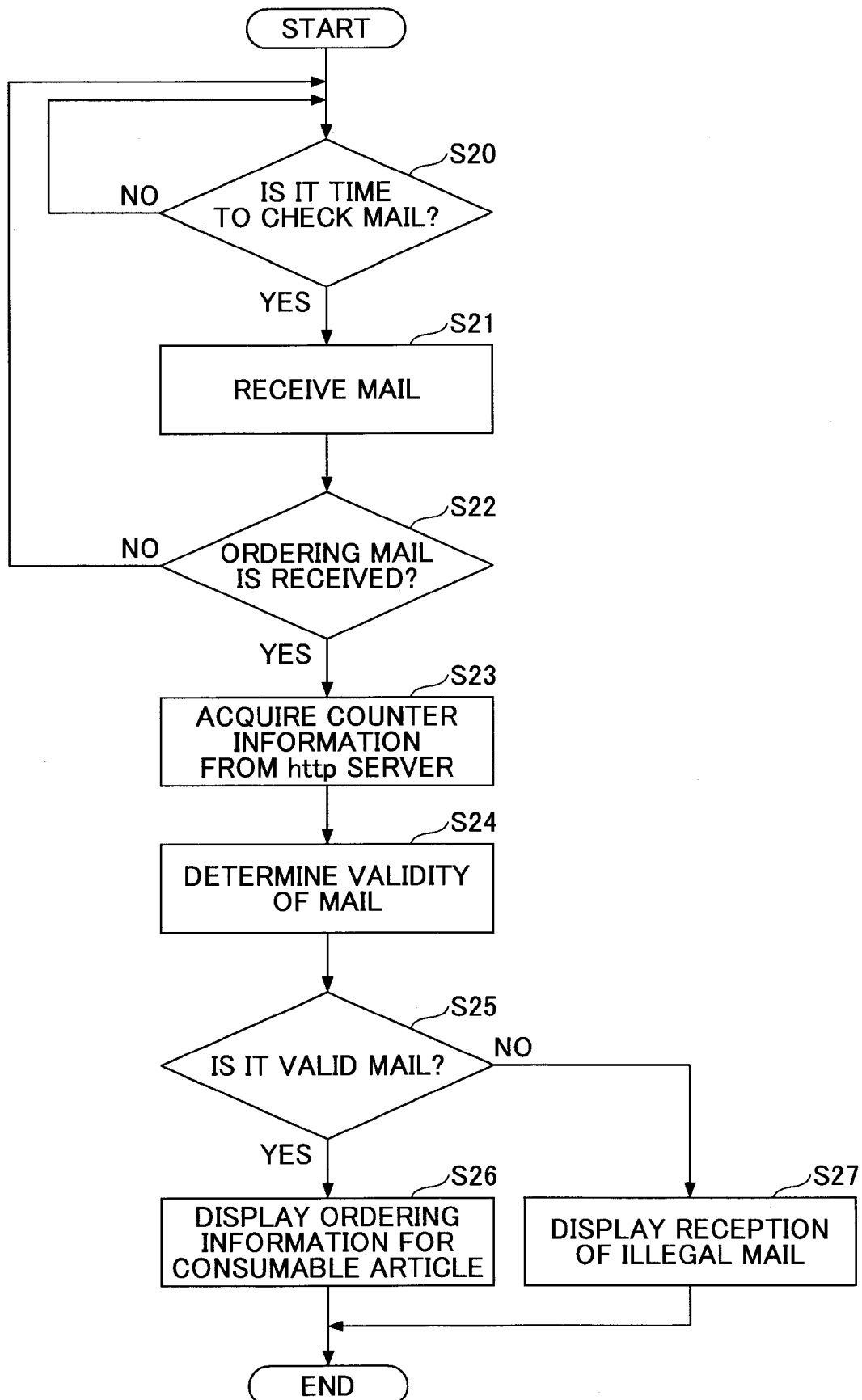
320

REPORTING DATE AND TIME	DEVICE TYPE AND DEVICE NUMBER	FULL COLOR COUNTER	MONOCHROME COUNTER	REMAINING AMOUNT OF BLACK TONER (%)	REMAINING AMOUNT OF CYAN TONER (%)	REMAINING AMOUNT OF MAGENTA TONER (%)	REMAINING AMOUNT OF YELLOW TONER (%)
2014/01/01 12:00	Z123-456789	1025	526	70	33	55	35
2014/01/02 12:00	Z123-456789	1200	546	69	30	55	34
2014/01/03 12:00	Z123-456789	1289	568	67	28	55	32
2014/01/04 12:00	Z123-456789	1348	568	65	25	55	31
2014/01/05 12:00	Z123-456789	1456	579	63	21	55	30
2014/01/06 12:00	Z123-456789	1567	588	62	19	55	28

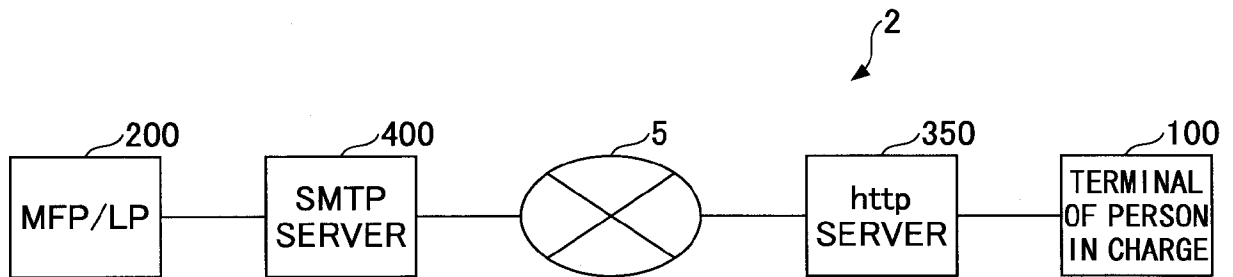
[Fig. 8]



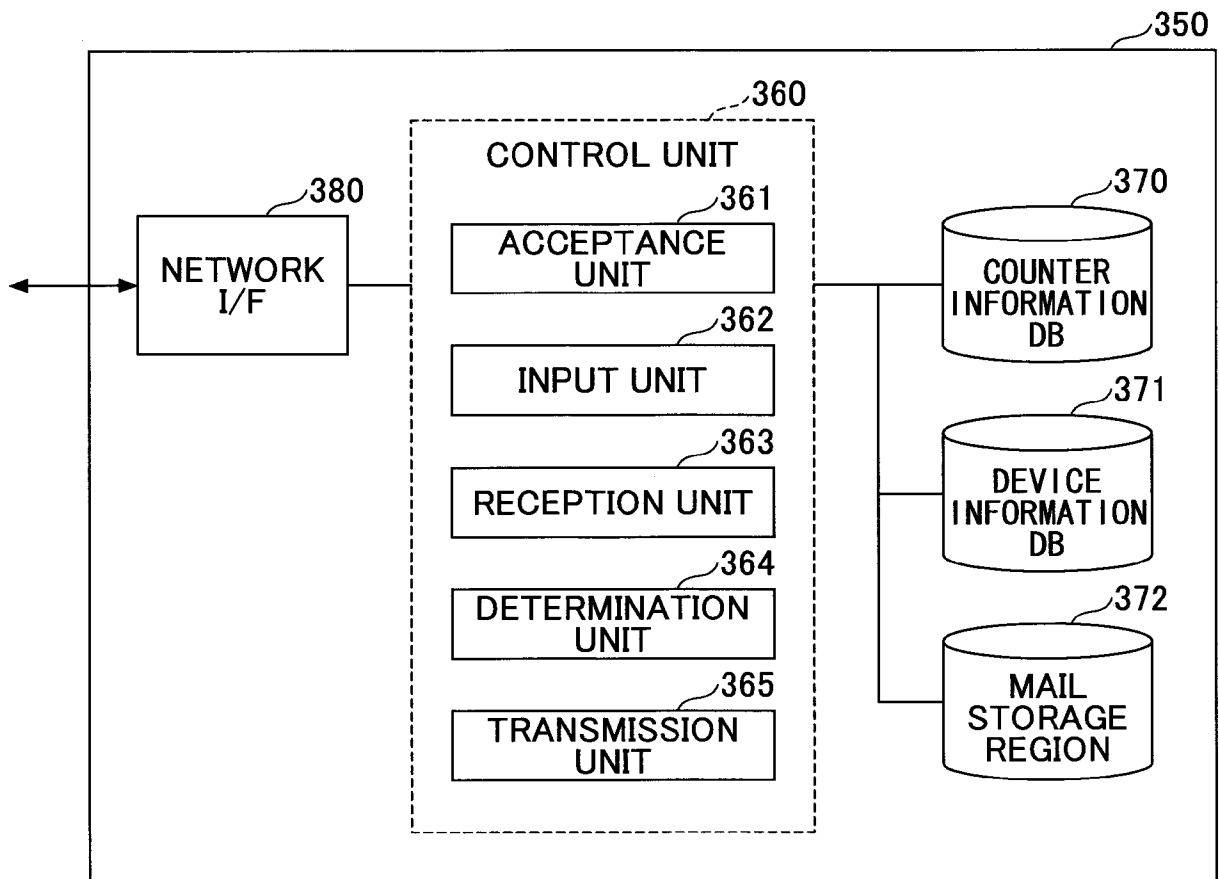
[Fig. 9]



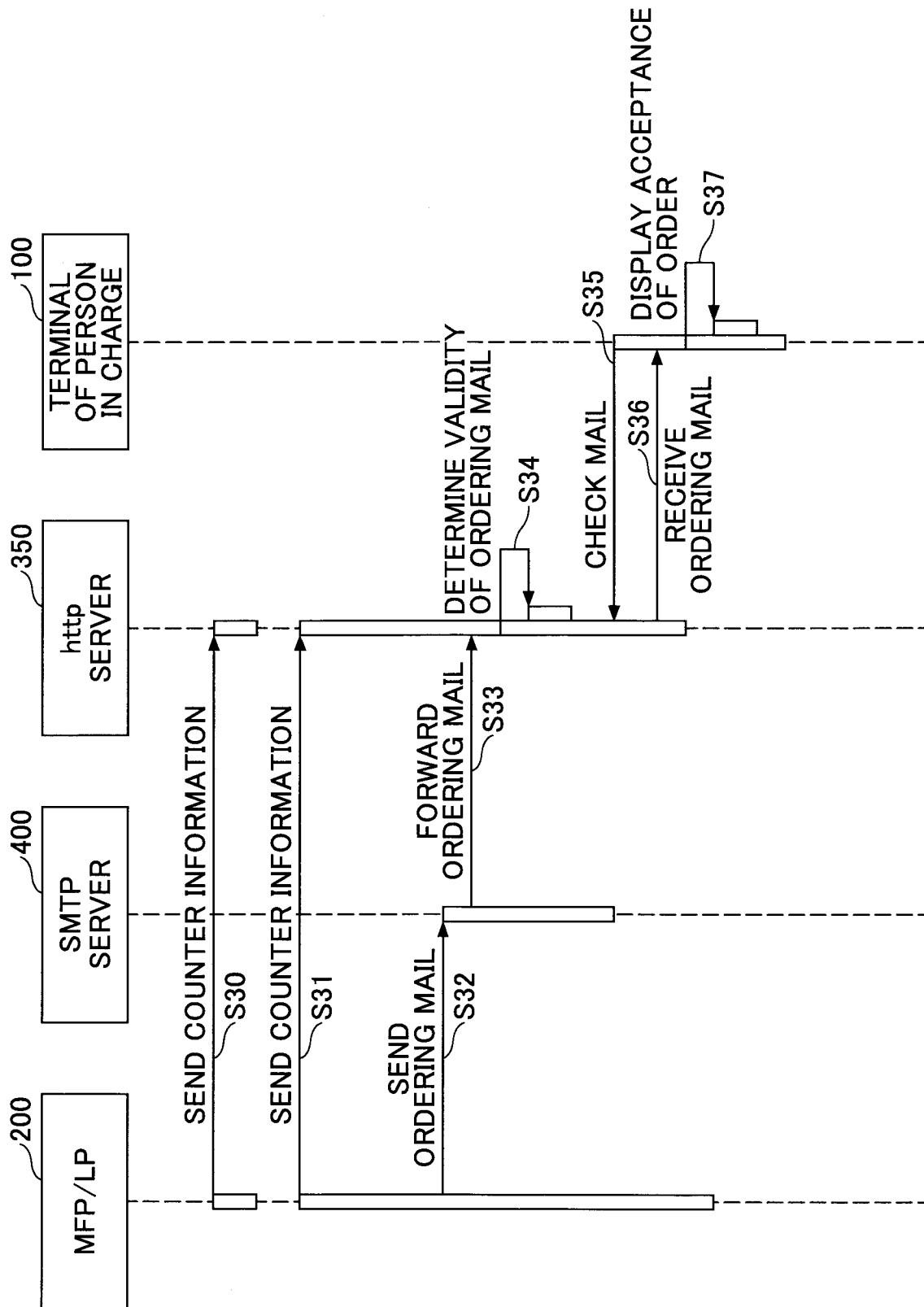
[Fig. 10]



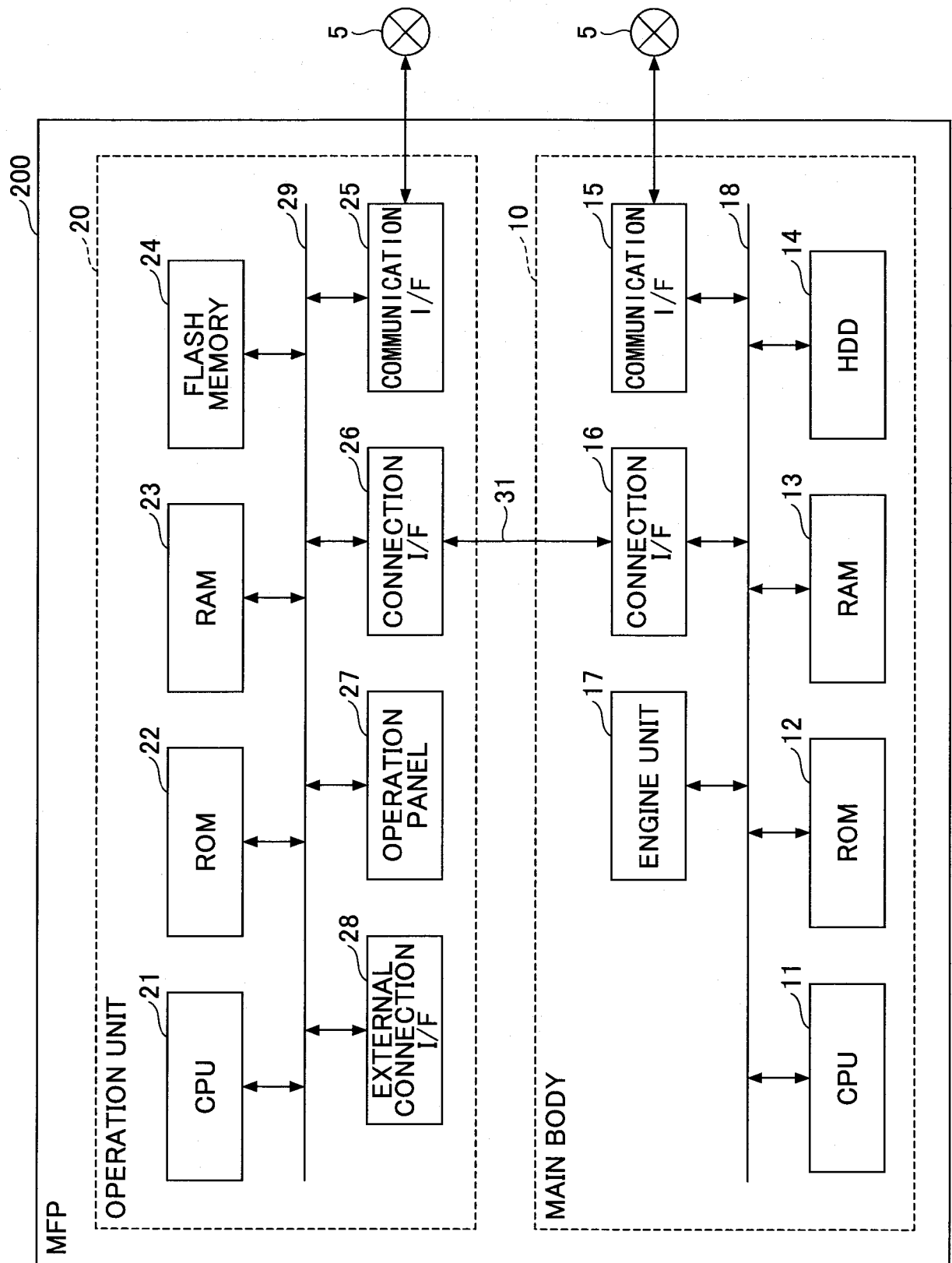
[Fig. 11]



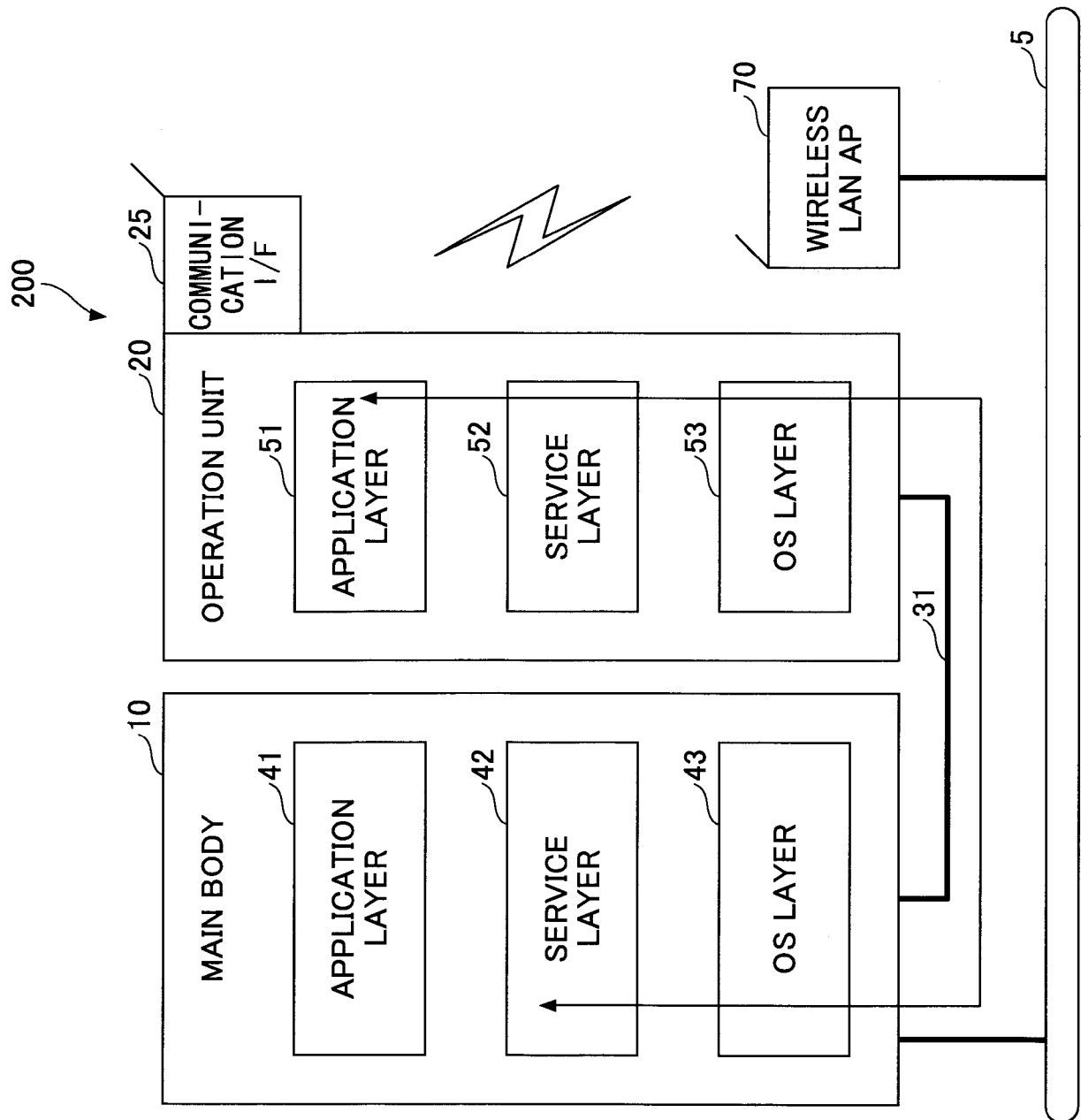
[Fig. 12]



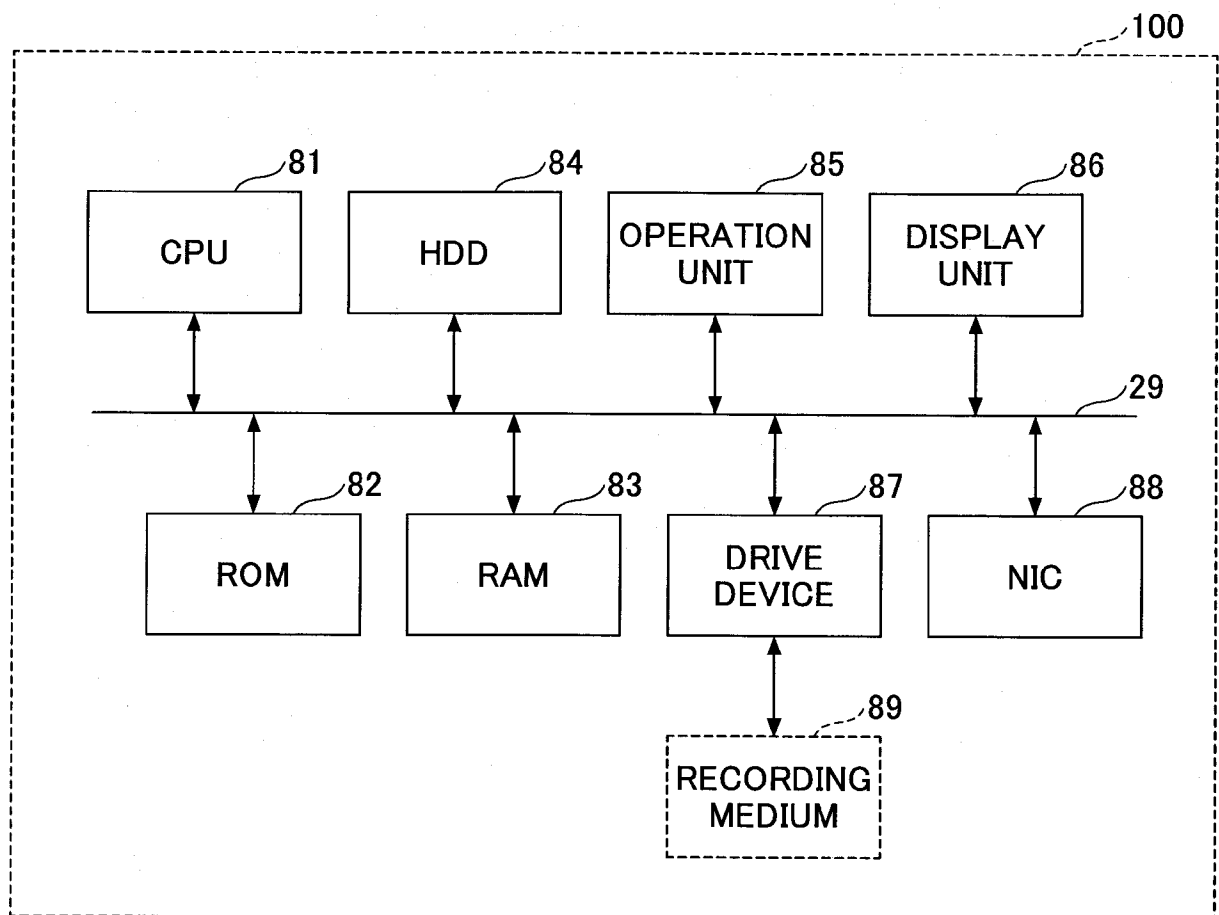
[Fig. 13]



[Fig. 14]



[Fig. 15]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/001488

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl. G06Q10/06(2012.01)i, B41J29/38(2006.01)i, G06F3/12(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)

Int.Cl. G06Q10/06, B41J29/38, G06F3/12

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

Published examined utility model applications of Japan 1922-1996
 Published unexamined utility model applications of Japan 1971-2016
 Registered utility model specifications of Japan 1996-2016
 Published registered utility model applications of Japan 1994-2016

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	D1:JP 2006-91985 A (FUJI XEROX CO LTD) 2006.04.06, The whole document, (Family none)	1-19
A	D2:JP 2006-221285 A (ICOH KK) 2006.08.24, The whole document, (Family none)	1-19
A	D3:JP 2007-11813 A (CANON MARKETING JAPAN INC) 2007.01.18, The whole document, (Family none)	1-19



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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