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(54) [TITLE OF THE INVENTION]
Payment method using mobile phone, and mobile phone

(57) [Claims]

[Claim 1]

A payment system equipped with a mobile phone, a terminal that accepts payments using the mobile phone, and a computer that manages the mobile phone and payments made by the terminal;
wherein the mobile phone comprises
a means of requesting the computer to generate a one-time identifier to enable the balance of the petty cash account;
a means of entering the desired transfer amount to be transferred from the original account to the petty cash account;
a means of transmitting the input transfer amount to the computer;
a means of receiving the one-time identifier and the balance of the petty cash account sent from the computer;

a means of storing the received one-time identifier;
a means of storing the balance of the received petty cash account;
a means for determining whether or not the one-time identifier stored in the mobile phone is valid;
as a result of the determination of the one-time identifier, if the one-time identifier is valid, a means for receiving the payment amount transmitted from the terminal;
a means for determining whether or not the received payment amount is within the balance of the petty cash account stored in the mobile phone;
as a result of the determination of the payment amount, if the payment amount is within the balance of the petty cash account, a means for transmitting the received one-time identifier to the terminal, and
a means for updating the balance of the petty cash account by subtracting the payment amount from the balance of the retail account;
the terminal comprises
a means of transmitting the payment amount to the mobile phone,
a means for receiving the one-time identifier sent from the mobile phone, and
a means for transmitting the payment amount and the received one-time identifier to the computer;
the computer comprises
a means of storing the balance of a petty cash account,
a means for receiving the transfer amount sent from the mobile phone,
a means of generating a one-time identifier in response to a request from the mobile phone,
a means of updating the balance of the petty cash account stored in the computer by transferring the received transfer amount from the original account to the petty cash account,
a means of transmitting the generated one-time identifier and the balance of the updated retail account to the mobile phone,
a means of receiving the payment amount and one-time identifier sent from the terminal, and
a means of recording the received payment amount and one-time identifier.

[Claim 2]
The payment system according to claim 1, wherein the mobile phone further comprises a means for transmitting identification information necessary for user authentication to the computer

[Claim 3]
The payment system according to claim 2, wherein the identification information comprises user-specific information unique to the user.

[Claim 4]
The payment system according to claim 3, wherein the mobile phone further comprises a means for storing the user-specific information.

[Claim 5]
The payment system according to claim 3, wherein the user-specific information comprises the telephone number of the mobile phone.

[Claim 6]
The payment system according to claim 5, wherein the user-specific information further comprises a password.

[Claim 7]
The payment system according to claim 3, wherein the user-specific information comprises a user identifier given to the user in advance.

[Claim 8]
The payment system according to claim 7, wherein the user-specific information further comprises a password.

[Claim 9]
The payment system according to claim 3, wherein the identification information further comprises telephone-specific information specific to the mobile phone.

[Claim 10]
The payment system according to claim 9, wherein the mobile phone further comprises a means for storing the phone-specific information.

[Claim 11]
The payment system according to claim 10, wherein the phone-specific information comprises the serial number of the mobile phone.

[Claim 12]
The payment system according to claim 10, wherein the phone-specific information comprises the subscriber identifier of the mobile phone.

[Detailed Description of the Invention]

Technical Field

The present invention relates to a mobile phone and a payment method using the mobile phone; more specifically, it relates to a service that mediates payments at virtual stores and brick-and-mortar stores on the Internet.

Prior Art

Currently, various payment methods using mobile phones have been proposed. Nikkei Electronics "Payment by Mobile Phone" No. 769, published by Nikkei BP (May 8, 2000), pageS109 to 129 describes mobile phones that are equipped with IC cards. In this mobile phone, the credit card number is recorded in advance on the IC card in a secure state, and the credit card number is encrypted and transmitted at the time of payment. Also described is a mobile phone equipped with readers / writers for a contactless IC card. In this mobile phone, electronic values such as the frequency of a prepaid card are downloaded and transferred wirelessly to a contactless IC card by a reader / writer. The user makes a payment using this contactless IC card.

Although the credit card number is encrypted on the mobile phone equipped with the above IC card, since the credit card number is still being sent, e-commerce on the Internet is not sufficiently secure.

On the other hand, in a mobile phone equipped with the above reader / writer, the user must carry a contactless IC card with the mobile phone. In addition, readers / writers experience many problems such as large size and high cost.

Aside from this, various payment methods using mobile phones have been proposed. In such cases, credit inquiry is required at the time of payment, and payment data need to be sent. There is a problem therein in that it is necessary to emit radio waves at the time of payment, it cannot be used outside the radio wave range, and it takes time to complete the payment.

Disclosure of Invention

The present invention has been developed to solve the above-stated problems. An object of the present invention is to provide a mobile phone having high security and ease of use, and a payment method using the mobile phone.

The payment method using a mobile phone according to the present invention is a method of mediating payment between a seller and a buyer who is a user of the mobile phone, comprising, in a server computer that has an account for each user to store the user's money, a step of receiving the amount sent from the mobile phone, a step of depositing the received amount into the user's account and updating the balance of that account, a step of sending the renewed account balance to the mobile phone, a step of receiving the payment amount, a step of subtracting the received payment amount from the balance of the account, and a step of paying the received payment amount to the seller. Here, the server computer may be installed in a mobile phone office (company), a financial institution (company), a payment institution (company), etc., but its location is not particularly limited.

On the other hand, the mobile phone according to the present invention is a mobile phone used for payment between a seller and a buyer who is a user of the mobile phone, wherein an account for accumulating the user's money is set up on the server computer for each user, the mobile phone equipped with a means for inputting a desired amount to be credited to the account according to the user's operation, a transmission / reception means that sends the entered amount to the computer of the mobile phone office and receives the balance of the virtual account sent from the server computer, and a means of remembering the balance of the received account.

According to this payment method or mobile phone, the user uses the mobile phone to transmit the desired amount to the financial institution or payment institution through the mobile phone office or mobile phone office. The mobile phone office, financial institution or payment institution receives the amount transmitted from the mobile phone, deposits the amount into the user's account, updates the balance of the account and sends it to the mobile phone. The mobile phone receives and stores the balance of the account sent from the mobile phone office. Therefore, the user can make a payment by using the mobile phone like a wallet. Here, it is not necessary to send a credit number or the like, so security is high. In addition, it is easy to use because it is not necessary to carry an IC card or the like.

Best Mode for Carrying Out the Invention

Hereinafter, embodiments of the present invention will be described in detail with reference to drawings. The same or corresponding parts in the drawings are designated by the same reference numerals and the description thereof is not repeated.

[First Embodiment]

1. Service overview

An embodiment of the present invention relates to a computer system for realizing a new service provided by a mobile phone company (referred to as "wallet service," hereinafter simply referred to as "the present service"). The present service allows you to use your mobile phone like a wallet. The outline of this service will be described below.

When purchasing a mobile phone, a credit card number, cash card number, etc. is registered with the mobile phone company in addition to the bank account with which the call charges are deducted. The mobile phone company sets up a virtual account for each mobile phone user. The user requests the mobile phone company to deposit the advance payment into the virtual account before the payment by using the mobile phone. The mobile phone company uses a pre-registered bank account, credit card number, cash card number, etc. to request the user for the advance payment. The payment method of the advance payment can be selected by the user. After requesting the prepayment, the mobile phone company deposits the prepayment into the virtual account and then sends the balance of the virtual account to the mobile phone. The mobile phone stores the balance of the transmitted virtual account. The user uses this mobile phone instead of a wallet to make a payment at a virtual store or at a brick-and-mortar store on the Internet. The store charges the mobile phone company.

2. Advance payment method

Next, four types of advance payment methods will be described.

2-11. When paying together with the call charge

FIG. 1 is a schematic diagram showing the transfer of funds when the advance payment is paid together with the call charge.

As shown in FIG. 1, the mobile phone company (mobile phone office) 10 is provided with a personal information database 11. The personal information of each user 12 is registered in the personal information database 11. Specifically, a virtual account 110 is set up to accumulate advance payments (advance payments for mobile phone companies). In addition to the telephone numbers of mobile phoneS13, e-mail addresses, passwords, usage status, key codes, account numbers, credit card numbers, debit card numbers, etc. are registered in advance.

First, the user 12 uses the mobile phone 13 to transmit the desired prepaid amount and the payment method (here, “added to the call charge”) to the mobile phone company 10. At this time, the telephone number of the mobile phone 13 is also transmitted.

The mobile phone company 10 searches the personal information database 11 based on the transmitted mobile phone number, and inquires about the usage status of the virtual account 110 of the user 12. If there is no problem with user 12 (if the usage status is "OK"), the mobile phone company 10 adds the sent prepaid amount to the prepaid balance of the virtual account 110, and sends the latest updated prepaid balance. On the other hand, if the payment of user 12 is delayed or the use of this service is suspended, the usage status is "NG". In this case, the mobile phone company 10 notifies the user 12 that the service cannot be used through the mobile phone 13.

If the user 12 selects "add to call charge" as the payment method as described above, the mobile phone company 10 sends the usage statement 15 of this service together with the invoice 14 of the basic charge and the call charge to user 12.

The mobile phone company 10 requests the bank 17 of the user 12 to withdraw the usage fee based on the account number registered in the personal information database 11. In response to this, the bank 17 transfers the funds from the account 16 of the user 12 to the account 19 of the mobile phone company 10 opened in the bank 18.

2-2. When paying by credit card

FIG. 2 is a schematic diagram showing the transfer of funds when the advance payment is paid by credit card. In this case, as shown in FIG. 2, the user 12 transmits the prepaid amount and the payment method (here, “credit card”) to the mobile phone company 10 using the mobile phone 13. If there is no problem with the usage status of the user 12, the mobile phone company 10 requests the credit card company 20 for approval based on the credit card number registered in advance.

If the credit company 20 can approve it, the credit company 20 notifies the mobile phone company 10 to that effect. In response to this, the mobile phone company 10 updates the prepaid balance of the virtual account 110 and sends the latest prepaid balance to the mobile phone 13. On the other hand, if the approval cannot be obtained, the credit sales company 20 notifies the mobile phone company 10 to that effect. In response to this, the mobile phone company 10 notifies the user 12 that the payment by credit card cannot be made without updating the prepaid balance.

If the payment is approved, the credit sales company 20 transfers the prepaid amount desired by the user 12 to the account 19 of the mobile phone company 10. The credit company 20 then requests the bank 17 to withdraw the prepaid amount from the user 12's account 16. In response, the bank 17 transfers the funds from the account 16 of the user 12 to the credit company 20.

2-3. When paying with a debit card

FIG. 3 is a schematic diagram showing the transfer of funds when the advance payment is paid by a debit card. In this case, as shown in FIG. 3, the user 12 transmits the prepaid amount and the payment method (here, “debit card”) to the mobile phone company 10 using the mobile phone 13.

If there is no problem with the usage status of the user 12, the mobile phone company 10 requests the bank 17 that issued the debit card based on the debit card number registered in advance to transfer the funds. When the transfer request is approved, the bank 17 sends the transfer data to the clearing center 21 and notifies the mobile phone company 10 of the completion of the transfer. In response to this, the mobile phone company 10 updates the prepaid balance and sends the latest prepaid balance to the mobile phone 13. On the other hand, if the bank 17 does not approve the transfer request, it notifies the mobile phone company 10 that the transfer cannot be made. In response to this, the mobile phone company 10 notifies the user 12 that the payment cannot be made with the debit card without updating the prepaid balance.

The clearing center 21 offsets and aggregates the transfer based on the transfer data transmitted from a large number of banks in addition to the bank 17, and transmits the payment data between the banks to the payment bank 22. In response, the clearing bank 22 transfers funds from the bank 17 to the merchant bank 23. In response, the merchant bank 23 deposits the funds into the account 19 of the mobile phone company 10.

2-4. When paying by automatic withdrawal

FIG. 4 is a schematic diagram showing the transfer of funds when the advance payment is paid by automatic deduction from the bank account.

In this case, as shown in FIG. 4, the user 12 uses the mobile phone 13 to transmit the prepaid amount and the payment method (here, “automatic withdrawal”) to the mobile phone company 10. If there is no problem with the usage status of the user 12, the mobile phone company 10 requests the bank 17 to withdraw the funds based on the pre-registered account number. If the withdrawal is possible, the bank 17 notifies the mobile phone company 10 to that effect. In response to this, the mobile phone company 10 updates the prepaid balance and sends the latest prepaid balance to the mobile phone 13. If the withdrawal is not possible, the bank 17 notifies the mobile phone company 10 to that effect. In response to this, the mobile phone company 10 notifies the user 12 that the payment cannot be made. Upon receiving the withdrawal request from the mobile phone company 10, the bank 17 immediately transfers the funds from the account 16 of the user 12 to the account 19 of the mobile phone company 10. Separately, the usage statement 15 is sent to the user 12 together with the invoice 14.

3. Payment

Next, a method of making a payment with the above-mentioned advance payment using the mobile phone 13 will be described.

3-1. Payment at a virtual store on the Internet

FIG. 5 is a schematic diagram showing a method of making a payment using a mobile phone at a virtual store on the Internet. As shown in FIG. 5, the user 12 first orders a product or service from a virtual store 24 on the Internet using a mobile phone 13 or a personal computer 40, and the payment method (here, "mobile phone payment") is selected. When using the personal computer 40, the user 12 manually inputs the telephone number of the mobile phone 13 into the personal computer 40 and transmits the telephone number to the virtual store 24 via the Internet 60. Upon receiving the order, the virtual store 24 requests the mobile phone company 10 to charge the payment amount based on the transmitted mobile phone number. Upon receiving the billing request, the mobile phone company 10 notifies the virtual store 24 that the service cannot be used if there is a problem with the usage status of the user 12.

In response to this, the virtual store 24 notifies the user 12 that the service cannot be used. If there is no problem with the usage status of the user 12, the mobile phone company 10 sends an e-mail to the mobile phone 13 of the user 12 based on the e-mail address of the user 12 registered in advance. The electronic invoice is for confirming the payment from the virtual account 110 to the user 12. In addition, the user 12 who receives the electronic invoice selects whether or not to approve the payment. When the user 12 approves the payment, the mobile phone 13 that receives the electronic invoice verifies the prepaid balance; if the prepaid balance is less than the payment amount, the mobile phone 13 notifies the mobile phone company 10 that the payment cannot be made due to insufficient balance. In response to this, the mobile phone company 10 notifies the user 12 through the virtual store 24 that the payment cannot be made because the balance is insufficient. When the user 12 cancels or refuses the payment, the mobile phone company 10 is notified of the cancellation or refusal of the payment. In response to this, the mobile phone company 10 notifies the virtual store 24 that the payment cannot be made because the payment has been canceled or rejected. In response to this, the virtual store 24 notifies the user 12 that the payment cannot be made.

In addition, when the user 12 approves the payment and the result of the verification of the prepaid balance shows that the payment amount is within the prepaid balance, the mobile phone company 10 is notified that the payment is approved. At this time, the password, mobile phone number, key code, etc. registered in advance in the mobile phone company 10 are also transmitted. The mobile phone company 10 searches the personal information database 11 based on the transmitted mobile phone number, and determines whether or not the transmitted password and key code match the pre-registered password and key code, respectively. If the key codes do not match, the mobile phone company 10 notifies the user 12 that the service cannot be used because the key code is abnormal, and also notifies the user 12 through the virtual store 24 that the payment cannot be made. If both match, the mobile phone company 10 updates the prepaid balance by subtracting the payment amount from the prepaid balance of the virtual account 110, and transmits the updated prepaid balance to the mobile phone 13. In response to this, the mobile phone 13 updates the internal prepaid balance. In addition, the mobile phone company 10 notifies the virtual store 24 of the completion of payment. In response to this, the virtual store 24 notifies the user 12 that the payment has been completed.

After that, the virtual store 24 delivers the ordered product to the user 12 or provides the ordered service to the user 12. The mobile phone company 10 deposits the above payment amount into the virtual store 24. The virtual store 24 pays the mobile phone company 10 a fee for using this service.

3-2. Payment at a brick-and-mortar store

FIG. 6 is a schematic diagram showing a method of making a payment using a mobile phone at a brick-and-mortar store. As shown in FIG. 6, at a brick-and-mortar store, the user 12 sets the mobile phone 13 in the reading device 270 connected to the POS terminal 27. The clerk inputs the amount of the product into the POS terminal 27 and calculates the payment amount. This payment amount is transmitted from the POS terminal 27 to the mobile phone 13 through the reader 270. The mobile phone 3 compares the balance stored inside with the payment amount, and if payment is not possible, sends an error message to the POS terminal 27. On the other hand, if payment is possible, the mobile phone 13 transmits the mobile phone number and the key code to the POS terminal 27. The mobile phone number cannot be entered directly into the POS terminal 27 by hand. The POS terminal 27 that has received the mobile phone number and the key code completes the payment and notifies the mobile phone 13 to that effect. Upon completion of the payment, the mobile phone 13 stores the payment amount in the internal memory, and the payment mode is turned off. After that, the user 12 removes the mobile phone 13 from the reader 270.

Next, the mobile phone number and key code are transmitted to the mobile phone company 10 together with the payment amount. In response to this, the mobile phone company 10 updates the prepaid balance by subtracting the payment amount from the prepaid balance of the virtual account 110, and notifies the POS terminal 27 of the completion of the payment.

4. Hardware configuration

FIG. 7 is a block diagram showing the hardware configuration of the mobile phone 13 and the server computer (hereinafter, simply referred to as a server) 30 installed in the mobile phone company 10.

As shown in FIG. 7, the mobile phone 13 comprises a data processing unit 131 composed of a CPU, a RAM 132, a ROM 133 such as an EEPROM, an antenna 134, a transmission / reception unit 135, an input device 136 such as a numeric keypad and a cursor key, a display device 137 such as a liquid crystal display, a battery 138, and an interface (I / F) unit 139.

The mobile phone 13 is attached to the power adapter 140, and current is supplied from the power adapter 140 to the battery 138 through the I / F unit 139 to charge the battery 138. The data processing unit 131 executes a normal mobile phone function by using the RAM 132, the RO M 133, the transmission / reception unit 135, the input device 136, the display device 137, and the I / F unit 139, and also performs the payment function described later.

The server 30 installed in the mobile phone company 10 is equipped with a data processing unit 301 composed of CPU and a database 302. The database 302 comprises a personal information database 11, a usage history database 28, and a payment history database 29. The data processing unit 301 executes a payment function described later using the database 302. The data processing unit 301 is connected to the radio base station 303. Radio waves are transmitted and received between the antenna 304 of the radio base station 303 and the antenna 134 of the mobile phone 13. The usage history database 28 is a log file for recording the details of data transactions with the mobile phone 13. Specifically, the deposit / withdrawal date / time, deposit / withdrawal amount, balance, etc. of the virtual account 110 are recorded. The payment history database 29 is a log file for recording the details of data transactions with stores. Specifically, the payment date and time, the payment amount, and the like are recorded.

5. Processing operation at the time of prepayment

5-1. When paying together with the call charge

FIG. 8 is a flowchart showing the operation of the mobile phone 13 and the server 30 when the advance payment shown in FIG. 1 is paid together with the call charge. FIG. 9 is a transition diagram of the display screen displayed on the display device 137 of the mobile phone 13 in this case.

First, the data processing unit 131 of the mobile phone 13 displays the screen D1 shown in FIG. 9 on the display device 17 and prompts the user 12 to enter the password. When the user 12 operates the input device 136 and inputs the password, the input device 136 gives the input password to the data processing unit 131 (S101).

Subsequently, the data processing unit 131 verifies the entered password by comparing the entered password with the password registered in advance in the RAM 132 or the ROM 133 (S102). If the entered password is incorrect, the data processing unit 131 displays the screen D2 shown in FIG. 9 on the display device 137 (S103). On the other hand, if the entered password is correct, the data processing unit 131 displays the screen D3 shown in FIG. 9 on the display device 137, and prompts the user 12 to select one from among "▲ 1 ▼ pay money", "▲ 2 ▼ "look in your wallet" and "▲ 3 ▼ put money in your wallet". When the user 12 operates the input device 136 and selects "▲ 3 ▼ put money in your wallet", the data processing unit 131 displays the screen D4 on the display device 137 and prompts the user 12 to input the prepaid amount. At this time, if there are no unreported data (details will be described later), the prepaid balance stored in RAM132 is displayed as the current balance. If there are no unreported data, the unreported payment amount is subtracted from the prepaid balance stored in RAM 132 to calculate the true prepaid balance and this is displayed as the current balance. When the user 12 operates the input device 136 to input the desired prepaid amount, the input device 136 gives the input prepaid amount to the data processing unit 131 (S104).

Subsequently, the data processing unit 131 displays the screen D5 on the display device 137 and prompts the user 12 to select a payment method for the prepaid amount. When the user 12 operates the input device 136, in addition to the payment method of "adding to the call charge", several payment methods of "credit", "debit card", and "automatic withdrawal" are displayed. Here, it is assumed that the user 12 selects the payment method of "adding to the call charge".

In response to this, the input device 136 gives the data processing unit 131 a selection of a payment method of "adding to the call charge" (S105).

Subsequently, the data processing unit 131 gives the selected payment method and the input prepaid amount to the transmission / reception unit 135, and the transmission / reception unit 135 transmits these to the mobile phone company 10 (S106). At this time, the mobile phone number unique to the user 12 stored in the RO M 133 in advance, the key code unique to the mobile phone 13 stored in the ROM 133 in advance, and the unreported data stored in the RAM 132, are sent together.

The mobile phone number is pre-programmed into a ROM 133 such as EEPROM when the mobile phone company 10 sells the mobile phone 13. The key code is the serial number and the control number unique to each mobile phone (referred to as subscriber ID (identifier), phone ID, terminal ID, etc.) when the mobile phone manufacturer manufactures the mobile phone that are re-programmed to ROM 133 such as EEPROM. Therefore, the mobile phone number is unique to the user 12, and the same mobile phone number can be registered even if the mobile phone 13 is replaced. However, the user 12 itself cannot rewrite the mobile phone number; the mobile phone company 10 will rewrite it at the request of the user 12. On the other hand, the key code is unique to the mobile phone 13. When the serial number is used for the key code, not only the user 12 but also the mobile phone company 10 cannot overwrite it. When a control number such as the subscriber ID mentioned above is used for the key code, the mobile phone company 10 can overwrite it, but the user 12 cannot.

Subsequently, the data processing unit 131 determines whether or not the previous processing has been completed normally (S107), and if the processing has not been completed normally, displays that fact on the display device 137 (S108), and disconnects (S109). On the other hand, if it ends normally, the connection is temporarily disconnected without displaying the abnormal end (S109).

On the other hand, in the server 30 installed in the mobile phone company 10, the data processing unit 301 receives the prepaid amount, the payment method, the mobile phone number and the key code transmitted from the mobile phone 13 through the wireless base station 303 (S201).

Subsequently, the data processing unit 301 searches the personal information database 11 based on the received mobile phone number (S202).

Thereafter, the data processing unit 301 compares the received key code with the key code of the searched personal information database 11 and confirms whether or not the key codes match (S203). If the key codes match, the data processing unit 301 checks the usage status of the personal information database 11 and determines whether or not there is a problem (S204). If the key codes do not match in step S202, or if there is a problem in the usage status in step S204, the data processing unit 301 transmits the information that the service cannot be used to the mobile phone 13 (S205). In the mobile phone 13, the transmission / reception unit 135 receives the information that the service cannot be used transmitted from the mobile phone 13 (S110).

After that, the data processing unit 131 displays the screen D6 shown in FIG. 9 on the display device 137 and notifies the user 12 that the service cannot be used (S111). Then, the data processing unit 131 displays on the display device 137 that the process has ended abnormally (S112).

On the other hand, if there is no problem in the usage status in step S204, the usage history database 28 is updated (S206). Specifically, the current date and time, the current prepaid amount (prepaid amount for user 12), the current prepaid balance, and unreported data (unreported payment amount) are recorded in the usage history database 28.

Thereafter, the data processing unit 301 transmits the current prepaid balance to the mobile phone 13 (S207).

Subsequently, the data processing unit 301 creates billing data for this prepaid amount (S208).

Thereafter, the data processing unit 301 collectively adds the created billing data to the call charge every month, and issues a usage statement 15 of this service together with the bill 14 as shown in FIG. 1. The subsequent processing is the same as the existing processing, and requests the bank 17 of the user 12 to withdraw the fee based on the account number registered in the personal information database 11 of the user 12 (S209). In response to this, the usage charge of this service is transferred from the user's account 16 to the mobile phone company's account 19 together with the call charge.

In the mobile phone 13, the transmission / reception unit 135 receives the prepaid balance transmitted from the server 30 in step S207 (S113).

Subsequently, the data processing unit 131 stores the received prepaid balance as the prepaid balance in the RAM 132, thereby updating the prepaid balance (S116).

After that, the data processing unit 131 displays the screen D7 shown in FIG. 9 on the display device 137 (S117). Specifically, the fact that the prepaid processing so far has been completed and the current prepaid balance are displayed.

5-2. When paying by credit card

FIG. 10 is a flowchart showing the operation of the mobile phone 13 and the server 30 when the prepaid amount shown in FIG. 2 is paid by a credit card. FIG. 11 is a transition diagram of the screen displayed on the display device 137 of the mobile phone 13 in this case. Unlike the above, when paying the prepaid amount with a credit card, the user 12 selects "credit (lump sum)" on the screen D5 shown in FIG. 11. In response to this, the input device 136 gives the data processing unit 131 a choice of payment method of payment by credit card (FIG. 10, S105).

In addition, if there is no problem in the usage status of the server 30 of the mobile phone company 10, the credit inquiry of the user 12 is made to the credit company 20 based on the credit card number registered in advance in the personal information database 11 (S210).

Subsequently, the data processing unit 301 determines whether or not the credit card company 20 approves the payment by the credit card based on the reply from the credit card company 20 (S211). In the case of non-approval, the data processing unit 301 transmits to the mobile phone 13 that payment cannot be made (S212). In the case of approval, the usage history database 28 is updated (S205). On the other hand, in the mobile phone 13, when the transmission / reception unit 135 receives from the server 30 that payment by credit card is not possible, the screen D8 shown in FIG. 12 is displayed on the display device 137, and the user 12 is notified that payment by credit card is not possible (S120).

5-3. When paying with a debit card

FIG. 12 is a flowchart showing the operation of the mobile phone 13 and the server 30 when the prepaid amount is paid by a debit card. FIG. 13 is a transition diagram of the screen displayed on the display device 137 of the mobile phone 13 in this case.

Unlike the above, when paying the prepaid amount with a debit card, the user 12 selects “debit card” on the display screen D5 shown in FIG. 13. In response to this, the input device 136 gives the selection information to the data processing unit 131 (S105).

On the other hand, in the server 30 of the mobile phone company 10, if there is no problem in the usage status, the data processing unit 301 sends a withdrawal (approval) request to the issuing bank 17 of the debit card based on the debit card number registered in advance in the personal information database 11 (S220). In response to this, the existing debit card processing is executed (S221).

Subsequently, the data processing unit 301 determines whether or not the transfer is completed based on the transfer result transmitted from the issuing bank 17 of the debit card (S222). If the transfer cannot be made, the data processing unit 301 transmits a notification to that effect to the mobile phone 13 (S212). In response to this, the data processing unit 131 of the mobile phone 13 displays the screen D9 shown in FIG. 13 on the display device 137 (S120), and notifies the user 12 that payment by the debit card is not possible.

5-4. When paying immediately with automatic withdrawal

FIG. 14 is a flowchart showing the operation of the mobile phone 13 and the server 30 when the prepaid amount shown in FIG. 4 is automatically deducted from the user's account 16. FIG. 15 is a transition diagram of the screen displayed on the display device 137 of the mobile phone 13 in this case. In the case of automatic withdrawal unlike the above, on the screen D5 shown in FIG. 15, the user 12 selects “automatic withdrawal”, and the input device 136 gives the selection information to the data processing unit 131 in response to the operation of the user 12 (S105).

On the other hand, in the server 30, if there is no problem in the usage status, the data processing unit 301 inquires the bank 17 of the user 12 whether or not the received prepaid amount can be withdrawn (S230).

Thereafter, the data processing unit 301 determines whether or not the withdrawal is possible based on the inquiry result returned from the bank 17 (S231). If the withdrawal is not possible, the data processing unit 301 transmits to that effect to the mobile phone 13 (S232).

In response thereto, the data processing unit 131 of the mobile phone 13 displays the screen D10 shown in FIG. 15 (S120), and notifies the user 12 that the desired prepaid amount cannot be withdrawn from the user's account 16.
On the other hand, if the withdrawal is possible, the mobile phone company 10 requests the bank 17 to make the withdrawal by the existing method (S223).
6. Processing operation at the time of payment
Next, the operation when payment is made at a virtual store on the Internet and at a brick-and-mortar store using the mobile phone 13 will be described.
6-1. When paying at a virtual store
FIG. 16 is a block diagram showing the hardware configuration of.a user's personal computer (PC) 40 and mobile phone 13, a mobile phone company server 30, and a virtual store server computer (hereinafter, simply referred to as a server) 50 used when making a payment at a virtual store.
As shown in FIG. 16, the personal computer 40 of the user 12 is equipped with a data processing unit 401 such as a CPU, a memory 402 such as a ROM or RAM, a hard disk (HD) 403, a modem 404, an input device 405 such as a keyboard or mouse and a display device 406 such as a CRT display and liquid crystal display. Similarly, the server 50 of the virtual store 24 is equipped with a data processing unit 501, a memory 502, a hard disk 503, a modem 504, an input device 505, and a display device 506. The personal computer 40 is connected to the Internet 60 through a modem 404. The server 50 is also connected to the Internet 60 through the modem 504. The server 30 of the mobile phone company 10 is also connected to the Internet 60 through the modem 303.
FIG. 17 and FIG. 18 are flowcharts showing the operations of the personal computer 40, the mobile phone 13, and the serverS30 and 50 shown in FIG. 16. The user 12 operates the input device 405 of the personal computer 40 to place an order for goods and services from the virtual store 24, and selects mobile phone payment as the payment method. In response to this, the data processing unit 401 of the personal computer 40 transmits the input order information and the mobile phone number to the server 50 of the virtual store 24 via the Internet 60 (S301).
The data processing unit 501 of the server 50 receives the transmitted order information and mobile phone number (S601).
Subsequently, the data processing unit 501 transmits the billing information such as the store name, the payment amount, and the mobile phone number to the server 30 of the mobile phone company 10 via the Internet 60, so that the payment amount of the user 12 is sent to the mobile phone company 10. (S602).
The data processing unit 301 of the server 30 receives the transmitted billing information (S501).
Thereafter, the data processing unit 301 searches the personal information database 11 based on the received mobile phone number (S502).
After that, the data processing unit 301 inquires about the usage status from the searched personal information of the user 12, and confirms whether or not there is a problem (S503). If there is a problem, the data processing unit 301 transmits the information that this service cannot be used to the server 50. As a result, the virtual store 24 is notified that this service cannot be used (S504). On the other hand, if there is no problem in the usage status, the data processing unit 301 identifies the e-mail address of the user 12 from the searched personal information and sends the billing data to the mobile phone 13 by e-mail (S505). This means that the mobile phone company 10 issues an invoice to the user 12 on behalf of the virtual store 24. In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the billing data transmitted from the server 30 of the mobile phone company 10 (S401).
When the user 12 operates the input device 136 of the mobile phone 13 to select the "received mail list", the data processing unit 131 of the mobile phone 13 displays the screen D11 shown in FIG. 19 on the display device 137. When the user 12 operates the input device 136 to select the billing data e-mail, the data processing unit 131 displays the screen D12 on the display device 137.

This is an electronic invoice that shows the order date, the orderer (usually the same as user 12), the invoicer (usually the same as the virtual store 24), and the invoice amount (usually the same as the payment amount).
User 12 confirms the billing details and selects "payment" if they agree, and selects "reject" if they disagree. The input device 136 of the mobile phone 13 inputs the selection information to the data processing unit 131 in response to such operation of the user 12. The data processing unit 131 determines whether or not the payment has been approved based on the input selection information (S402). If the payment is not approved, the transmission / reception unit 135 transmits the payment cancellation / refusal information to the server 30 of the mobile phone 10 (S403). In this case, the data processing unit 131 displays the screen D13 shown in FIG. 19 on the display device 137 (S404).
In the server 30 of the mobile phone company 10, the data processing unit 301 receives the payment cancellation / refusal information transmitted from the mobile phone 13 (S506), and further transmits the information to the server 50 of the virtual store 24 (S507).
In the server 50 of the virtual store 24, the data processing unit 501 receives the payment cancellation / refusal information transmitted from the server 30 of the mobile phone company 10 (S605).
Subsequently, the data processing unit 501 transmits the received payment cancellation / refusal information to the user 12's personal computer 40 via the Internet 60, whereby the virtual store 24 informs the user 12 that the payment to the user 12 has been canceled or refused (S606).
In the personal computer 40 of the user 12, the data processing unit 401 receives the payment cancellation / rejection information transmitted from the server 50 of the virtual store 24 (S304), and displays that the payment has been canceled or rejected on the display device 406.
If payment is approved in step S402 above, the data processing unit 131 of the mobile phone 13 determines whether unnotified data (data on payment date and time, payment amount, etc. that have not yet been notified to the mobile phone company 10 because the payment was made at a store outside the radio wave range; the details will be described later) exist in the RAM 132 (S405). If there are unreported data, the data processing unit 131 totals the unreported payment amounts to calculate the cumulative unreported amount (S406). Subsequently, the cumulative unreported amount is subtracted from the prepaid balance stored in the RAM 132 to calculate the true prepaid amount at the present time (S407).
If there are no unreported data in step S405, or after the step S407, the data processing unit 131 verifies the prepaid balance and determines whether the payment amount is within the prepaid balance (S408). If the payment amount exceeds the unpaid balance, the data processing unit 131 displays the screen D14 shown in FIG. 19 on the display device 137 to notify the user 12 of the insufficient balance (S409), and then transmits information regarding the insufficient balance by radio waves to the server 30 of the mobile phone company 10 (S410).
In response to this, in the server 30 of the mobile phone company 10, the data processing unit 301 receives the information on the insufficient balance transmitted from the mobile phone 13 (S508), and subsequently, the information on the insufficient balance is transmitted to the server 50 of the virtual store 24 via the Internet 60 (S509).
In the server 50 of the virtual store 24, the data processing unit 501 receives the information on the insufficient balance transmitted from the server 30 of the mobile phone company 10 (S607), and then transmits the information on the insufficient balance to the personal computer 40 of the user 12 via the Internet 60 (S608). The personal computer 40 of the user 12 receives the information of the insufficient balance and displays the information on the display device 406 (S305).
On the other hand, in the mobile phone 13, if the payment amount is within the prepaid balance in step S408 above, the data processing unit 131 displays the screen D1 shown in FIG. 19 and prompts the user 12 to enter the password. When the user 12 inputs the password, the input device 136 gives the input password to the data processing unit 131 (S411).
Subsequently, the transmission / reception unit 135 transmits the payment approval information and the unreported data to the server 30 of the mobile phone company 10 by radio waves (S412). Specifically, the telephone number of the mobile phone 13, the key code registered in advance in the ROM 133 in hardware, the password entered in step S411, and the unreported payment amount are transmitted.
In the server 30 of the mobile phone company 10, the data processing unit 301 receives the payment approval information transmitted from the mobile phone 13 (S510).

Subsequently, the data processing unit 301 searches the personal information database 11 and identifies the personal information of the user 12 based on the received mobile phone number. The data processing unit 301 further compares the received key code with the key code registered in advance as personal information of the user 12 and determines whether or not the key codes match (S511). If the key codes match, the data processing unit 301 compares the received password with the password registered in advance as the personal information of the user 12 and determines whether or not the passwords match (S512).

If the key codes do not match or the passwords do not match, the data processing unit 301 transmits information that this service is not available to the mobile phone 13 by radio waves, and as a result, the mobile phone company 10 notifies the user 12 that this service cannot be used (S513).

In the user's mobile phone 13, the transmission / reception unit 135 receives the information that the service cannot be used transmitted from the server 30 of the mobile phone company 10 (S413).

Thereafter, the data processing unit 131 displays on the display device 137 that this service cannot be used (S414).

Subsequently, the data processing unit 131 displays on the display device 137 that the service procedure has been completed abnormally (S415).

On the other hand, in the mobile phone 13 of the mobile phone company 10, the data processing unit 301 transmits the non-payment information to the server 50 of the virtual store 24 via the Internet 60 (S514). In the server 50 of the virtual store 24, the data processing unit 501 receives the non-payment information transmitted from the server 30 of the mobile phone company 10 (S609).

In response to this, the data processing unit 501 sends the non-payment information to the user 12's personal computer 40 via the Internet 60, and as a result, the virtual store 24 notifies the user 12 that the payment cannot be made (S610).

In the personal computer 40 of the user 12, the data processing unit 401 receives the non-payment information transmitted from the server 50 of the virtual store 21 (S306), and displays on the display device 406 that the payment cannot be made.

On the other hand, in the server 30 of the mobile phone company 10, if the passwords match in step S512 above, the data processing unit 301 updates the usage history database 28 and updates the prepaid balance of the virtual account 110 of the user 12 (S515). Specifically, the usage history database 28 records the payment date and time, the payment amount, and the like.

Subsequently, the data processing unit 301 transmits the updated prepaid balance to the mobile phone 13 by radio waves (S516).

In the mobile phone 13, the data processing unit 131 receives the prepaid balance of the virtual account 110 sent from the server 30 of the mobile phone company 10 (S416).

Subsequently, the data processing unit 131 updates the prepaid balance stored in the RAM 132 so that it becomes the same as the prepaid balance of the received virtual account, and further clears the unreported data stored in the RAM 132 (S417). As a result, the prepaid balance in the mobile phone 13 and the prepaid balance in the virtual account 110 in the mobile phone company are synchronized.

Then, the data processing unit 131 displays the screen D 15 shown in FIG. 1 9 on the display device 137 and notifies the user 12 that the payment has been completed.

In the server 30 of the mobile phone company 10 after the above step S516, information on the completion of payment is transmitted to the server 50 of the virtual store 24 via the Internet 60, so that the mobile phone company 10 notifies the virtual store 24 that the payment has been completed (S517). Then, the mobile phone company 10 pays the payment amount to the virtual store 24 by the existing method (S518).

On the other hand, in the server 50 of the virtual store 24, the data processing unit 501 receives the payment completion information transmitted from the server 30 of the mobile phone company 10 (S611).

Subsequently, the data processing unit 501 transmits the order details and the payment completion information to the personal computer 40 of the user 12 via the Internet 60 (S612).

In the personal computer 40 of the user 12, the data processing unit 401 receives the order details and the payment completion information transmitted from the server 50 of the virtual store 24 (S307).

6-2. When paying at a brick-and-mortar store

FIG. 20 is a block diagram showing a hardware configuration of a mobile phone 13, a POS terminal 37, and a server 30 used when making a payment at a brick-and-mortar store.

As shown in FIG. 20, the POS terminal 27 is also equipped with data processing unit 271, RAM 272, hard disk 273, input device 27 4, display device 275 and interface (I / F) unit 276. The reader 270, in which the mobile phone 13 is set at the time of payment, is connected to the interface 276. A scanner for reading the product barcode is also connected to the interface unit 276. The cash withdrawal unit 278 is also connected to the interface unit 276.

FIG. 21 and FIG. 22 are flowcharts showing the operations of the mobile phone 13, the POS terminal 27, and the server 30 when the payment is made at the brick-and-mortar store as shown in FIG. 6.

First, before user 12 shops at the brick-and-mortar store 26, on the screen D1 shown in FIG. 23, the input device 136 of the mobile phone 13 is operated to input the password, and in response to this, the input device 136 gives the input password to the data processing unit 131 (S701).

Subsequently, the data processing unit 131 compares the entered password with the password registered in advance in ARM 132 as shown in FIG. 24, and verifies the password (S702). If the passwords do not match, the data processing unit 131 displays the screen D 2 shown in FIG. 23 on the display device 137 (S703).

On the other hand, when the passwords match, the data processing unit 131 displays the menu screen D3 shown in FIG. 23. When the user 12 selects "▲ 1 ▼ pay money", the data processing unit 131 determines whether or not there are unreported data (S704). The unreported data are cumulatively stored in RAM 132 as shown in Fig. 24, when the payment is made at a store outside the radio wave range, so that the payment amount, the payment date and time, and the payment store are shown. If there are unreported data, the data processing unit 131 determines whether or not they are within the radio wave range (S705), and if they are within the radio wave range, the transmission / reception unit 135 transmits unreported data to the server 30 of the mobile phone company 10 by radio waves together with the key code registered in advance in ROM 133 as shown in Fig. 24 (S706). If out of the radio range, the cumulative unreported amount is calculated by adding the unreported payment amounts stored in RM 132 (S707), and then from the prepaid balance stored in RAM 132 subtracting the cumulative unreported amount to calculate the current true prepaid balance (S708). The prepaid balance in the mobile phone 13 is not updated unless the mobile phone company 10 sends the prepaid balance of the virtual account 110. Therefore, when payments are made continuously with the mobile phone 13 at a brick-and-mortar store outside the radio wave range, each payment amount is stored in ARM 132 as unreported data.

On the other hand, in the server 30 of the mobile phone company 10, the data processing unit 301 receives the unreported data transmitted from the mobile phone 13 of the user 12 in step S706 above (S901).

Subsequently, the data processing unit 301 compares the key code transmitted from the mobile phone 13 with the key code registered in advance in the personal information database 11 and confirms whether or not the key codes match (S902). If the key codes do not match, the data processing unit 301 transmits the information that this service cannot be used to the mobile phone 13 by radio waves, and as a result, the mobile phone company 10 notifies the user 12 that this service cannot be used (S903).

If the key codes match, the data processing unit 301 updates the usage history database 28 based on the received unreported data, and updates the prepaid balance of the virtual account 110 (S904). Subsequently, the data processing unit 301 transmits the updated latest prepaid balance to the mobile terminal 13 (S950).

In the mobile phone 13, the transmission / reception unit 135 receives the information that the service cannot be used, which is transmitted from the server 30 of the mobile phone company 10 in step S903 above (S709). Subsequently, the data processing unit 131 displays on the display device 137 that the service cannot be used (S710), and further displays on the display device 137 that the service procedure has been completed abnormally (S711).

In addition, the transmission / reception unit 135 receives the prepaid balance transmitted from the server 30 of the mobile phone company 10 in step S905 above (S712). Subsequently, the data processing unit 131 updates the prepaid balance stored in RAM 132 so as to be the same as the received prepaid balance, and further clears the unreported data (S713).

If there are no unreported data in step S704 above, or alternatively, after step S708 or S713 above, the data processing unit 103 displays the currently available balance as shown in screen D 16 shown in FIG. 23 (S714).
Thereafter, the payment mode of the mobile phone 13 is turned on, and the data processing unit 131 displays the screen D 17 shown in FIG. 23 on the display device 137 (S715). Subsequently, the user 12 sets the mobile phone 13 in the reader 270 (S716). As a result, the data processing unit 131 displays the screen D 18 shown in FIG. 23 on the display device 137. At this time, in the POS terminal 27 of the brick-and-mortar store, the data processing unit 271 transmits the payment amount to the mobile phone 13 through the reading device 28 (S801). In the mobile phone 13, the data processing unit 131 receives the payment amount transmitted from the POS terminal 27 (S717).
Then, the data processing unit 131 determines whether or not the received payment amount is within the current balance (S718). When the payment amount exceeds the balance, the data processing unit 131 displays the screen D1 9 shown in FIG. 23 on the display device 137 and notifies the user 12 of the insufficient balance (S719). When the payment amount is within the balance, the data processing unit 131 transmits the telephone number of the mobile phone 13 and the key code pre-registered in hardware in the RO M 133 to the POS terminal 27 through the reader 28 (S720).
In the POS terminal 27, the data processing unit 271 receives the mobile phone number and key code transmitted from the mobile terminal 13 (S802). Subsequently, the data processing unit 271 records the received mobile phone number, key code, and payment details on the hard disk 273 (S803). Thereafter, the data processing unit 271 transmits the payment completion information to the mobile phone 13 through the reader 270 (S804).
In the mobile phone 13, the data processing unit 131 receives the payment completion information transmitted from the POS terminal 27 and confirms the transaction completion (S721).
Subsequently, the data processing unit 131 stores the payment details including the payment amount at this time in ARM 132 as unreported data (S722).
During the above steps S716 to S722, the data processing unit 131 displays the screen D 18 shown in FIG. 23 on the display device 137. If the mobile phone 13 is removed from the reading device 2700 during the operation, the operation will end abnormally. After the payment details are stored in the RM 132 in step S722, the data processing unit 131 displays the screen D 20 shown in FIG. 23 on the display device 137. Then, the above payment mode is turned off (S723).
Subsequently, the data processing unit 131 determines whether or not it is within the radio wave range (S724), and if it is within the radio wave range, the unreported data stored in the RM 132 are transmitted to the server 30 of the mobile phone company 10 together with the key code programmed in the ROM 133 (S725).
In the server 30 of the mobile phone company 10, the data processing unit 301 receives the unreported data transmitted from the mobile phone 13 together with the key code (S909).
Thereafter, the data processing unit 301 compares the key code transmitted from the mobile phone 13 with the key code registered in advance in the personal information database 11 and confirms whether or not the key codes match. (S910). If the key codes do not match, the data processing unit 301 transmits the information that this service is not available to the mobile phone 13 by radio waves (S911). The mobile phone 13 receives this information (S726) and receives this information, and subsequently, the fact that this service is not available is displayed on the display device 137 (S727), and the fact that this service procedure has been completed abnormally is displayed on the display device 137 (S728).
If the key codes match in step S910 above, the data processing unit 301 updates the usage history database 28 based on the received unreported data, and updates the prepaid balance of the virtual account 110 (S912).
Thereafter, the data processing unit 301 transmits the latest prepaid balance to the mobile phone 13 (S913).

The mobile phone 13 receives the prepaid balance transmitted from the server 30 of the mobile phone company 10, and the prepaid balance stored in ARM 132 is updated so that it becomes the same as the received prepaid balance, and the unreported data is cleared (S729).

On the other hand, in the POS terminal 27 of the brick-and-mortar store 26, the data processing unit 271 transmits the above payment details to the server 30 of the mobile phone company 10 (S805). It is desirable to send the payment details for each transaction, that is, in real time, but batch processing may be performed after the close of business.

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the payment details transmitted from the POS terminal 27 (S906).

Subsequently, the data processing unit 301 transmits the payment completion information to the POS terminal 27 (S907). Then, the mobile phone company 10 processes the payment to the brick-and-mortar storeS26 based on the payment details (S980).

In the POS terminal 27, the data processing unit 271 receives the payment completion information transmitted from the server 30 of the mobile phone company 10 (S806).

In the first embodiment described above, the payment amount is transmitted from the POS terminal 27 to the mobile phone 13 and the mobile phone 13 determines whether or not the payment is possible; however, the balance of the virtual account may be transmitted from the mobile phone 13 to the POS terminal 27, and the POS terminal 27 may determine whether or not the payment can be made.

Further, in the first embodiment described above, the mobile phone 13 is electrically connected to the POS terminal 27 by using the reading device 270; however, connection may be made by short-range wireless communication (for example, Bluetooth), Local Area Network (LAN) or Infrared Data Association (IrDA), or may be connected optically using a bar code reader. When a bar code reader is used, the data transmitted from the mobile phone 13 to the OS terminal 27 may be displayed as a bar code on the display device 137, and the data may be read by the bar code reader. These changes are also applicable to the embodiments described below.

7. Advantages of this service

7-1. Credit card number, cash card number, account number are not exposed on the Internet.

In the case of payment by credit card, it may be possible to pay with a credit card number; especially when making payments on the Internet, users will feel strong anxiety and resistance to entering their credit card numbers. In fact, the risk of payment being made if a third party knows the credit card number and the risk of the card number being stolen at the store cannot be denied. However, in this embodiment, the payment transaction data exposed on the Internet does not include the credit card number, and the mobile phone number plays a role.

In addition, although mobile phone numbers are widely known to third parties due to their purpose of use, if a third party knows only the mobile phone number of another person but does not have the mobile phone itself, the method is highly secure because payment cannot be completed at a brick-and-mortar store or a virtual store on the Internet, and the payment limit is limited to the balance in the virtual account.

7-2. No credit inquiry or approval is required for payment.

When a user deposits funds in a virtual account of a mobile phone company (prepayment), the credit inquiry and approval required for each payment method are performed; therefore, when a user makes a payment at a virtual store or a brick-and-mortar store on the Internet, it is only necessary to check whether the payment amount is within the prepaid balance. Currently, there is no need for procedures such as obtaining an approval number and or signature by the person, which are required for over-the-counter payment.

7-3. There is no need to propagate by radio waves when making over-the-counter payments (even outside the radio range).

In this embodiment, it is not always necessary to perform radio wave propagation from the mobile phone at the time of over-the-counter payment. Therefore, it is not necessary to be aware of whether or not the place where the over-the-counter payment is made is within the radio wave range. Consequently, it is possible to make payments in underground shopping malls and buildings in many metropolitan areas outside the radio wave range, in subway premises, and in vending machines and ticket vending machines installed underground. Even if the mobile phone is out of the radio range and the payment amount has not been notified to the mobile phone company, the unreported amount remains in the internal memory of the mobile phone, and when the next transaction occurs, unreported data will always be sent, and the next payment process will start after the balance of the virtual account is synchronized between the mobile phone and the mobile phone company.

7-4. It is possible to transfer to a virtual account 24 hours per day.
Even if the balance of the virtual account is insufficient when making a payment at a virtual store or a brick-and-mortar store on the Internet, as a general rule, it is possible to transfer funds (prepayment) to a virtual account at any time over 24 hours on the spot. Therefore, it is possible to shop at any time.
7-5. There is no need to be aware of credit lines or balances when making payments.
Conventionally, when making payments by credit card at the store, credit card payments may be refused due to exceeding the usage limit, and payment itself may not be possible if cash is not sufficient. Therefore, there are many users who use multiple credit cards properly, but it is practically difficult for users to recognize the limit amount for each company's credit card. On the other hand, in this embodiment, the user can check the amount transferred to the virtual account in the mobile phone company at any time, that is, the prepaid balance on the mobile phone. Moreover, it is guaranteed that payment is always possible within that balance.
7-6. Users can continue to use each service program provided by sellers who provide existing payment methods such as credit cards and debit cards. Users can continue to receive services provided by credit companies and the like by transferring funds to the virtual account of the mobile phone company using existing payment methods such as credit cards.
7-7. Postpayment is possible even for those of ages who do not possess a credit card.
When the user specifies the transfer of funds to the virtual account in the mobile phone company by the payment method "add to the call charge," the funds are actually withdrawn from the user's account at the time of withdrawal of the call charge. Therefore, even those of ages who do not possess a credit card need only have funds in their account when their call charges are withdrawn, and it is possible to make a "pseudo next month lump sum payment" like a credit card.
7-8. If it becomes available in the "Cash on Delivery" provided by the courier, the user does not need to prepare cash in advance. By introducing payment by mobile phone as a means for the courier to collect the price at the time of product delivery, the user does not need to prepare cash in advance, and the courier does not need to have the delivery person retain change.
It is conceivable to send data all at once after the work of the day is completed, or to send and receive wirelessly each time., without sending to and receive data for the server of the mobile phone company for each payment as in the case of the POS terminal at the store. In addition, terminals that enable payment at such destinations can be diverted to small stores and the like, and are easy to introduce.
7-9. Fees are cheaper than bank transfers and payments at convenience stores.
When transferring funds to a virtual account in a mobile phone company using the payment method of "adding to the call charge", the user pays a monthly usage fee of about 100 yen to 200 yen. When making small payments repeatedly within the same month, the fee paid by the user will be lower than when using bank transfer or payment at a convenience store.
7-10. The fee burden is fair.
With current credit and debit card payments, the merchant bears the fee; some stores (not affiliated) do not use credit card or debit card payments because small payments put pressure on sales profits. On the other hand, in this embodiment, when a credit card or a debit card is used when transferring funds to a mobile phone company, it is assumed that there are few cases of transferring an extremely small amount, and if necessary, the mobile phone company sets the minimum amount and the unit for the transfer of funds in advance, so that it is possible to balance the commission paid by the mobile phone company to the credit sales company and the amount of income. On the other hand, when transferring funds from a mobile phone company to a member store, a fee is calculated and charged for the total amount of the transfer during a certain period. In other words, unlike the current credit card and debit card payment methods, in which a fee is charged to the member store for the payment amount each time the user makes a payment, the member store charges a fee for the total amount from the mobile phone company, it is easy to introduce even in stores (companies) that often make small payments, and the fee burden is fair regardless of the amount of the individual transaction payment.

In other words, with conventional payment systems, even stores and companies (for example, convenience stores), where small payments are the majority, do not have to put pressure on their profit margins.

7-11 1. It is a payment system suitable for small amount transactions.

As mentioned in 7-10 above, since the commission burden is fair, even for stores and companies (for example, convenience stores) where small payments are the majority, no pressure is applied to sales profits. In addition, even in stores and companies that have introduced payment methods using credit cards and debit cards, in many cases, the minimum payment amount that can be used (for example, 3000 yen or more) is set in consideration of the ratio of the commission to be borne relative to the sales amount. In this embodiment, the fee is charged for the total payment amount during a certain period, so that it is not necessary to set a limit amount.

7-12. No monetary value is added to mobile phones.

Currently, the ongoing electronic money plan aims to download and use the monetary information itself on mobile phones. In this embodiment, a mobile phone is used as a tool for realizing transfer from a virtual account, and electronic money can also be used as funds for transfer to a virtual account. The purpose is to enhance the security and convenience of the mobile phone company and the payment site by intervening in the commercial transaction, and it does not add monetary value to the mobile phone. Therefore, while losing electronic money is the same as losing cash if it is lost, in this embodiment, even if the mobile phone is lost, the monetary value is not lost.

7-13. Safety against unauthorized use of the terminal

It is possible to request the mobile phone company to stop the service even if it is lost or stolen, and even if it is misused at a store before the service is stopped, the available amount is within the balance in the virtual account. In addition, even if the person owns the mobile phone and the mobile phone number is abused by a third party on the Internet, while with other payment methods it is difficult for the person to recognize abuse until the payment is completed or the usage statement arrives, in this embodiment, since all payment confirmations are transmitted to the mobile phone, it is possible for the person to recognize and prevent the payment before the payment is completed. If the mobile phone usage contractor has notified the mobile phone company of the suspension of this service, in the case of payment on the Internet, when checking the usage status of the mobile phone, in the case of payment at a brick-and-mortar store, when the payment mode is turned on, the service is notified as being unavailable.

7-14. The security of transactions between mobile phones and servers of mobile phone companies is high.

A mobile phone number and a key code are transmitted as a pair from the mobile phone to the server of the mobile phone company, and the mobile phone company uses both of them for authentication. Since the mobile phone number is unique to the user and the key code is unique to the mobile phone, even a third party who knows the mobile phone number of the user 12 cannot perform the above-mentioned transactions using a mobile phone other than the user 12's own mobile phone 13.

7-15. Payment is completed in a short time.

As described in 7-2 above, the credit inquiry is made at the time of advance payment and does not need to be made at the time of payment, so the time required for payment is short. This time is shorter than the time required for payment by credit card or debit card currently performed in brick-and-mortar stores.

[Second Embodiment]

Although the embodiments of the present invention have been described above, the present invention can also be implemented in other embodiments. For example, in the above embodiment, a virtual account is provided in a mobile phone company, but a virtual account may be provided in a financial institution such as a bank. In short, A virtual account may be set up on a server that can communicate directly or indirectly with the mobile phone. Hereinafter, the second embodiment of the present invention will be described focusing on the differences from the first embodiment.

1. Transfer of funds

FIG. 25 is a schematic diagram showing the transfer of funds according to the second embodiment of the present invention. Unlike the first embodiment shown in FIG. 1, in this second embodiment, as shown in FIG. 25, the virtual account 110 of the user 12 is provided in the server computer of the financial institution 70 such as a bank.

In addition to the balance, the actual account number, the virtual account number, the mobile phone company, and the mobile phone number are stored in the virtual account 110. As the actual account number, the number of the account actually opened by the user 12 at the financial institution 70 is registered. As the virtual account number, a number for identifying the virtual account 110 is registered. As the mobile phone company, the name of the mobile phone company 10 contracted by the user 12 is registered. As the mobile phone number, the mobile phone number of the mobile phone 13 of the user 12 is registered.

Provided in financial institution 70, in addition to the virtual account 110, are the user 12's actual account 710, the virtual account 110 deposit / withdrawal history database 712 and the virtual account 110 payment history database 714. The actual account number and the account balance are stored in the actual account 710 of the user 12. The deposit / withdrawal history database 712 stores the account number of the virtual account 110, the date of deposit / withdrawal of the virtual account 110, and the deposit / withdrawal amount. In the payment history database 714 are stored the account number of the virtual account 110, the date of deposit / withdrawal of the virtual account 110, the payment amount, and whether or not the mobile phone 13 has been notified of the virtual account balance at that time to the mobile phone 13. On the other hand, the personal information database 11 in the server computer of the mobile phone company 10 stores the name of the financial institution 70 with which the user 12 deals.

FIG. 26 is a block diagram showing a hardware configuration of a mobile phone used for transferring funds, a server of a mobile phone company, and a server of a financial institution. Unlike the first embodiment shown in FIG. 7 above, in this second embodiment, as shown in FIG. 26, the advance receipt history and the payment history are not recorded in the database 320 of the server 30 of the mobile phone company 10. In addition, virtual account information is not recorded in this personal information database 11. Instead, the server 72 of the financial institution 70 is provided with a database 702. Virtual account information 110, virtual account deposit / withdrawal history 712 and virtual account payment history 714 are recorded in this database 702. The data processing unit 701 of the server 72 communicates with the data processing unit 301 of the server 30 and performs payment processing using the database 702.

FIG. 27 and FIG. 28 are flowcharts showing the operation of the mobile phone 13, the mobile phone company server 30 and the financial institution server 72 when the funds are transferred to the virtual account 110 of the financial institution 70. FIG. 29 is a transition diagram of the screen displayed on the mobile phone 13 in this case.

As shown in FIG. 27, in the second embodiment, in step S104, the user 12 operates the input device 136 of the mobile phone 13 to input a desired transfer amount. As a result, the input device 136 gives the input transfer amount to the data processing unit 131. Subsequently, the transmission / reception unit 135 of the mobile phone 13 transmits the input transfer amount together with the mobile phone number, the key code and the unreported data to the server 30 of the mobile phone company 10. In the server 30 of the mobile phone company 10, after authentication is performed using the received mobile phone number and key code in the same manner as in the first embodiment (S202, S203), the transfer request is transmitted to the bank of user 12 as shown in FIG. 28 (S240).

In particular, the name of the bank of user 12 (here, bank B) is read from the personal information database 11 of user 12, the mobile phone number and transfer amount of user 12 are transmitted to the server 72 of the bank B, and a request made that the transferred amount be transferred from the actual account 710 of user 12 to the virtual account 110.

In the server 72 of the financial institution 70, the data processing unit 701 receives the above transfer request sent from the mobile phone company 10 (S1000).

Subsequently, the data processing unit 701 determines whether or not the transfer is possible by referring to the actual account 710 of the user 12 (S1001). If the requested transfer amount exceeds the balance of the actual account 710, the data processing unit 701 sends the information that the transfer is not possible to the server 30 of the mobile phone company 10 (S1002).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the non-transferable information sent from the financial institution 70 (S241), and continues to transmit this to mobile phone 13 of user 12 (S242).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the non-transferable information transmitted from the mobile phone company 10 (S140).
Subsequently, the data processing unit 131 displays the screen D 21 shown in FIG. 29 on the display device 137 (S141), and user 12 is notified that the transfer cannot be made due to insufficient balance.
Thereafter, the data processing unit 131 displays an abnormal termination on the display device 137 (S142).
If the transfer amount requested in step S1001 is within the balance of the actual account 710, the data processing unit 701 transfers the requested amount from the actual account 710 to the virtual account 110 (S1004).
Next, the data processing unit 701 updates the deposit / withdrawal history database 712 based on the transfer amount (S1005).
Subsequently, the data processing unit 701 determines whether or not there are unreported data in the information received in the above step S1000 (S1005). If unreported data exists in step S704, the unreported data is transmitted from the mobile phone 13 to the mobile phone company 10 in step S106, and is transmitted from the mobile phone company 10 to the financial institution 70 in step S240 above, the data processing unit 701 updates the payment history database 714 based on the unreported data (S1006). If there are no unreported data, the data processing unit 701 transmits the balance of the virtual account 110 to the mobile phone company 10 (S1007).
In the server 30 of the mobile phone company 10, the data processing unit 301 receives the balance of the virtual account 110 sent from the financial institution 70 (S243), and subsequently, this is transmitted to the mobile phone 13 of the user 12 (S207).
In the mobile phone 13, the transmission / reception unit 135 receives the balance of the virtual account 110 sent from the mobile phone company 10 (S113) and data in the same manner as in the first embodiment. The processing unit 131 updates the balance of the virtual account recorded in RAM 132 (S114), and finally displays on the display device 137 that the transfer has been completed (S115). Here, if there is unreported data, the unreported data is cleared (S143).
2. Payment at a virtual store
FIG. 30 is a schematic view showing payment at a virtual store according to the second embodiment of the present invention. As shown in Fig. 30, here, a payment institution 80 is provided between the virtual store 24 on the Internet and the financial institution 70. The payment institution 80 accumulates payment information 810 every time this service is used, and pays the usage fee to the virtual store 24 in a lump sum based on the accumulated large number of units of payment information 810. The payment information 810 comprises the name of the financial institution 70 as the bank name, the name or name of the user 12 as the payer name, the transfer amount, the virtual account number of the virtual account 110, and the name of the virtual store 24 on the Internet as the payment destination.
Figure 31 is a block diagram showing the hardware configuration of mobile phone 13, mobile phone company 10 server 30, financial institution 70 server 72, payment institution 80 server 82, and virtual store 24 server 50.
As shown in FIG. 31, the server 82 of the payment institution 80 is provided with a data processing unit 801 and a database 802. he data processing unit 801 communicates with the data processing unit 701 of the server 72, and performs payment processing to the virtual store 24 according to the payment information 810 stored in the database 802.
FIGS. 32 to 34 are flowcharts showing the operation of personal computer 40, mobile phone 13; server 30 of mobile phone company 10; server 50 of virtual store 24 and server 72 of financial institution 70 when making a payment at a virtual store 24. Here, for the sake of simplicity, the operation of the server 82 of the payment institution 80 is omitted.
Similar to the first embodiment shown in FIG. 17, the server 30 of the mobile phone company 10 transmits the billing data from the virtual store 24 to the mobile phone 13 (S505).
In the mobile phone 13, the transmission / reception unit 135 receives the billing data (S401). Then, the electronic invoice sent by the e-mail is opened (S420). Subsequently, after processing the unreported data in the same manner as in the first embodiment (S405 to S407), the data processing unit 131 displays the billing details and the available balance (for example, the screen D22 or D23 shown in FIG. 35) on the display device 137 (S421).

Subsequently, the data processing unit 131 verifies whether or not the billed amount is within the available balance (S422). If the billed amount is within the available balance, the "Payment" button is displayed as shown in screen D22 of Fig. 35. If the billed amount exceeds the available balance, the "Put money in your wallet" button is displayed as shown in screen D23 of Fig. 35.

If the billed amount exceeds the available balance, the data processing unit 131 determines whether or not to transfer the additional funds according to the operation of the user 12 (S423). If the additional funds are to be transferred, the above-mentioned funds are transferred (S424), and if the additional funds are not transferred, the process proceeds to step S403.

If the billed amount is within the available balance in step S422, it is determined whether or not the user 12 approves the payment in the same manner as in the first embodiment (S402). In addition, on the server 30 of the mobile phone company 10,

After confirming the password (S512), the data processing unit 301 sends the payment request information to the financial institution 70, and if there is unreported data, the unreported data is transmitted. (S520). In the server 72 of the financial institution 70, the data processing unit 701 receives the payment request information sent from the mobile phone company 10 (S1100).

Subsequently, the data processing unit 701 transfers the received payment amount from the virtual account 110 of the user 12 (S1101). When unreported data is received, the unreported payment amount is also transferred from the virtual account 110 of the user 12. Here, the payment institution 80 is requested to transfer the payment amount to the virtual store 24. The payment institution 80 does not pay the payment amount to the virtual store 24 every time a request is made, but pays a plurality of payment amounts to the virtual store 24 in a predetermined monthly unit, for example. Such a payment institution 80 is not always necessary, and the financial institution 70 may pay the payment amount directly to the virtual store 24. However, it is possible to reduce the fee incurred for each transfer by setting up a payment institution 80.

Subsequently, the data processing unit 701 updates the deposit / withdrawal history database 712 based on the payment amount. (S1102).

Thereafter, the data processing unit 701 updates the payment history database 714 based on the payment amount. (S1103).

Next, the data processing unit 701 reads the balance of the virtual account 110 and sends it to the mobile phone company 10 (S1104).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the virtual account balance sent from the financial institution 70 (S521), and subsequently transmits this to the mobile phone 13 of the user 12 (S516).

3. Payment at a brick-and-mortar store

FIG. 36 is a schematic view showing payment at a brick-and-mortar store according to the second embodiment of the present invention.

As shown in Fig. 36, even when the payment is made at the brick-and-mortar store, the payment institution 80 makes a batch payment to the brick-and-mortar store 26 for the transfer request from the financial institution 70.

FIG. 7 is a block diagram showing the hardware configuration of mobile phone 13, POS terminal 27, mobile phone company 10 server 30, financial institution 70 server 72, and payment institution 80 server 82 provided for payment at brick-and-mortar stores.

As shown in FIG. 37, the data processing unit 801 in the server 82 of the payment institution 80 communicates with the data processing unit 701 of the server 72 and pays the brick-and-mortar store 26 according to the payment information 810.

FigureS38 to 40 are flowcharts showing the operations of the mobile phone 13 and the POS terminal 27, the server 30 of the mobile phone company 10 and the server 72 of the financial institution 70 when making a payment at a brick-and-mortar store.

Unlike the first embodiment shown in FIG. 21 above, in this second embodiment, in step S707 shown in FIG. 38, the data processing unit 131 of the mobile phone 13 subtracts the cumulative unreported amount calculated in step S707 from the virtual account balance recorded in the RAM 132.

In addition, in the server 30 of the mobile phone company 10, when the key code match is confirmed in step S902, the data processing unit 301 transmits the unreported data to the server 72 of the financial institution 70 (S920).

In the server 72 of the financial institution 70, the data processing unit 701 receives the unreported data transmitted from the mobile phone company 10 (S1200). Subsequently, the data processing unit 701 updates the payment history database 714 based on the received unreported data (S1201). Thereafter, the data processing unit 701 transmits the virtual account balance of the virtual account 110 to the server 30 of the mobile phone company 10 (S1202). In the server 30 of the mobile phone company 10, the data processing unit 301 receives the virtual account balance transmitted from the financial institution 70 (S921), and subsequently transmits this to the mobile phone 13 of the user 12 (S105).

In the mobile phone 13, the transmission / reception unit 135 receives the virtual account balance transmitted from the mobile phone company 10 (S712); further, the data processing unit 131 updates the virtual account balance recorded in RAM 132 based on the received virtual account balance and clears the unreported data (S713).

In addition, in the server 30 of the mobile phone company 10, after receiving the payment details transmitted from the brick-and-mortar store 26 in step S960, the data processing unit 301 transmits the received payment details to the server 72 of the financial institution 70 (S922). In the server 72 of the financial institution 70, the data processing unit 701 receives the payment details sent from the mobile phone company 10 (S1203).

Subsequently, the data processing unit 701 updates the payment history database 714 based on the received payment details (S1204).

Next, the data processing unit 701 transmits the payment completion information to the server 30 of the mobile phone company 10 (S1205).

Then, the financial institution 70 processes the payment to the brick-and-mortar store 26 through the payment institution 80 in the same manner as in the case of the virtual store (S1206). In the server 30 of the mobile phone company 10, the data processing unit 301 receives the payment completion information sent from the financial institution 70 (S923), and subsequently sends this to the POS terminal 27 of the brick-and-mortar store 26 (S907).

In addition, in the server 30 of the mobile phone company 10, when the key code match is confirmed in step S909, the data processing unit 301 transmits the unreported data received in step S909 to the server 72 of the financial institution 70 (S924).

In the server 72 of the financial institution 70, the data processing unit 701 receives the unreported data transmitted from the mobile phone company 10 (S1207).

Thereafter, the data processing unit 701 updates the payment history database 714 based on the received unreported data (S1208).

Subsequently, the data processing unit 701 reads the virtual account balance of the virtual account 110 and sends it to the server 30 of the mobile phone company 10 (S1209).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the virtual account balance sent from the financial institution 70 (S925), and continues to transmit this to the mobile phone 13 of the user 12 (S913).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the virtual account balance transmitted from the mobile phone company 10 (S730), further updates the virtual account balance recorded in RAM132 based on the received virtual account balance, and clears the unreported data (S729).

As described above, according to the second embodiment of the present invention, since the virtual account 110 is provided at the financial institution 70, transferring funds to the virtual account 110 is easier than in the first embodiment.

In the second embodiment described above, the financial institution 70 is provided with a virtual account 110 in addition to the actual account 710. The actual account 710 may be treated as a virtual account 110 as it is. In this case, it is not necessary to transfer funds from the actual account 710 to the virtual account 110, which further simplifies the processing procedure.

In the payment at the virtual store on the Internet in the above embodiment, the user places an order using a personal computer, but the user may place an order using a mobile phone. In this case, the mobile phone acts as an alternative to the personal computer.

[Third Embodiment]

In the first embodiment, the virtual account is set up at a mobile phone company, and in the second embodiment, it is set up at a financial institution. In the third embodiment described below, a virtual account is set up in a payment institution separate from the mobile phone company or financial institution.

1. Service overview

A user who wishes to use the service according to the third embodiment registers in advance the bank account number, credit card number of the credit card company, etc. required for depositing the advance payment to the virtual account. Prior to payment, the user requests the payment institution through the mobile phone company to deposit the advance payment into the virtual account using the mobile phone. The payment institution uses the pre-registered bank account number, credit card number of the credit card company, etc. to request advance payment from the user. After requesting the advance payment, the payment institution deposits the advance payment into the virtual account and then sends the balance of the virtual account to the mobile phone via the mobile phone company. The virtual store or the brick-and-mortar store charges the payment institution instead of the mobile phone company or the financial institution as in the first and second embodiments.

1-1. Use registration

FIG. 41 is a schematic diagram showing a method of registration for use first when the user 12 of the mobile phone 13 wishes to use this service. As shown in Figure 41, the user 12 who wishes to use this service fills in the payment information, such as the mobile phone company, mobile phone number, and bank account number or credit card number for withdrawing the down payment, on the designated withdrawal account registration form 25 and mails it to the payment institution 90. The payment institution 90 registers the user information 910 in the database based on the withdrawal account registration form 25.

Subsequently, the payment institution 90 notifies the user 12 of the membership number (customer number in the user information 910) given to the user 12 through the mobile phone company 10. User 12 confirms the detail of the notification, and if there is no problem, approves the application for this service to the payment institution 90 through the mobile phone company 10. In response to this, the payment institution 90 opens a virtual account 110 and also opens an area in the database for recording the deposit / withdrawal history 912 and the payment history 914 of the virtual account.

In addition, the database of the payment institution 90 records member store information 916 such as member stores (including virtual stores and brick-and-mortar stores) that can use this service and transfer accounts for transferring the usage amount at the member stores.

Subsequently, the payment institution 90 notifies the mobile phone 13 of the user 12 through the mobile phone company 10 of the start of this service. At this time, the mobile phone company 10 changes the usage status of the personal information 11 from "unregistered" to "available". When the mobile phone 13 of the user 12 receives the notification of the start of this service from the mobile phone company 10, it changes the usage status of mobile phone S13 from "unavailable" to "available".

By the above procedure, userS12 will be able to use this service.

1-2. Transfer funds to a virtual account

FIG. 42 is a schematic diagram showing the transfer of funds when the advance payment to be deposited in the virtual account 110 set up in the payment institution 90 is withdrawn from the account of the financial institution. As shown in Fig. 42, the user 12 uses the mobile phone 13 and requests the payment institution 90 to deposit the desired advance payment into the virtual account 110 through the mobile phone company 10. Here, an example is shown in which 500 yen is deposited in the virtual account 110. When the payment institution 90 receives a request for advance payment to the virtual account 110, based on the user information 910, a request is made to the financial institution 170 such as a bank or credit company where the account 160 of the user 12 is opened to withdraw the advance payment. The financial institution 170 that received the withdrawal request confirms whether or not the withdrawal is possible, and if possible, sends the transfer data to the payment institution 90 and pays the advance payment to the payment institution 90.

If the withdrawal is not possible, the payment institution 90 is notified to that effect. When the payment institution 90 receives the transfer data from the financial institution 170, it updates the deposit / withdrawal history 912 and further updates the virtual account 110. Subsequently, the payment institution 90 notifies the mobile phone company 10 of the balance of the updated virtual account 110. The mobile phone company 10 creates transmission data 102 such as a mobile phone number and a virtual account balance. The mobile phone company 10 notifies the user 12 of the virtual account balance based on the transmitted data 102. In response to this notification, the mobile phone 13 of the user 12 updates the virtual account balance. When the transmission of the transmission data 102 from the mobile phone company 10 to the mobile phone 13 of the user 12 is completed, the transmission data 102 is cleared. When the transmission data 102 cannot be transmitted, such as when the user 12 is out of the radio range, the transmission data 102 is not cleared and is retained as it is.

1-3. Payment at a virtual store

FIG. 43 is a schematic diagram showing a method of making a payment at a virtual store 24 on the Internet using a mobile phone 13. As shown in FIG. 43, the user 12 places an order to the virtual store 24 using the mobile phone 13 or the personal computer 40. The virtual store 24 that received the order sends an electronic invoice containing the customer number and billing details of the user 12 to the mobile phone 13 of the user 12 through the payment institution 90 and the mobile phone company 10. The user 12 confirms the transmitted electronic invoice on the mobile phone 13 and notifies the payment institution 90 through the mobile phone company 10 if the invoice detail matches the order detail. When the payment institution 90 obtains the approval of the payment, the deposit / withdrawal history 912 and the payment history 914 are updated according to the details of the request, and the balance of the virtual account 110 is also updated. Here, an example is shown in which a product of 3000 yen is purchased at a virtual store 24 called store B.

Subsequently, the payment institution 90 notifies the mobile phone company 10 of the updated virtual account balance. The mobile phone company 10 uses the virtual account balance as transmission data 102, and further transmits the virtual account balance to the mobile phone 13 of the user 12. The virtual account balance of the mobile phone 13 is updated accordingly. When the transmission of the virtual account balance from the mobile phone company 10 to the user 12 is completed, the transmission data 102 is cleared.

On the other hand, when the payment institution 90 finishes updating the virtual account balance, the payment institution 90 notifies the user 12 through the virtual store 24 that the payment is completed. In addition, the payment institution 90 deposits the payment amount into the transfer account of the member store based on the member store information 916.

1-4. Payment at a brick-and-mortar store

FIG. 4 4 is a schematic diagram showing a method of making a payment at brick-and-mortar store 26 using the mobile phone 13. As shown in Fig. 44, when the mobile phone 13 is attached to the POS terminal 27 installed in the brick-and-mortar store 26, the POS terminal 27 transmits the payment amount to the mobile phone 13. If the payment amount is within the virtual account balance, the mobile phone 13 records the payment details in unreported data and transmits the mobile phone number, key code and password to the POS terminal 27. In response to this, the POS terminal 27 notifies the mobile phone 13 of the completion of the payment.

After that, the POS terminal 27 notifies the payment institution 90 of the payment details together with the mobile phone number, the key code and the password. The payment institution 90 requests authentication by sending the received mobile phone number, key code and password to the mobile phone company 10. The mobile phone company 10 that received the authentication request changes the unnotified personal information 11 from "none" to "yes". If the received mobile phone number, key code and password do not match the mobile phone number, key code and password registered as personal information 11, the mobile phone company 10 changes the usage status of the personal information 11 to "authentication abnormality" and notifies the user 12 and the payment institution 90 to that effect. In response to this notification, the mobile phone 13 changes the usage status to "authentication error".

On the other hand, if the received mobile phone number, key code and password match the mobile phone number, key code and password registered as personal information 11, the mobile phone company 10 notifies the payment institution 90 that the authentication has been successfully completed. In response to this notification, the payment institution 90 updates the deposit / withdrawal history 912 and the payment history 914. The payment institution 90 further updates the balance of the virtual account 110 and changes the unreported from "none" to "yes". Here, an example is shown in which a product of 1000 yen is purchased at a brick-and-mortar store 26 called store D.

Subsequently, the payment institution 90 notifies the brick-and-mortar store 26 that the payment has been completed. In addition, the payment institution 90 deposits the payment amount into the transfer account of the member store based on the member store information 916.

1-5. Request for unreported data

FIG. 45 is a schematic diagram which shows the method in which the payment institution 90 requests the mobile phone 13 to send unreported data in order to synchronize the virtual account balance, when, because user 12 has made a payment at a brick-and-mortar store 26 unreported data are generated in the mobile phone 13 and the virtual account balance of the mobile phone 13 does not match the virtual account balance of the payment institution 90. As shown in FIG. 45, the payment institution 90 requests unreported data from the mobile phone 13 of the user 12 through the mobile phone company 10. In response to this, the mobile phone 13 transmits the unreported data to the payment institution 90 through the mobile phone company 10. The payment institution 90 changes the status of the corresponding payment in the payment history 914 from "not notified" to "notified" based on the received unreported data.

Subsequently, the payment institution 90 transmits the balance of the virtual account 110 to the mobile phone company 10. The mobile phone company 10 sets the received virtual account balance as the transmission data 102, and changes the unnotified in the personal information 11 from "Yes" to "No". The mobile phone company 10 transmits the virtual account balance to the mobile phone 13. In response to this, the mobile phone 13 updates the virtual account balance and clears the unreported data. When the mobile phone company 10 completes the transmission of the virtual account balance, the transmission data 102 is cleared.

1-6. Billing agency

FIG. 46 is a schematic diagram showing a method in which the payment institution 90 charges the credit sales company 20 for the payment amount of the user 12 at the virtual store 24 on behalf of the virtual store 24. This billing agent does not use the virtual account 110 set up in the payment institution 90, but debit payments and credit card payments are made using the bank account number registered as user information 910 and the credit card number of the credit card company.

As shown in FIG. 46, when the user 12 places an order with the virtual store 24 using the mobile phone 13 or the personal computer 40, the virtual store 24 issues an electronic invoice consisting of the customer number, billing details, etc. to the user 12 through the payment institution 90 and the mobile phone company 10. The user 12 confirms the electronic invoice sent to the mobile phone 13 and, if the payment is approved, notifies the payment institution 90 through the mobile phone company 10 to that effect. At that time, one of the pre-registered payment methods is selected. Here, an example is shown in which payment by credit card of credit card company E is selected.

The payment institution 90 notifies the virtual store 24 of the approval of the payment, and also notifies the credit card company 20 of the payment details such as the credit card number and the payment amount using the user information 910. In response to this, the credit sales company 20 processes the payment amount for the virtual store 24 and notifies the virtual store 24 that the payment has been completed.

When the user 12 selects the payment by the debit card as the payment method, the payment institution 90 notifies the bank 17 of the payment details such as the account number and the payment amount using the user information 910. Bank 17 deducts the payment amount from the account of user 12 and further processes the payment amount to the virtual store 24.

In the above billing service, important payment information such as bank account numbers and credit card numbers of credit card companies is registered in advance at the payment institution 90. It is not transmitted from the mobile phone 13 or the personal computer 40. Authentication is performed by the mobile phone company 10 using the mobile phone number, key code and password, and only when the authentication is obtained, the pre-registered account number and credit card number are notified from the payment institution 90 to the financial institution 170 and the credit card company 20. Therefore, a high degree of safety can be ensured.

2. System configuration and operation

Next, the system configuration for realizing the above service and its operation will be described.

2-1. Registration

FIG. 47 is a block diagram showing a hardware configuration for registration of use shown in FIG. 41. Unlike the first and second embodiments described above, in the third embodiment, the server 30 of the mobile phone company 10 is provided with a memory 303 for storing the transmission data 102. In addition, the server 92 of the payment institution 90 is provided with a data processing unit 921 and a database 922.

The database 922 stores user information 910, virtual account deposit / withdrawal history 912, virtual account payment history 914 and member store information 916. The data processing unit 921 is connected to the data processing unit 301 of the server 30 installed in the mobile phone company 10 and performs predetermined data processing on the database 922.

FIG. 48 is a flowchart showing the operation of the mobile phone 13 of the user 12, the server 30 of the mobile phone company 10 and the server 92 of the payment institution 90 when registering the use. First, the user 12 operates the input device 136 of the mobile phone 13 to send an application for using this service from the mobile phone 13 to the mobile phone company 10 (S11). In the server 30 of the mobile phone company 10, the data processing unit 301 receives the usage application sent from the mobile phone 13 (S21), and his is sent to the payment institution 90 (S22). In the server 92 of the payment institution 90, the data processing unit 921 receives the usage application sent from the mobile phone company 10 (S1301). In response to this, the payment company 92 sends the prescribed application form to the user 12 (S1302). User 12 fills in the account number of the bank from which a withdrawal is desired, the credit card number of the credit card company, etc. on the application form, and then returns it to the payment institution 90. The payment institution 90 receives the application form returned from the user 12 (S1302). Based on the items entered in this application form, the data processing unit 301 registers the user information 910 in the database 922 (S1303). Specifically, the member number, mobile phone number, mobile phone company, bank account number, credit card number of the credit sales company, etc. of the user 12 are registered. Subsequently, the data processing unit 921 notifies the mobile phone company 10 of the membership number (S1304).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the membership number sent from the payment institution 90 (S23) and notifies the user 12 of this (S24). In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the membership number transmitted from the mobile phone company 10 (S12), and then if the user 12 approves the application, the mobile phone company 10 is notified to that effect (S13). At the server 30 of the mobile phone company 10, the data processing unit 301 receives the application approval notification sent from the mobile phone 13 (S25), then receives the notification of application approval (S25) and notifies the payment institution 90 of this (S26).

In the server 92 of the payment institution 90, the data processing unit 921 receives the application approval notification sent from the mobile phone company 10 (S1305), opens a virtual account 110 (S1306) and notifies the mobile phone company 10 of the start of this service (S1307). In the server 30 of the mobile phone company 10, the data processing unit 301 receives the service start notification sent from the payment institution 90 (S27), and updates the usage status of the personal information 11 from "unregistered" to "available" (S28). Subsequently, the data processing unit 301 notifies the user 12 of the start of this service (S29). In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the service start notification sent from the mobile phone company 10 (S14), and updates the usage status from "unavailable" to "available" (S15).

2-2. Transfer funds to a virtual account

Figure 49 is a block diagram showing the hardware configuration of the mobile phone 13 of user 12; mobile phone company 10 server 30, payment institution 90 server 92 and financial institution 170 server 172 used for fund transfer shown in Figure 42. As shown in FIG. 49, the server 172 installed in the financial institution 170 is equipped with a data processing unit 17 4 and a database 176. The data processing unit 17 4 processes the data in the database 176 and is connected to the data processing unit 301 of the server 30 installed in the mobile phone company 10. In the database 176 is registered user information 177 such as the user's address and name, actual account information 17 8 regarding the actual account opened at the financial institution 170, and actual account history 179 such as deposits and withdrawals in the actual account.

FigureS50 to 52 are flowcharts showing the operation of mobile phone 13, mobile phone company 10 server 30 and payment institution 90 server 92 when funds are transferred from the financial institution 170 to the virtual account 110 of the payment institution 90 as shown in FIG. 42.

Here, before entering the password (S101), the mobile phone 13 confirms the usage status, and if it is not available, the display device 137 displays that fact (S100).

If it is available, user 12 is prompted to enter the password (S101). In addition, after password verification (S102) and before inputting the prepaid amount (S104), the unreported data are confirmed and the available balance is displayed as in Fig. 21 (S714).

Subsequently, the transmission / reception unit 135 of the mobile phone 13 transmits the prepaid amount and the like entered in step S104 to the mobile phone company 10 (S106). Here, the password entered in step S101 is also transmitted to the mobile phone company 10.

The server 30 of the mobile phone company 10 searches for personal information 11 based on the mobile phone number received by the data processing unit 301 (S202), and then verifies the received key code and password. (S203). If the key code or password does not match, the usage status of personal information 11 is changed from "available" to "unavailable" (S250), and the user 12 is notified of the authentication error (S251).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the notification of the authentication abnormality from the mobile phone company 10 (S150), and in response thereto, the data processing unit 131 changes the usage status of the mobile phone 13 from "available" to "authentication error" (S151), and changes the suspension of use of this service to display in display device 137 Display (S152).

On the other hand, if both the key code and the password match in step S203, the data processing unit 301 confirms the usage status of the personal information 11 (S204), and if the usage status is "Available", it is determined whether or not there are unreported data (S253). If there is unreported data, the data processing unit 301 transmits the unreported data to the payment institution 90 together with the prepaid amount received in step S201 (S254). On the other hand, when there are no unreported data, the data processing unit 301 sends only the prepaid amount to the payment institution 90 (S255). In this way, when the prepaid amount is transmitted from the mobile phone company 10 to the payment institution 90, the mobile phone number of the user 12 is also transmitted.

In the server 92 of the payment institution 90, the data processing unit 921 receives the mobile phone number, the prepaid amount, etc. sent from the mobile phone company 10 (S1300). Based on the received information and the user information 910 registered in the database 922, the billing data for the financial institution 170 where the user 12 has an account is created (S1301).

The payment institution 90 requests the financial institution 170 to withdraw the prepaid amount according to the billing data (S1302). The financial institution 170 withdraws the prepaid amount from the account 160 of the user 12 in response to the withdrawal request from the payment institution 90 (S1400). Subsequently, the data processing unit 174 determines whether or not the withdrawal is possible, that is, whether or not the prepaid amount is within the account balance (S1401). If the withdrawal is not possible, the data processing unit 174 notifies the payment institution 90 to that effect (S1402). In the server 92 of the payment institution 90, the data processing unit 921 receives a notification from the financial institution 170 that it cannot be withdrawn (S1303), and notifies the mobile phone company 10 of this together with the mobile phone number of the user 12 (S1304). In the server 30 of the mobile phone company 10, the data processing unit 301 receives a notification that the payment cannot be withdrawn from the payment institution 90 (S256), and notifies the mobile phone 13 of the user 12 (S232).

On the other hand, if the withdrawal is possible in step S1401, the data processing unit 174 of the server 172 sends the transfer data to the payment institution 90 (S1403), and executes the payment process to transfer the prepaid amount from the account of the user 12 to the account of the payment institution 90 (S1404).

In the server 92 of the payment institution 90, the data processing unit 921 receives the transfer data transmitted from the financial institution 170 (S1305), and subsequently updates the deposit / withdrawal history 912 by recording the deposit of the prepaid amount in the database 922 (S1306). Here, the payment history 914 is updated by recording the payment amount in the database 922 (S1307). Subsequently, the data processing unit 921 updates the virtual account balance by adding the prepaid amount to the balance of the virtual account 110 (S1308). If there is unreported data, it is changed to "None". Subsequently, the data processing unit 921 transmits the balance of the virtual account 110 to the mobile phone company 10 together with the mobile phone number (S1309).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the virtual account balance transmitted from the payment institution 90 (S257), and stores the virtual account balance as transmission data 102 in the memory 303 (S258). Subsequently, the data processing unit 301 changes the unreported data to “None” (S259).

Subsequently, the data processing unit 301 changes the unreported data to “None” (S259). Thereafter, the data processing unit 301 transmits the transmission data 102 stored in the memory 303 to the mobile phone 13 of the user 12 (S26 0). Then, it is determined whether or not the above transmission is completed normally (S261), and if it is completed normally, the transmission data 102 is cleared (S262). If the transmission data cannot be transmitted to the mobile phone 13 and the transmission is not completed normally, such as when the user 12 is out of the radio wave range or the power of the mobile phone 13 is turned off, the re-transmission process is performed (S263). Specifically, after the elapse of a predetermined period, the transmission data 102 is transmitted to the mobile phone 13 again.

2-3. Payment at a virtual store

Figure 5 3 is a block diagram showing the hardware configuration of personal computer 40, mobile phone 13, mobile phone company 10 server 30, payment institution 90 server 92 and virtual store 24 server 50 used for payment at the virtual store 24 shown in Fig. 43. As shown in FIG. 53, the data processing unit 921 of the server 92 installed in the payment institution 90 is connected to the Internet 60.

FIGS. 54 to 56 are flowcharts showing the operation of personal computer 40, mobile phone 13, mobile phone company 10 server 30, payment institution 90 server 92, and virtual store 24 server 50 when making a payment at a virtual store 24, as shown in FIG. 43.

Here, the personal computer 40 or the mobile phone 13 of the user 12 transmits the membership number (customer number) together with the order details to the virtual store 24 (S301). The server of the virtual store 24 receives these (S601), creates an electronic invoice, and sends the billing details together with the membership number to the payment institution 90 via the Internet 60 (S602).

In the server 92 of the payment institution 90, the data processing unit 921 receives the electronic invoice sent from the virtual store 24 (S1310), searches the database 922 based on the received membership number, and specifies the mobile phone number and mobile phone company of the user 12 from the user information 910 (S1311). Thereafter, the data processing unit 921 transmits the received electronic invoice to the corresponding mobile phone company 10 together with the mobile phone number (S1312).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the electronic invoice sent from the payment institution 90 together with the mobile phone number (S501). The data processing unit 301 confirms the usage status in the personal information 11 (S503), and if the usage status is "unavailable", notifies the payment institution 90 together with the mobile phone number (S504).

In the server 92 of the payment institution 90, the service unavailable notification notified from the mobile phone company 10 is received together with the mobile phone number (S1313), and this is notified to the virtual store 24 via the Internet 60 (S1314).

In addition, the user 12 opens the electronic invoice sent from the mobile phone company 10 and received by the mobile phone 13 (S418), and the data processing unit 131 of the mobile phone 13 displays the billing details of the received electronic invoice and the available virtual account balance on the display device 137 (S154).

In addition, when the billing amount of the electronic invoice exceeds the available balance, the data processing unit 131 inquires of the user 12 through the display device 137 whether or not to make an additional transfer to the virtual account 110 (S155). When making an additional transfer, the data processing unit 131 executes the processing of the fund transfer (S156).

In addition, the determination of whether or not to approve the payment (S402) is performed after the verification of the available balance (S408). In the server 30 of the mobile phone company 10, the cancellation or refusal of the payment received by the data processing unit 301 is transmitted to the payment institution 90 together with the mobile phone number (S507). In the server 92 of the payment institution 90, the data processing unit 921 receives the cancellation or refusal of the payment sent from the mobile phone company 10 (S1315). This is transmitted to the virtual store 24 via the Internet 60 (S1316). The cancellation or refusal of the payment is returned to the user 12 via the virtual store 24 as in the above embodiment (S605, S606, S304). In the personal computer 40 or the mobile phone 13 of the user 12, the data processing unit 401 or 131 displays the cancellation or refusal of the received payment (order cancellation) on the display device 406 or 137 (S308).

Further, in the mobile phone 13 of the user 12 the data processing unit 131 verifies the input password (S157) after the password is input (S411). If the password is incorrect, the data processing unit 131 displays that fact on the display device 137 (S15 8), and if the password is correct, the transmitting / receiving unit 135 notifies the mobile phone company 10 of the approval of the payment (S412).

In addition, if the key code or password does not match on the server 30 of the mobile phone company 10, the data processing unit 301 changes the usage status of personal information 11 from "available" to "authentication error" (S522), the user 12 is notified to that effect (S523), and also the payment institution 90 is notified to that effect together with the mobile phone number (S524). In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the notification of the authentication abnormality sent from the mobile phone company 10 (S159), the data processing unit 131 changes the usage status from "available" to "authentication error", and further displays the suspension of use of this service on the display device 137 (S161). On the other hand, in the server 92 of the payment institution 90, the data processing unit 921 receives the notification of the authentication abnormality sent from the mobile phone company 10 (S1317), and notifies the virtual store 24 via the Internet 60 that payment is not possible due to an authentication error (S1318).

In the server 50 of the virtual store 24, the modem 504 receives the non-payment notification sent from the payment institution 90 (S613), and in response to this, the cancellation of the order is transmitted to the personal computer 40 or the mobile phone 13 of the user 12 via the Internet 60 (S614). In the personal computer 40 or the mobile phone 13 of the user 12, the modem 404 or the transmitter / receiver 135 receives the cancellation of the order sent from the virtual store 24 (S309), and the data processing unit 401 or 131 displays the fact thereof on the display device 406 or 137 (S310).

If both the key code and password match in steps S511 and S512, the data processing unit 301 determines whether or not the answer to the presence of unreported data is "Yes" (S525), and if there are unreported data, the payment data and unreported data are sent to the payment institution 90 together with the mobile phone number (S526). If there are no unreported data, the data processing unit 301 transmits the payment data together with the mobile phone number to the payment institution 90 (S527). In the server 92 of the payment institution 90, the data processing unit 921 receives the payment data (and unreported data if there are unreported data) sent from the mobile phone company 10 (S1319), updates the deposit / withdrawal history 912 based on the received payment data (and unnotified data if there is unreported data) (S1320), updates the payment history 914 (S1321), and also updates the balance of the virtual account 110 (S1322). Here, the data processing unit 921 sets the unreported setting of the virtual account 110 to “None”.

Subsequently, the data processing unit 921 sends the updated balance of the virtual account 110 to the mobile phone company 10 together with the mobile phone number (S1323). The completion of the payment is notified to the virtual store 24 via the Internet 60 (S1324), and the payment to the virtual store 24 is further processed (S1325). The notification of payment completion is also made to the user 12 via the virtual store 24 (S612 and S307). In the personal computer 40 or the mobile phone 13 of the user 12, the data processing unit 401 or 131 displays the completion of the received payment on the display device 406 or 137 (S311).

On the other hand, in the server 30 of the mobile phone company 10, the data processing unit 301 receives the virtual account balance sent from the payment institution 90 (S528), and the balance is stored in the memory 303 as transmission data 102 (S529). Subsequently, the data processing unit 301 sets the unnotified personal information 11 to "None" (S530), and transmits the transmission data (virtual account balance) 102 stored in the memory 303 is to the mobile phone 13 of the user 12 (S531).

Subsequently, the data processing unit 301 determines whether or not the transmission of the above data has been completed normally (S532), if it ends normally, the transmission data 102 stored in the memory 303 is cleared (S533), and if it does not end normally, the transmission process is performed again (S534).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the transmission data 102 transmitted from the mobile phone company 10 (S162), and the data processing unit 131 updates the virtual account balance based on the received transmission data 102 (S163). Subsequently, the data processing unit 131 clears the unreported data (S164) and displays the completion of the payment together with the virtual account balance on the display device 137 (S165).

2-4. Payment at a brick-and-mortar store

Figure 57 is a block diagram which shows the hardware configuration of mobile phone 13, POS terminal 27, server 30 of mobile phone company 10 and server 92 of payment institution 90 used for payment at brick-and-mortar stores shown in Fig. 44. Here, unlike FIG. 20, the server 92 of the payment institution 90 is connected to the POS terminal 27 of the brick-and-mortar store 26 and the server 30 of the mobile phone company 10.

FIGS. 58 to Fig. 60 are flowcharts showing the operation of mobile phone 13, POS terminal 27, server 30 of mobile phone company 10 and server 92 of payment institution 90 shown in FIG. 57.

Here, on the server 30 of the mobile phone company 10, if there are unreported data as a result of the determination in step S525, the data processing unit 301 transmits the unreported data to the payment institution 90 together with the mobile phone number (S535). In the server 92 of the payment institution 90, if there are unreported data, the data processing unit 921 updates the deposit / withdrawal history 912 (S1330). Subsequently, the data processing unit 921 updates the payment history 914 and sets the corresponding payment status as “notified” (S1331). Subsequently, the data processing unit 921 updates the balance of the virtual account 110 when there are unreported data, and sets the unreported setting to “None” (S1332).

In addition, unlike FIG. 22 here, in the mobile phone 13 of the user 12, after the balance verification (S718), the data processing unit 131 stores the payment details in the unreported data (S722), and after that, the terminal information of the mobile phone 13 such as the mobile phone number, the key code, and the password is transmitted to the POS terminal 27 (S720). Steps S802 to S804 and S721 are the same as in FIG. 22. After receiving the payment completion notification from the POS terminal 27 in step S721, the data processing unit 131 turns off the payment mode (S723) and displays the end of payment on the display device 137 (S731).

In addition, the data processing unit 271 of the POS terminal 27 transmits the payment details recorded in step S803 to the payment institution 90 together with the mobile phone number, key code and password received in step S802 (S805). In the server 92 of the payment institution 90, the data processing unit 921 receives the payment details sent from the POS terminal 27 together with the mobile phone number, etc. (S1333), and the user information 910 stored in the database 922 is searched based on the received mobile phone number (S1334). According to this search result, the data processing unit 921 transmits the mobile phone number, key code and password received in step S1333 to the mobile phone company 10 in order to request the corresponding mobile phone company 10 for authentication (S1335).

In the server 30 of the mobile phone company 10, the data processing unit 301 authenticates in the same manner as in FIG. 5 5 (S511 and S512). However, here, if the key code or password does not match, the data processing unit 301 changes the usage status of personal information 1 to "unavailable" (S522) and notifies the user 12 of the suspension of use of this service (S523). In the mobile phone 13 of the user 12 the data processing unit 131 changes the usage status to "unavailable" (S160).

On the other hand, if the key code and password match, the data processing unit 301 changes the unnotified personal information 11 to "Yes" (S925), notifies the payment institution 90 of the success of the authentication, and performs the request processing of the unreported data described later (S927).

In the server 92 of the payment institution 90, the data processing unit 921 receives the notification of successful authentication sent from the mobile phone company 10 (S1330), and updates the balances of deposit / withdrawal history 912, payment history 914 and virtual account 110 (S1320 to S1322). Here, when the payment history 914 is updated, the state is set as “unreported”. Subsequently, the data processing unit 921 changes the unreported setting of the virtual account 110 to “Yes” (S1331).

Also, when the data processing unit 921 receives the notification of the authentication abnormality from the mobile phone company 10 (S1317), the data processing unit 921 processes the payment of the payment amount to the brick-and-mortar store 26 (S1332). The cause of such an authentication error may be the fraud of user 12; however, in this case as well, the payment institution 90 guarantees payment to the brick-and-mortar store 26. The payment institution 90 will bear the damage caused by unauthorized use; however, since the use of this service is stopped when an authentication error is detected as described above, damage can be minimized.

2-5. Request for unreported data

Figure 6 1 is a flowchart showing the operation of mobile phone 13, mobile phone company 10 server 30 and payment institution 90 server 92 when the mobile phone company 10 requests unreported data from the user 12. The unreported data are stored in the RAM 132 of the mobile phone 13 as in the first embodiment shown in FIG. 24. When requesting unreported data, the hardware configuration shown in Fig. 47 is used.

In the server 30 of the mobile phone company 10, the data processing unit 301 requests the mobile phone 13 of the user 12 to transmit unreported data at predetermined time intervals (S540). In the mobile phone 13 of the user 12 the transmission / reception unit 135 receives the transmission request of the unreported data transmitted from the mobile phone company 10 (S170), and in response to this, the data processing unit 131 transmits the unreported data stored in the RM 132 to the mobile phone company 10 together with the mobile phone number, key code and password (S706).

Hereinafter, as in FIG. 58 and FIG. 59, the server 30 of the mobile phone company 10 performs authentication and the like. The server 92 of the payment institution 90 updates the payment history 914.

2-6. Billing agency

FIG. 62 is a block diagram showing the hardware configuration of personal computer 40, mobile phone 13, mobile phone company 10 server 30, virtual store 24 server 50, payment institution 90 server 92 and financial institution 170 server 94 used by the billing agency shown in Fig. 46. As shown in FIG. 62, the server 94 of the financial institution is equipped with a data processing unit 941 and a database 942.The data processing unit 941 is connected to the Internet 60 and the data processing unit 921 of the server 92 installed in the payment institution 90. User information 943, member store information 94 4 and user history 945 are stored in the database 942. The user information 943 comprises the user's address, name, telephone number, etc., an account number in the case of a bank, a credit card number in the case of a credit company, a withdrawal bank account, and the like. Merchant information 94 4 is the address, name, etc. of the merchant that accepts payments by debit card or credit card. The user history 945 is the payment amount by debit card or credit card, the payment date, the name of the member store used, and the like.

FIGS. 63 and 64 are flowcharts showing the operation of personal computer 40, mobile phone 13, mobile phone company 10 server 30, payment institution 90 server 92, financial institution server 94 and virtual store 24 server 50 shown in Fig. 62

The billing agency processing shown in FIGS. 63 and 64 is similar to the payment processing at the virtual store shown in FIGS. 54 to 56. However, in the case of a billing agency, the mobile phone 13 of the user 12 approves the payment immediately after opening the electronic bill in step S418 (S402). In addition, when the passwords match in step S157, the user 12 is urged to select a payment method of payment by debit card or payment by credit card (S171). Subsequently, the transmission / reception unit 135 of the mobile phone 13 notifies the mobile phone company 10 of the approval of the payment (S412). At this time, the mobile phone number, key code, password, payment details, and payment method are also transmitted to the mobile phone company 10.

In addition, in the server 30 of the mobile phone company 10, if the key code and password match in steps S511 and S512, the data processing unit 301 transmits the payment approval received in step S510 to the payment institution 90 together with the mobile phone number. In the server 92 of the payment institution 90, the data processing unit 921 notifies the virtual store 24 via the Internet 60 of the approval of this payment (S1335), and in the server 50 of the virtual store 24, the modem 504 receives this notification (S615).

Subsequently, the data processing unit 921 notifies the financial institution of the payment details (S1336). On the server 94 of the financial institution, the data processing unit 941 receives the payment details sent from the payment institution 90 (S1500) and performs a predetermined payment processing (S1501). Subsequently, the data processing unit 941 notifies the virtual store 24 whether or not the payment is possible (S1502). In the server 50 of the virtual store 24, modem 54 receives the payment acceptance notification sent by the financial institution (S616), judges whether payment is possible (S617), and if payment is not possible, the cancellation of the order is sent to the personal computer 40 or the mobile phone 13 of the user 12 (S618).

In the personal computer 40 or the mobile phone 13 of the user 12, the modem 404 or the transmitter / receiver 135 receives the order cancellation sent from the virtual store 24 (S315) and displays the fact on the display device 406 or 137 (S316).

The third embodiment is significantly different from the first and second embodiments in that a virtual account 110 is provided in the payment institution 90, but is also different in other respects. These differences can also be adopted in the first and second embodiments described above.

[Fourth Embodiment]

In the third embodiment described above, the user 12 is authenticated based on the personal information 11 provided in the mobile phone company 10. In the fourth embodiment described below, the user 12 is authenticated based on the user information 910 provided in the payment institution 90. Since the hardware configuration for this fourth embodiment is the same as that shown in FIGS. 47, 49, 53, 57 and 62, the description is not repeated. Hereinafter, the fourth embodiment will be described focusing on the differences from the third embodiment.

1. Prepayment method

First, a prepayment method for depositing money into a virtual account will be described. FIG. 65 is a schematic view showing a prepayment method according to a fourth embodiment of the present invention. Here, an area for storing the one-time ID, the retail account balance, and the retail payment history, which will be described later, is secured in the RAM 132 of the mobile phone 13. In addition, the user information 910 of the payment institution 90 comprises a key code and a password for authenticating the user 12. The user information 910 also comprises the e-mail address, usage status, and membership classification of the mobile phone 13. There are "General" and "Member stores" for individual users in the membership category. Virtual account 110 comprises retail account balances and one-time IDs. FIG. 66 and FIG. 67 are flowcharts showing the operation of the mobile phone, the server of a mobile phone company, and the server of a payment institution of the case shown in FIG. 65.

First, the user 12 uses the mobile phone 13 and selects "prepayment" on the menu screen (S98). Specifically, in the mobile phone 13 shown in FIG. 47, FIG. 49, FIG. 53, FIG. 57 and FIG. 62, the input device 136 gives a “Prepaid” selection signal to the data processing unit 131 in response to the operation of the user 12. Hereinafter, since steps S99 to S103 are the same as those shown in FIG. 50, the description thereof will not be repeated.

After the password verification (S102), the user 12 uses the mobile phone 13 and inputs the customer number given in advance (S175). Specifically, the customer number input by the input device 136 is given to the data processing unit 131 in response to the operation of the user 12. Here, user S1 and 2 enter the customer number; however, the customer number entered first may be stored in RAM132, and the stored customer number may be transmitted from the second time onward. Further, the telephone number of the mobile phone 13 may be used as the customer number as in the above embodiment.

The transmission / reception unit 135 of the mobile phone 13 transmits the customer number entered in step S17 5, the key code pre-registered in ROM133 and the password entered in step S101. to the mobile phone company 10 (S176).

In the server 30 of the mobile phone company 10, the data processing unit 301 receives the customer number, key code, and password transmitted from the mobile phone 13 and transmits them as they are to the payment institution 90 via the Internet 60. That is, the mobile phone company 10 transfers the customer number, key code, and password sent from the mobile phone 13 to the payment institution 90 (S265).

In the server 92 of the payment institution 90, the data processing unit 921 receives the customer number, key code, and password transmitted from the mobile phone 13 via the mobile phone company 10 (S200). After that, the server 92 of the payment institution 90 performs the same processing as steps S203 to S205 and S250 and S251 shown in FIGS. 50 and 51 in behalf of server 30 of mobile phone company 10. However, here, the server 92 of the payment institution 90 sends an authentication abnormality notification to the mobile phone company 10, and the server 30 of the mobile phone company 10 transmits this to the mobile phone 13 (S266).

In addition, the server 92 of the payment institution 90 sends an unavailability notification to the mobile phone company 10, and the server 30 of the mobile phone company 10 transfers this to the mobile phone 13 (S267). Since steps S150 to S152, S110, and S111 of the mobile phone 13 are the same as those shown in FIG. 51, the explanation thereof is not repeated.

As a result of checking the usage status (S204), if the usage status is "Available", the payment institution 90 requests the user 12 to enter the prepaid amount. Specifically, in the server 92 of the payment institution 90, the data processing unit 921 transmits a request for the prepaid amount to the mobile phone 13 (S1340). In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the request for the prepaid amount sent from the payment institution 90 via the Internet 60 to the mobile phone 13 of the user 12 (S268).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the request for the prepaid amount sent from the payment institution 90 via the mobile phone company 10 (S177).

In response to this request, the user 12 operates the input device 136 of the mobile phone 13 to input the desired prepaid amount and select the payment method of the prepaid amount (S178). Similar to the above, the payment method comprises withdrawal from a bank account, debit payment, credit card payment, transfer, and electronic money payment. The transmission / reception unit 135 of the mobile phone 13 transmits the input prepaid amount and the selected payment method to the payment institution 90. In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the prepaid amount and the payment method sent from the mobile phone 13 to the payment institution 90 (S269).

In the server 92 of the payment institution 90, the data processing unit 921 receives the prepaid amount and the payment method transmitted from the mobile phone 13 via the mobile phone company 10 (S1341). Subsequently, the data processing unit 921 executes the payment processing of the desired prepaid amount by the selected payment method (S1342).

Subsequently, the data processing unit 921 determines whether or not payment is possible (S1343). If payment is not possible, the payment institution 90 notifies user 12 that advance payment is not possible. Specifically, on the server 92 of the payment institution 90, the data processing unit 921 sends a notification that advance payment is not possible to the mobile phone 13 (S1344). In the server 30 of the mobile phone company 10, the data processing unit 301 forwards the non-prepaid notice sent from the payment institution 90 via the Internet 60 to the mobile phone 13 (S270).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the notification of non-prepayment sent from the payment institution 90 via the mobile phone company 10 (S179), and displays the non-prepayment on the display device 137 (S180).

On the other hand, if payment can be made in step S1343, the payment institution 90 notifies the user 12 of the completion of the prepayment together with the new balance of the virtual account. Specifically, the data processing unit 921 sends a notification of the completion of prepaid payment to the mobile phone 13 together with the balance of the virtual account (S1345). In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the balance of the virtual account and the notification of the completion of prepaid payment sent from the payment institution 90 via the Internet 60 to the mobile phone 13 of the user 12 (S271).

In the mobile phone 13 of the user 12, the transmitter / receiver unit 135 receives the notification of the balance of the virtual account and the completion of prepaid payment sent from the payment institution 90 via the mobile phone company 10 (S181). The data processing unit 131 displays the completion of prepaid payment together with the balance of the virtual account on the display device 137 (S182).

After notification of completion of prepaid payment (S1345), the data processing unit 921 updates the deposit / withdrawal history 912 based on the prepaid amount (S1306), and further updates the balance of the virtual account 110 (S1308).

The communication according to steps S26 5 to S271 described above is performed within the same session. Therefore, if communication is interrupted before updating the deposit / withdrawal history or virtual account balance, the deposit / withdrawal history or virtual account balance will not be updated.

2. Payment at a virtual store

Next, payment at a virtual store will be described. Below are two ways to transfer the billed amount from a virtual account to a virtual store.

2-1. First remittance method

FIG. 68 is a conceptual diagram showing a first remittance method according to a fourth embodiment of the present invention. Here, the member store billing history 918 and the member store deposit history 920 are recorded in the database 922 provided on the server 92 of the payment institution 90. FIGS. 69 and 70 are flowcharts showing the operation of personal computers, mobile phones, mobile phone company servers, payment institution servers, and virtual store servers in the case shown in Fig. 68.

Similar to the third embodiment above, the personal computer 40 or the mobile phone 13 of the user 12 transmits the customer number together with the order details to the virtual store 24 (S301). The server 50 of the virtual store 24 receives these (S601) and sends the billing details together with the customer number to the payment institution 90 (S602).

In the server 92 of the payment institution 90, the data processing unit 921 receives the billing detail sent from the virtual store 24 (S1310).

Subsequently, the server 92 of the payment institution 90 executes the same processing as the stepS502, S503, and S505 shown in FIG. 54 on behalf of the server 30 of the mobile phone company 10. However, here, the server 92 of the payment institution 90 searches the user information 910 in the database 922 based on the customer number instead of the mobile phone number (S502).

As a result of checking the usage status (S503), if the usage status is "Available", in the server 92 of the payment institution 90, the data processing unit 921 searches the database 922 based on the customer number, the e-mail address of the mobile phone 13 is read from the user information 910 and an e-mail is sent to the mobile phone 13 by e-mail according to the e-mail address (S505). The billing number, billing amount, remittance destination (merchant number), etc. are recorded on this electronic invoice.

Subsequently, the data processing unit 921 updates the member store billing history 918 and records the billing number, billing date, billing amount, etc. based on the electronic bill sent from the virtual store 24 (S1340).

In the server 30 of the mobile phone company 10, the data processing unit 301 forwards the e-mail transmitted from the payment institution 90 via the Internet 60 to the mobile phone 13 of the user 12 (S272).

In the mobile phone 13, the transmission / reception unit 135 receives the e-mail sent from the payment institution 90 via the mobile phone company 10 (S401), and the data processing unit 131 opens the e-mail in response to the operation of the user 12 and displays the electronic invoice on the display device 137 (S418).

Next, when the user 12 confirms the electronic invoice and transfers the invoice amount recorded therein to the virtual store 24, "Remittance" is selected. At this time, the user 12 operates the input device 136 to input the customer number and the password.

As a result, the mobile phone 13 connects to server 92 of the payment institution 90 according to the remittance Uniform Resource Locator (URL) embedded in the e-mail, and the transmission / reception unit 135 transmits a remittance selection signal to the payment institution 90 together with the key code, the customer number and the password (S430). The server 30 of the mobile phone company 10 transfers the remittance selection signal transmitted from the mobile phone 13 to the payment institution 90 via the Internet 60 (S273). In the server 92 of the payment institution 90, the data processing unit 921 receives the key code, customer number, password and remittance selection signal transmitted from the mobile phone 13 via the mobile phone company 10 (S1341), and searches the user information 910 in the database 922 based on the received customer number (S1342). After that, the server 92 of the payment institution 90 performs the same processing as the steps S511, S512, S522 to S524 shown in FIG. 55 in behalf of the server 30 of the mobile phone company 10.

The data processing unit 921 verifies the key code and password (S511, S512), and then if both match, a notification of remittance completion is sent to the mobile phone 13 of the user 12 via the mobile phone company 10 together with the new balance of the virtual account 110 (S1343). The server 30 of the mobile phone company 10 forwards the remittance completion notification sent from the payment institution 90 via the Internet 60 to the mobile phone 13 of the user 12 (S275).

In mobile phone 13, the transmission / reception unit 135 receives the remittance completion notification sent from the payment institution 90 via the mobile phone company 10 (S431), and further, the data processing unit 131 displays the remittance completion on the display device 137 together with the virtual account balance after the remittance (S432).

After the remittance completion notification (S1343), the server 92 of the payment institution 90 executes the same process as steps S1320 to S1322 shown in FIG. 56.

After updating the virtual account balance (S1322), the data processing unit 921 updates the member store billing history 918 in the database 922 and records the payment date (S1344). Subsequently, the data processing unit 921 updates the member store deposit history 920 in the database 922 and records the billing number, deposit date, deposit amount, remittance customer number, etc. (S1345). Thereafter, the data processing unit 921 sends a payment notification to the virtual store 24 via the Internet 60 (S1346). In the server 50 of the virtual store 24, the modem 504 receives the payment notification sent from the payment institution 90 (S619).

Here, the communication according to steps S272 to S275 is performed in the same session.

2-2. Second remittance method

FIG. 71 is a conceptual diagram showing a second remittance method according to the fourth embodiment of the present invention.

FIGS. 72 and 73 are flowcharts showing the operations of a personal computer, a mobile phone, a server of a mobile phone company, a server of a payment institution, and a server of a virtual store in the case shown in FIG. 71.

The virtual store 24 that received the order does not notify the user 12 of the payment details via the payment institution 90 as in the first remittance method above, but here the payment details are notified to the user 12 directly. Specifically, in the server 50 of the virtual store 24, after receiving the order (S601), the data processing unit 501 transmits the billing details such as the member store number and the billing amount of the virtual store 24 to the mobile phone 13 or the personal computer 40 of the user 12 via the Internet 60 (S620). In the mobile phone 13 or the personal computer 40 of the user 12 the transmitter / receiver 135 or the modem 404 receives these (S312).

The user 12 operates the mobile phone 13 after seeing the notified billing detail, and selects "Remittance" from the menu screen (S97). Similar to steps S99 to 103, S175, S176, S265 and S200 shown in FIG. 66, the user 12 inputs the password and the customer number, the mobile phone 13 sends them together with the key code to the payment institution 90, and the payment institution 12 receives them.

Subsequently, similar to the steps S502, S503, S1314, S603, S604, S302, S303, S511, S521, S522 to S524, S274, S159, S613 shown in FIG. 69, the payment institution 90 authenticates, and if both the key code and password match in steps S511 and S512, the user 12 is requested to enter the specific remittance details. In response to this request, the user 12 inputs the specific remittance details and sends them to the payment institution 90.

Specifically, in the server 92 of the payment institution 90, the data processing unit 921 transmits the request for the remittance detail to the mobile phone 13 of the user 12 (S1347).

In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the request for the remittance detail sent from the payment institution 90 via the Internet 60 to the mobile phone 13 (S276).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the request for the remittance detail transmitted from the payment institution 90 via the mobile phone company 10 (S433).

Subsequently, the input device 136 gives the remittance detail input in response to the operation of the user 12 to the data processing unit 131, and the transmission / reception unit 135 transmits the input remittance detail to the payment institution 90 (S434). The details of the remittance include the member store number of the remittance destination and the remittance amount. In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the remittance details sent from the mobile phone 13 to the payment institution 90 (S277). In the server 92 of the payment institution 90, the data processing unit 921 receives the remittance details transmitted from the mobile phone 13 via the mobile phone company 10 (1348).

Since the following is the same as steps S1343, S275, S431, S432, S1320 to S1322, S1345, S1346, and S619 shown in FIG. 70, the description thereof is not repeated. However, since the billing history 918 shown in FIG. 68 does not exist here, the billing history is not updated (S1344).

3. Payment at a brick-and-mortar store

Next, the payment at a brick-and-mortar store will be described. Here, a petty cash account that can be transferred from a virtual account is further provided, and a one-time ID (identifier) that enables the use of the petty cash account is issued.

3-1. Issuance of one-time ID (transfer to petty cash account)

FIG. 74 and FIG. 75 are conceptual diagrams showing a method of issuing a one-time ID according to a fourth embodiment of the present invention.

FIG. 7 4 shows a case where there is no petty cash payment history, and FIG. 75 shows a case where there is a petty cash payment history. Here, the deposit / withdrawal history of petty cash account 915 is recorded in the database 922 provided on the server 92 of the payment institution 90.

FIG. 76 and FIG. 77 are flowcharts showing the operation of mobile phones, mobile phone company servers, and payment agency servers in the case shown in FIG. 74 and FIG. 75.

When trying to transfer the desired amount from a virtual account to a petty cash account in order to make a payment at a brick-and-mortar store, the user 12 operates the mobile phone 13 and selects "One-time ID" on the menu screen (S96). Specifically, in the mobile phone 13, the input device 136 gives a selection signal of "One-time ID" to the data processing unit 131 in response to the operation of the user 12. Hereinafter, since steps S99 to S103 and S1755 are the same as those shown in FIG. 66, the description thereof will not be repeated.

After entering the customer number (S17 5), in the mobile phone 13, the transmission / reception unit 135 transmits the customer number, the key code, the password, and the petty cash account information to the payment institution 90 (S185). The retail account information comprises the retail account balance and the retail payment history recorded in RAM 132. However, when requesting one-time ID for the first time, the retail payment history does not yet exist. Hereinafter, since steps S265 to S267, S200, S202 to S205, S250, S251, S150 to S152, S110, and S111 are the same as those shown in FIG. 66, the description thereof will not be repeated.

If the key code and password match as a result of user 12 authentication (S203), and the usage status is confirmed to be “Available” as a result of confirmation of usage status (S204), the payment institution 90 requests the user 12 for the transfer amount from the virtual account to the petty cash account. Specifically, on the server 92 of the payment institution 90, the data processing unit 921 sends a request for the desired transfer amount to the retail account to the mobile phone 13 of the user 12 (S1350). At this time, the transferable limit (usually the balance of the virtual account) is also transmitted. In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the request for the transfer amount sent from the payment institution 90 via the Internet 60 to the mobile phone 13 (S278).

In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the transfer amount request sent from the payment institution 90 via the mobile phone company 10 (S186).

In response to this request, the user 12 operates the input device 136 of the mobile phone 13 to specify the desired transfer amount (S187). The input device 136 gives the transfer amount specified by the user 12 to the data processing unit 131.

The data processing unit 131 compares the payment amount specified in step S18 7 with the limit amount received in step S186 and determines whether or not the specified payment amount is within the limit (S188). If the specified transfer amount exceeds the limit, the data processing unit 131 displays on the display device 137 that transfer is not possible (S189). On the other hand, if the specified transfer amount is within the limit, the transmission / reception unit 135 transmits the specified transfer amount to the payment institution 90 (S190). In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the transfer amount transmitted from the mobile phone 13 of the user 12 to the payment institution 90 via the Internet 60 (S279).

In the server 92 of the payment institution 90, the data processing unit 921 receives the transfer amount transmitted from the mobile phone 13 of the user 12 via the mobile phone company 10 (S1351), and furthermore, a one-time ID is randomly generated (S1352).

Subsequently, based on the transfer amount received in step S1351, the data processing unit 921 updates the virtual account deposit / withdrawal history 912 (S1320), updates the virtual account payment history 914 (S1321), updates the balance of the virtual account 110 (S1322), and updates the deposit / withdrawal history 915 of the petty cash account (S1345).

For example, as shown in FIG. 74, when user 12 specifies the transfer amount as 1000 yen, the deposit / withdrawal history of the virtual account 912 records that 1000 yen has been withdrawn to the petty cash account. In addition, the balance of the virtual account 110 will be deducted by 1000 yen, and the balance of the petty cash account will be increased by 100 yen. Furthermore, it is recorded that 1000 yen has been deposited in the input / output history 915 of the petty cash account. In this case, since the small-lot payment history is not transmitted from the mobile phone 13, the payment history 914 of the virtual account is not updated.

Next, as shown in Fig. 75, when it is recorded that 300 yen was used in the small-lot payment history of mobile phone 13 (that is, the small-lot account balance of mobile phone 13 is 700 yen), and when the user 12 specifies the transfer amount aS1500 yen, the difference (800 yen) between this transfer amount (1500 yen) and the current petty cash account balance (700 yen) is calculated, and it is recorded in the input / output history 912 of the virtual account that the 800 yen withdrawal was made. In addition, based on the small-lot payment history of the mobile phone 13, the payment history of the virtual account 914 records that 300 yen was used for the payment. Further, based on the above difference, the balance of the virtual account 110 is reduced by 800 yen to 200 yen. 300 yen was used for payment from the petty cash account, but since 800 yen is newly transferred to the petty cash account, the balance of the petty cash account will be 1500 yen, which is equal to the above transfer amount. In addition, it is recorded in the deposit / withdrawal history 915 of the petty cash account that 300 yen has been withdrawn based on the small payment history of the mobile phone 13. Furthermore, it is recorded that 800 yen has been deposited based on the above difference.

Finally, the data processing unit 921 transmits the transfer details such as the one-time ID and the petty cash account balance generated in step S1352 to the mobile phone 13 of the user 12 (S1353). In the server 30 of the mobile phone company 10, the data processing unit 301 transfers the transfer details transmitted from the payment institution 90 via the Internet 60 to the mobile phone 13 (S280). In the mobile phone 13 of the user 12, the transmission / reception unit 135 receives the transfer details transmitted from the payment institution 90 via the mobile phone company 10 (S119).

Subsequently, the data processing unit 131 clears the small-lot payment history recorded in the RAM 132 (S192). Thereafter, the data processing unit 131 rewrites the petty cash account balance recorded in RAM 132 (S193), Furthermore, the one-time ID recorded in RAM 132 is rewritten (S194).

For example, in the case shown in FIG. 74, the one-time ID of “987655” generated by the payment institution 90 is recorded in the RAM 132 of the mobile phone 13. In addition, the retail account balance is updated from "0 yen" to "100 yen" according to the transfer amount specified by the user 12. Further, in the case shown in FIG. 75, the new one-time ID of “34567” generated by the payment institution 90 is recorded in the RAM 132 of the mobile phone 13. In addition, the new small-lot account balance of "1500 yen" calculated by the payment institution 90 is recorded in the RAM 132 of the mobile phone 13.

Finally, the data processing unit 131 displays on the display device 137 the completion of payment to the petty cash account together with the balance of the petty cash account (S195).

3-2. Use of one-time ID (payment from a petty cash account)

FIG. 78 is a conceptual diagram showing a method of making a payment at a brick-and-mortar store using the one-time ID according to the fourth embodiment of the present invention.

FIG. 79 is a flowchart showing the operation of the mobile phone, the POS terminal of the brick-and-mortar store, and the server of the payment institution in the case shown in FIG. 78.

When making a payment at a brick-and-mortar store 26 after transferring the desired amount to a petty cash account and obtaining a one-time ID, user 12 operates the mobile phone 13 and selects "Payment" on the menu screen (S95). Specifically, in the mobile phone 13, the input device 136 gives a "payment" selection signal to the data processing unit 131 in response to the operation of the user 12. Hereinafter, since steps S99 to S103 are the same as those shown in FIG. 66, the description thereof will not be repeated.

After the password verification (S102), the data processing unit 131 determines whether or not the one-time ID recorded in the RAM 132 is valid (S735). One-time ID has an effective date, and the balance of the retail account can only be used for payment at the brick-and-mortar store until the effective date. One-time ID may be invalidated once it is used for payment at a physical store.

When the one-time ID is invalid, the data processing unit 131 displays the fact on the display device 137 (S736). On the other hand, when the one-time ID is valid, the data processing unit 131 displays on the display device 137 that payment from a petty cash account is possible (S737). Hereinafter, since steps S716 to S719 and S801 are the same as those shown in FIG. 59, the description thereof will not be repeated.

As a result of the balance verification (S718), if the payment amount sent from the POS terminal 27 is within the balance of the petty cash account, the interface unit 13 9 of the mobile phone 13 transmits the one-time ID recorded in the RM 132 to the POS terminal 27 (S738). Subsequently, the data processing unit 131 updates the small-lot payment history recorded in the RAM 132 (S739). Specifically, the data processing unit 131 stores the payment amount, the payment date, the member store number of the brick-and-mortar store 26, etc. transmitted from the POS terminal 27. Subsequently, the data processing unit 131 updates the balance of the petty cash account recorded in ARM 132 (S740). Specifically, the data processing unit 131 subtracts the payment amount from the balance of the retail account and records a new balance. At this point, the balance of the petty cash account of the mobile phone 13 deviates from the balance of the petty cash account of the payment institution 90.

Finally, the data processing unit 131 displays the completion of the payment on the display device 137 together with the new balance of the petty cash account (S741).

In the POS terminal 27 of the brick-and-mortar store 26, the interface unit 276 receives the one-time ID transmitted from the mobile phone 13 (S810). Subsequently, the data processing unit 271 executes the sales recording process based on the payment amount (S811).

Next, the interface unit 276 transmits the payment details such as the one-time ID, the payment date, the payment amount, and the customer number together with the member store number to the payment institution 90 (S805). In the server 92 of the payment institution 90, the data processing unit 921 receives the payment details sent from the POS terminal 27 (S1333), and the payment history of the member store 920 is updated based on the received payment details (S1355).

Subsequently, the data processing unit 921 sends a notification to the brick-and-mortar store 26 that the payment has been approved (S1324). The POS terminal 27 of the brick-and-mortar store 26 receives the payment approval notification sent from the payment institution 90 (S806).

Finally, the data processing unit 921 calculates the total payment amount for one month at the end of the month, for example, and executes the payment processing for the brick-and-mortar store 26 (S1325).

In the fourth embodiment described above, the server 30 of the mobile phone company 10 transfers the key code sent from the mobile phone 13 as is to the server 92 of the payment institution 90; however, the key code transmitted from the mobile phone 13 may be converted into another key code having a one-to-one correspondence with this and transmitted to the server 92 of the payment institution 90.

Also, the one-time ID is downloaded when transferring to a petty cash account; however, the new one-time ID may be automatically downloaded every time the user 12 accesses the service site provided by the payment institution 90 with the mobile phone 13.

In this case, the security is further increased because the frequency of updating the one-time ID is increased.

Also, the one-time ID is used as an image of a one-dimensional or two-dimensional barcode. When making a payment at a brick-and-mortar store, the barcode displayed on the mobile phone 13 may be optically read by the reader of the POS terminal 27. In this case, it is not necessary to attach a dedicated device for reading information from the mobile phone 13 to the POS terminal 27, and an existing bar code reader may be used. In addition, the balance of the petty cash account may be added to the barcode of the one-time ID.

According to the fourth embodiment of the present invention, since the payment institution 90 has acquired the key code output from the mobile phone 13 and has authenticated the user 12, authentication does not depend on the mobile operator 10.

Therefore, this service can be provided only by the payment company 90. In addition, a petty cash account is set up separately from the virtual account. When making a payment at a brick-and-mortar store, the virtual account is transferred to the retail account in advance, and the payment is made from the retail account; therefore, the balance of the virtual account does not deviate from the true balance as in the first and second embodiments described above. In addition, since the payment institution issues a one-time ID to enable withdrawals from petty cash accounts, the one-time ID is output from the mobile phone 13 to the POS terminal 27 only when the one-time ID is valid and the payment amount is within the balance of the petty cash account, and the POS terminal 27 completes the payment based on this one-time ID, there is a higher level of security.

A predetermined program is installed on each of the above computers. Each of these programs is intended to cause a corresponding computer to execute a series of steps arranged in each column shown in the flowchart. Each program can be recorded and distributed on a computer-readable medium such as CD-ROM.

The embodiments disclosed this time are to be interpreted as exemplary in all respects and not restrictive. The scope of the present invention is defined by the claims, not by the embodiments described above; it is intended to include the meaning equivalent to the scope of claims and all changes within the scope of the claims.

Industrial applicability

The present invention is applicable to payment services using mobile phones.

[Brief Description of the Drawings]

FIG. 1 is a schematic diagram showing a transfer of funds when a prepaid amount to be deposited in a virtual account is paid together with a call charge according to the first embodiment of the present invention.

FIG. 2 is a schematic diagram showing the transfer of funds when the prepaid amount to be deposited in the virtual account is paid by a credit card according to the first embodiment of the present invention.

FIG. 3 is a schematic diagram showing the transfer of funds when the prepaid amount to be deposited in the virtual account is paid by a debit card according to the first embodiment of the present invention.

FIG. 4 is a schematic diagram showing the transfer of funds when the prepaid amount to be deposited in the virtual account is automatically deducted from the bank account according to the first embodiment of the present invention.

FIG. 5 is a schematic view showing a method of making a payment at a virtual store on the Internet using a mobile phone according to the first embodiment of the present invention.

FIG. 6 is a schematic view showing a method of making a payment at a brick-and-mortar store using a mobile phone according to the first embodiment of the present invention.

FIG. 7 is a block diagram showing a hardware configuration of a mobile phone and a server of a mobile phone company used for depositing an advance payment to a virtual account as shown in FIGS. 1 to 4.

FIG. 8 is a flowchart showing the operation of the mobile phone and the server of the mobile phone company shown in FIG. 7 in the case shown in FIG. 1.

FIG. 9 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIG. 8.

FIG. 10 is a flowchart showing the operation of the mobile phone and the server of the mobile phone company shown in FIG. 7 in the case shown in FIG. 2.

FIG. 11 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIG. 10.

FIG. 12 is a flowchart showing the operation of the mobile phone and the server of the mobile phone company shown in FIG. 7 in the case shown in FIG. 3.

FIG. 13 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIG.

FIG. 14 is a flowchart showing the operation of the mobile phone and the server of the mobile phone company shown in FIG. 7.

FIG. 15 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIG. 14.

FIG. 16 is a block diagram which shows the hardware configuration of a mobile phone, a server of a mobile phone company, a personal computer, and a server of a virtual store that are used when making a payment using a mobile phone in a virtual store on the Internet according to the first embodiment of the present invention.

FIG. 17 is a flowchart showing the operation of personal computers, mobile phones, mobile phone company servers, and virtual store servers shown in FIG. 16 in the case of FIG. 5.

FIG. 18 is a flowchart according to FIG. 17.
FIG. 19 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIGS. 17 and 18.
FIG. 20 is a block diagram showing the hardware configurations of the mobile phone, the server of the mobile phone company, and the POS terminal of the brick-and-mortar store, which are used in the case shown in FIG. 6.
FIG. 21 is a flowchart showing the operation of the mobile phone shown in FIG. 20, the POS terminal of the brick-and-mortar store, and the server of the mobile phone company.
FIG. 22 is a flowchart according to FIG. 21.
FIG. 23 is a transition diagram of the screen displayed during the operation of the mobile phone shown in FIGS. 21 and 22.
FIG. 24 is a diagram showing information stored in the RAM and ROM of the mobile phone.
FIG. 25 is a schematic diagram showing the transfer of funds when transferring from a actual account to a virtual account according to the second embodiment of the present invention.
FIG. 26 is a block diagram showing the hardware configurations of the mobile phone, the server of the mobile phone company, and the server of the financial institution used for the transfer from the actual account to the virtual account as shown in FIG. 25.
FIG. 27 is a flowchart showing the operation of the mobile phone, the server of a mobile phone company, and the server of a financial institution shown in FIG. 26, in the case shown in FIG. 25.
FIG. 28 is a flowchart according to FIG. 27.
FIG. 29 is a transition diagram of the screen displayed during the operation of the mobile phone shown in FIGS. 27 and 28.
FIG. 30 is a schematic diagram showing a method of making a payment at a virtual store on the Internet using a mobile phone according to a second embodiment of the present invention.
FIG. 31 is a block diagram which shows the hardware configuration of a server for personal computers, mobile phones, mobile phone company servers, financial institution servers, payment institution servers, and virtual stores used in the case show in FIG. 30.
Figure 32 is a flowchart showing the operation of the personal computer, mobile phone, mobile phone company server, virtual store server, and financial institution server shown in FIG. 31, used in the case shown in FIG. 30.
FIG. 33 is a flowchart according to FIG. 32.
FIG. 34 is a flowchart according to FIG. 33.
FIG. 35 is a transition diagram of a screen displayed during the operation of the mobile phone shown in FIGS. 32 to 34.
FIG. 36 is a schematic view showing a method of making a payment at a brick-and-mortar store using a mobile phone according to the second embodiment of the present invention.
FIG. 37 shows the hardware configuration of mobile phones, POS terminals in brick-and-mortar stores, servers of mobile phone companies, servers of financial institutions, and servers of payment institutions used in the case shown in FIG. 36.
FIG. 38 shows the case shown in FIG. 36.
FIG. 37 is a flowchart showing the operation of the mobile phone, the POS terminal, the server of a mobile phone company, and the server of a financial institution shown in FIG. 37.
FIG. 39 is a flowchart according to FIG. 38.
FIG. 40 is a flowchart according to FIG. 39.
FIG. 41 is a schematic diagram showing a method of registering user information of a service according to a third embodiment of the present invention.
FIG. 42 is a schematic diagram showing a transfer of funds when a prepaid amount is deposited in a virtual account according to a third embodiment of the present invention.
FIG. 43 is a schematic diagram showing a method of making a payment at a virtual store on the Internet using a mobile phone according to a third embodiment of the present invention.

FIG. 44 is a schematic view showing a method of making a payment at a brick-and-mortar store using a mobile phone according to the third embodiment of the present invention.
FIG. 45 is a schematic diagram showing a method in which a payment institution requests a user for unreported data stored in a mobile phone according to a third embodiment of the present invention.
FIG. 46 is a schematic diagram which shows the method in which a payment institution acts on behalf of a bill to a financial institution, in a case where payment is made at a virtual store on the Internet using a mobile phone according to the third embodiment of the present invention.
FIG. 47 is a block diagram showing a hardware configuration of a mobile phone, a server of a mobile phone company, and a server of a payment institution used for usage registration shown in FIG. 41.
FIG. 48 is a flowchart showing the operation of the mobile phone, the server of the mobile phone company, and the server of the payment institution shown in FIG. 47 in the case shown in FIG. 41.
FIG. 49 is a block diagram showing a hardware configuration of a mobile phone, a server of a mobile phone company, a server of a payment institution, and a server of a financial institution used for transferring funds to the virtual account shown in FIG. 42.
FIG. 50 is a flowchart showing the operation of the mobile phone, the server of the mobile phone company, and the server of the payment institution shown in FIG. 49 in the case shown in FIG. 42.
FIG. 51 is a flowchart following FIG. 50.
FIG. 52 is a flowchart following FIG. 51.
FIG. 53 is a block diagram showing the hardware configuration of a personal computer, a mobile phone, a server of a mobile phone company, a server of a payment institution, and a server of a virtual store, used for payment at the virtual store shown in FIG. 43.
FIG. 54 is a flowchart showing the operation of the personal computer, mobile phone, the server of a mobile phone company, the server of a payment institution, and the server of a virtual store in the case shown in FIG. 43.
FIG. 55 is a flowchart following FIG. 54.
FIG. 56 is a flowchart following FIG. 55.
FIG. 57 is s a block diagram showing the hardware configuration of a mobile phone, a POS terminal, a server of a mobile phone company, and a server of a payment institution, used for payment at the brick-and-mortar store shown in FIG. 44.
FIG. 58 is a flowchart showing the operation of the mobile phone, POS terminal, the server of a mobile phone company, and the server of a payment institution shown in FIG. 57 in the case shown in FIG. 44.
FIG. 59 is a flowchart following FIG. 58.
FIG. 60 is a flowchart following FIG. 59.
FIG. 61 is a flowchart showing the operation of the mobile phone, the server of the mobile phone company, and the server of the payment institution in the case of the request for the unreported data shown in FIG. 45.
FIG. 62 is a block diagram showing the hardware configuration of the personal computer, the mobile phone, the server of the mobile phone company, the server of the payment institution, the server of the financial institution, and the server of the virtual store used for the billing agency shown in FIG. 46.
FIG. 63 is a flowchart showing the operation of the server of a payment institution, the server of a financial institution, and the server of a virtual store shown in FIG. 62 in the case shown in FIG. 46.
FIG. 64 is a flowchart following FIG. 63.
FIG. 65 is a schematic diagram showing a prepaid method according to a fourth embodiment of the present invention.
FIG. 66 is a flowchart showing the operation of the mobile phone, the server of the mobile phone company, and the server of the payment institution in the case shown in FIG. 65.
FIG. 67 is a flowchart following FIG. 66.
FIG. 68 is a conceptual diagram showing a first remittance method according to a fourth embodiment of the present invention.
FIG. 69 is a flowchart showing the operation of the server of the personal computer, mobile phone, mobile phone company server, payment institution server, and virtual store server in the case shown in FIG. 68.

FIG. 70 is a flowchart following FIG. 69.
FIG. 71 is a conceptual diagram showing a second remittance method according to the fourth embodiment of the present invention.
Figure 72 is a flowchart showing the operation of the server of a personal computer, mobile phone, mobile phone company server, payment institution server, and virtual store server in the case shown in FIG. 71.
FIG. 73 is a flowchart following FIG. 72.
FIG. 74 is a conceptual diagram showing a method of issuing a one-time ID when there is no petty cash account payment history according to the fourth embodiment of the present invention.
FIG. 75 is a conceptual diagram showing a method of issuing a one-time ID when there is a petty cash account payment history according to a fourth embodiment of the present invention.
FIG. 76 is a flowchart showing the operation of the mobile phone, the server of the mobile phone company, and the server of the payment institution in the cases shown in FIGS. 74 and 75.
FIG. 77 is a flowchart following FIG. 76.
FIG. 78 is a conceptual diagram showing a method of making a payment at a brick-and-mortar store using the one-time ID according to the fourth embodiment of the present invention.
Figure 79 is a flowchart which shows the operation of the mobile phone, the POS terminal of a brick-and-mortar store, and the server of a payment institution in the case shown in FIG. 78.

Continued from front page.

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G06Q 20/00,30/00,40/00
G07F 7/08,19/00
H04M 11/00
H04W 4/00

FIG. 1

User
12
13
Send prepaid amount / method of payment
(Add to call charges)
①
Mobile phone number / Key code
②
Send latest advance balance
③
Service not available
15
Invoice
Basic charge
Call charge
Usage statement
Withdrawal request
Transfer of funds
Bank
17
User's account
16
Bank
18
Mobile phone company's account
19
Mobile phone company
11
Personal information DB
Mobile phone number
E-mail address
Password
Usage situation
Advance balance
Key code
Account No.
Credit card
Debit card
10

FIG. 2

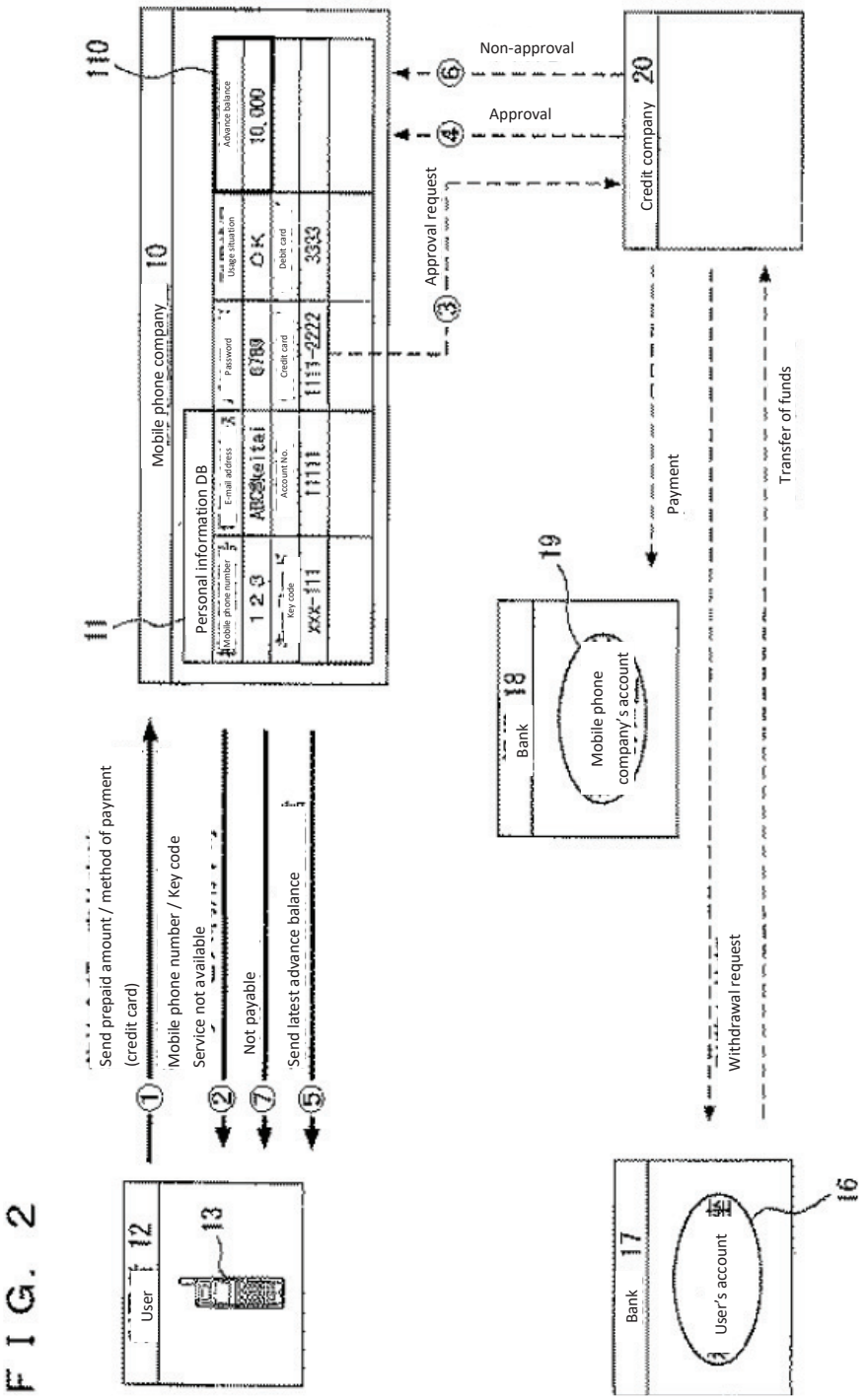

User
12
13
Send prepaid amount / method of payment (credit card)
Mobile phone number / Key code
Service not available
Not payable
Send latest advance balance
Mobile phone company
10
11
Personal information DB
Mobile phone number
E-mail address
Password
Usage situation
Advance balance
Key code
Account No.
Credit card
Debit card
123
OK
10,000
3333
110
Approval request
Non-approval
Approval
Credit company
20
Payment
Transfer of funds
Bank
18
Mobile phone company's account
19
Bank
17
User's account
16
Withdrawal request

FIG. 3

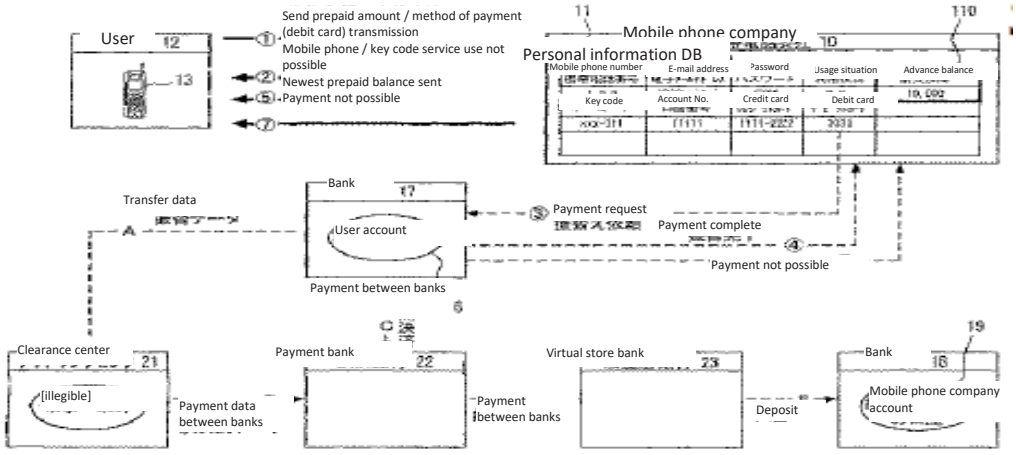

User
12
13
Send prepaid amount / method of payment (debit card) transmission
Mobile phone / key code service use not possible
Newest prepaid balance sent
Payment not possible
11
Mobile phone company
Personal information DB
10
110
Mobile phone number
E-mail address
Password
Usage situation
Advance balance
Key code
Account No.
Credit card
Debit card
Transfer data
Bank
17
User account
Payment request
Payment complete
Payment not possible
Payment between banks
6
Clearance center
21
[illegible]
Payment data between banks
Payment bank
22
Payment between banks
Virtual store bank
23
Deposit
Bank
18
19
Mobile phone company account

FIG. 4

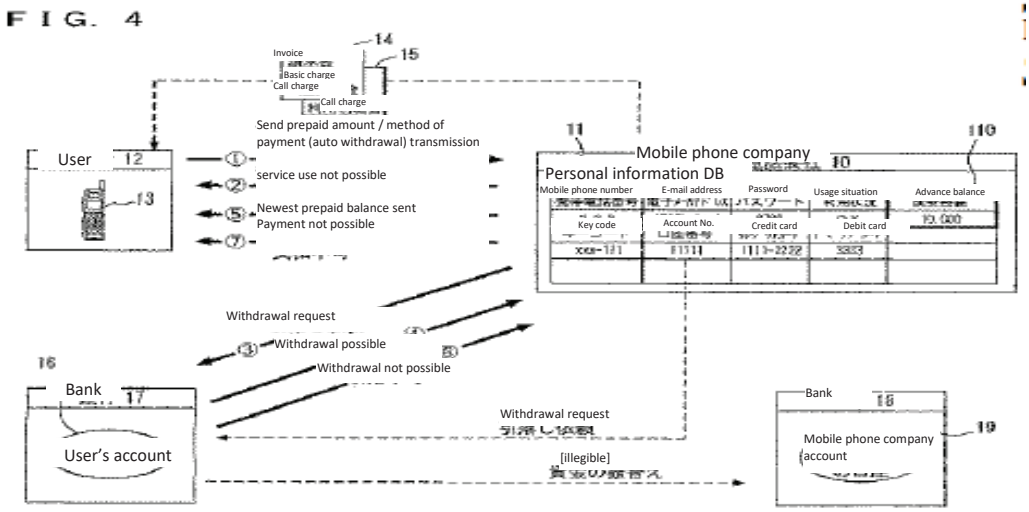

Invoice
Basic charge
Call charge
Call charge
14
15
Send prepaid amount / method of payment (auto withdrawal) transmission
User
12
13
service use not possible
Newest prepaid balance sent
Payment not possible
11
Mobile phone company
Personal information DB
10
110
Mobile phone number
E-mail address
Password
Usage situation
Advance balance
Key code
Account No.
Credit card
Debit card
Withdrawal request
Withdrawal possible
Withdrawal not possible
16
Bank
17
User's account
Withdrawal request
[illegible]
Bank
18
19
Mobile phone company account

FIG. 5

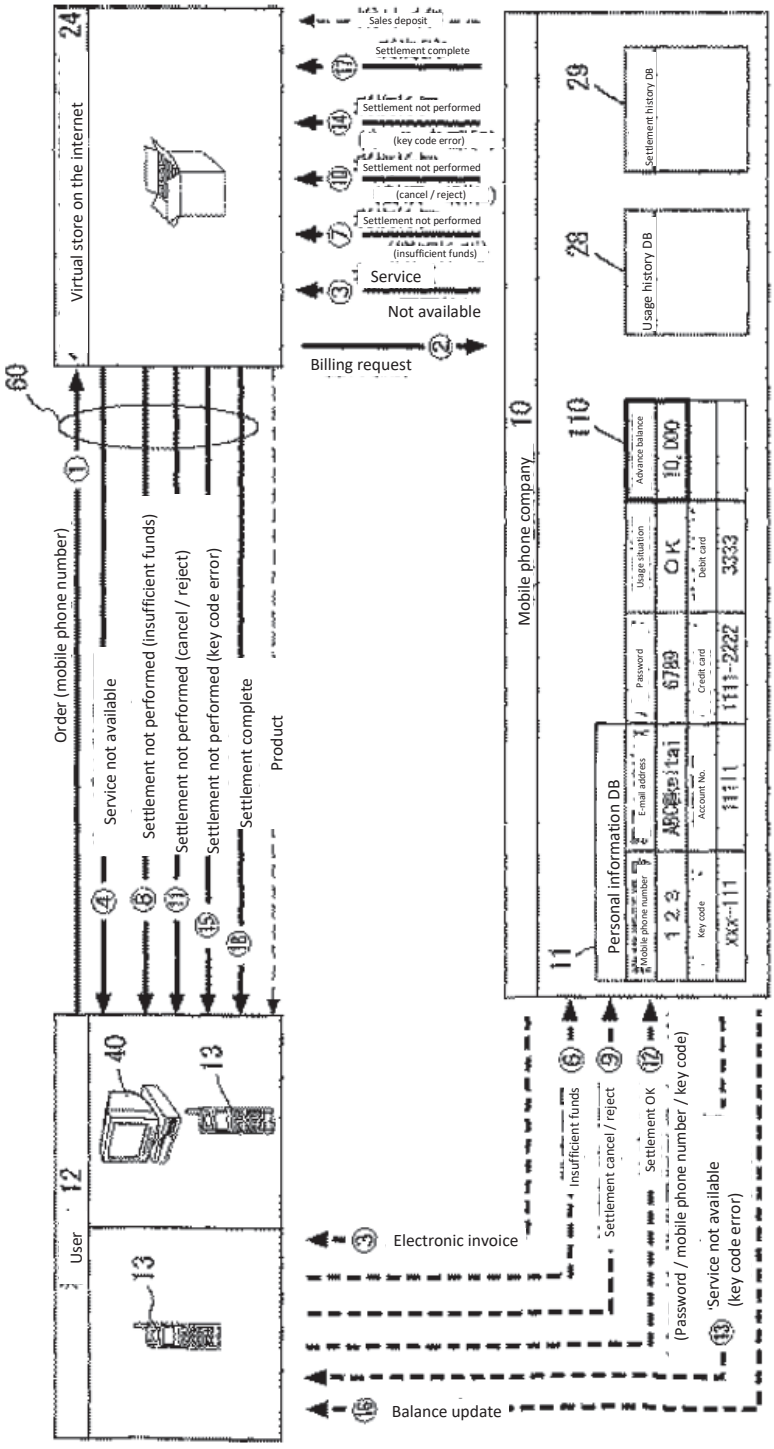

User
12
Virtual store on the internet
24
60
Order (mobile phone number)
Service not available
Settlement not performed (insufficient funds)
Settlement not performed (cancel / reject)
Settlement not performed (key code error)
Settlement complete
Product
Billing request
Service Not available
Settlement not performed (insufficient funds)
Settlement not performed (cancel / reject)
Settlement not performed (key code error)
Settlement complete
Sales deposit
Mobile phone company
10
11
Personal information DB
Mobile phone number
E-mail address
Password
Usage situation
Advance balance
Key code
Account No.
Credit card
Debit card
110
28
Usage history DB
29
Settlement history DB
Electronic invoice
Insufficient funds
Settlement cancel / reject
Settlement OK
(Password / mobile phone number / key code)
Service not available (key code error)
Balance update

FIG. 6

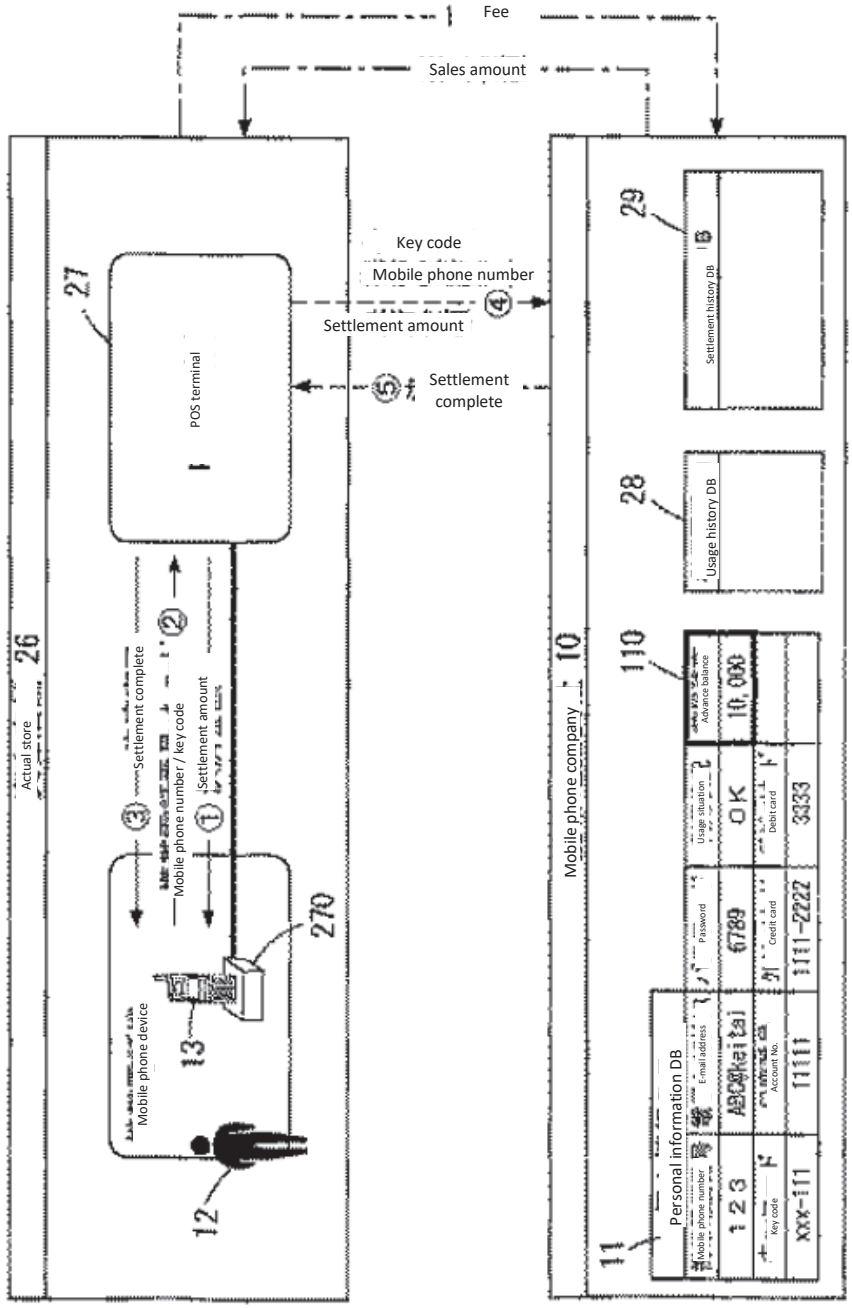

Fee
Sales amount
Key code
Mobile phone number
Settlement amount
Settlement complete
Actual store
26
27
POS terminal
Settlement complete
Mobile phone number / key code
Settlement amount
Mobile phone device
13
270
12
Mobile phone company
10
29
Settlement history DB
28
Usage history DB
110
Advance balance
10,000
Usage situation
OK
Debit card
3333
Password
6789
Credit card
1111-2222
E-mail address
ABCdefghi
Account No.
11111
Key code
xxx-111
11
Personal information DB

FIG. 7

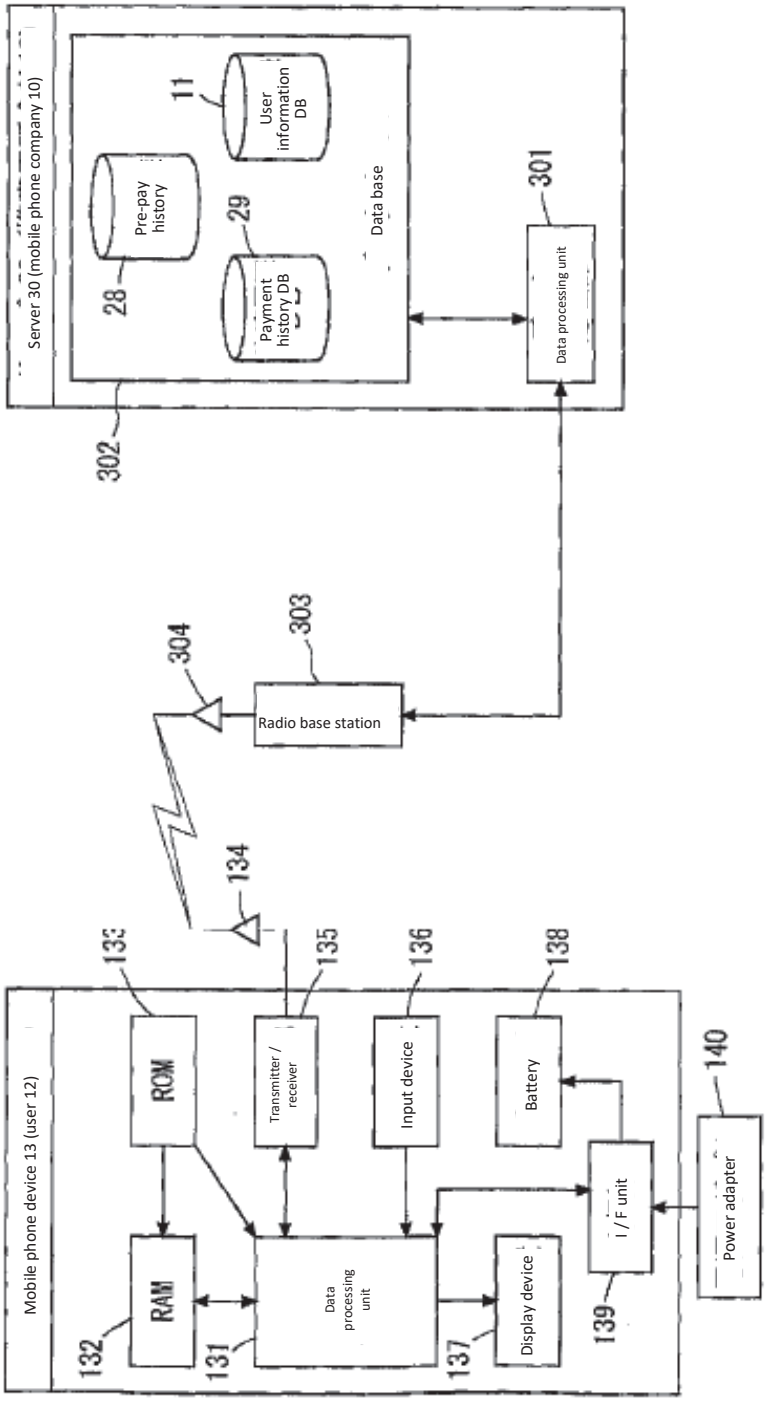

Server 30 (mobile phone company 10)
Data base
User information DB
11
Pre-pay history
28
Payment history DB
29
Data processing unit
301
302
303
304
Radio base station
134
Mobile phone device 13 (user 12)
ROM
RAM
Transmitter / receiver
Input device
Battery
Data processing unit
Display device
I / F unit
Power adapter
132
131
137
139
140
135
136
138

FIG. 8

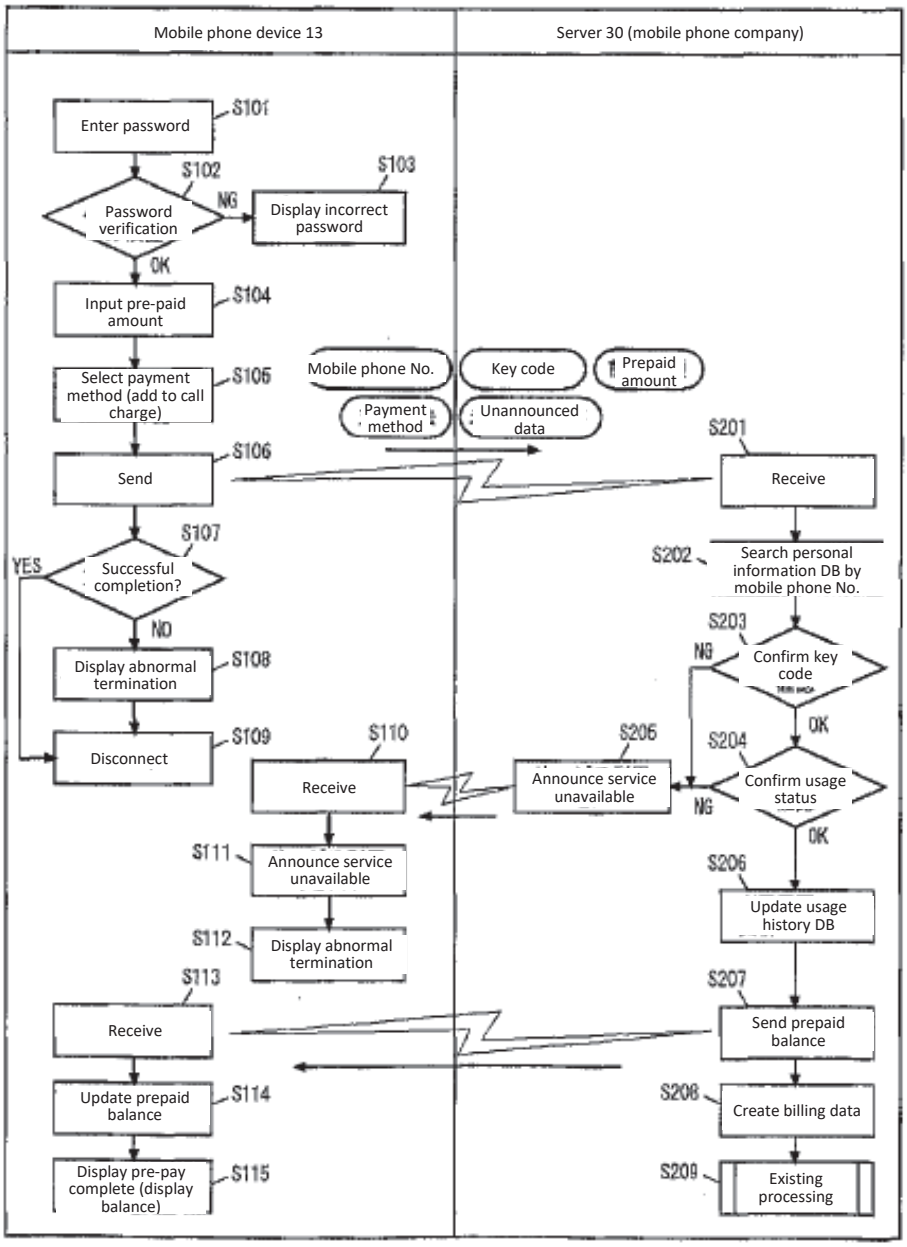

Mobile phone device 13
Server 30 (mobile phone company)
Enter password
S101
S102
Password verification
NG
S103
Display incorrect password
OK
Input pre-paid amount
S104
Select payment method (add to call charge)
S105
Mobile phone No.
Key code
Prepaid amount
Payment method
Unannounced data
Send
S106
S201
Receive
S107
YES
Successful completion?
S202
Search personal information DB by mobile phone No.
NO
S203
NG
Confirm key code
Display abnormal termination
S108
OK
S204
Disconnect
S109
S110
S205
Receive
Announce service unavailable
Confirm usage status
NG
OK
S111
Announce service unavailable
S206
Update usage history DB
S112
Display abnormal termination
S113
S207
Receive
Send prepaid balance
Update prepaid balance
S114
S208
Create billing data
Display pre-pay complete (display balance)
S115
S209
Existing processing

FIG. 9

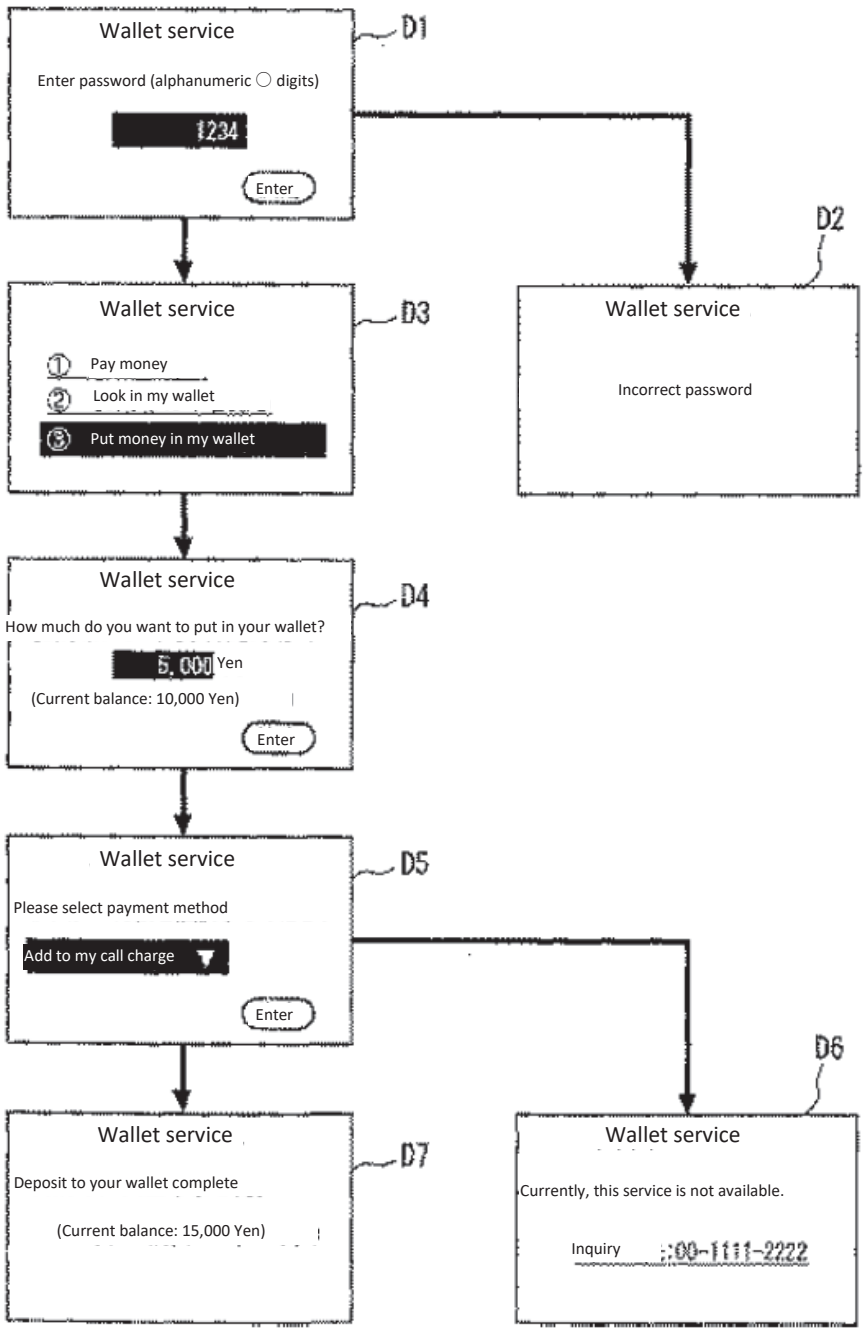

Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D1
D2
Wallet service
Incorrect password
Wallet service
① Pay money
② Look in my wallet
③ Put money in my wallet
D3
Wallet service
How much do you want to put in your wallet?
5,000 Yen
(Current balance: 10,000 Yen)
Enter
D4
Wallet service
Please select payment method
Add to my call charge
Enter
D5
D6
Wallet service
Currently, this service is not available.
Inquiry :00-1111-2222
Wallet service
Deposit to your wallet complete
(Current balance: 15,000 Yen)
D7

FIG. 10

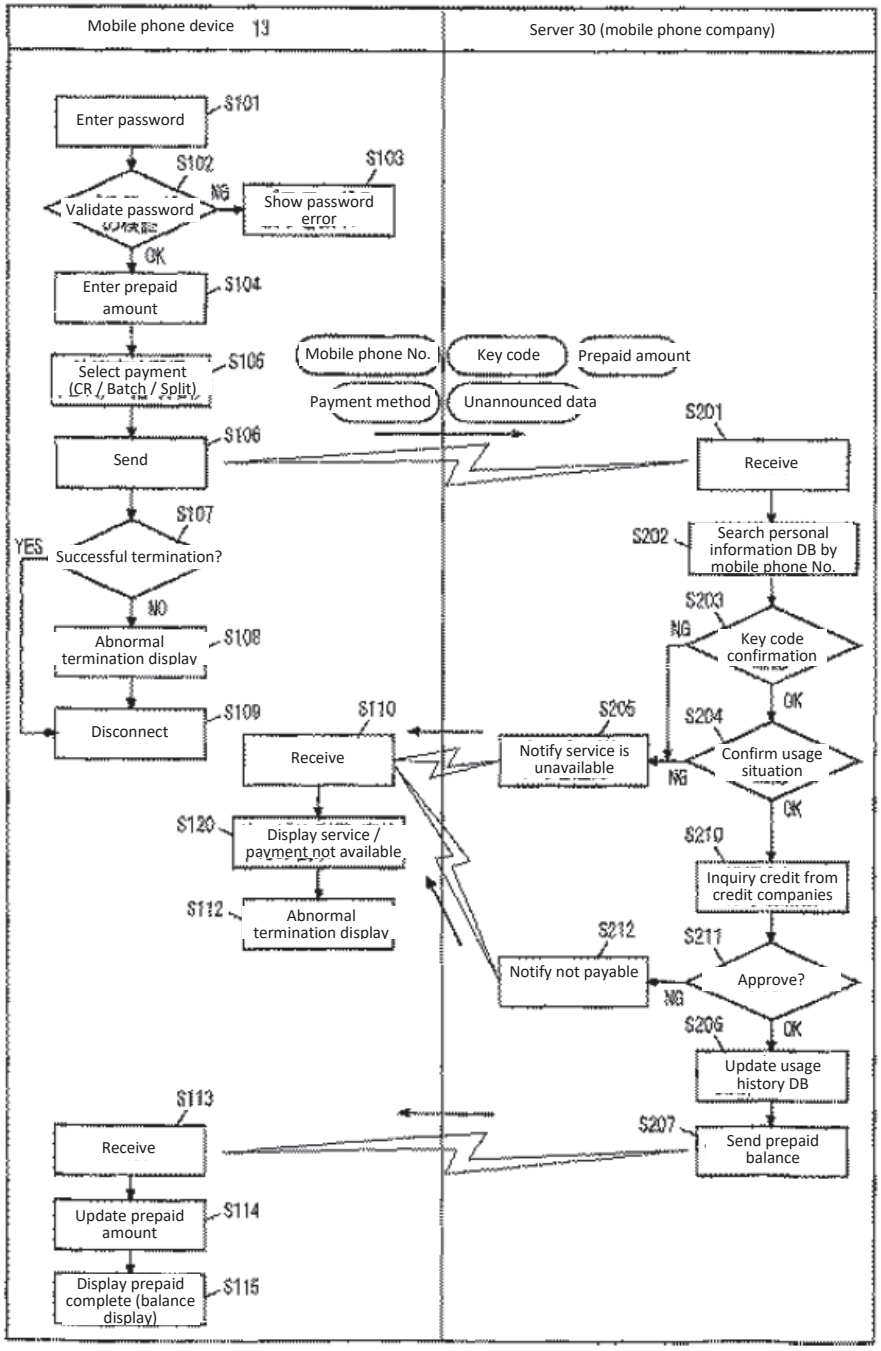

Mobile phone device 13
Server 30 (mobile phone company)
Enter password
S101
Validate password
S102
NG
Show password error
S103
OK
Enter prepaid amount
S104
Select payment (CR / Batch / Split)
S105
Mobile phone No.
Key code
Prepaid amount
Payment method
Unannounced data
Send
S106
Receive
S201
Search personal information DB by mobile phone No.
S202
Key code confirmation
S203
NG
OK
Confirm usage situation
S204
Notify service is unavailable
S205
NG
OK
Inquiry credit from credit companies
S210
Approve?
S211
NG
Notify not payable
S212
OK
Update usage history DB
S206
Send prepaid balance
S207
Successful termination?
S107
YES
NO
Abnormal termination display
S108
Disconnect
S109
Receive
S110
Display service / payment not available
S120
Abnormal termination display
S112
Receive
S113
Update prepaid amount
S114
Display prepaid complete (balance display)
S115

FIG. 11

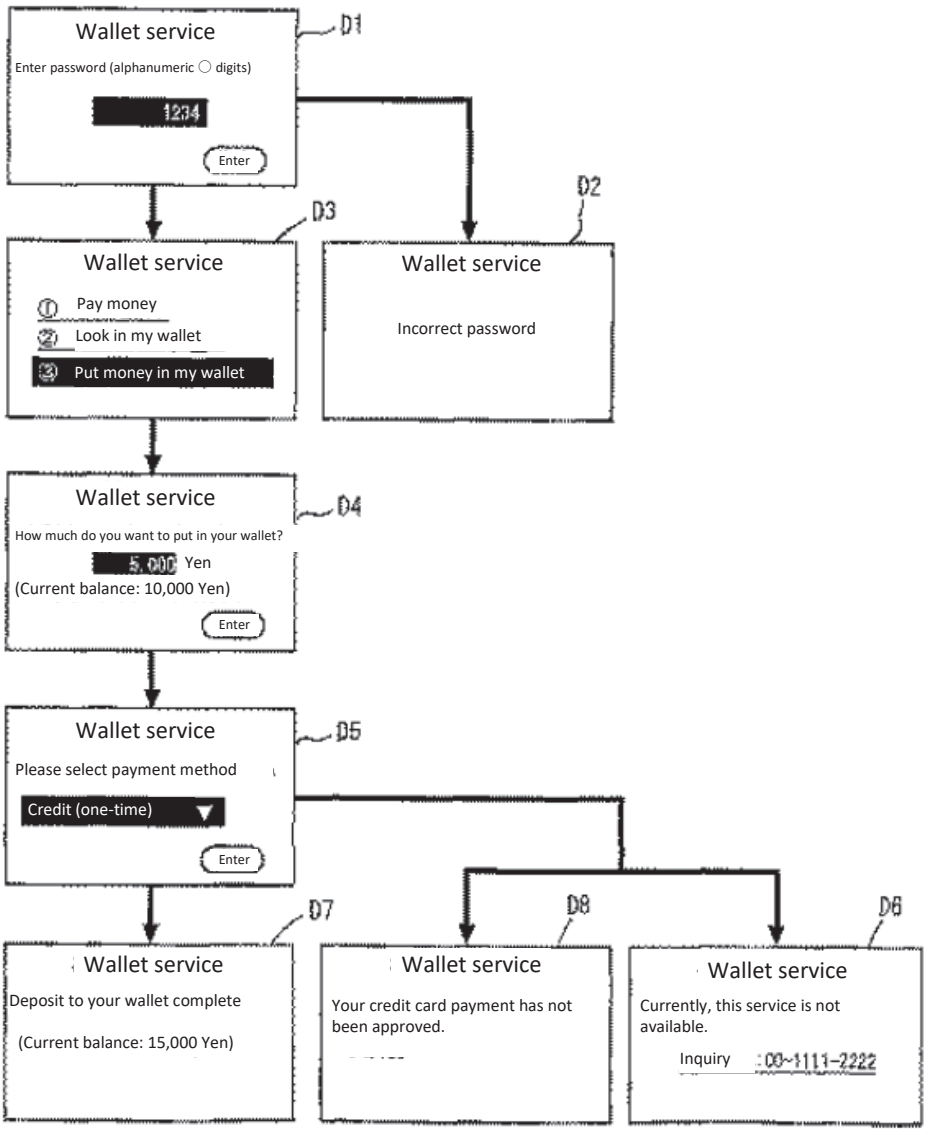

Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D1
D2
D3
Wallet service
① Pay money
② Look in my wallet
③ Put money in my wallet
Wallet service
Incorrect password
Wallet service
How much do you want to put in your wallet?
5,000 Yen
(Current balance: 10,000 Yen)
Enter
D4
Wallet service
Please select payment method
Credit (one-time)
Enter
D5
D7
D8
D6
Wallet service
Deposit to your wallet complete
(Current balance: 15,000 Yen)
Wallet service
Your credit card payment has not been approved.
Wallet service
Currently, this service is not available.
Inquiry :00~1111-2222

FIG. 12

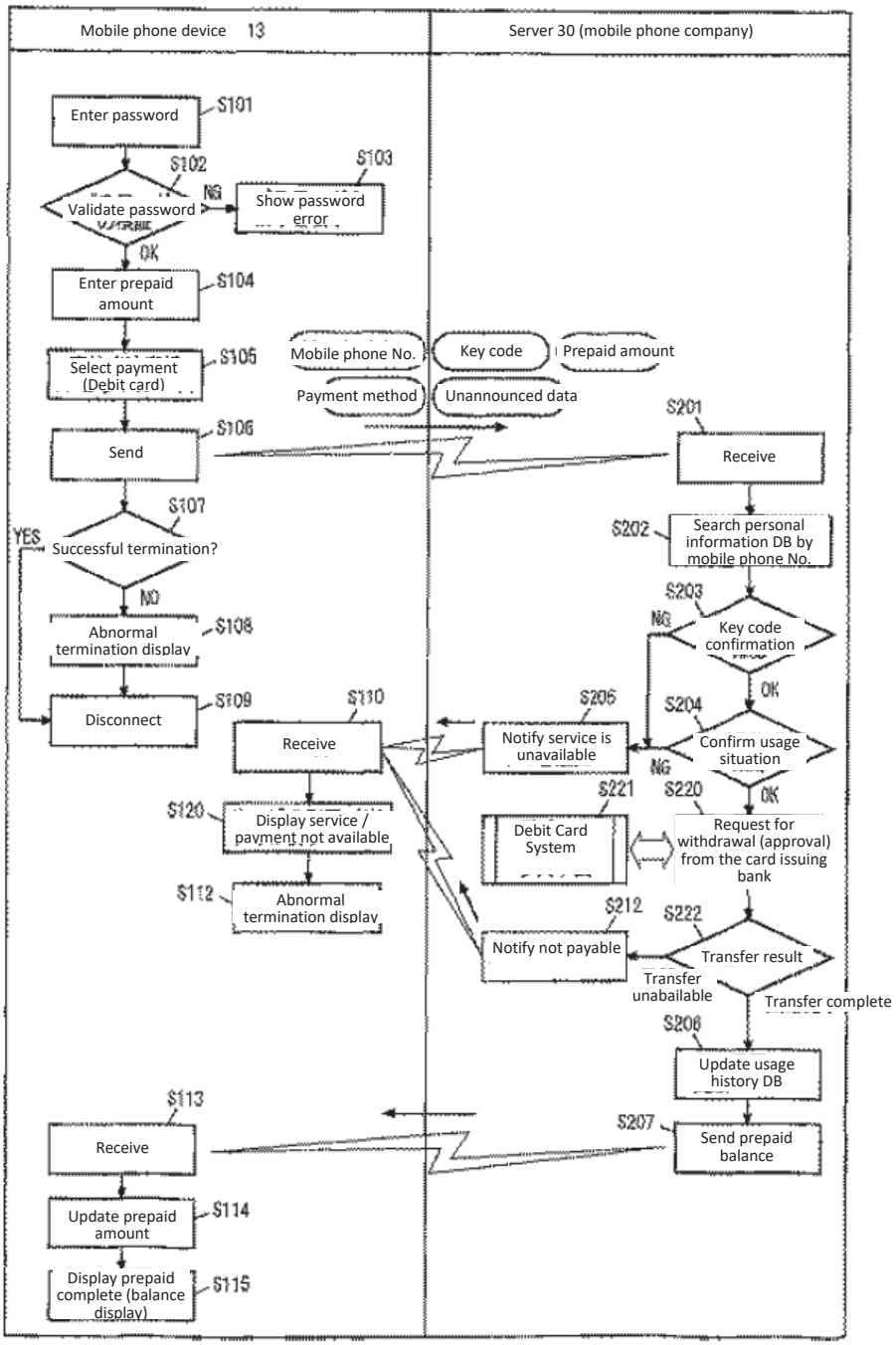

Mobile phone device 13
Server 30 (mobile phone company)
Enter password
S101
S102
Validate password
NG
S103
Show password error
OK
Enter prepaid amount
S104
Select payment (Debit card)
S105
Mobile phone No.
Key code
Prepaid amount
Payment method
Unannounced data
Send
S106
S201
Receive
S107
YES
Successful termination?
NO
S202
Search personal information DB by mobile phone No.
S203
NG
Key code confirmation
OK
Abnormal termination display
S108
Disconnect
S109
S110
Receive
S205
Notify service is unavailable
S204
Confirm usage situation
NG
OK
S221
S220
Debit Card System
Request for withdrawal (approval) from the card issuing bank
S120
Display service / payment not available
S112
Abnormal termination display
S212
Notify not payable
S222
Transfer result
Transfer unabailable
Transfer complete
S206
Update usage history DB
S113
Receive
S207
Send prepaid balance
Update prepaid amount
S114
Display prepaid complete (balance display)
S115

FIG. 13

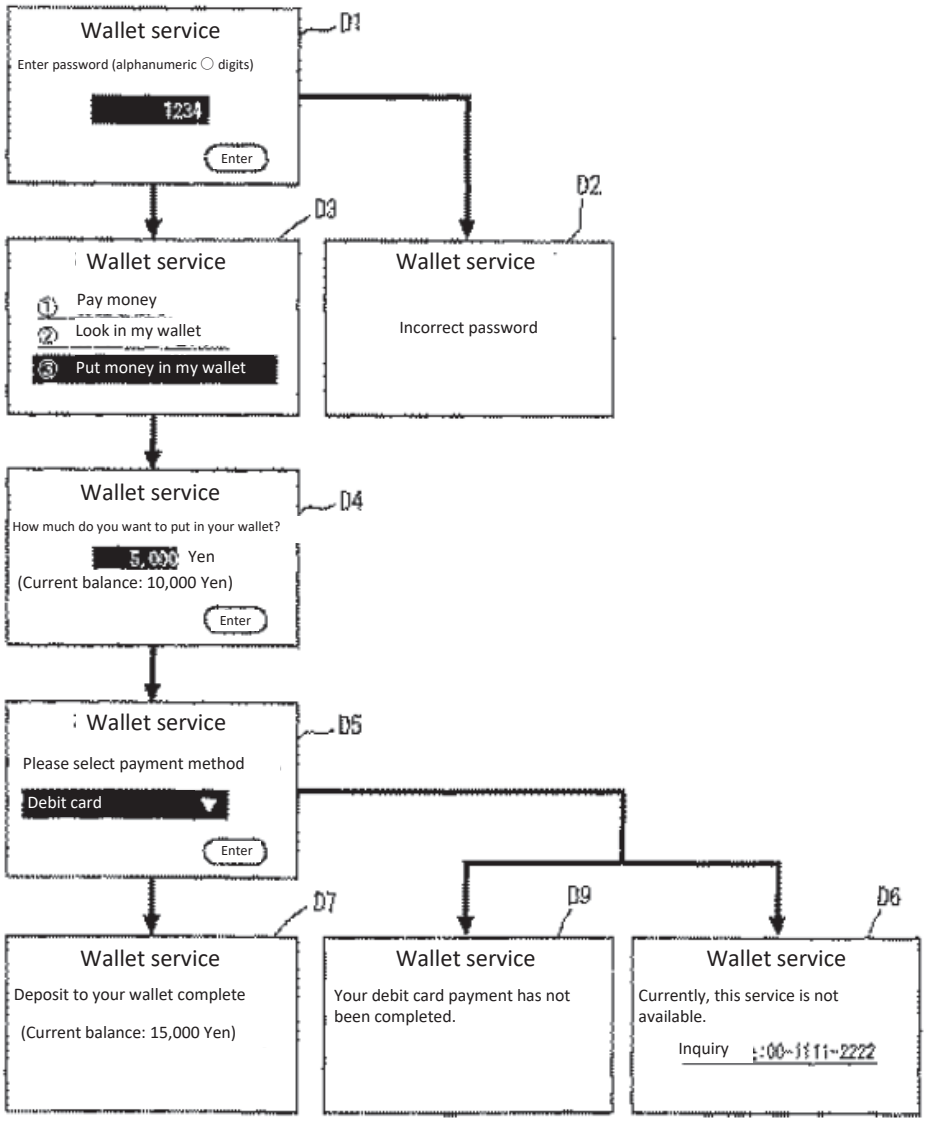

Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D1
D2
D3
Wallet service
① Pay money
② Look in my wallet
③ Put money in my wallet
Wallet service
Incorrect password
Wallet service
How much do you want to put in your wallet?
5,000 Yen
(Current balance: 10,000 Yen)
Enter
D4
Wallet service
Please select payment method
Debit card
Enter
D5
D7
D9
D6
Wallet service
Deposit to your wallet complete
(Current balance: 15,000 Yen)
Wallet service
Your debit card payment has not been completed.
Wallet service
Currently, this service is not available.
Inquiry

FIG. 14

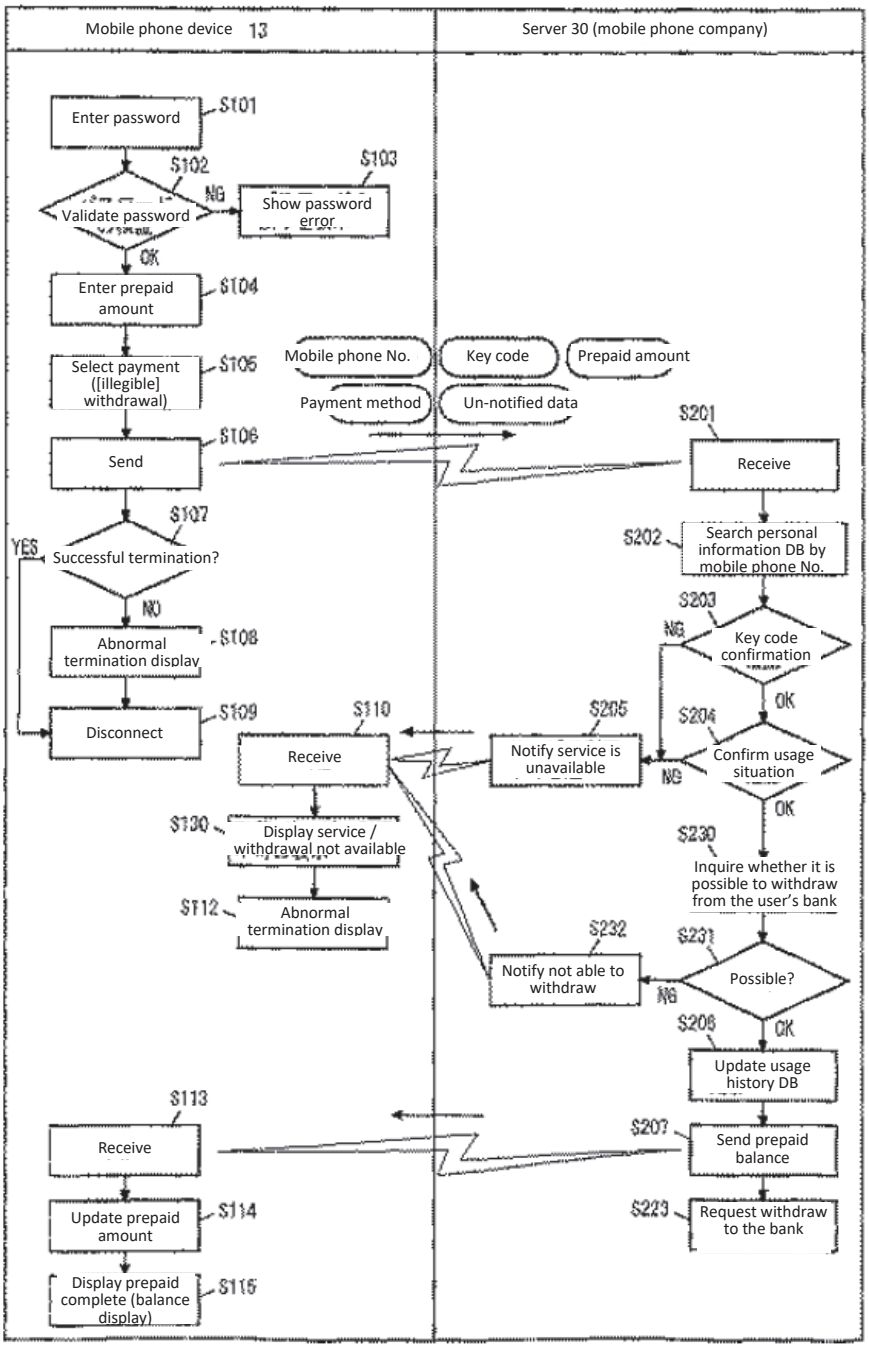

Mobile phone device 13
Server 30 (mobile phone company)
Enter password
S101
S102
Validate password
NG
OK
S103
Show password error
Enter prepaid amount
S104
Select payment ([illegible] withdrawal)
S105
Send
S106
S107
Successful termination?
YES
NO
Abnormal termination display
S108
Disconnect
S109
Mobile phone No.
Key code
Prepaid amount
Payment method
Un-notified data
S201
Receive
S202
Search personal information DB by mobile phone No.
S203
Key code confirmation
NG
OK
S204
Confirm usage situation
NG
OK
S205
Notify service is unavailable
S110
Receive
S130
Display service / withdrawal not available
S112
Abnormal termination display
S230
Inquire whether it is possible to withdraw from the user's bank
S231
Possible?
NG
OK
S232
Notify not able to withdraw
S206
Update usage history DB
S207
Send prepaid balance
S223
Request withdraw to the bank
S113
Receive
S114
Update prepaid amount
S115
Display prepaid complete (balance display)

FIG. 15

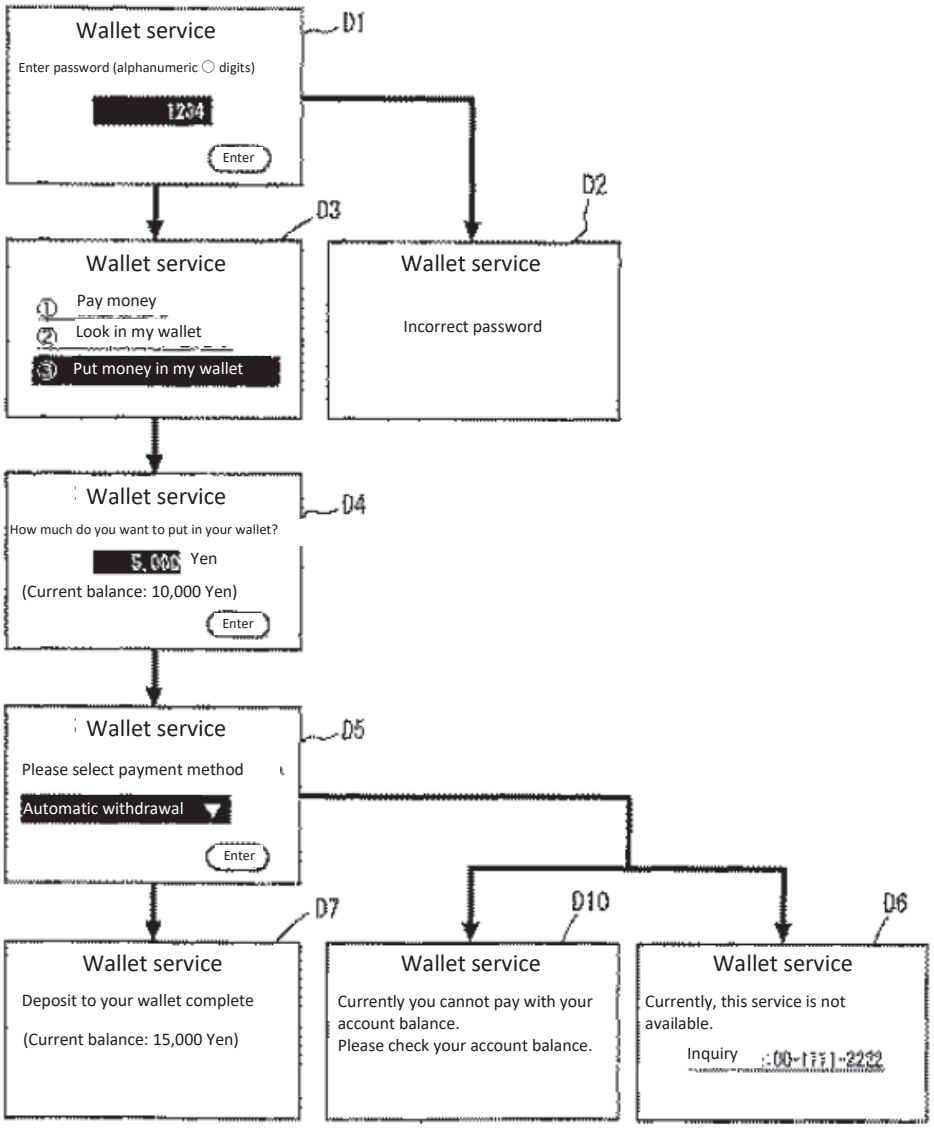

Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D1
D2
D3
Wallet service
① Pay money
② Look in my wallet
③ Put money in my wallet
Wallet service
Incorrect password
Wallet service
How much do you want to put in your wallet?
5,000 Yen
(Current balance: 10,000 Yen)
Enter
D4
Wallet service
Please select payment method
Automatic withdrawal
Enter
D5
D7
D10
D6
Wallet service
Deposit to your wallet complete
(Current balance: 15,000 Yen)
Wallet service
Currently you cannot pay with your account balance.
Please check your account balance.
Wallet service
Currently, this service is not available.
Inquiry

FIG. 16

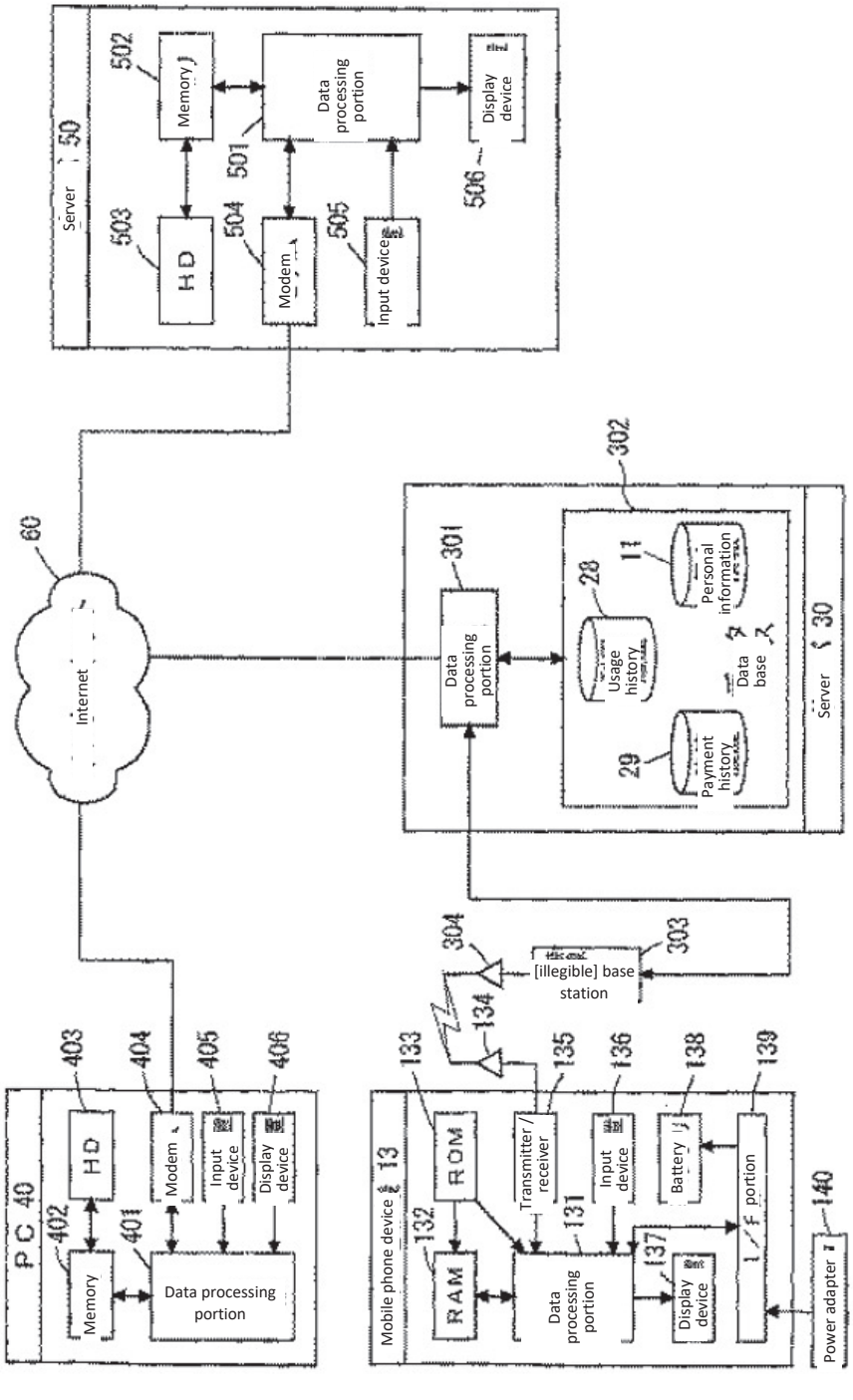

Server 50
502
Memory
Data processing portion
Display device
501
506
503
HD
504
Modem
505
Input device
60
Internet
302
301
Data processing portion
28
Usage history
11
Personal information
Data base
29
Payment history
Server 30
304
[illegible] base station
303
134
PC 40
403
404
405
406
HD
Modem
Input device
Display device
402
401
Memory
Data processing portion
Mobile phone device 13
133
135
136
138
139
ROM
Transmitter / receiver
Input device
Battery
I/F portion
132
131
137
140
RAM
Data processing portion
Display device
Power adapter

FIG. 17

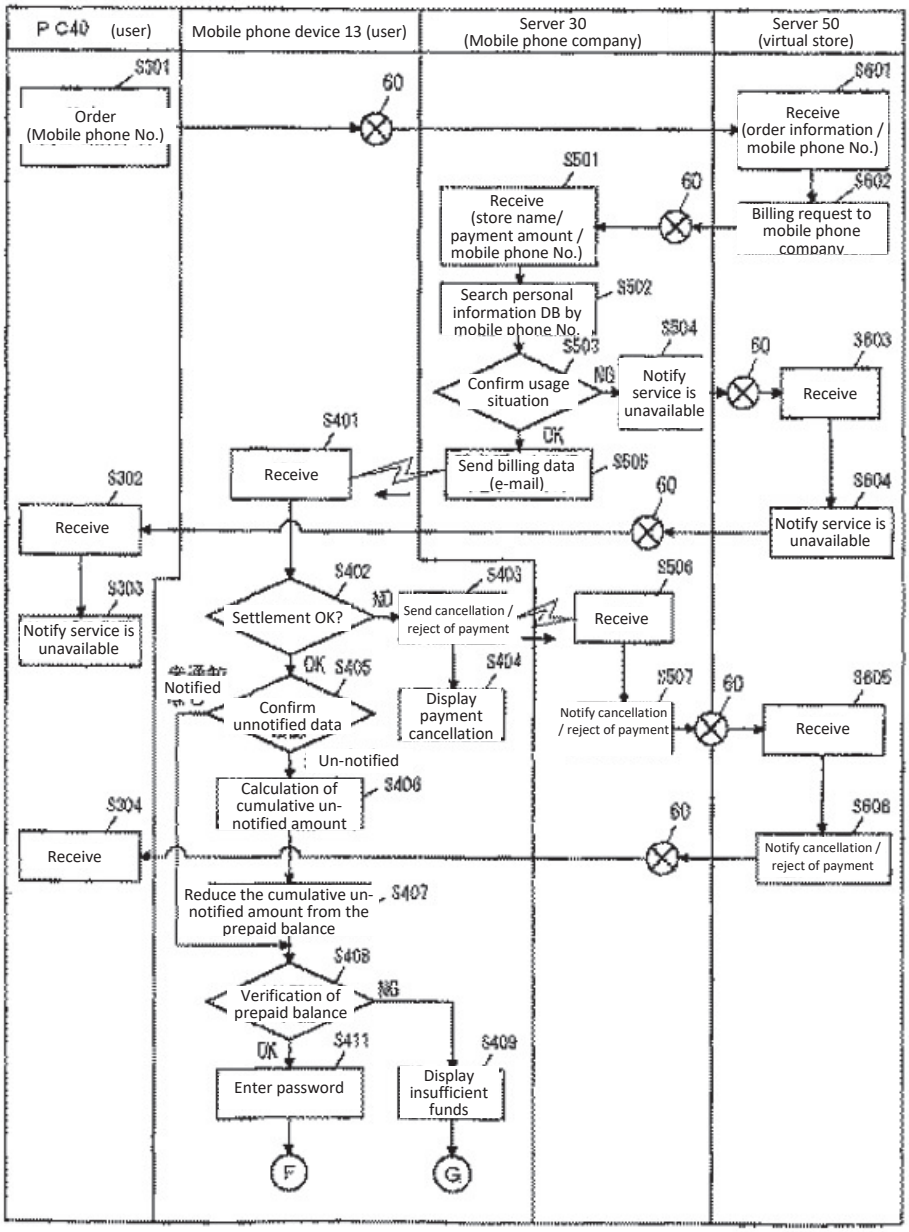

PC40 (user)
Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 50 (virtual store)
S301
Order (Mobile phone No.)
60
S601
Receive (order information / mobile phone No.)
S501
Receive (store name/ payment amount / mobile phone No.)
60
S602
Billing request to mobile phone company
Search personal information DB by mobile phone No.
S502
S504
S503
Confirm usage situation
NG
Notify service is unavailable
60
S603
Receive
OK
S401
Receive
Send billing data (e-mail)
S505
S302
Receive
60
S604
Notify service is unavailable
S303
Notify service is unavailable
S402
Settlement OK?
NG
S403
Send cancellation / reject of payment
Receive
S506
OK
S405
Notified
Confirm unnotified data
S404
Display payment cancellation
Notify cancellation / reject of payment
S507
60
S605
Receive
Un-notified
Calculation of cumulative un-notified amount
S406
S304
Receive
60
S606
Notify cancellation / reject of payment
Reduce the cumulative un-notified amount from the prepaid balance
S407
S408
Verification of prepaid balance
NG
OK
S411
Enter password
S409
Display insufficient funds
F
G

FIG. 18

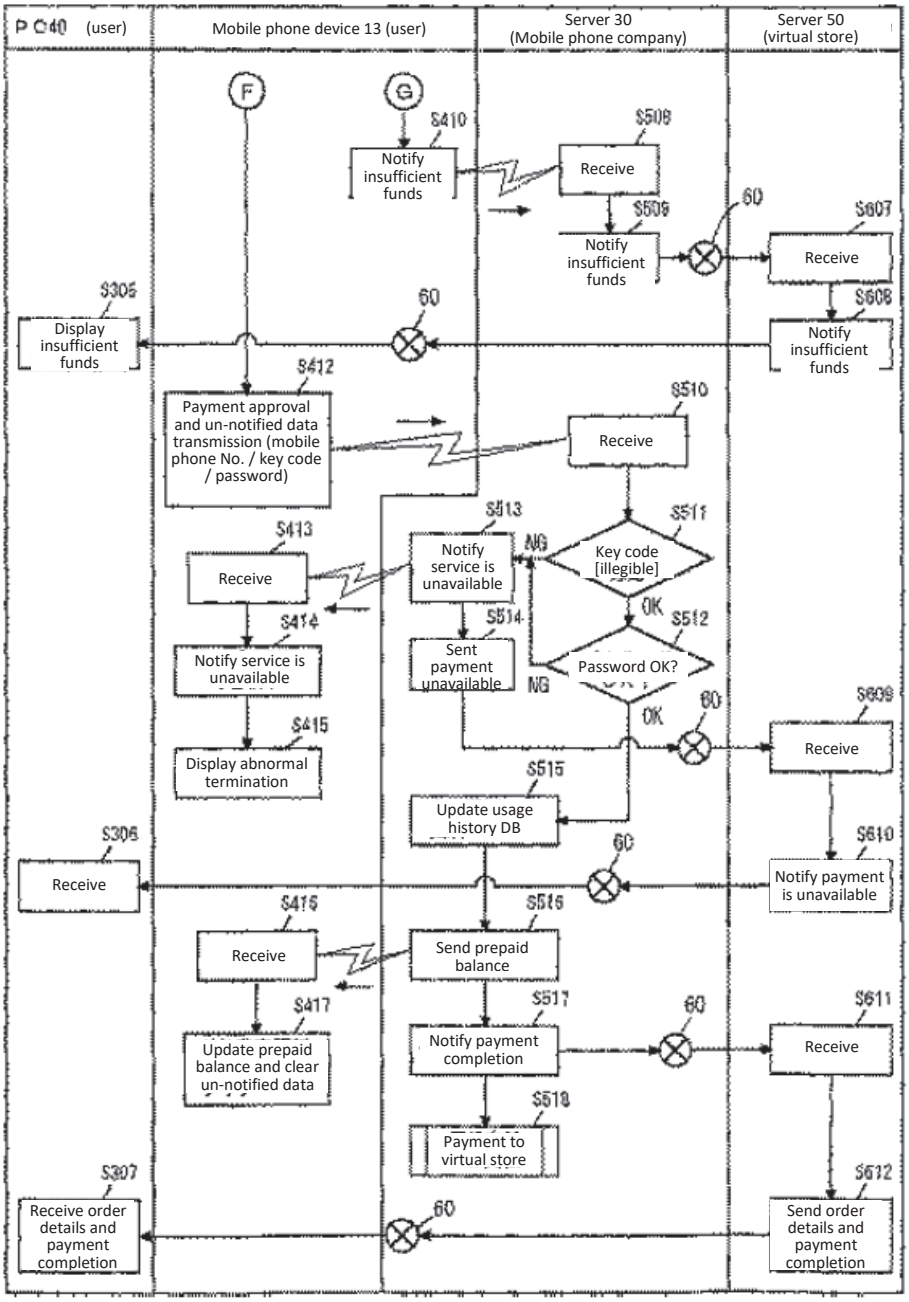

PC40 (user)
Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 50 (virtual store)
F
G
S410
Notify insufficient funds
S509
Receive
S508
Notify insufficient funds
60
S607
Receive
S305
Display insufficient funds
60
S608
Notify insufficient funds
S412
Payment approval and un-notified data transmission (mobile phone No. / key code / password)
S510
Receive
S513
Notify service is unavailable
S511
Key code [illegible]
NG
OK
S413
Receive
S414
Notify service is unavailable
S514
Sent payment unavailable
S512
Password OK?
NG
OK
60
S609
Receive
S415
Display abnormal termination
S515
Update usage history DB
S306
Receive
60
S610
Notify payment is unavailable
S416
Receive
S516
Send prepaid balance
S417
Update prepaid balance and clear un-notified data
S517
Notify payment completion
60
S611
Receive
S518
Payment to virtual store
S307
Receive order details and payment completion
60
S612
Send order details and payment completion

FIG. 19

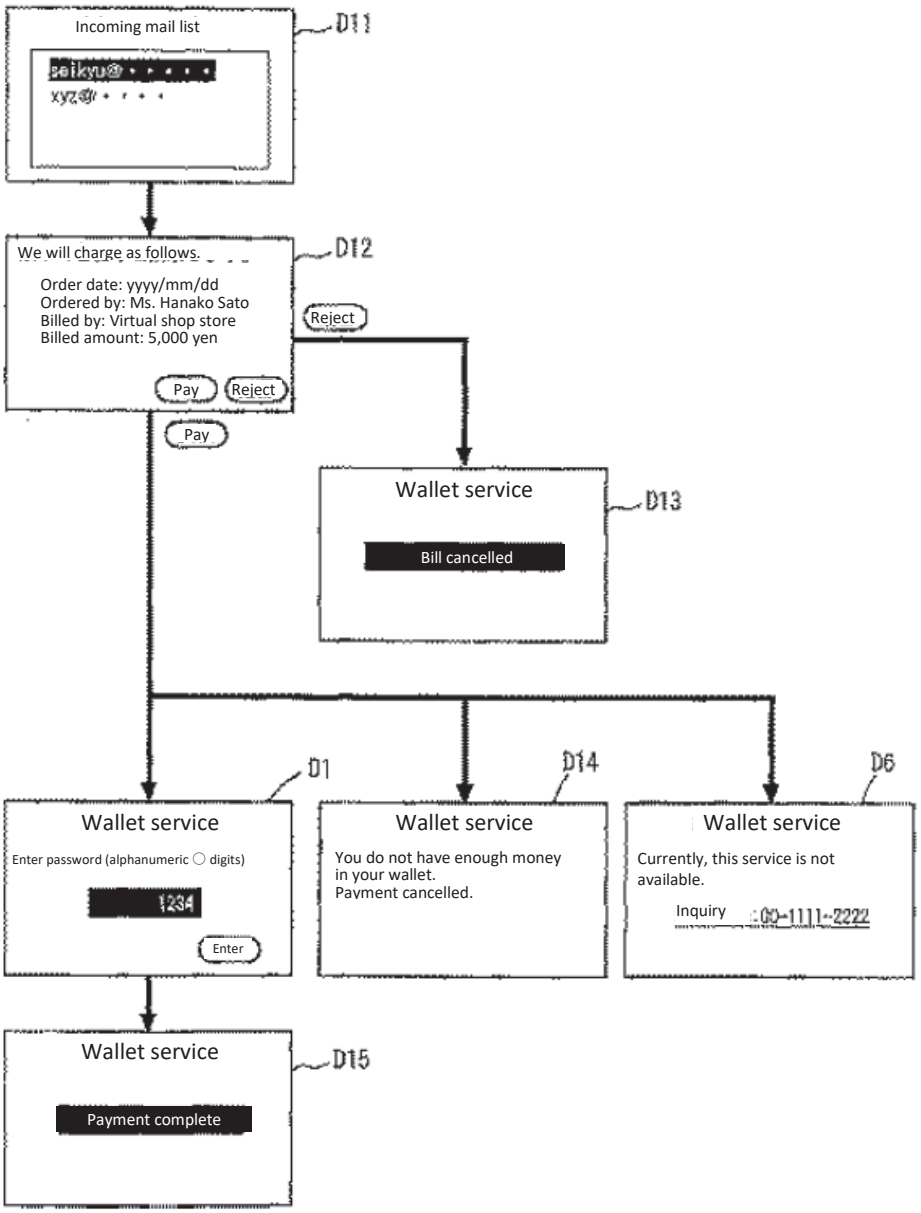

Incoming mail list
D11
seikyu@
xyz@
We will charge as follows.
Order date: yyyy/mm/dd
Ordered by: Ms. Hanako Sato
Billed by: Virtual shop store
Billed amount: 5,000 yen
D12
Reject
Pay
Reject
Pay
Wallet service
Bill cancelled
D13
D1
D14
D6
Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
Wallet service
You do not have enough money in your wallet.
Payment cancelled.
Wallet service
Currently, this service is not available.
Inquiry
Wallet service
Payment complete
D15

FIG. 20

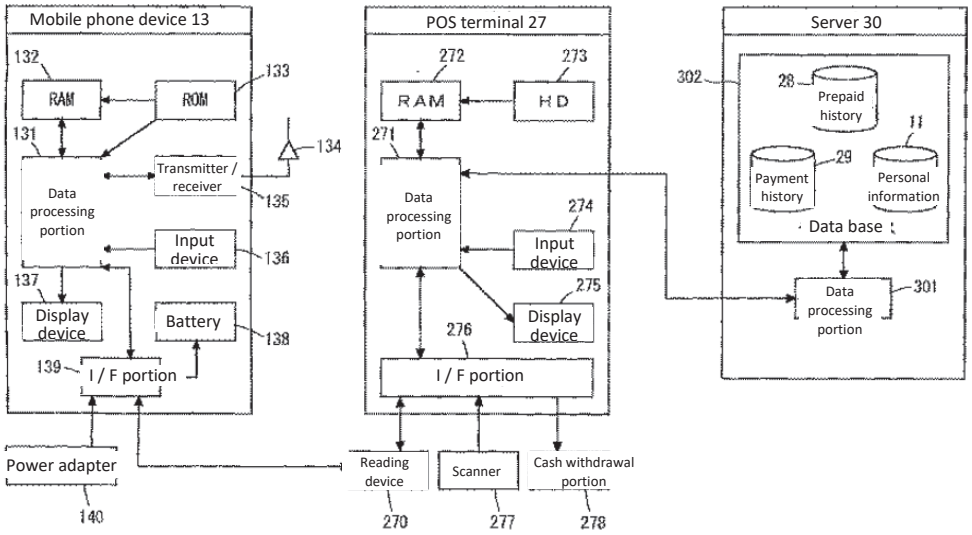

Mobile phone device 13
132
RAM
ROM
133
131
Transmitter / receiver
134
135
Data processing portion
Input device
136
137
Display device
Battery
138
139
I / F portion
Power adapter
140
POS terminal 27
272
273
RAM
HD
271
Data processing portion
274
Input device
275
Display device
276
I / F portion
Reading device
Scanner
Cash withdrawal portion
270
277
278
Server 30
302
28
Prepaid history
11
29
Payment history
Personal information
Data base
Data processing portion
301

FIG. 21

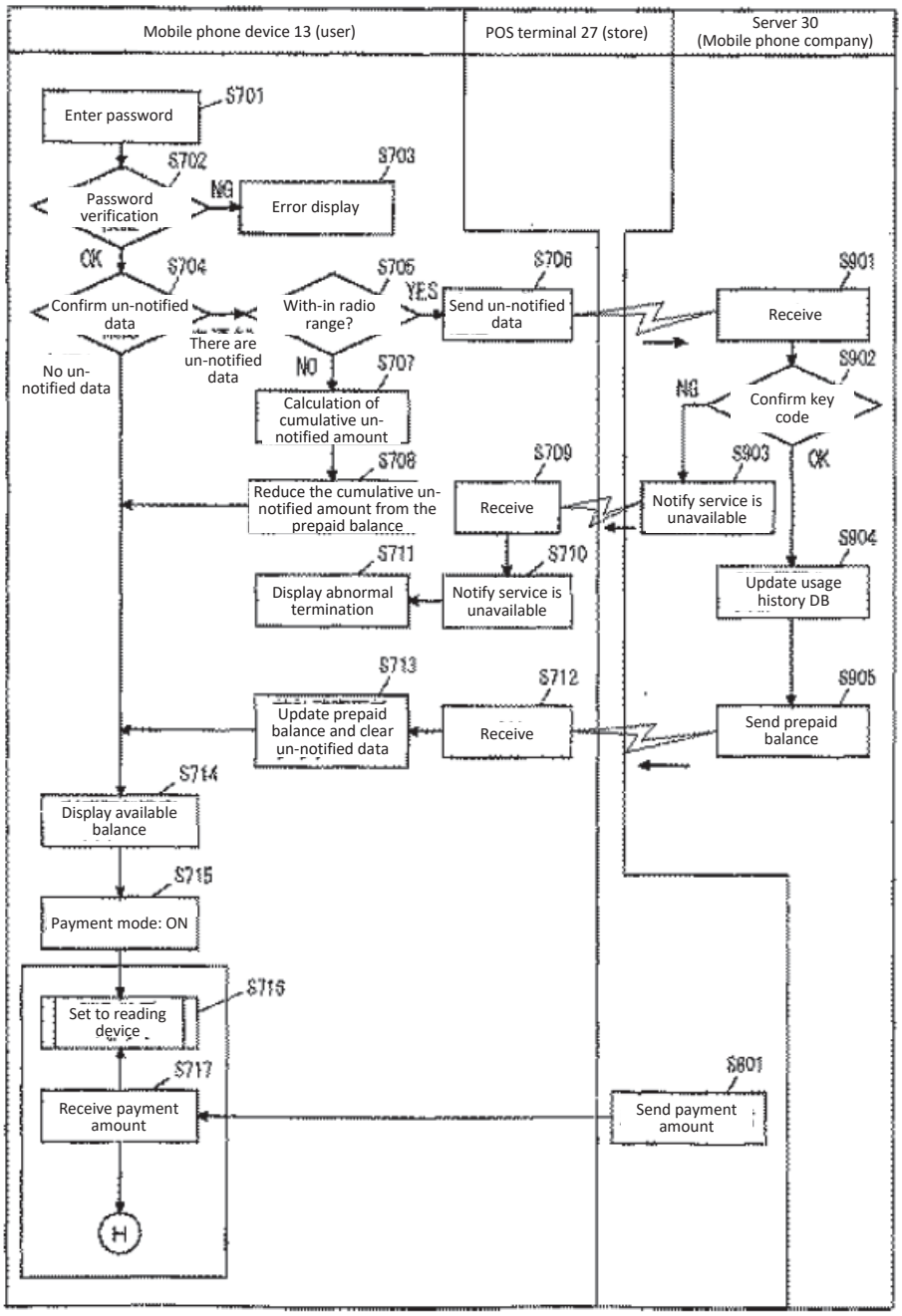

Mobile phone device 13 (user)
POS terminal 27 (store)
Server 30 (Mobile phone company)
Enter password
S701
S702
Password verification
NG
S703
Error display
OK
S704
Confirm un-notified data
There are un-notified data
No un-notified data
S705
With-in radio range?
YES
NO
S706
Send un-notified data
S707
Calculation of cumulative un-notified amount
S708
Reduce the cumulative un-notified amount from the prepaid balance
S709
Receive
S710
Notify service is unavailable
S711
Display abnormal termination
S712
Receive
S713
Update prepaid balance and clear un-notified data
S714
Display available balance
S715
Payment mode: ON
S716
Set to reading device
S717
Receive payment amount
H
S801
Send payment amount
S901
Receive
S902
Confirm key code
NG
OK
S903
Notify service is unavailable
S904
Update usage history DB
S905
Send prepaid balance

FIG. 22

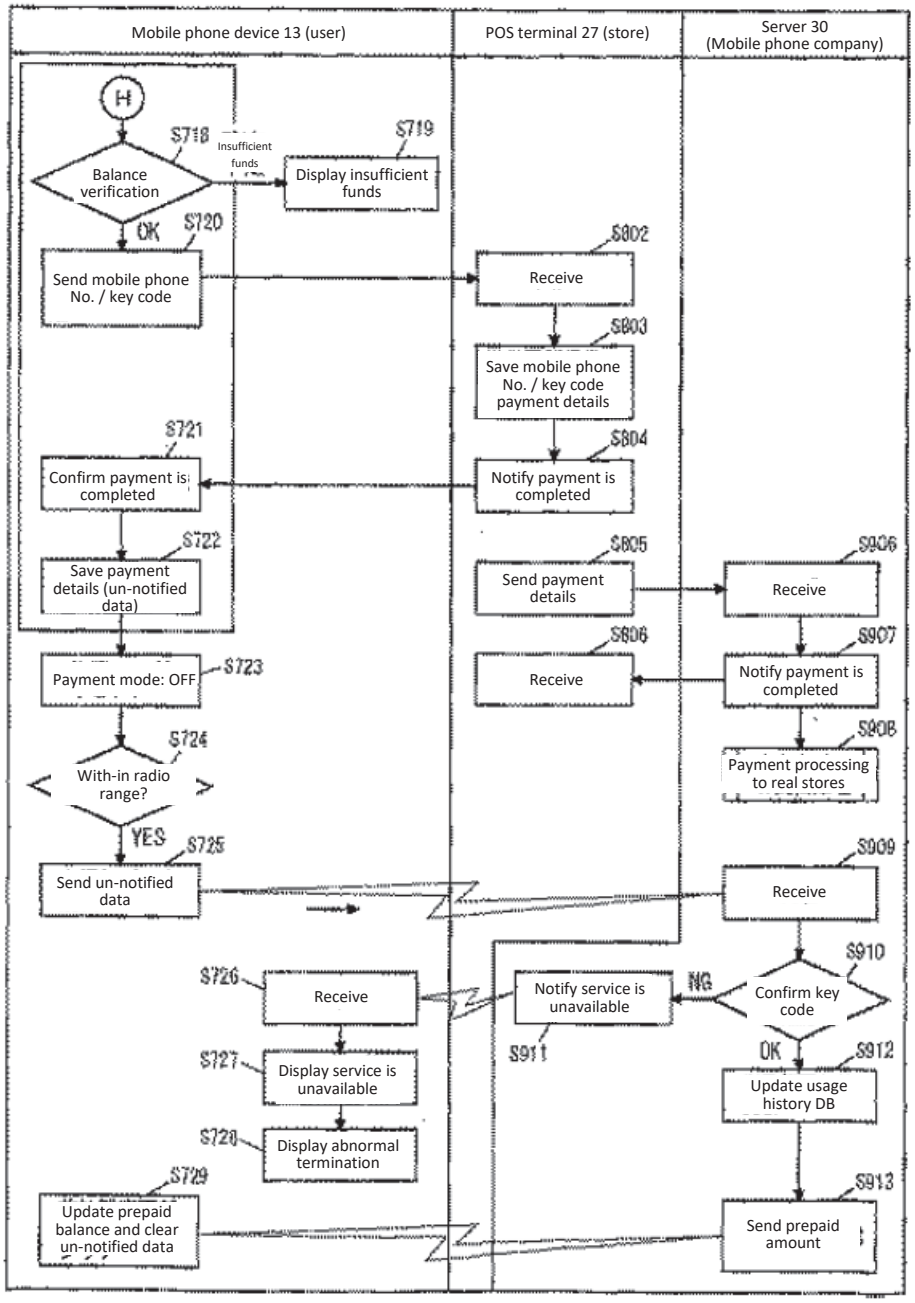

Mobile phone device 13 (user)
POS terminal 27 (store)
Server 30 (Mobile phone company)
H
S718
Balance verification
Insufficient funds
S719
Display insufficient funds
OK
S720
Send mobile phone No. / key code
S802
Receive
S803
Save mobile phone No. / key code payment details
S804
Notify payment is completed
S721
Confirm payment is completed
S722
Save payment details (un-notified data)
S805
Send payment details
S906
Receive
S806
Receive
S907
Notify payment is completed
Payment mode: OFF
S723
S724
With-in radio range?
YES
S908
Payment processing to real stores
S725
Send un-notified data
S909
Receive
S910
Confirm key code
NG
S911
Notify service is unavailable
S726
Receive
S727
Display service is unavailable
S728
Display abnormal termination
OK
S912
Update usage history DB
S729
Update prepaid balance and clear un-notified data
S913
Send prepaid amount

FIG. 23

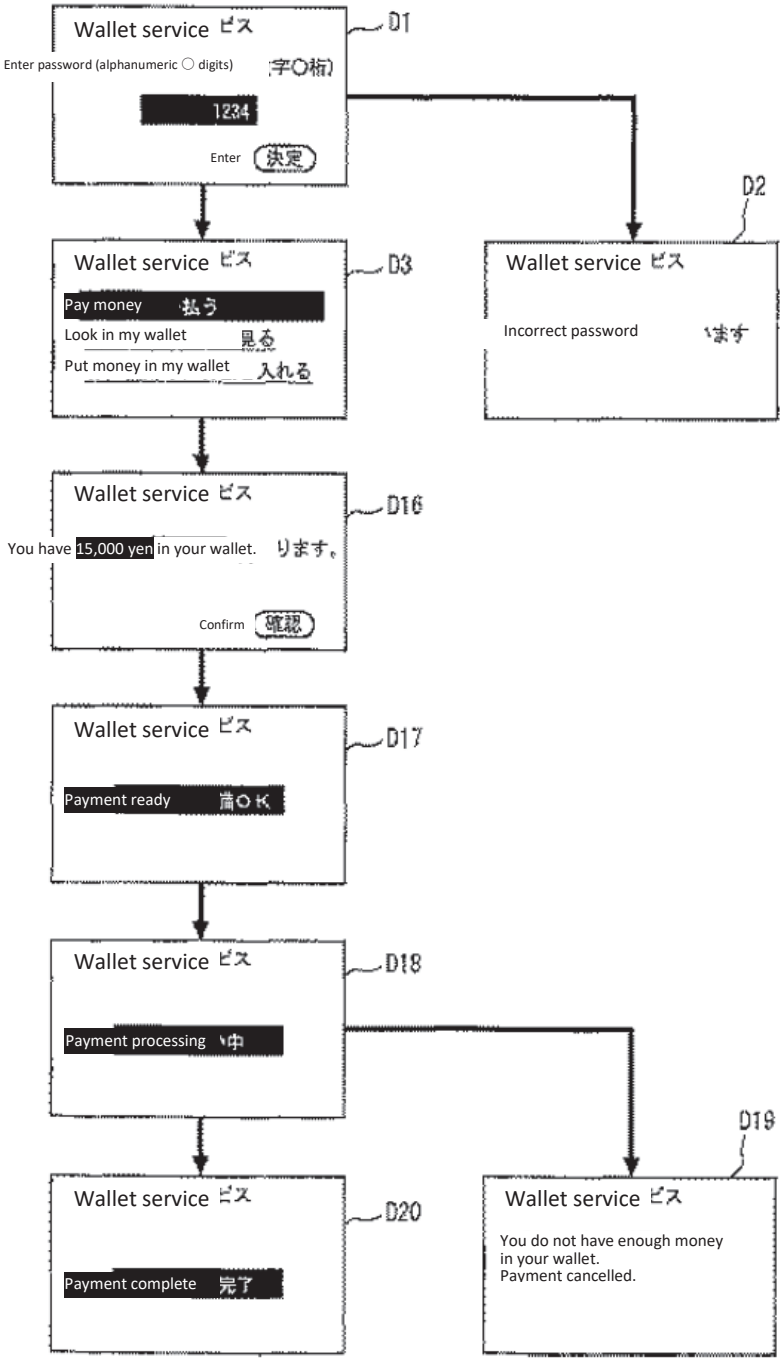

Wallet service ビス
D1
Enter password (alphanumeric ○ digits) 字○桁)
1234
Enter 決定
D2
Wallet service ビス
Incorrect password います
Wallet service ビス
D3
Pay money 払う
Look in my wallet 見る
Put money in my wallet 入れる
Wallet service ビス
D16
You have 15,000 yen in your wallet. ります。
Confirm 確認
Wallet service ビス
D17
Payment ready 備○K
Wallet service ビス
D18
Payment processing 中
D19
Wallet service ビス
You do not have enough money in your wallet.
Payment cancelled.
Wallet service ビス
D20
Payment complete 完了

FIG. 24

RAM 132
前払残高
未通知データ1
未通知データ2
未通知データ3
未通知データX
パスワード
Prepaid balance
Un-notified data 1
Un-notified data 2
Un-notified data 3
Un-notified data X
Password
ROM 133
キーコード
Key code

FIG. 25

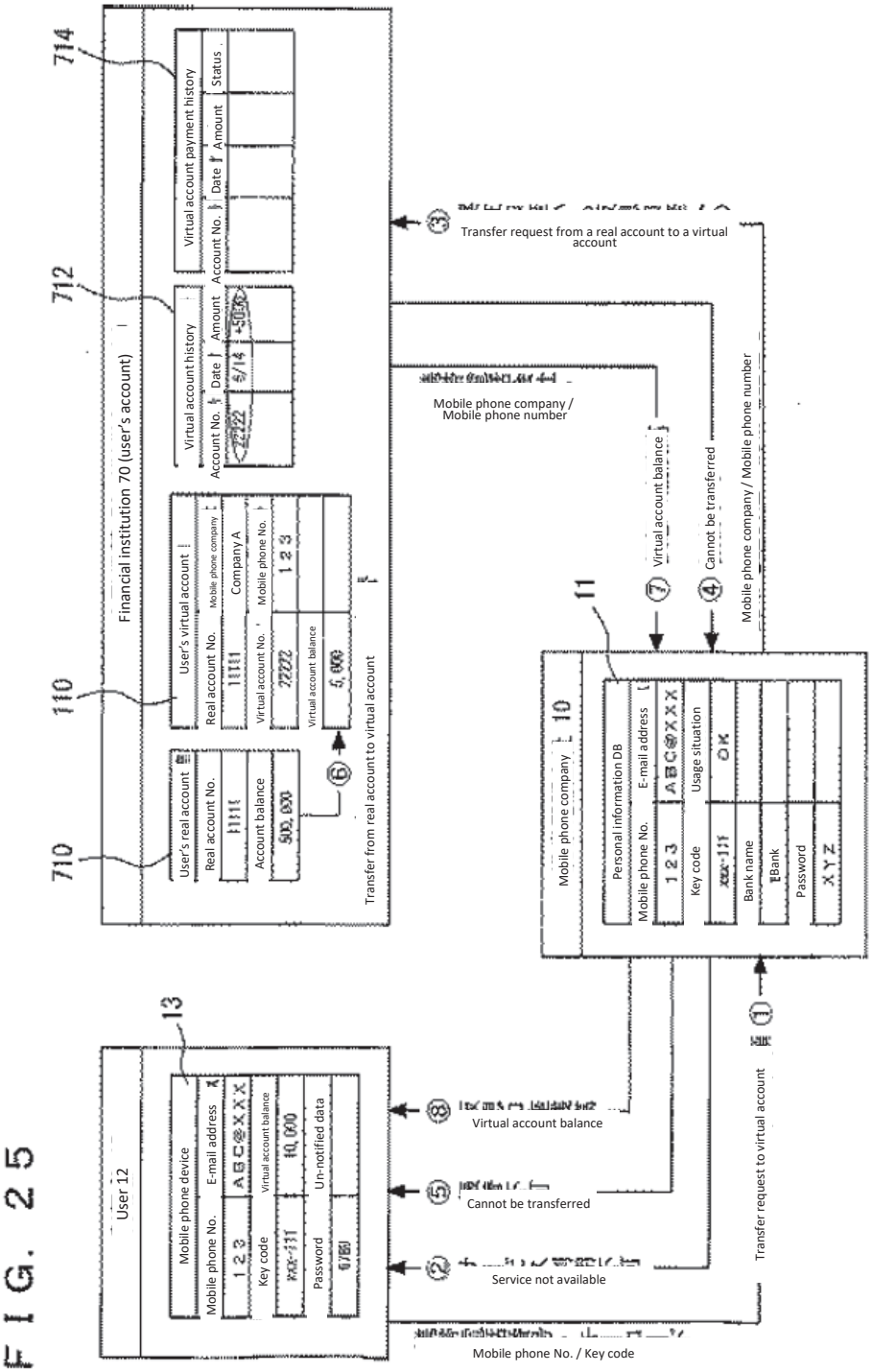

714
712
110
710
11
13
Financial institution 70 (user's account)
Virtual account payment history
Account No.
Date
Amount
Status
Virtual account history
Account No.
Date
Amount
User's virtual account
Real account No.
Mobile phone company
Company A
Virtual account No.
Mobile phone No.
Virtual account balance
User's real account
Real account No.
Account balance
Transfer from real account to virtual account
Transfer request from a real account to a virtual account
Mobile phone company / Mobile phone number
Virtual account balance
Cannot be transferred
Mobile phone company / Mobile phone number
Mobile phone company
Personal information DB
Mobile phone No.
E-mail address
Usage situation
Key code
Bank name
Password
OK
XYZ
User 12
Mobile phone device
Mobile phone No.
E-mail address
Key code
Virtual account balance
Password
Un-notified data
Virtual account balance
Cannot be transferred
Service not available
Transfer request to virtual account
Mobile phone No. / Key code

FIG. 26

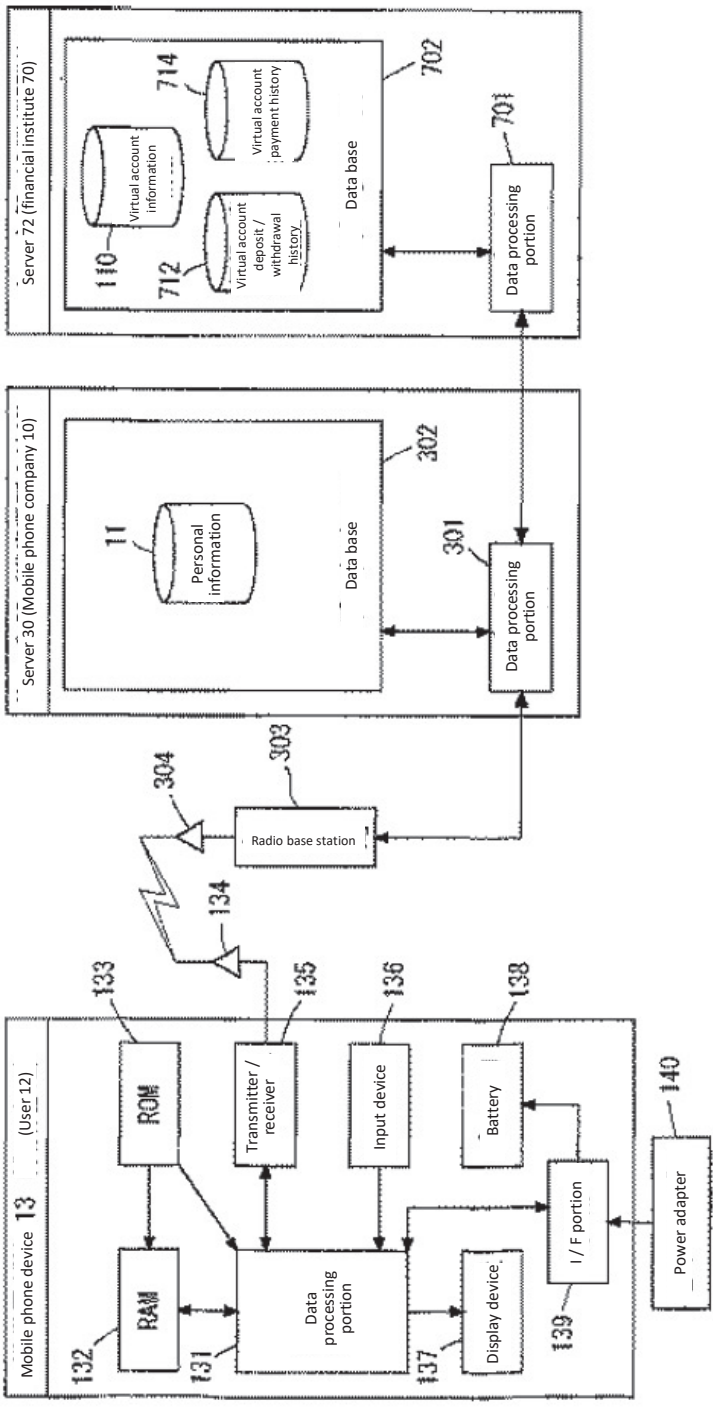

Server 72 (financial institute 70)
Virtual account information
Virtual account payment history
Virtual account deposit / withdrawal history
Data base
Data processing portion
110
712
714
702
701
Server 30 (Mobile phone company 10)
Personal information
Data base
Data processing portion
11
302
301
303
304
Radio base station
134
Mobile phone device 13 (User 12)
ROM
RAM
Transmitter / receiver
Input device
Battery
Data processing portion
Display device
I / F portion
Power adapter
133
135
136
138
132
131
137
139
140

FIG. 27

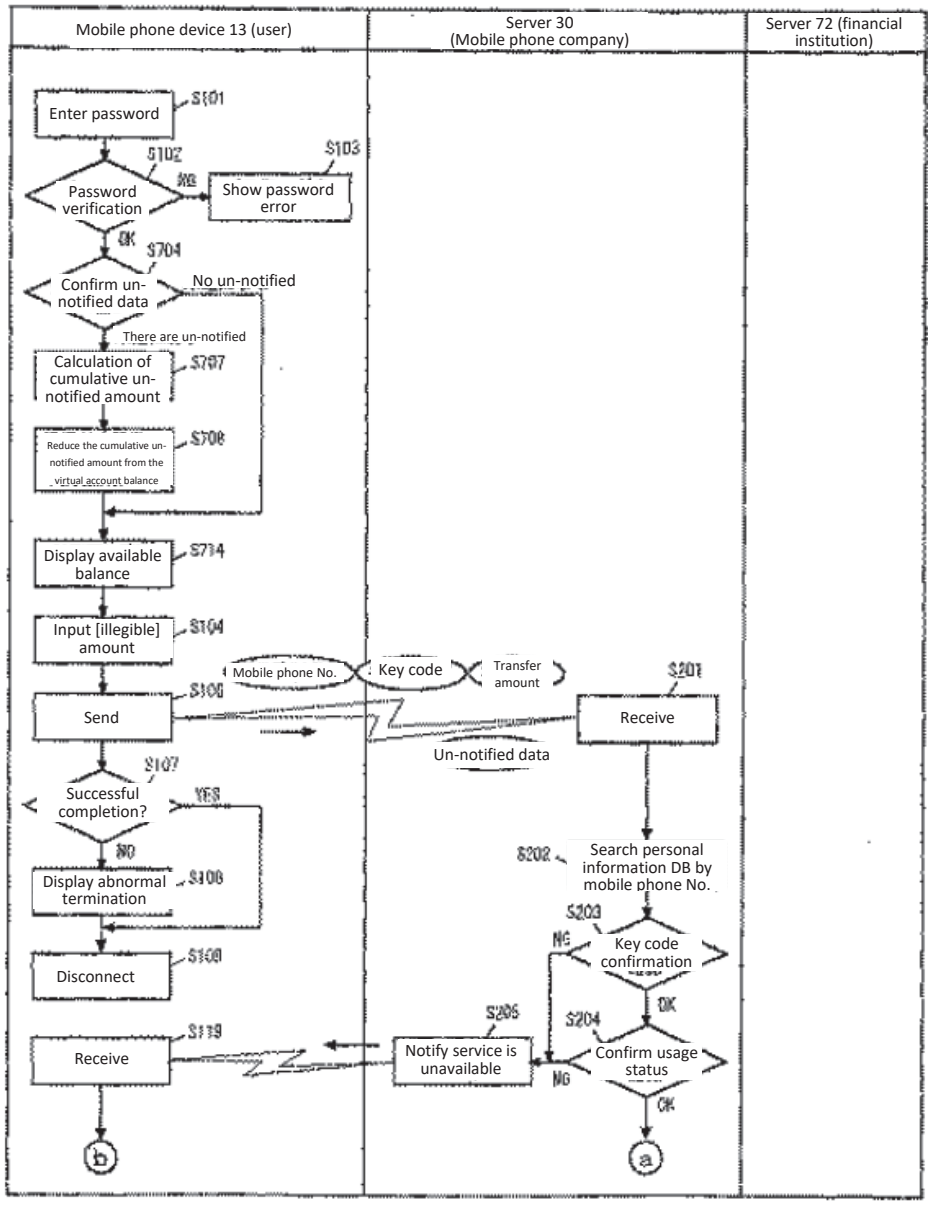

Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 72 (financial institution)
Enter password
S101
S102
Password verification
NG
S103
Show password error
OK
S704
Confirm un-notified data
No un-notified
There are un-notified
Calculation of cumulative un-notified amount
S707
Reduce the cumulative un-notified amount from the virtual account balance
S708
Display available balance
S714
Input [illegible] amount
S104
Mobile phone No.
Key code
Transfer amount
S201
Send
S105
Receive
Un-notified data
S107
Successful completion?
YES
NO
Display abnormal termination
S108
S202
Search personal information DB by mobile phone No.
S203
NG
Key code confirmation
OK
S204
Confirm usage status
NG
OK
S205
Notify service is unavailable
Disconnect
S109
Receive
b
a

FIG. 28

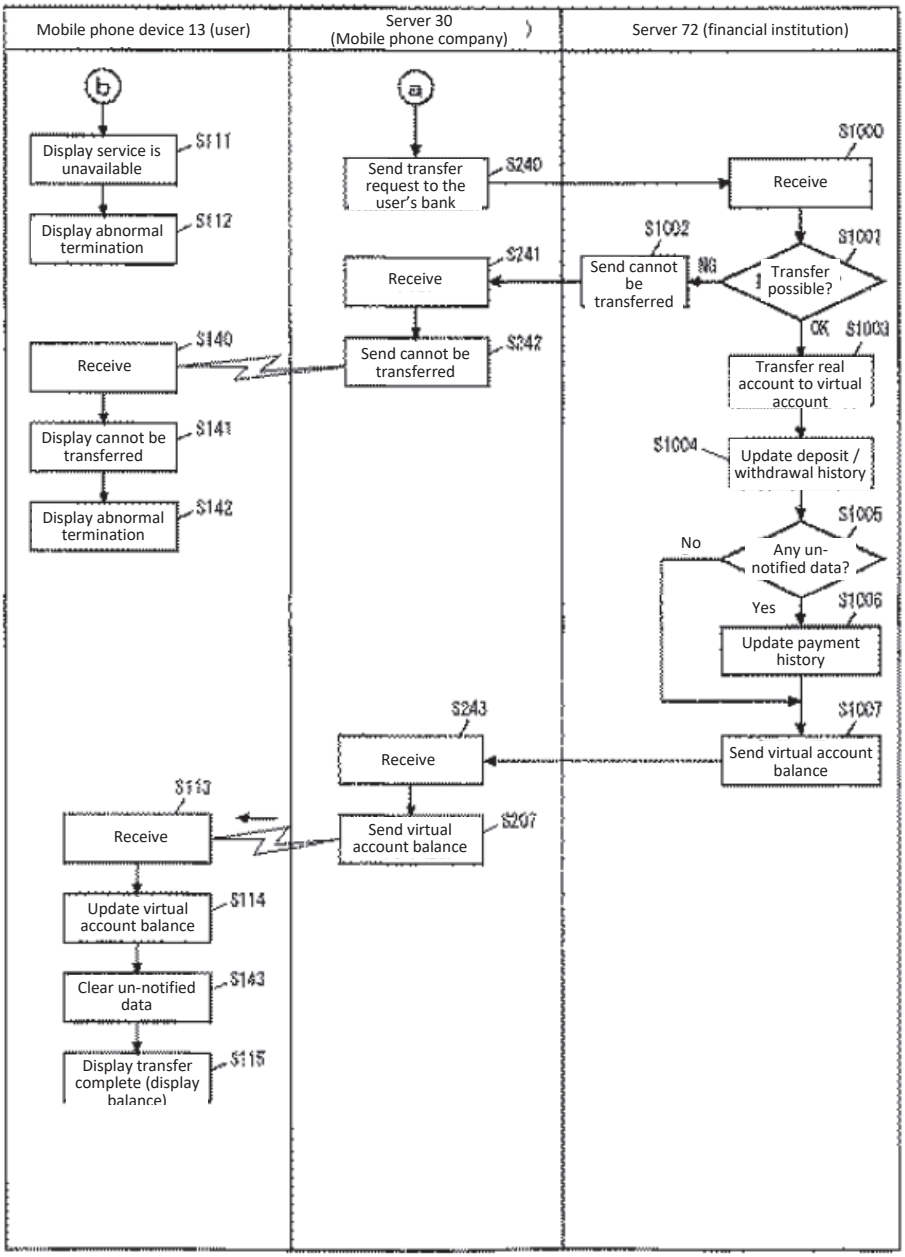

Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 72 (financial institution)
b
a
Display service is unavailable
S111
Display abnormal termination
S112
Receive
S140
Display cannot be transferred
S141
Display abnormal termination
S142
Send transfer request to the user's bank
S240
Receive
S241
Send cannot be transferred
S242
Receive
S243
Send virtual account balance
S207
Receive
S113
Update virtual account balance
S114
Clear un-notified data
S143
Display transfer complete (display balance)
S115
Receive
S1000
Send cannot be transferred
S1002
NG
Transfer possible?
S1001
OK
Transfer real account to virtual account
S1003
Update deposit / withdrawal history
S1004
Any un-notified data?
S1005
No
Yes
Update payment history
S1006
Send virtual account balance
S1007

FIG. 29

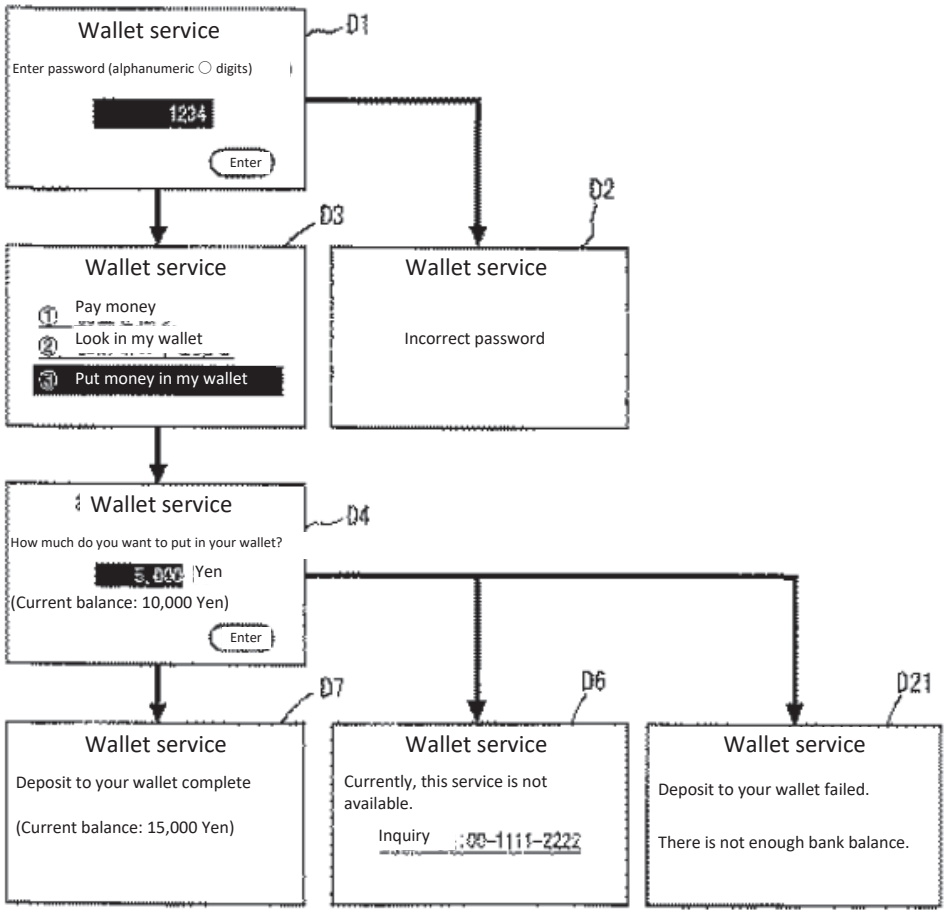

Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D1
D2
D3
Wallet service
Pay money
Look in my wallet
Put money in my wallet
Wallet service
Incorrect password
Wallet service
How much do you want to put in your wallet?
5,000 Yen
(Current balance: 10,000 Yen)
Enter
D4
D7
D6
D21
Wallet service
Deposit to your wallet complete
(Current balance: 15,000 Yen)
Wallet service
Currently, this service is not available.
Inquiry 00-1111-2222
Wallet service
Deposit to your wallet failed.
There is not enough bank balance.

FIG. 30

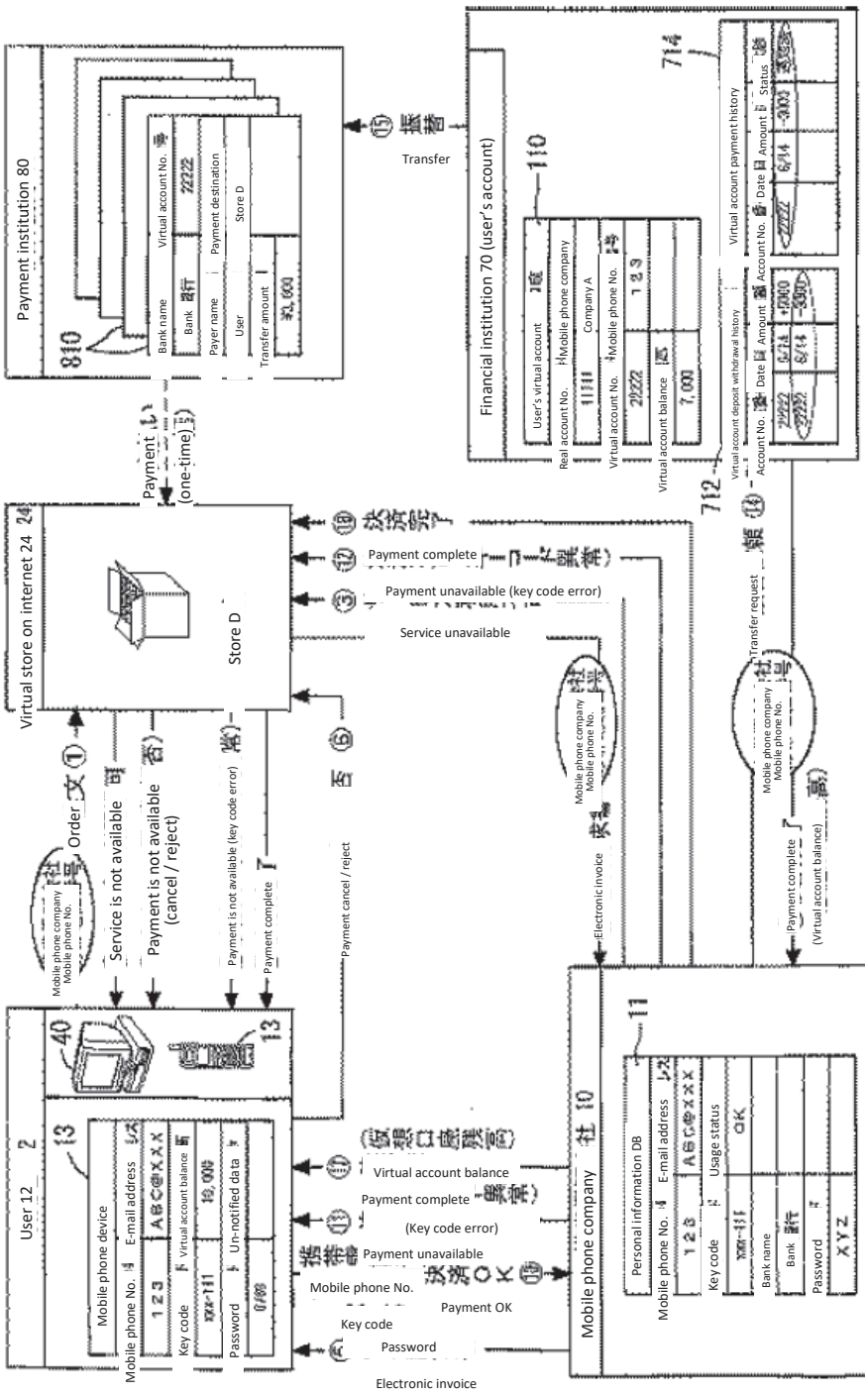

Payment institution 80
Transfer
Financial institution 70 (user's account)
Payment (one-time)
Virtual store on internet 24
Store D
Payment complete
Payment unavailable (key code error)
Service unavailable
Order
Service is not available
Payment is not available (cancel / reject)
Payment is not available (key code error)
Payment complete
Payment cancel / reject
Transfer request
Payment complete (Virtual account balance)
Electronic invoice
User 12
Mobile phone device
Mobile phone company
Mobile phone No.
E-mail address
Virtual account balance
Un-notified data
Key code
Password
Virtual account balance
Payment complete
(Key code error)
Payment unavailable
Payment OK
Mobile phone No.
Key code
Password
Electronic invoice
Mobile phone company
Personal information DB
Usage status
Bank name
Virtual account payment history
Virtual account deposit withdrawal history

FIG. 31

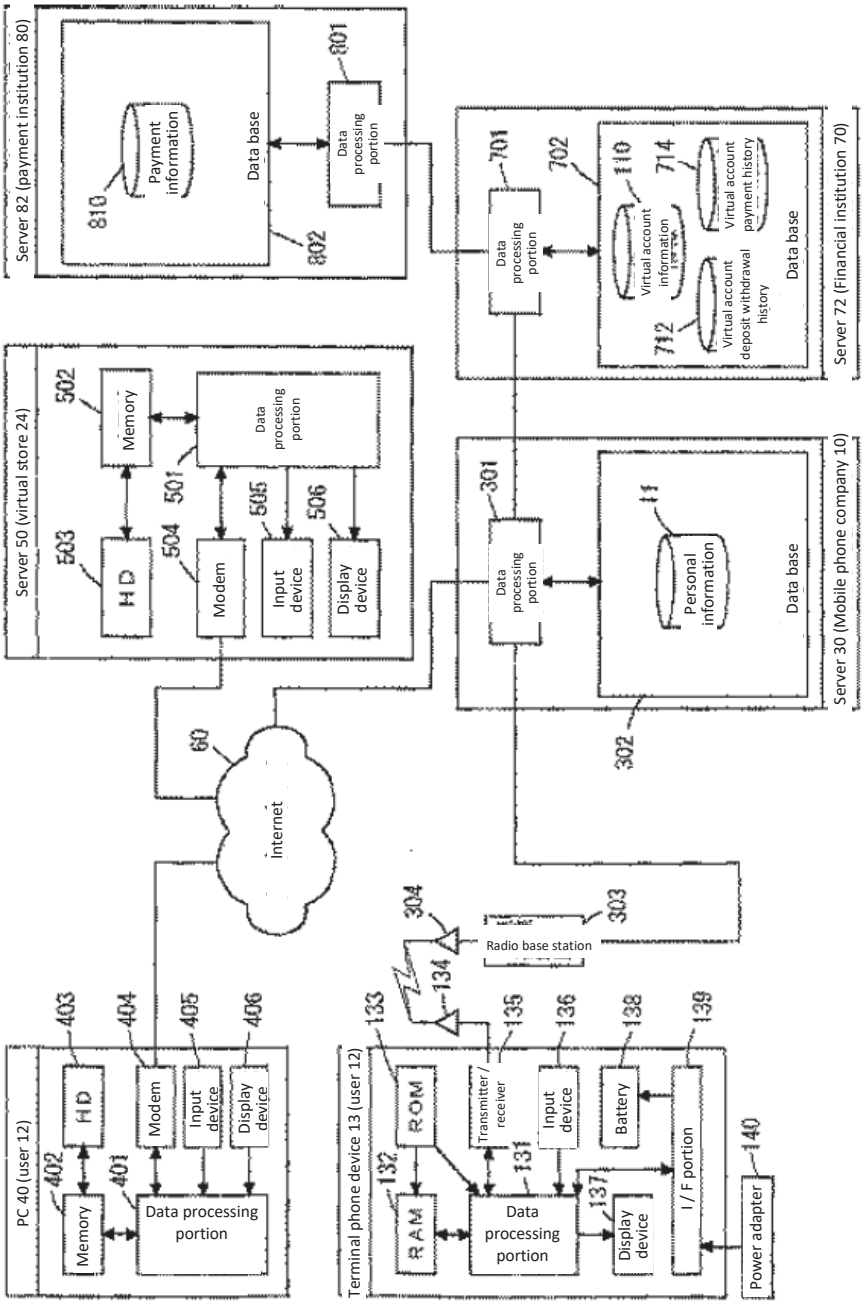

Server 82 (payment institution 80)
Payment information
810
Data base
801
Data processing portion
802
Server 72 (Financial institution 70)
701
Data processing portion
702
110
Virtual account information
714
Virtual account payment history
712
Virtual account deposit withdrawal history
Data base
Server 50 (virtual store 24)
502
Memory
501
Data processing portion
503
HD
504
Modem
505
Input device
506
Display device
Server 30 (Mobile phone company 10)
301
Data processing portion
11
Personal information
Data base
302
60
Internet
304
Radio base station
303
PC 40 (user 12)
403
HD
404
Modem
405
Input device
406
Display device
402
Memory
401
Data processing portion
Terminal phone device 13 (user 12)
133
ROM
132
RAM
134
135
Transmitter / receiver
131
Data processing portion
136
Input device
138
Battery
137
Display device
139
I / F portion
140
Power adapter

FIG. 32

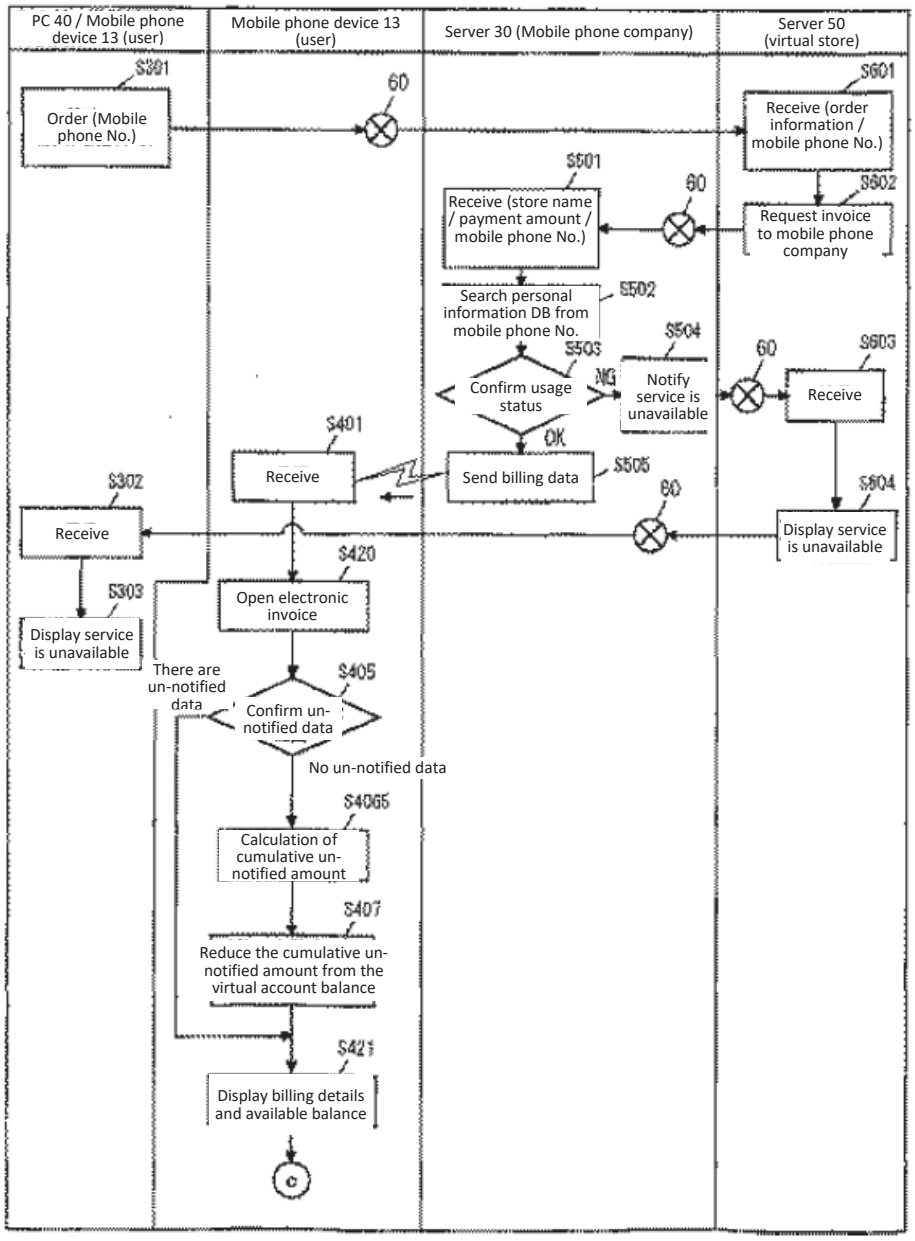

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 50 (virtual store)
S301
Order (Mobile phone No.)
60
S601
Receive (order information / mobile phone No.)
S602
Request invoice to mobile phone company
60
S501
Receive (store name / payment amount / mobile phone No.)
Search personal information DB from mobile phone No.
S502
S503
Confirm usage status
NG
S504
Notify service is unavailable
60
S603
Receive
OK
S401
Receive
Send billing data
S505
60
S604
Display service is unavailable
S302
Receive
S420
Open electronic invoice
S303
Display service is unavailable
There are un-notified data
S405
Confirm un-notified data
No un-notified data
S406S
Calculation of cumulative un-notified amount
S407
Reduce the cumulative un-notified amount from the virtual account balance
S421
Display billing details and available balance
C

FIG. 33

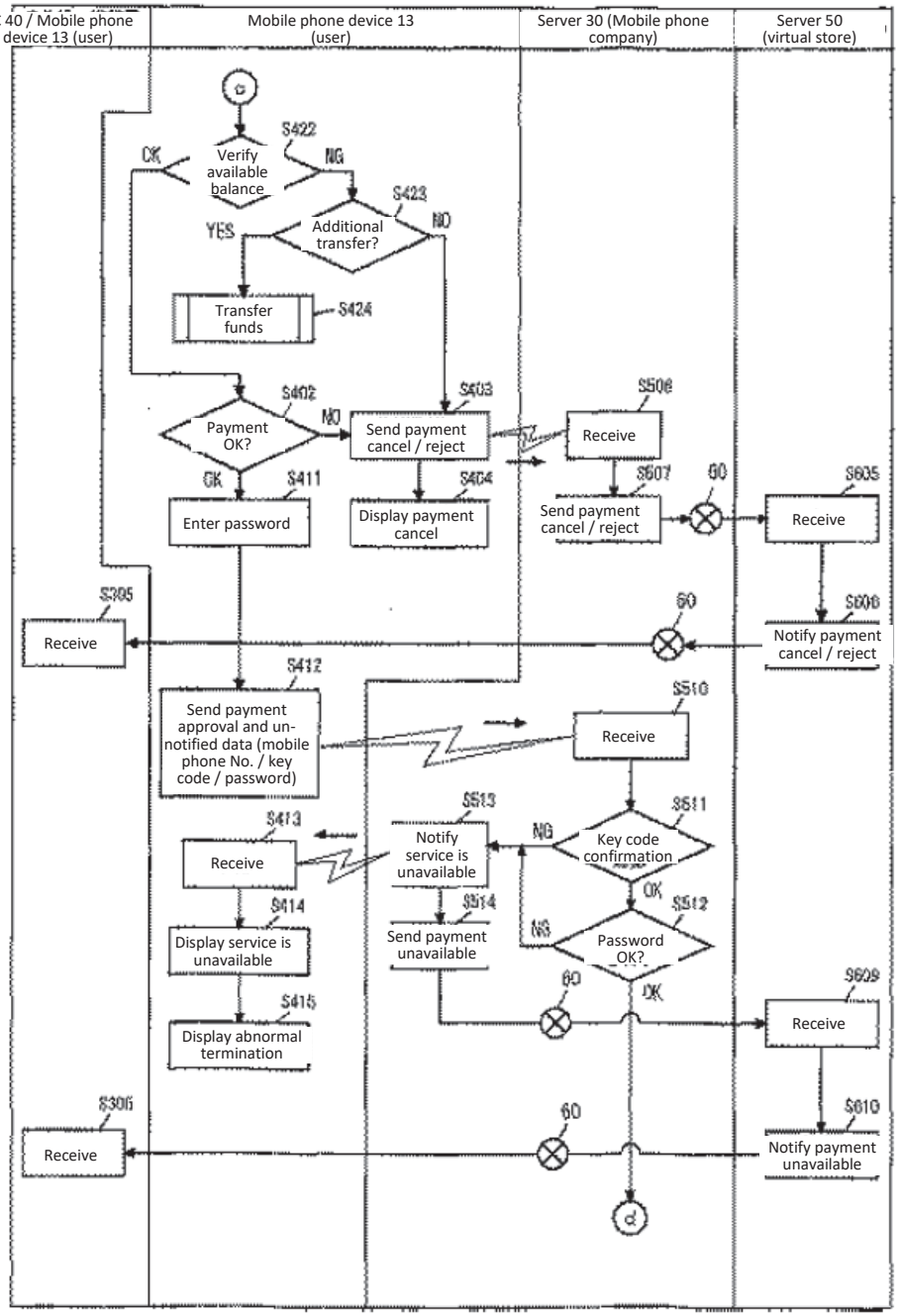

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 50 (virtual store)
Verify available balance
S422
OK
NG
Additional transfer?
S423
YES
NO
Transfer funds
S424
Payment OK?
S402
NO
OK
Send payment cancel / reject
S403
Enter password
S411
Display payment cancel
S404
Receive
S506
Send payment cancel / reject
S507
60
Receive
S605
Notify payment cancel / reject
S606
Receive
S305
Send payment approval and un-notified data (mobile phone No. / key code / password)
S412
Receive
S510
Key code confirmation
S511
NG
OK
Password OK?
S512
Notify service is unavailable
S513
Send payment unavailable
S514
Receive
S413
Display service is unavailable
S414
Display abnormal termination
S415
Receive
S609
Notify payment unavailable
S610
Receive
S306
60
a

FIG. 34

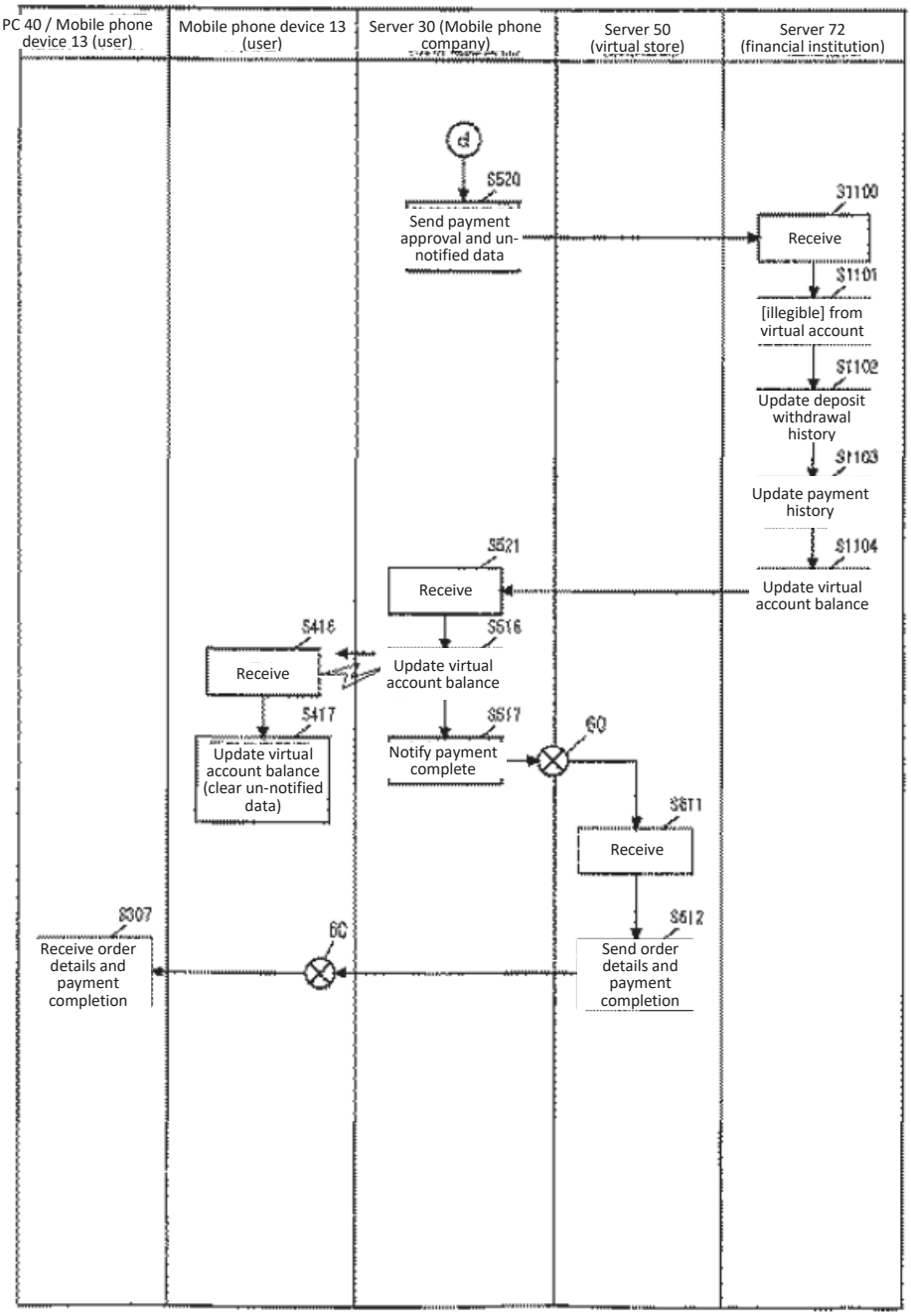

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (Mobile phone company)
Server 50 (virtual store)
Server 72 (financial institution)
d
S520
Send payment approval and un-notified data
S1100
Receive
S1101
[illegible] from virtual account
S1102
Update deposit withdrawal history
S1103
Update payment history
S1104
Update virtual account balance
S521
Receive
S516
Update virtual account balance
S416
Receive
S417
Update virtual account balance (clear un-notified data)
S517
Notify payment complete
6Q
S611
Receive
S612
Send order details and payment completion
6C
S307
Receive order details and payment completion

FIG. 35

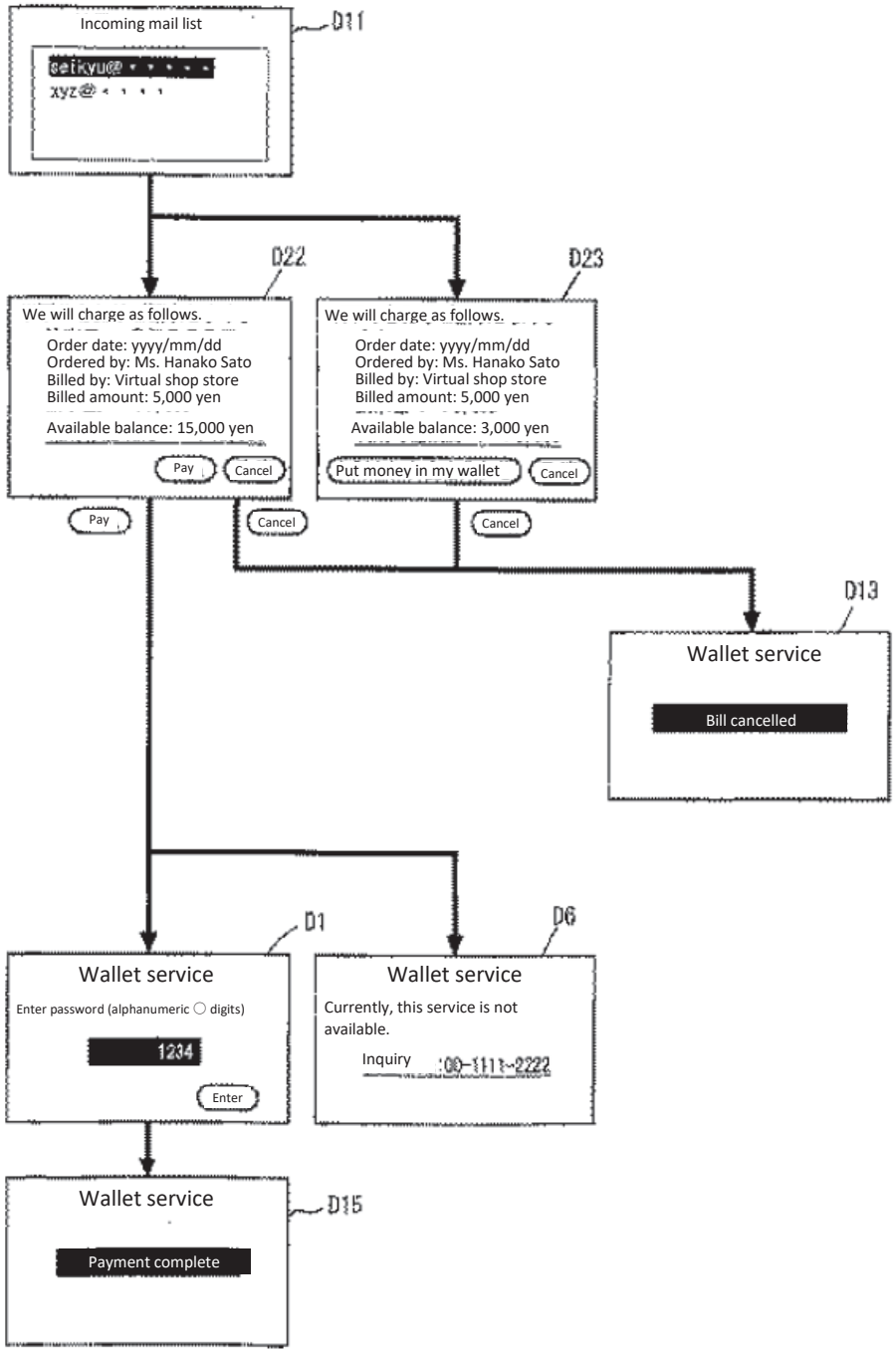

Incoming mail list
D11
seikyu@
xyz@
D22
We will charge as follows.
Order date: yyyy/mm/dd
Ordered by: Ms. Hanako Sato
Billed by: Virtual shop store
Billed amount: 5,000 yen
Available balance: 15,000 yen
Pay
Cancel
D23
We will charge as follows.
Order date: yyyy/mm/dd
Ordered by: Ms. Hanako Sato
Billed by: Virtual shop store
Billed amount: 5,000 yen
Available balance: 3,000 yen
Put money in my wallet
Cancel
Pay
Cancel
Cancel
D13
Wallet service
Bill cancelled
D1
Wallet service
Enter password (alphanumeric ○ digits)
1234
Enter
D6
Wallet service
Currently, this service is not available.
Inquiry
D15
Wallet service
Payment complete

FIG. 36

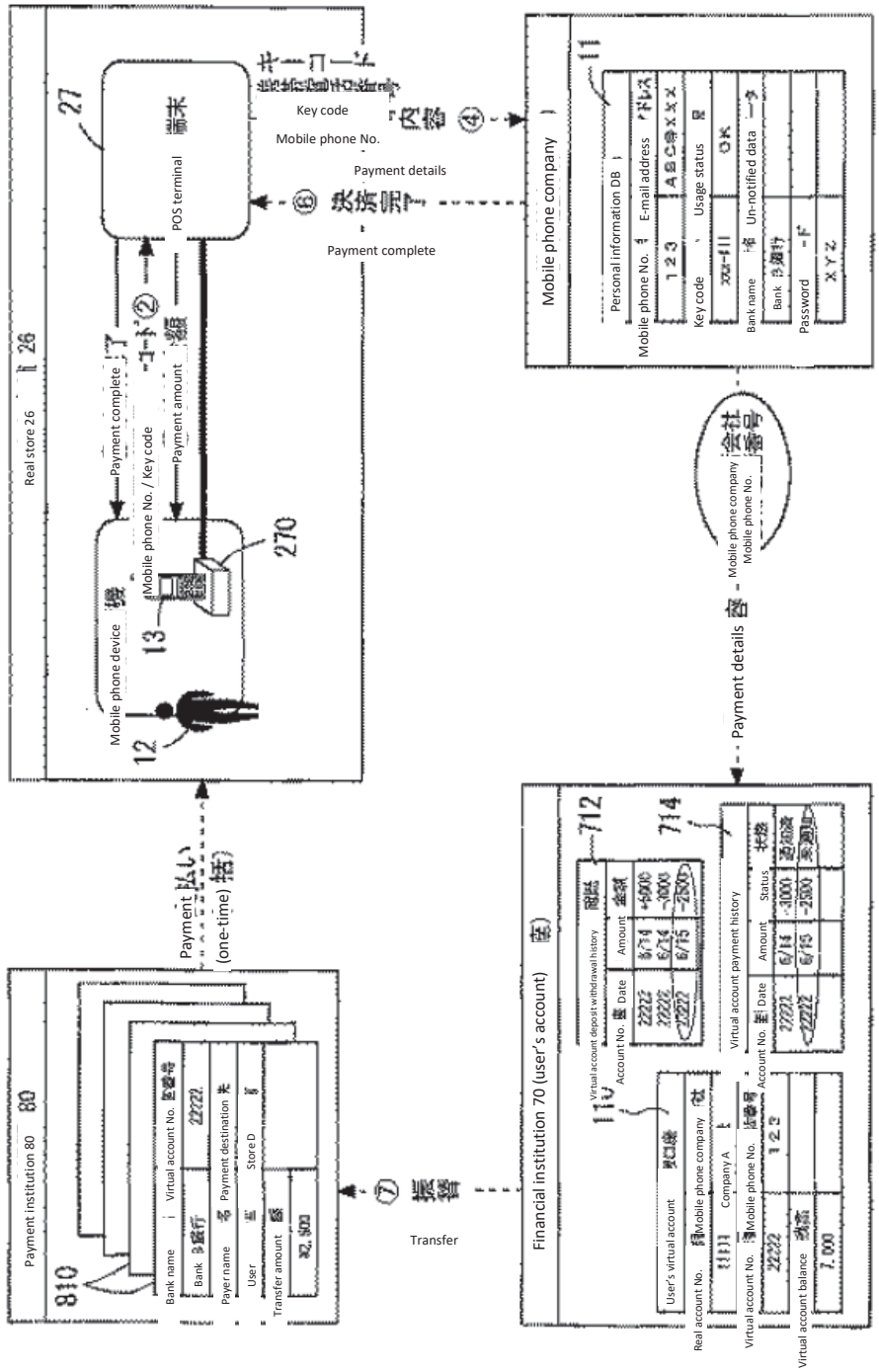

Payment details
Payment complete
Key code
Mobile phone No.
Payment details
Payment complete
Mobile phone company
Personal information DB
Mobile phone No.
E-mail address
Key code
Usage status
Bank name
Un-notified data
Bank
Password
Real store 26
POS terminal
Payment complete
Mobile phone No. / Key code
Payment amount
Mobile phone device
Mobile phone company
Mobile phone No.
Payment details
Payment (one-time)
Payment institution 80
Bank name
Virtual account No.
Bank
Payer name
Payment destination
User
Store D
Transfer amount
Transfer
Financial institution 70 (user's account)
User's virtual account
Real account No.
Mobile phone company
Company A
Virtual account No.
Mobile phone No.
Virtual account balance
Virtual account deposit withdrawal history
Account No.
Date
Amount
Balance
Virtual account payment history
Account No.
Date
Amount
Status

FIG. 37

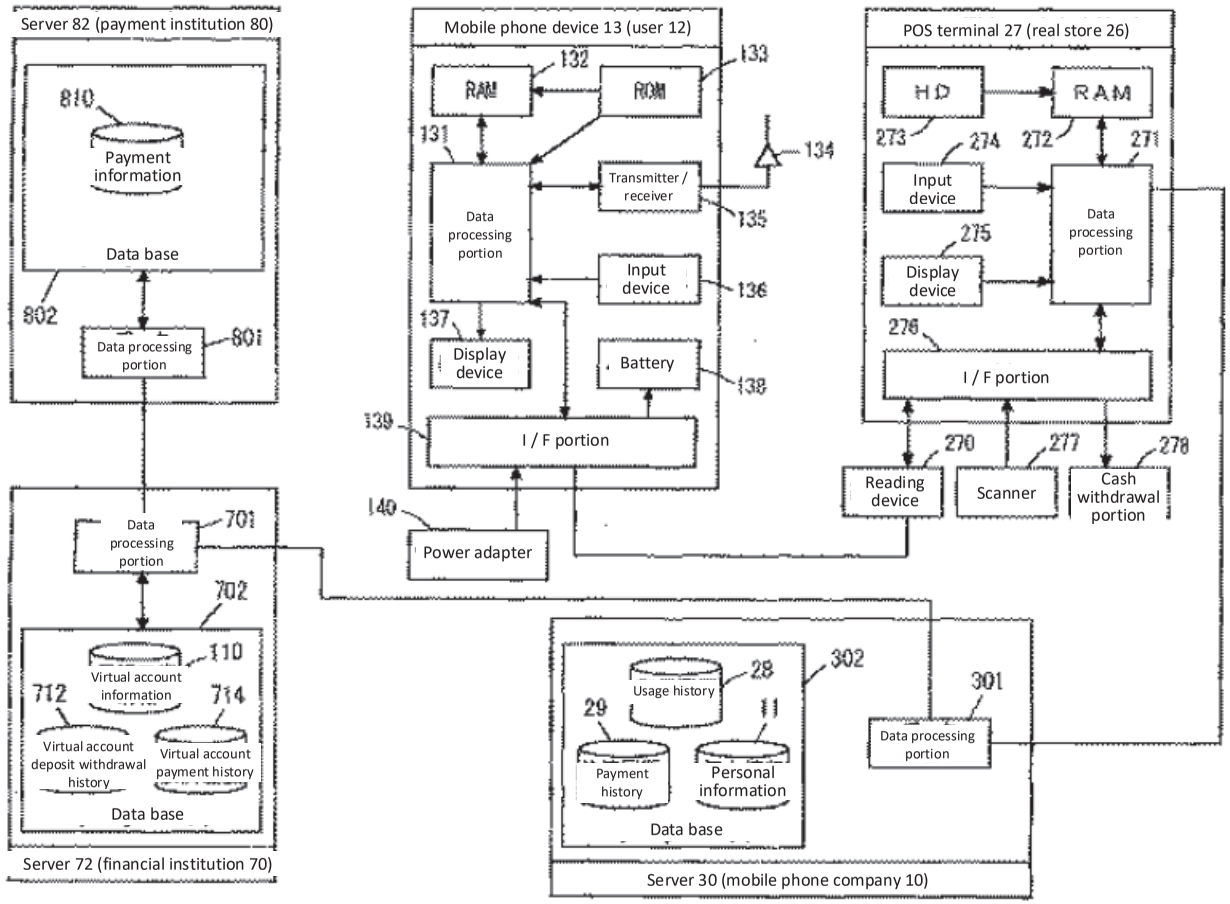


FIG. 38

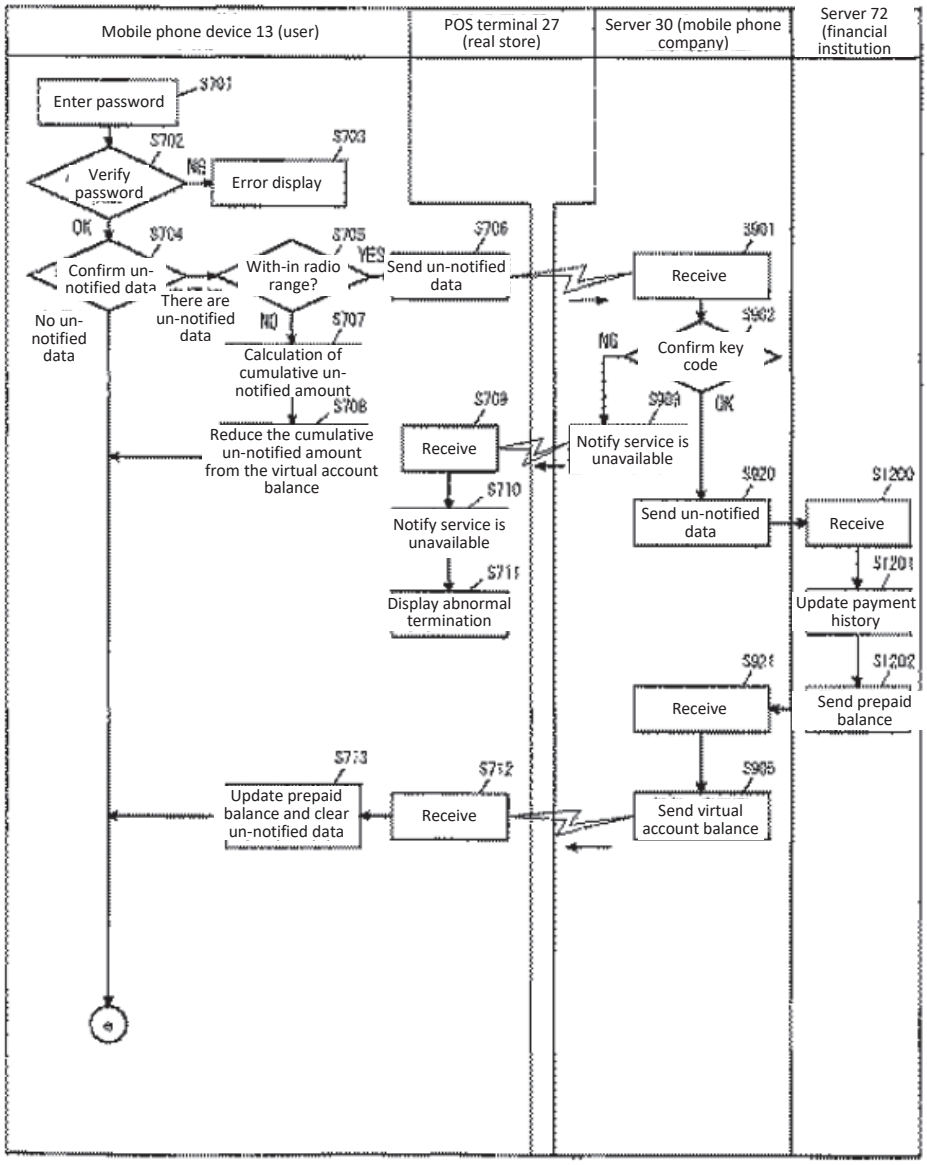

Mobile phone device 13 (user)
POS terminal 27 (real store)
Server 30 (mobile phone company)
Server 72 (financial institution)
Enter password
S701
S702
Verify password
NG
S703
Error display
OK
S704
Confirm un-notified data
No un-notified data
There are un-notified data
S705
With-in radio range?
YES
NO
S706
Send un-notified data
S707
Calculation of cumulative un-notified amount
S708
Reduce the cumulative un-notified amount from the virtual account balance
S709
Receive
S710
Notify service is unavailable
S711
Display abnormal termination
S712
Receive
S713
Update prepaid balance and clear un-notified data
S901
Receive
S902
Confirm key code
NG
S903
Notify service is unavailable
OK
S920
Send un-notified data
S921
Receive
S925
Send virtual account balance
S1200
Receive
S1201
Update payment history
S1202
Send prepaid balance

FIG. 39

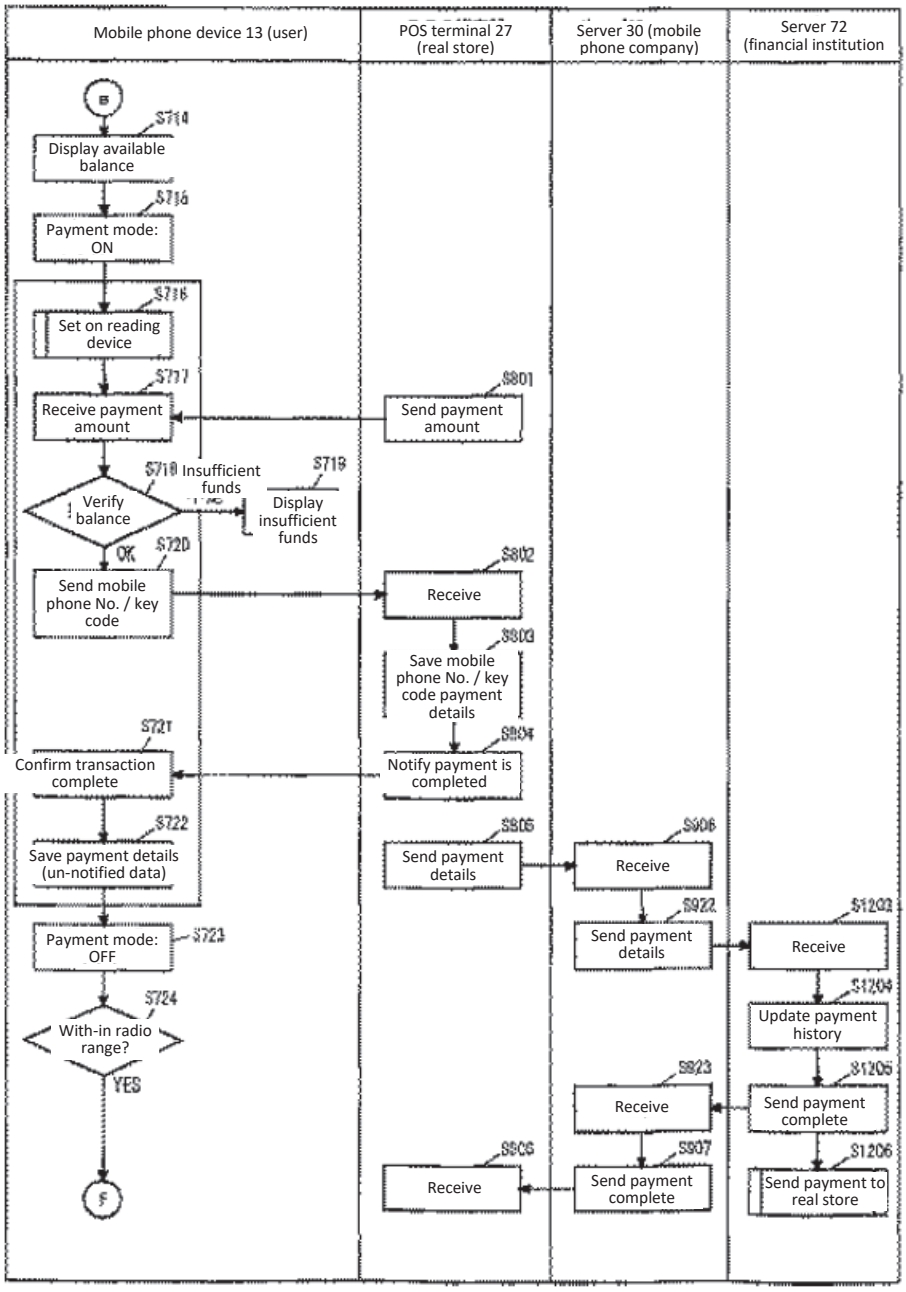

Mobile phone device 13 (user)
POS terminal 27 (real store)
Server 30 (mobile phone company)
Server 72 (financial institution
B
S714
Display available balance
S716
Payment mode: ON
S715
Set on reading device
S717
Receive payment amount
S801
Send payment amount
S718
Verify balance
Insufficient funds
S719
Display insufficient funds
OK
S720
Send mobile phone No. / key code
S802
Receive
S803
Save mobile phone No. / key code payment details
S804
Notify payment is completed
S721
Confirm transaction complete
S722
Save payment details (un-notified data)
S805
Send payment details
S906
Receive
S922
Send payment details
S1203
Receive
S1204
Update payment history
S1205
Send payment complete
S923
Receive
S907
Send payment complete
S1206
Send payment to real store
S806
Receive
S723
Payment mode: OFF
S724
With-in radio range?
YES
F

FIG. 40

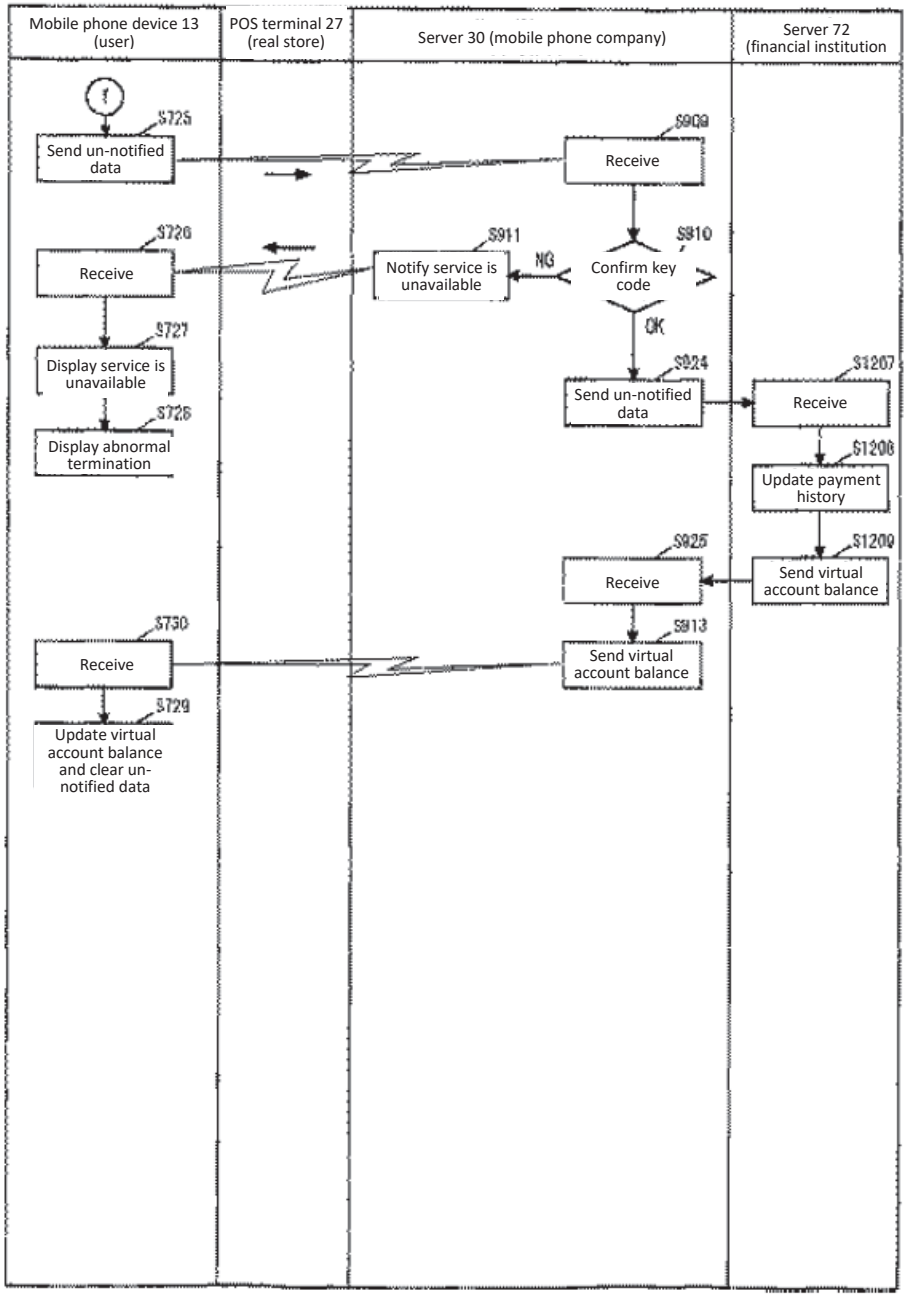

Mobile phone device 13 (user)
POS terminal 27 (real store)
Server 30 (mobile phone company)
Server 72 (financial institution)
S725
Send un-notified data
S909
Receive
S726
Receive
S911
Notify service is unavailable
NG
S910
Confirm key code
OK
S727
Display service is unavailable
S728
Display abnormal termination
S924
Send un-notified data
S1207
Receive
S1208
Update payment history
S1209
Send virtual account balance
S925
Receive
S730
Receive
S913
Send virtual account balance
S729
Update virtual account balance and clear un-notified data

FIG. 41

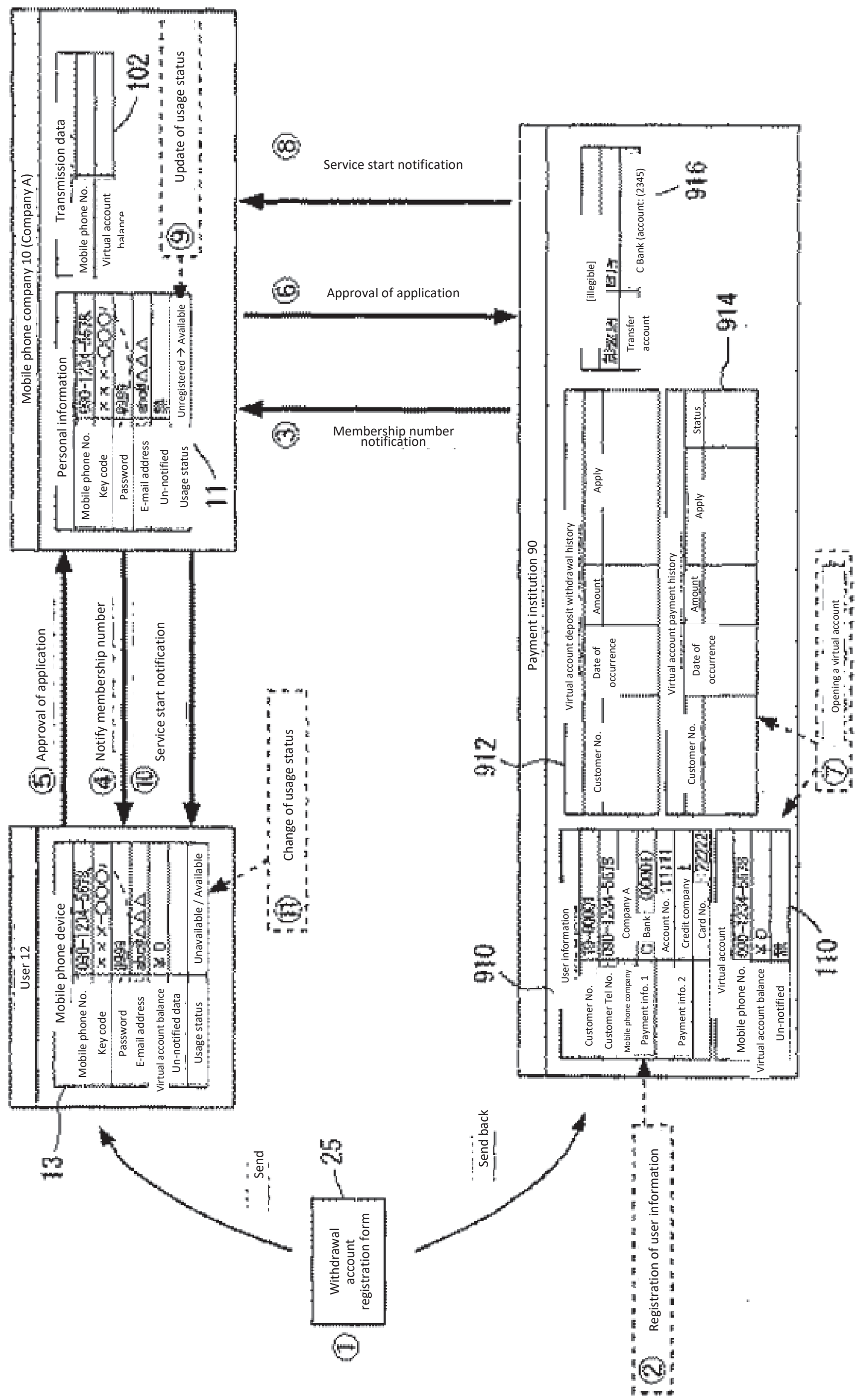

Mobile phone company 10 (Company A)
Personal information
Mobile phone No.
Key code
Password
E-mail address
Un-notified
Usage status
Unregistered → Available
11
Transmission data
Mobile phone No.
Virtual account balance
102
Update of usage status
9
Membership number notification
3
Approval of application
6
Service start notification
8
User 12
Mobile phone device
Mobile phone No.
Key code
Password
E-mail address
Virtual account balance
Un-notified data
Usage status
Unavailable / Available
13
5 Approval of application
4 Notify membership number
10 Service start notification
11 Change of usage status
Withdrawal account registration form
25
1
Send
Send back
2 Registration of user information
Payment institution 90
910
User information
Customer No.
Customer Tel No.
Mobile phone company
Company A
Payment info. 1
Bank
Account No.
Payment info. 2
Credit company
Card No.
Virtual account
Mobile phone No.
Virtual account balance
Un-notified
110
912
Virtual account deposit withdrawal history
Customer No.
Date of occurrence
Amount
Apply
Virtual account payment history
Status
914
Transfer account
[illegible]
C Bank (account: (2345)
916
7 Opening a virtual account

FIG. 42

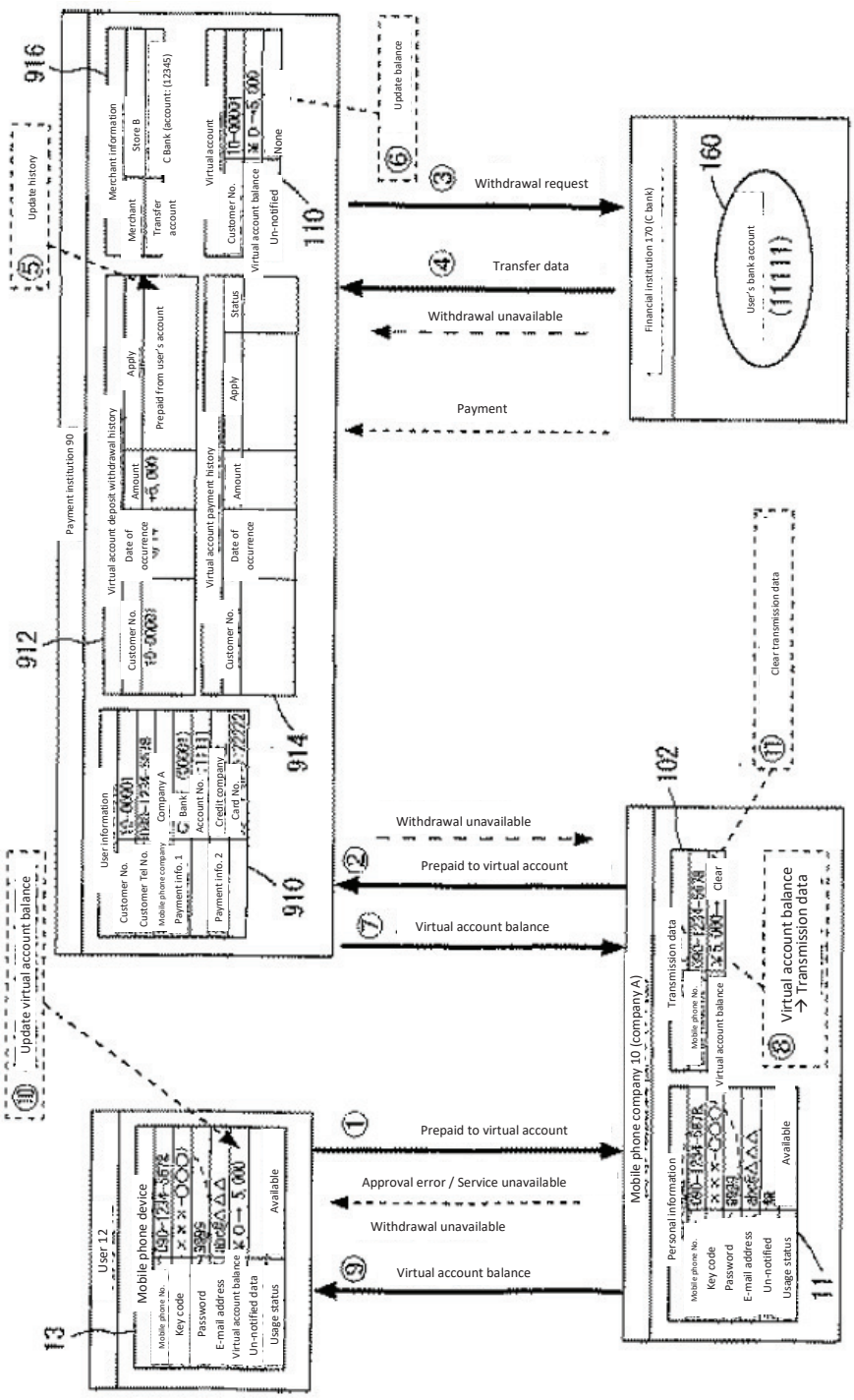

Payment institution 90
916
912
914
910
Update history
Merchant information
Merchant
Store B
Transfer account
C Bank (account: 12345)
Virtual account
Customer No.
Virtual account balance
Un-notified
None
Update balance
Virtual account deposit/withdrawal history
Apply
Prepaid from user's account
Amount
Date of occurrence
Status
Virtual account payment history
User information
Customer No.
Customer Tel No.
Mobile phone company
Company A
Payment info. 1
Payment info. 2
Bank
Account No.
Credit company
Card No.
Withdrawal request
Transfer data
Withdrawal unavailable
Payment
Financial institution 170 (C bank)
160
User's bank account
Update virtual account balance
Prepaid to virtual account
Withdrawal unavailable
Virtual account balance
Clear transmission data
102
Mobile phone company 10 (company A)
Transmission data
Mobile phone No.
Virtual account balance
Clear
Personal information
Key code
Password
E-mail address
Un-notified
Usage status
Available
Virtual account balance → Transmission data
User 12
Mobile phone device
Prepaid to virtual account
Approval error / Service unavailable
Withdrawal unavailable
Virtual account balance
13
11

FIG. 43

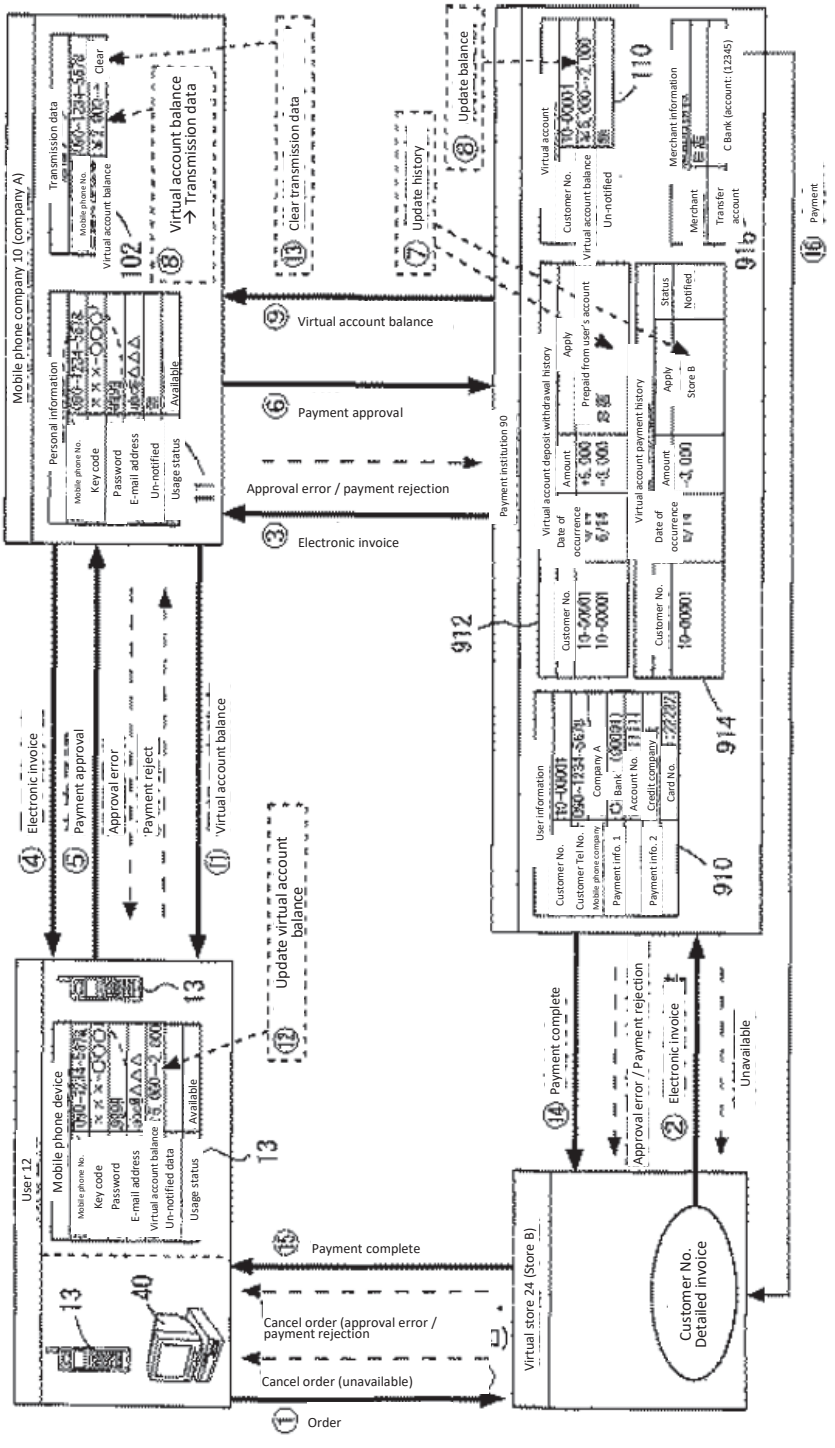

Mobile phone company 10 (company A)
Transmission data
Personal information
Virtual account balance
Virtual account balance → Transmission data
Clear transmission data
Update history
Update balance
Virtual account balance
Payment approval
Approval error / payment rejection
Electronic invoice
Payment institution 90
Virtual account deposit withdrawal history
Virtual account payment history
Virtual account
Merchant information
User 12
Mobile phone device
Electronic invoice
Payment approval
Approval error
Payment reject
Virtual account balance
Update virtual account balance
Payment complete
Approval error / Payment rejection
Electronic invoice
Unavailable
Customer No.
Detailed invoice
Virtual store 24 (Store B)
Cancel order (approval error / payment rejection
Cancel order (unavailable)
Order
Payment complete
User information
Payment
912
914
910
916
110
102
11
13
40

FIG. 44

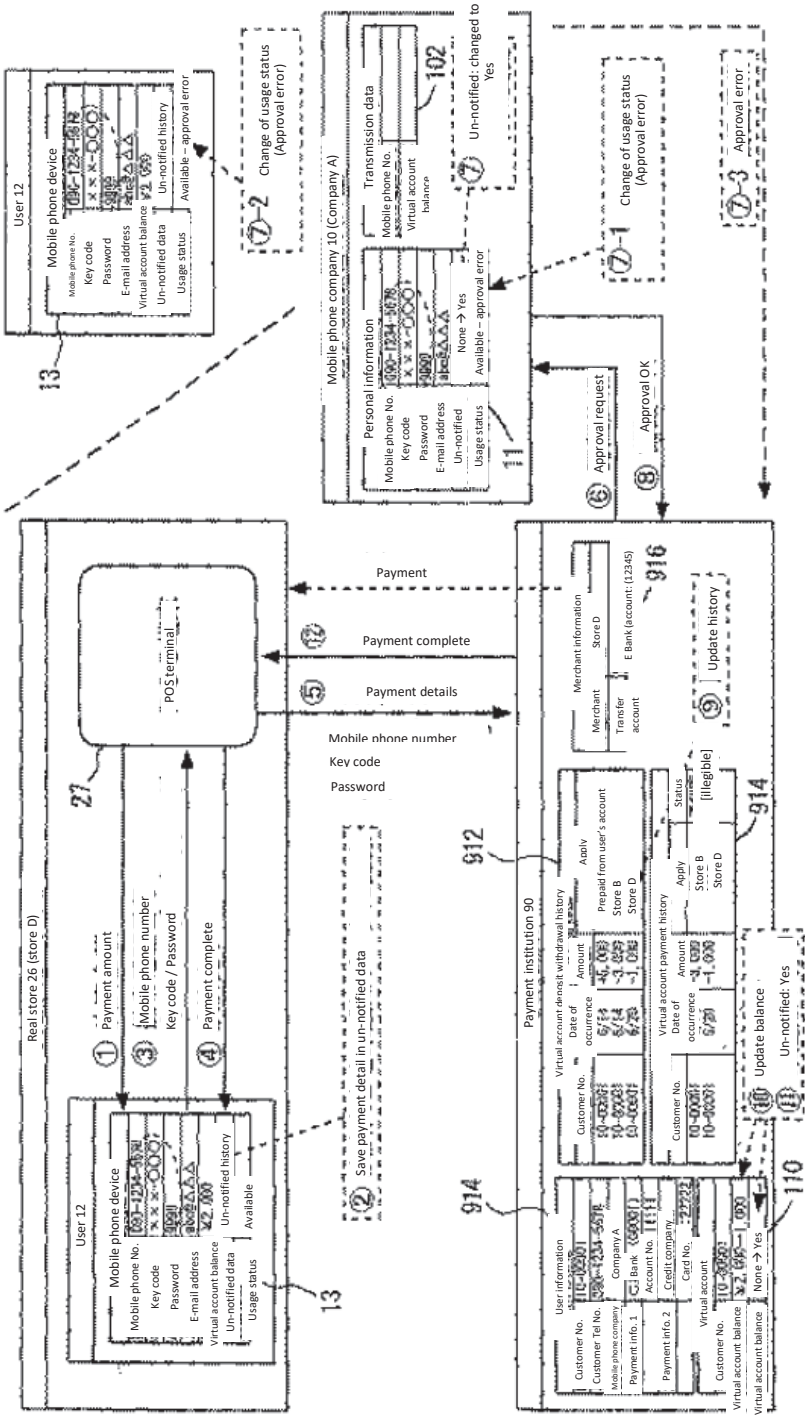

User 12
Mobile phone device
Mobile phone No.
Key code
Password
E-mail address
Virtual account balance
Un-notified data
Usage status
Un-notified history
Available – approval error
13
⑦-2 Change of usage status (Approval error)
Mobile phone company 10 (Company A)
Personal information
Mobile phone No.
Key code
Password
E-mail address
Un-notified
Usage status
None → Yes
Available – approval error
11
Transmission data
Mobile phone No.
Virtual account balance
102
⑦ Un-notified: changed to Yes
⑥ Approval request
⑧ Approval OK
⑦-1 Change of usage status (Approval error)
⑦-3 Approval error
Real store 26 (store D)
① Payment amount
③ Mobile phone number
Key code / Password
④ Payment complete
② Save payment detail in un-notified data
27
POS terminal
Payment
⑫ Payment complete
⑤ Payment details
Mobile phone number
Key code
Password
Payment institution 90
912
914
916
Merchant information
Merchant
Transfer account
Store D
E Bank (account: (12345)
⑨ Update history
Virtual account deposit withdrawal history
Customer No.
Date of occurrence
Amount
Apply
Prepaid from user's account
Store B
Store D
Virtual account payment history
Status
[illegible]
User information
Customer Tel No.
Mobile phone company
Company A
Payment info. 1
Bank
Account No.
Payment info. 2
Credit company
Card No.
Virtual account
Virtual account balance
None → Yes
⑩ Update balance
⑪ Un-notified: Yes
110

FIG. 45

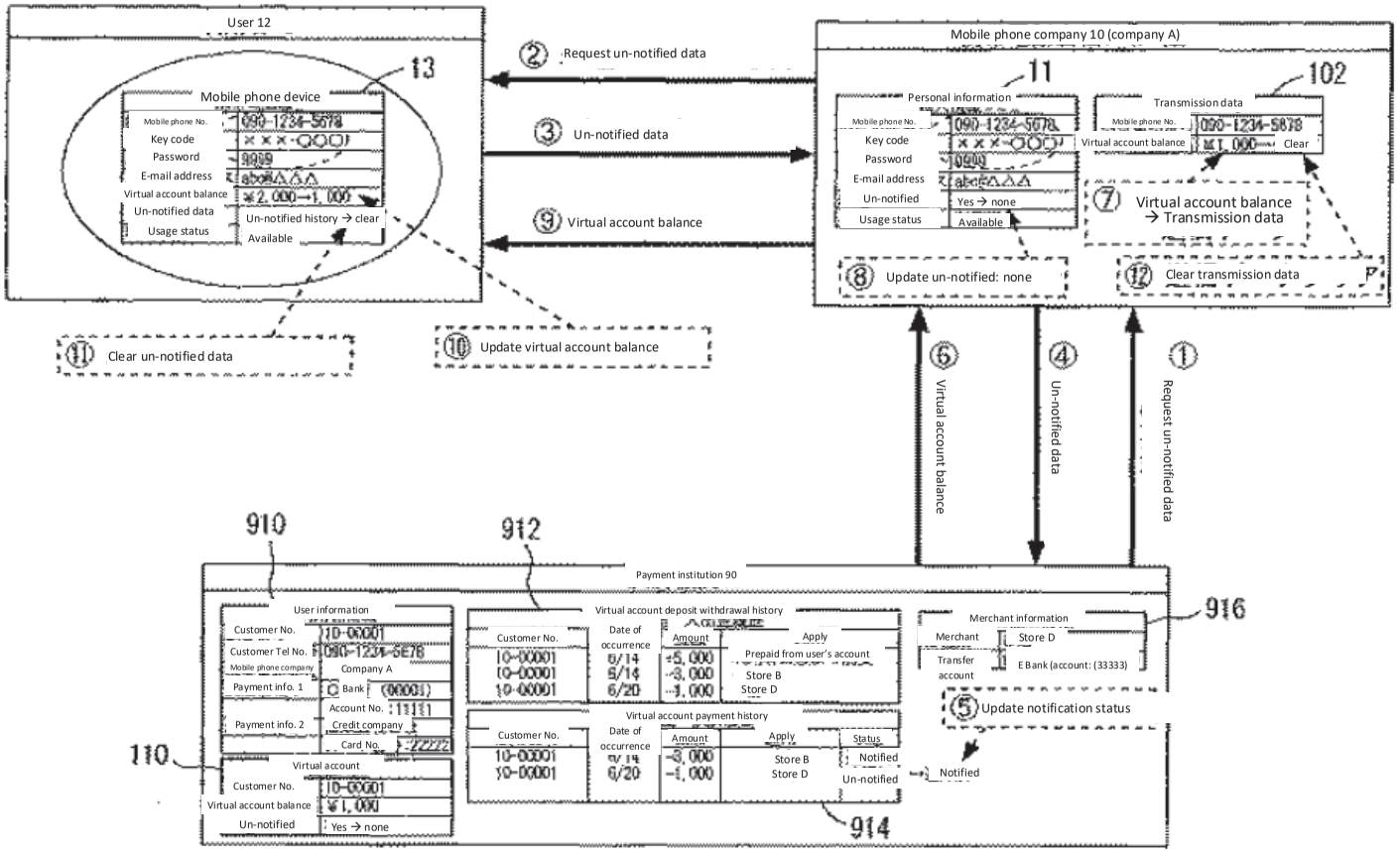


FIG. 46

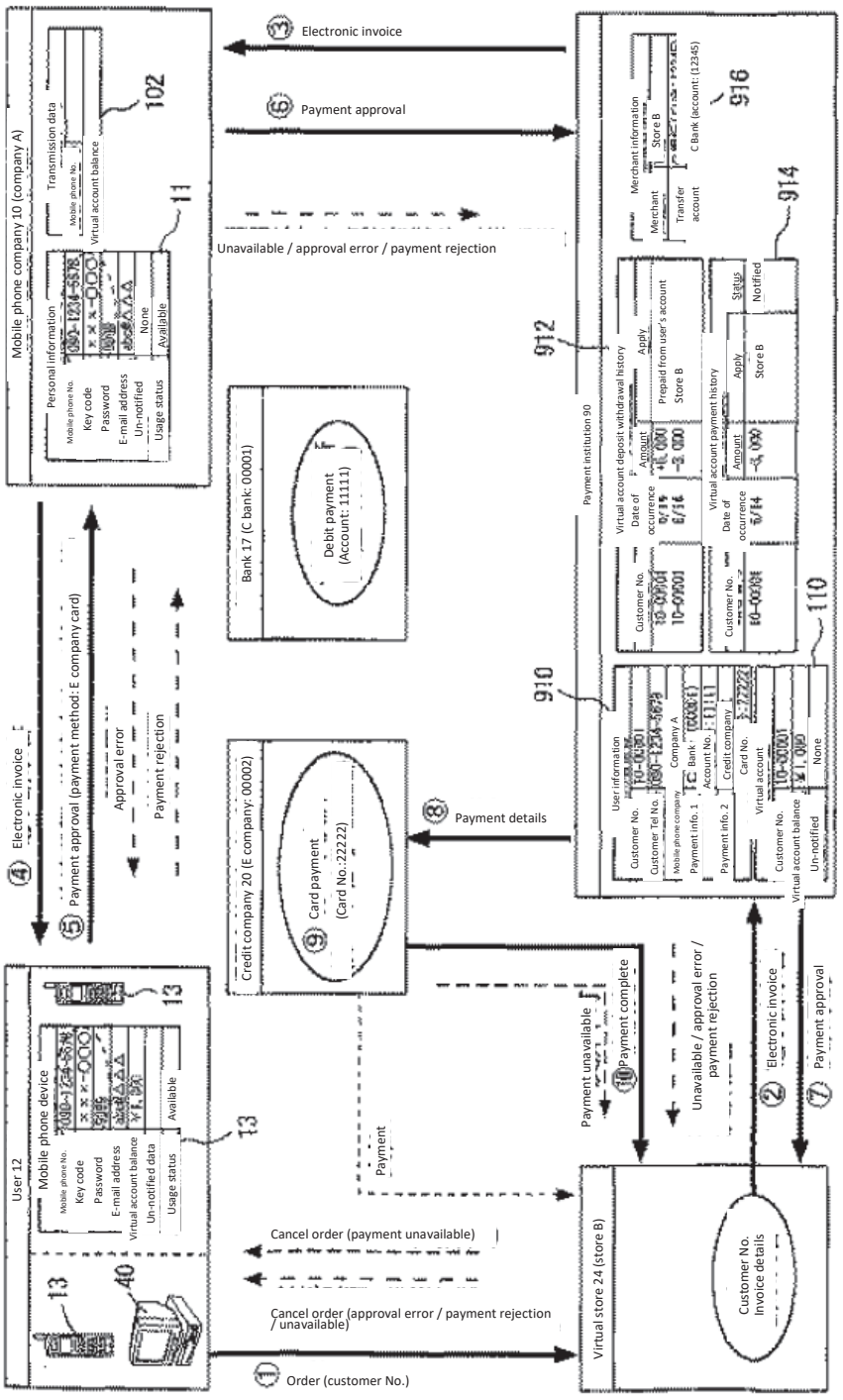

User 12
Mobile phone device
Mobile phone No.
Key code
Password
E-mail address
Virtual account balance
Un-notified data
Usage status
Available
13
40
Mobile phone company 10 (company A)
Personal information
Transmission data
Virtual account balance
None
Available
102
11
Electronic invoice
Payment approval (payment method: E company card)
Approval error
Payment rejection
Payment
Cancel order (payment unavailable)
Cancel order (approval error / payment rejection / unavailable)
Order (customer No.)
Virtual store 24 (store B)
Customer No.
Invoice details
Payment unavailable
Payment complete
Unavailable / approval error / payment rejection
Electronic invoice
Payment approval
Credit company 20 (E company: 00002)
Card payment
(Card No.:22222)
Bank 17 (C bank: 00001)
Debit payment
(Account: 11111)
Payment details
Payment institution 90
User information
Customer No.
Customer Tel No.
Mobile phone company
Company A
Payment info. 1
Bank
Account No.
Payment info. 2
Credit company
Card No.
Virtual account
Customer No.
Virtual account balance
Un-notified
None
910
Virtual account deposit withdrawal history
Customer No.
Date of occurrence
Amount
Apply
Prepaid from user's account
Store B
912
Virtual account payment history
Customer No.
Date of occurrence
Amount
Apply
Store B
Status
Notified
914
110
Merchant information
Store B
Merchant
Transfer account
C Bank (account: 12345)
916

FIG. 47

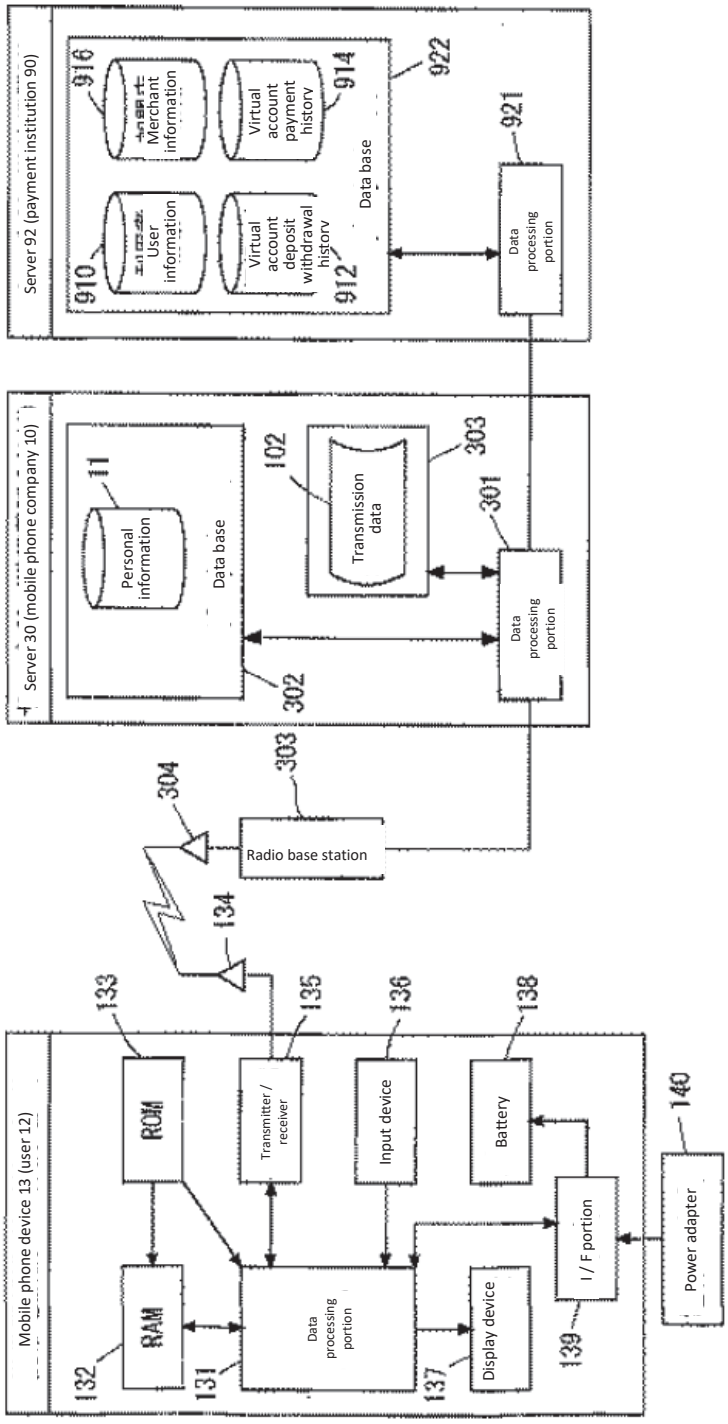

Server 92 (payment institution 90)
916
Merchant information
914
Virtual account payment history
922
910
User information
912
Virtual account deposit withdrawal history
Data base
921
Data processing portion
Server 30 (mobile phone company 10)
11
Personal information
Data base
102
Transmission data
303
301
Data processing portion
302
303
304
Radio base station
134
Mobile phone device 13 (user 12)
133
ROM
135
Transmitter / receiver
136
Input device
138
Battery
140
Power adapter
RAM
Data processing portion
Display device
I / F portion
132
131
137
139

FIG. 48

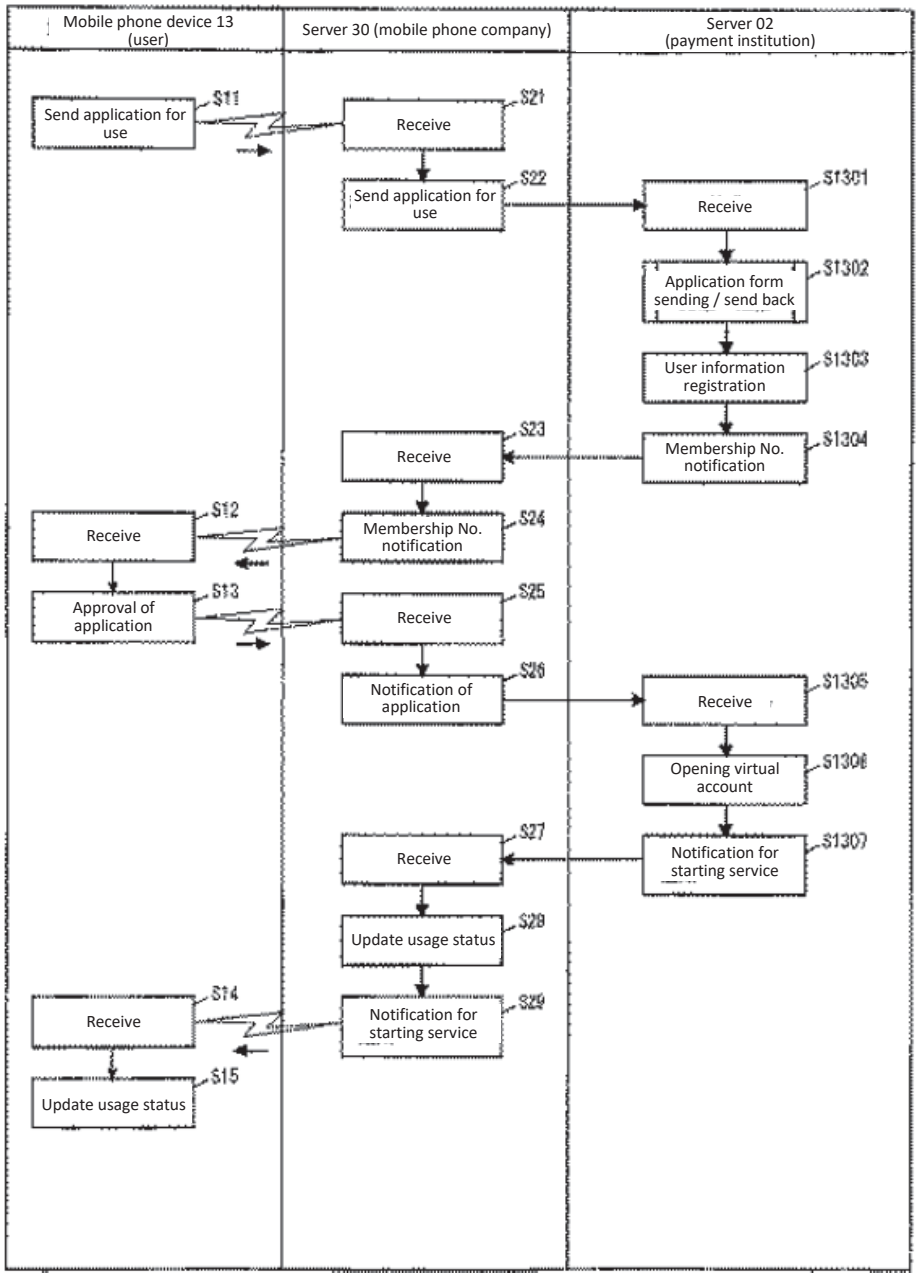

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 02 (payment institution)
Send application for use
S11
Receive
S21
Send application for use
S22
Receive
S1301
Application form sending / send back
S1302
User information registration
S1303
Membership No. notification
S1304
Receive
S23
Membership No. notification
S24
Receive
S12
Approval of application
S13
Receive
S25
Notification of application
S26
Receive
S1305
Opening virtual account
S1306
Notification for starting service
S1307
Receive
S27
Update usage status
S28
Notification for starting service
S29
Receive
S14
Update usage status
S15

FIG. 49

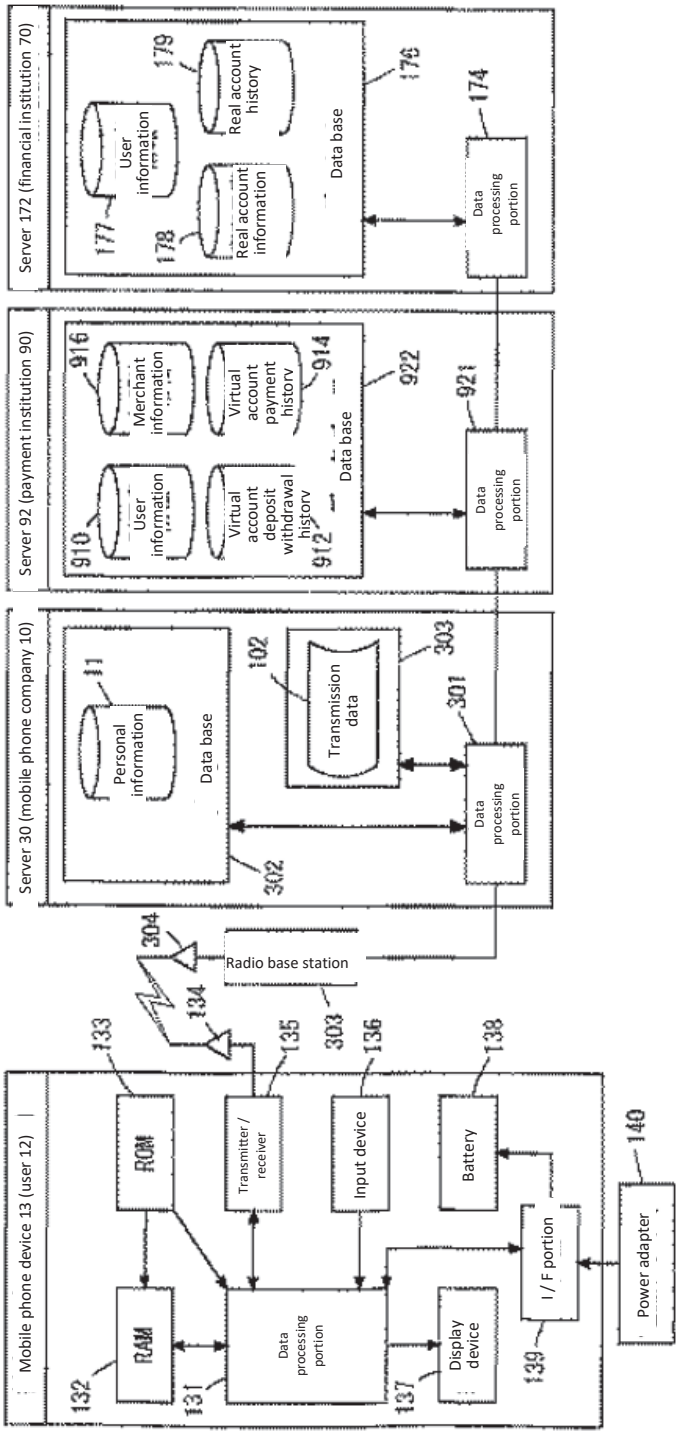

Server 172 (financial institution 70)
User information
Real account history
Real account information
Data base
Data processing portion
177
178
179
176
174
Server 92 (payment institution 90)
User information
Virtual account deposit withdrawal history
Merchant information
Virtual account payment history
Data base
Data processing portion
910
912
916
914
922
921
Server 30 (mobile phone company 10)
Personal information
Data base
Transmission data
Data processing portion
11
102
303
301
302
304
Radio base station
134
303
Mobile phone device 13 (user 12)
ROM
Transmitter / receiver
Input device
Battery
RAM
Data processing portion
Display device
I / F portion
Power adapter
133
135
136
138
132
131
137
139
140

FIG. 50

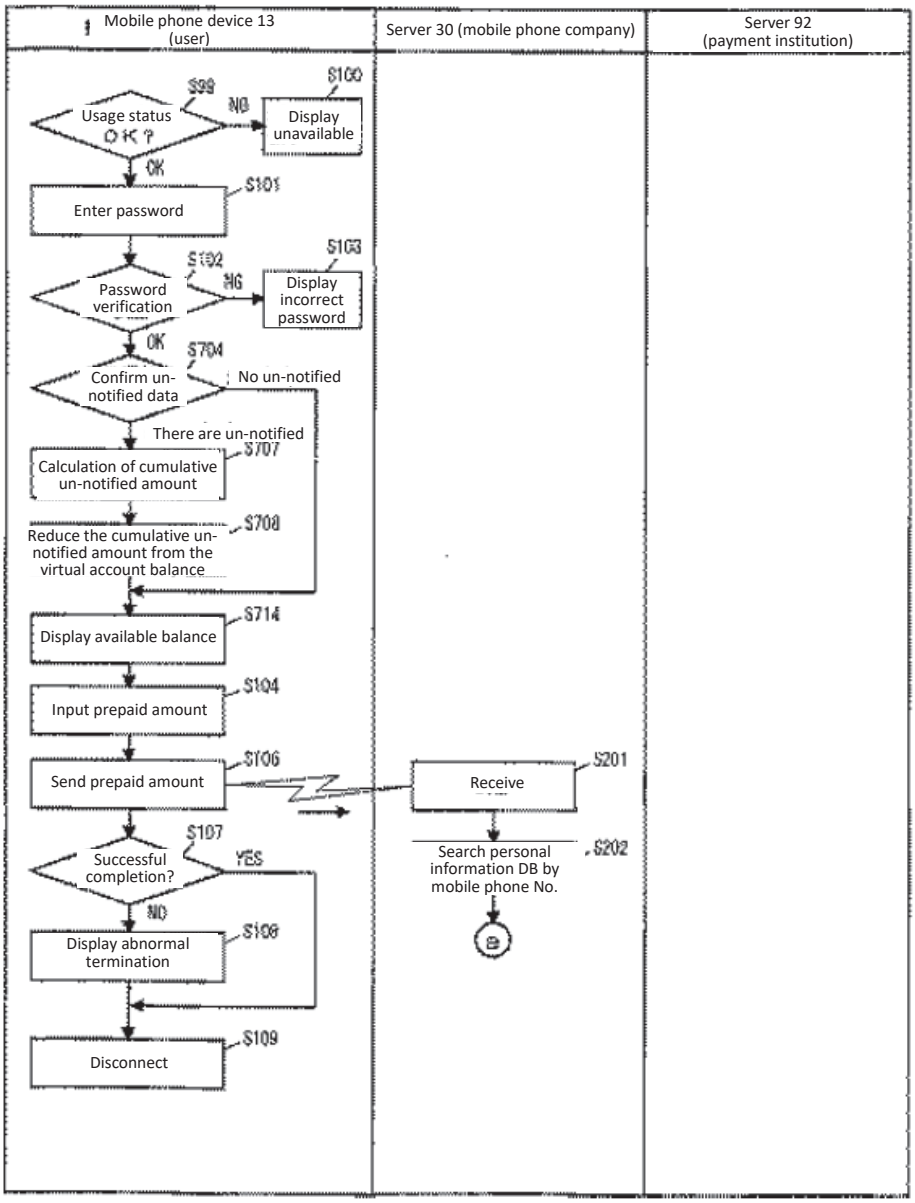

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
S99
Usage status OK?
NG
S100
Display unavailable
OK
S101
Enter password
S102
Password verification
NG
S103
Display incorrect password
OK
S704
Confirm un-notified data
No un-notified
There are un-notified
S707
Calculation of cumulative un-notified amount
S708
Reduce the cumulative un-notified amount from the virtual account balance
S714
Display available balance
S104
Input prepaid amount
S106
Send prepaid amount
S201
Receive
S202
Search personal information DB by mobile phone No.
a
S107
Successful completion?
YES
NG
S108
Display abnormal termination
S109
Disconnect

FIG. 51

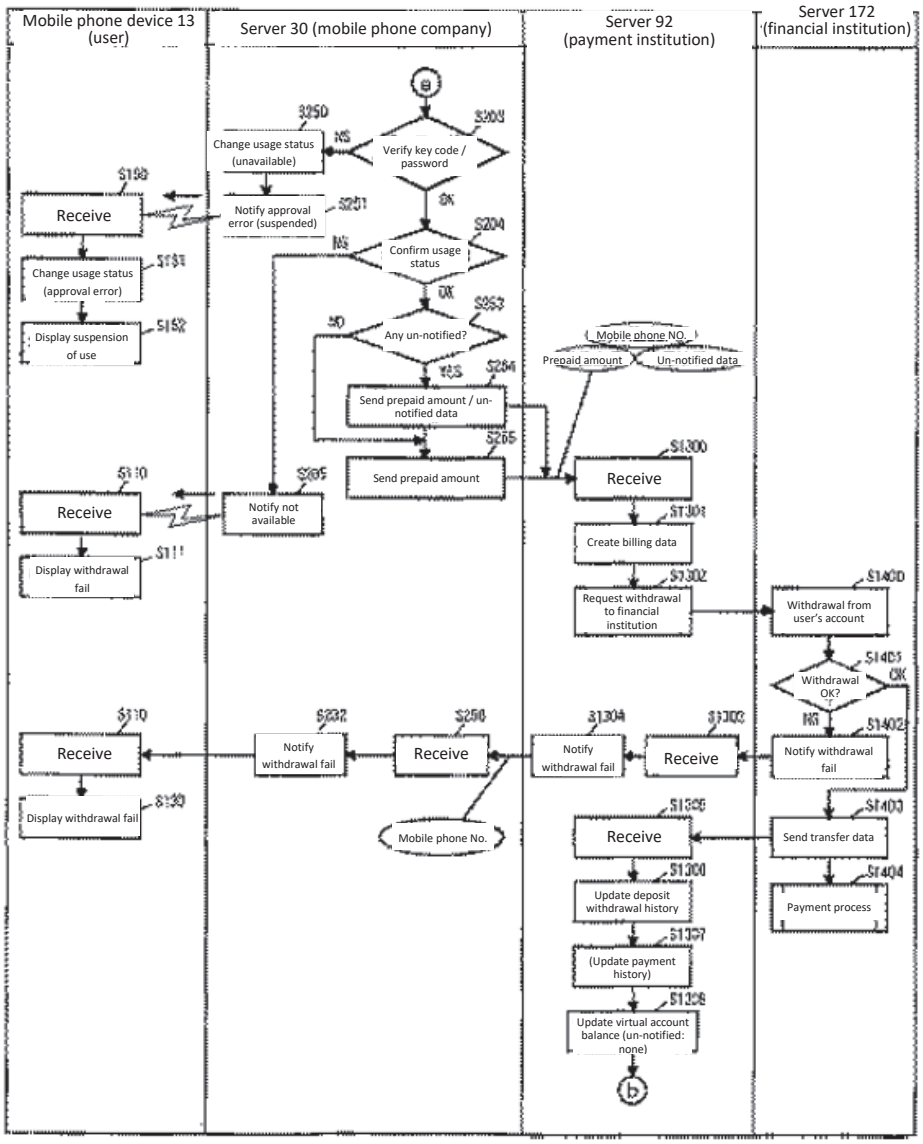

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 172 (financial institution)
Verify key code / password
Change usage status (unavailable)
Notify approval error (suspended)
Confirm usage status
Any un-notified?
Send prepaid amount / un-notified data
Send prepaid amount
Notify not available
Receive
Change usage status (approval error)
Display suspension of use
Display withdrawal fail
Mobile phone NO.
Prepaid amount
Un-notified data
Create billing data
Request withdrawal to financial institution
Withdrawal from user's account
Withdrawal OK?
Notify withdrawal fail
Send transfer data
Payment process
Update deposit withdrawal history
(Update payment history)
Update virtual account balance (un-notified: none)
Mobile phone No.

FIG. 52

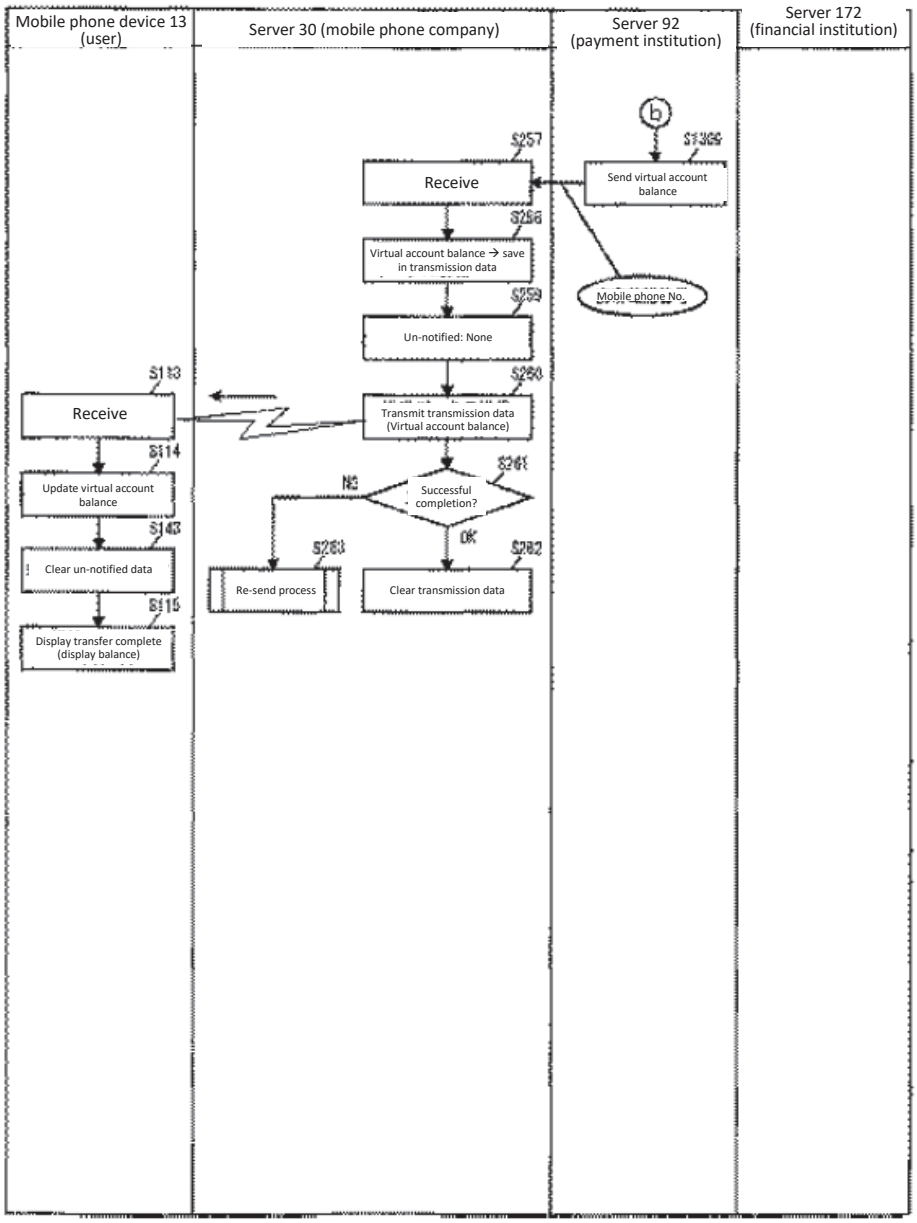

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 172 (financial institution)
b
S1365
Send virtual account balance
S257
Receive
S256
Virtual account balance → save in transmission data
Mobile phone No.
S259
Un-notified: None
S260
Transmit transmission data (Virtual account balance)
S261
Successful completion?
NG
OK
S263
Re-send process
S262
Clear transmission data
S113
Receive
S114
Update virtual account balance
S143
Clear un-notified data
S115
Display transfer complete (display balance)

FIG. 53

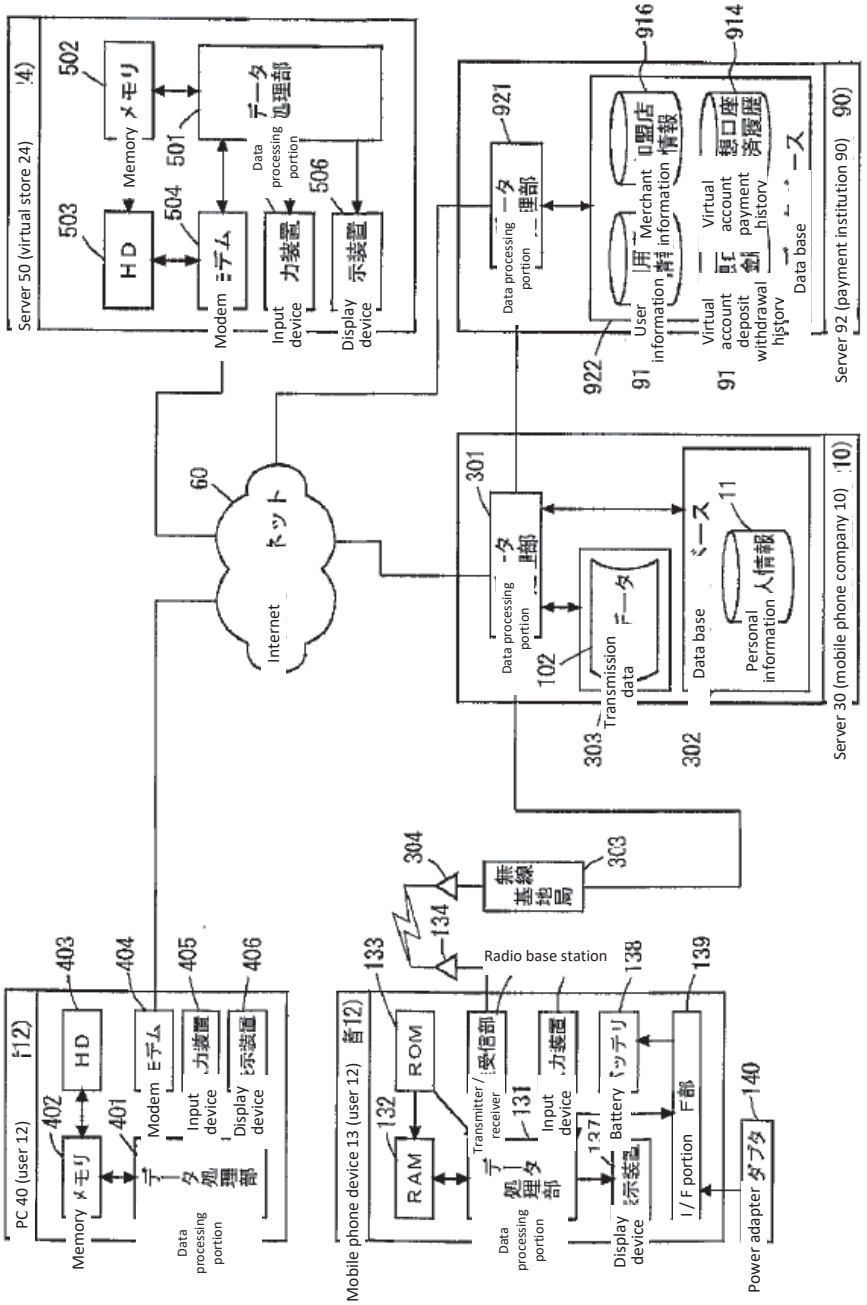

Server 50 (virtual store 24)
Memory
HD
Modem
Input device
Display device
Data processing portion
Server 92 (payment institution 90)
Data base
User information
Virtual account deposit withdrawal history
Virtual account payment history
Merchant information
Server 30 (mobile phone company 10)
Personal information
Transmission data
Internet
Radio base station
PC 40 (user 12)
Mobile phone device 13 (user 12)
ROM
RAM
Transmitter / receiver
Battery
I/F portion
Power adapter

FIG. 54

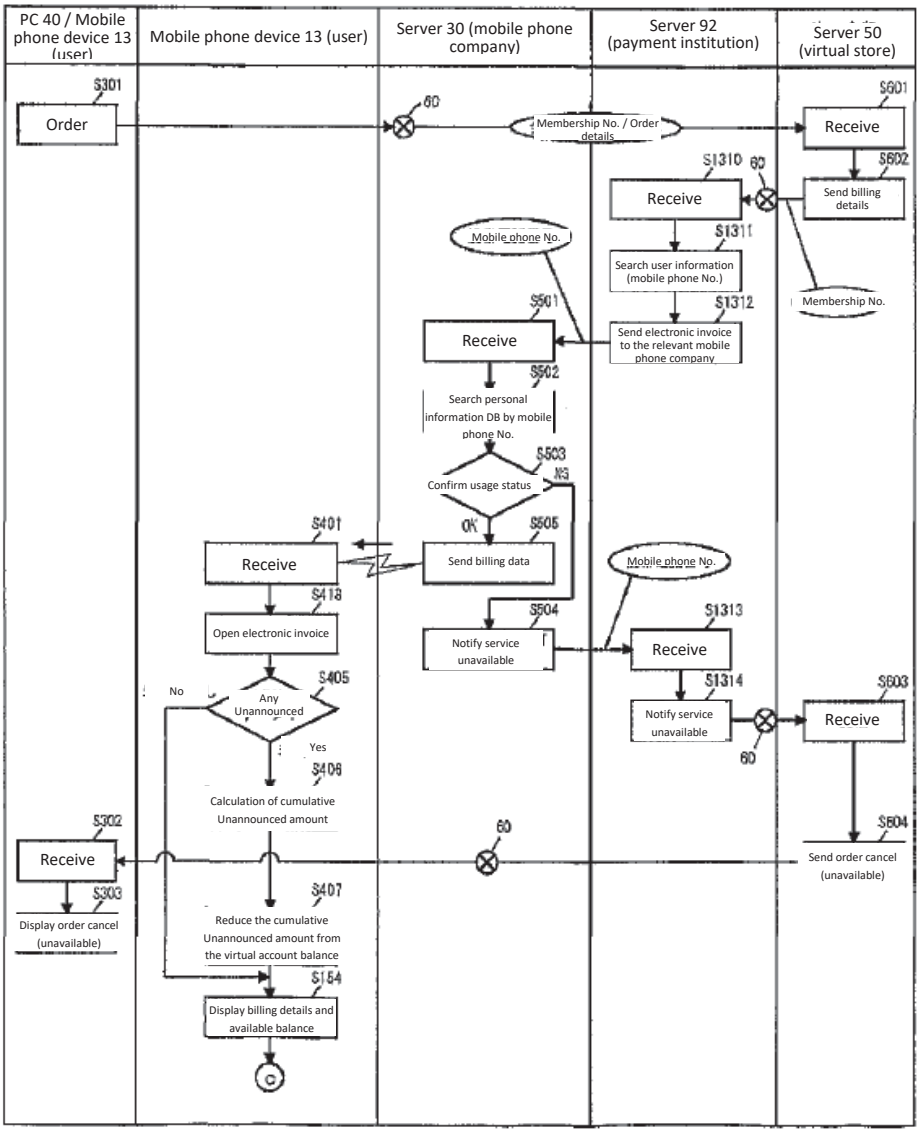

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S301
Order
60
Membership No. / Order details
S601
Receive
S602
Send billing details
S1310
Receive
Mobile phone No.
S1311
Search user information (mobile phone No.)
Membership No.
S1312
Send electronic invoice to the relevant mobile phone company
S501
Receive
S502
Search personal information DB by mobile phone No.
S503
Confirm usage status
NG
OK
S505
Send billing data
S401
Receive
S418
Open electronic invoice
S504
Notify service unavailable
Mobile phone No.
S1313
Receive
S1314
Notify service unavailable
S603
Receive
S405
Any Unannounced
No
Yes
S406
Calculation of cumulative Unannounced amount
S302
Receive
S303
Display order cancel (unavailable)
S407
Reduce the cumulative Unannounced amount from the virtual account balance
S154
Display billing details and available balance
S604
Send order cancel (unavailable)

FIG. 55

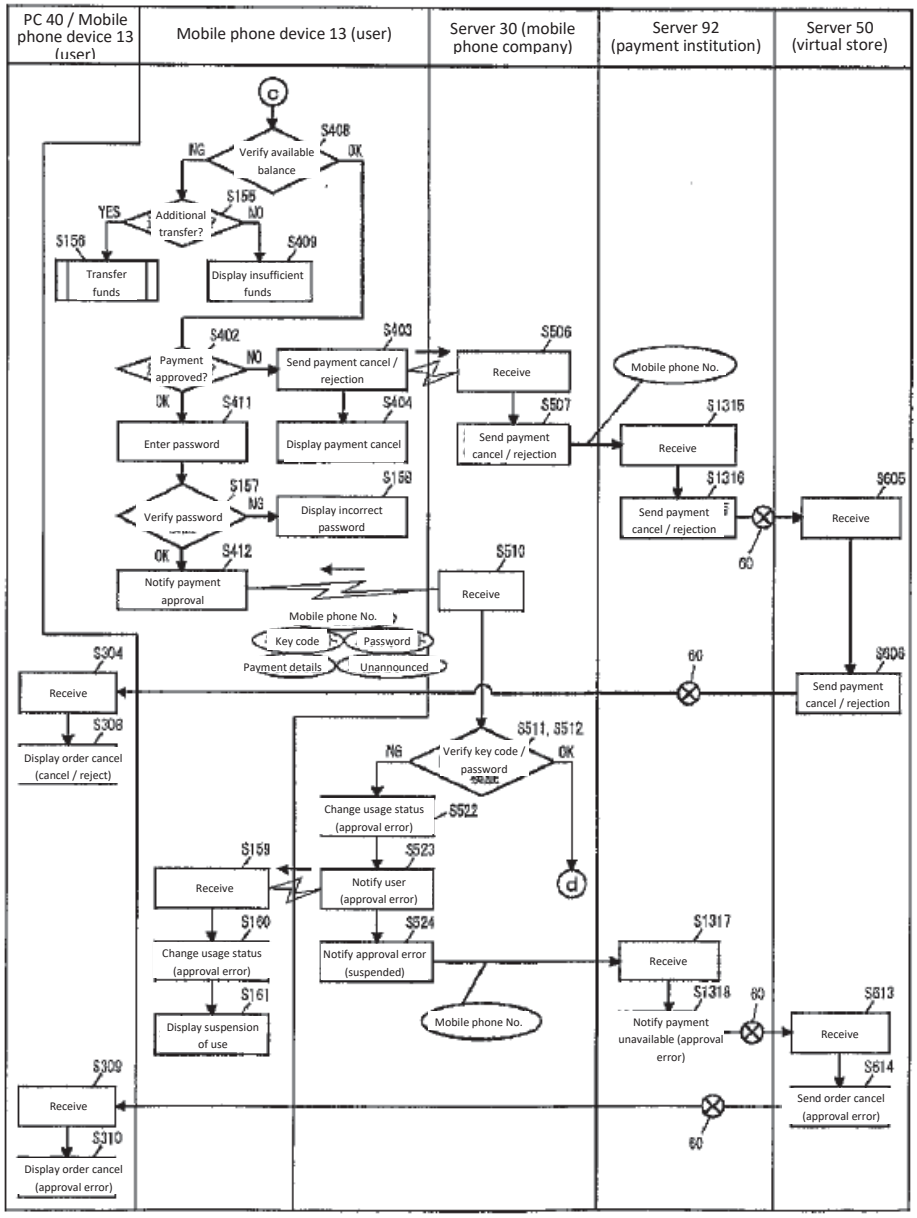

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
c
S408
Verify available balance
NG
OK
S155
Additional transfer?
YES
NO
S156
Transfer funds
S409
Display insufficient funds
S402
Payment approved?
NO
OK
S403
Send payment cancel / rejection
S506
Receive
Mobile phone No.
S507
Send payment cancel / rejection
S1315
Receive
S1316
Send payment cancel / rejection
S605
Receive
60
S411
Enter password
S404
Display payment cancel
S157
Verify password
NG
OK
S158
Display incorrect password
S412
Notify payment approval
S510
Receive
Mobile phone No.
Key code
Password
Payment details
Unannounced
60
S606
Send payment cancel / rejection
S304
Receive
S308
Display order cancel (cancel / reject)
S511, S512
Verify key code / password
NG
OK
Change usage status (approval error)
S522
S523
Notify user (approval error)
d
S159
Receive
S160
Change usage status (approval error)
S161
Display suspension of use
S524
Notify approval error (suspended)
Mobile phone No.
S1317
Receive
S1318
Notify payment unavailable (approval error)
60
S613
Receive
S614
Send order cancel (approval error)
60
S309
Receive
S310
Display order cancel (approval error)

FIG. 56

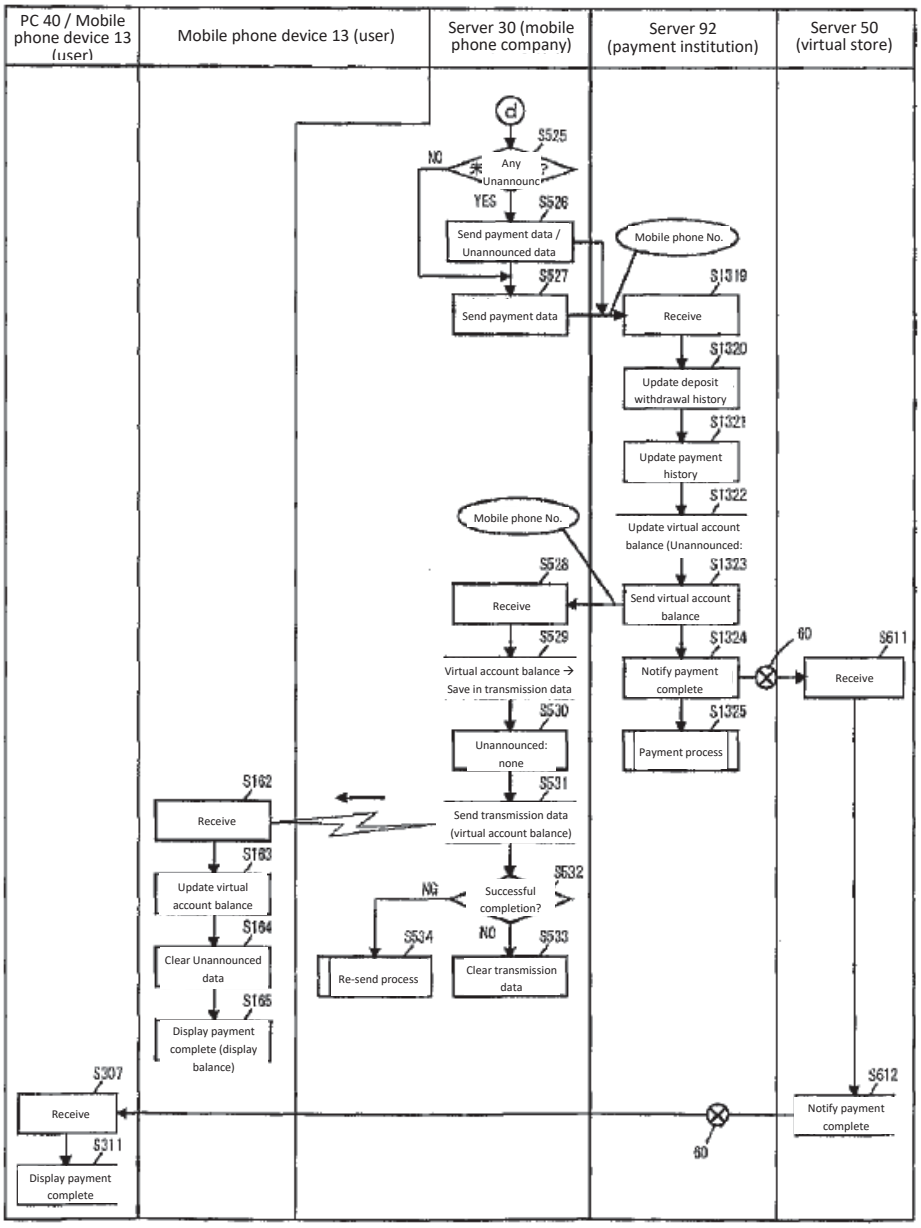

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S525
Any Unannounced?
NO
YES
S526
Send payment data / Unannounced data
Mobile phone No.
S527
Send payment data
S1319
Receive
S1320
Update deposit withdrawal history
S1321
Update payment history
S1322
Update virtual account balance (Unannounced:
Mobile phone No.
S528
Receive
S1323
Send virtual account balance
S529
Virtual account balance → Save in transmission data
S1324
Notify payment complete
60
S611
Receive
S530
Unannounced: none
S1325
Payment process
S162
Receive
S531
Send transmission data (virtual account balance)
S163
Update virtual account balance
S532
Successful completion?
NG
NO
S164
Clear Unannounced data
S534
Re-send process
S533
Clear transmission data
S165
Display payment complete (display balance)
S307
Receive
S311
Display payment complete
S612
Notify payment complete
60

FIG. 57

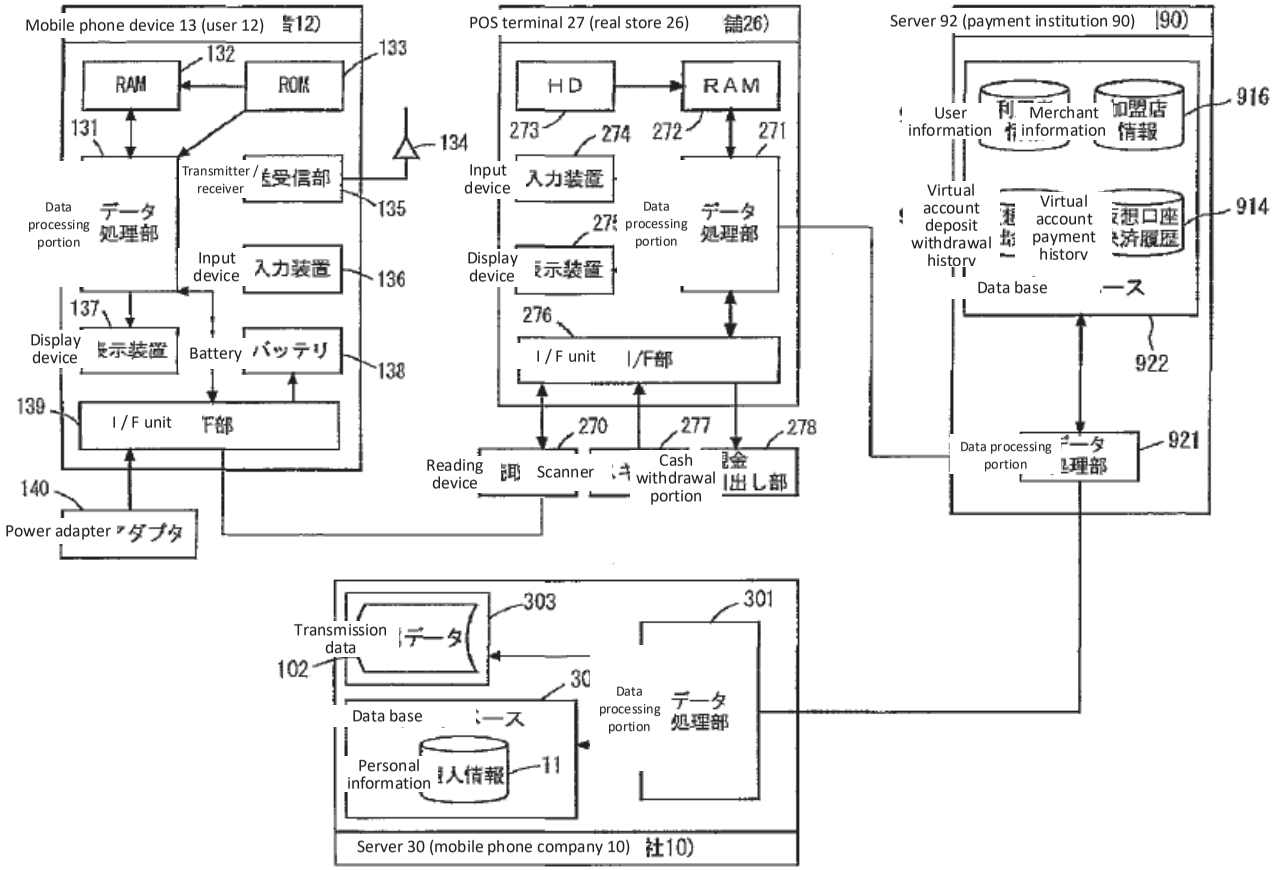


FIG. 58

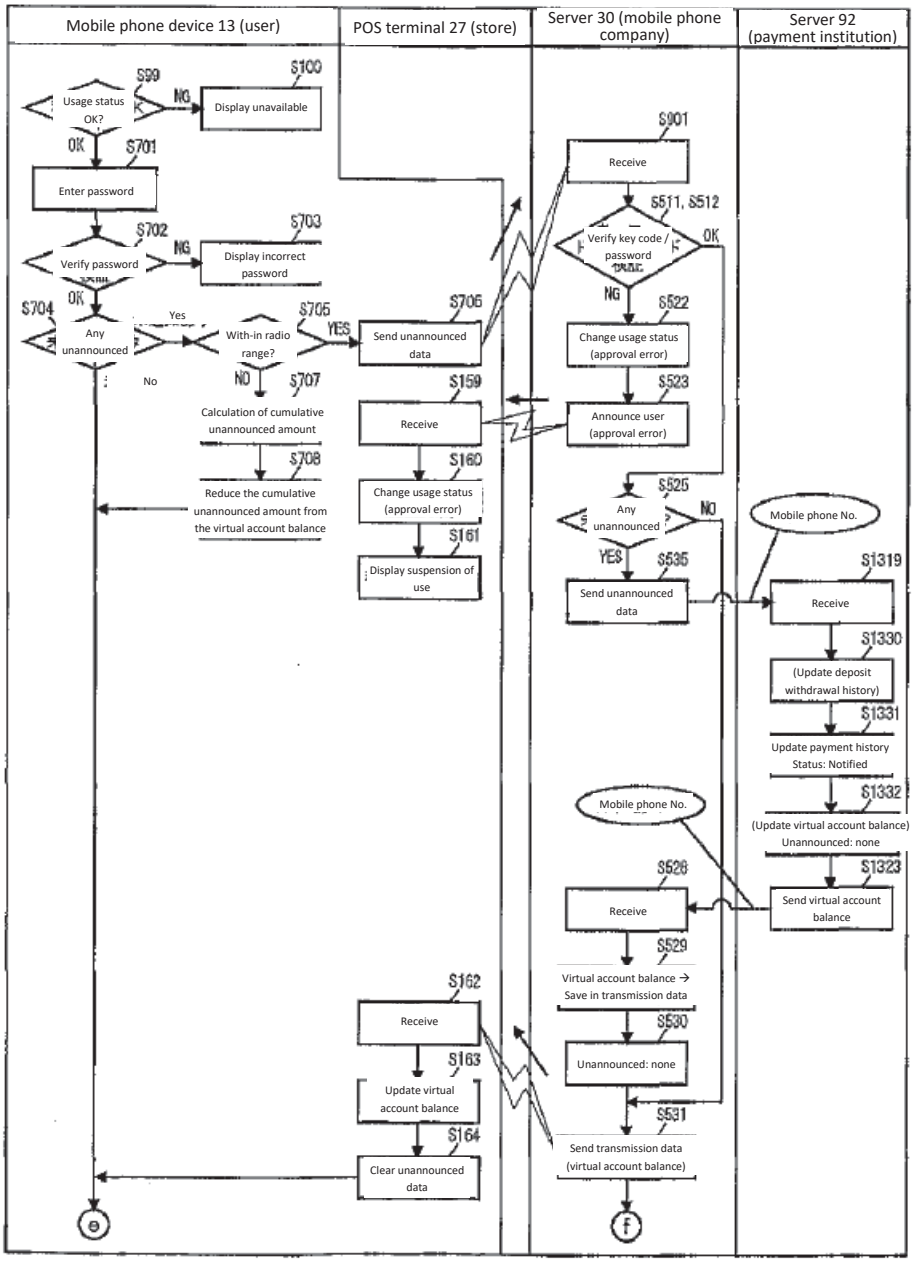

Mobile phone device 13 (user)
POS terminal 27 (store)
Server 30 (mobile phone company)
Server 92 (payment institution)
S99
Usage status OK?
NG
S100
Display unavailable
OK
S701
Enter password
S702
Verify password
NG
S703
Display incorrect password
OK
S704
Any unannounced
Yes
With-in radio range?
S705
YES
Send unannounced data
No
NO
S707
Calculation of cumulative unannounced amount
S708
Reduce the cumulative unannounced amount from the virtual account balance
S159
Receive
S160
Change usage status (approval error)
S161
Display suspension of use
S162
Receive
S163
Update virtual account balance
S164
Clear unannounced data
S901
Receive
S511, S512
Verify key code / password
OK
NG
S522
Change usage status (approval error)
S523
Announce user (approval error)
S525
Any unannounced
NO
YES
S535
Send unannounced data
S526
Receive
S529
Virtual account balance → Save in transmission data
S530
Unannounced: none
S531
Send transmission data (virtual account balance)
Mobile phone No.
S1319
Receive
S1330
(Update deposit withdrawal history)
S1331
Update payment history Status: Notified
S1332
(Update virtual account balance) Unannounced: none
S1323
Send virtual account balance
Mobile phone No.

FIG. 59

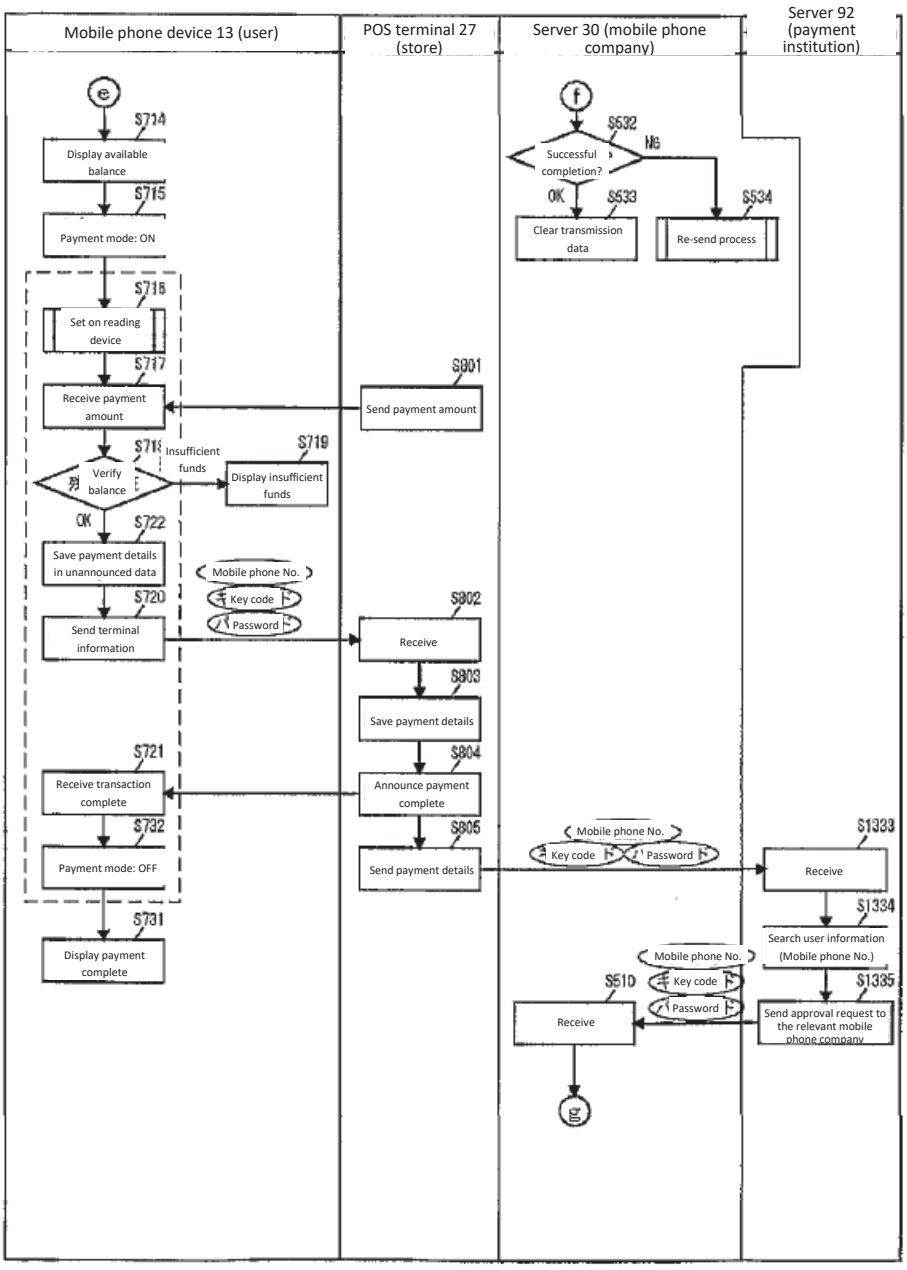

Mobile phone device 13 (user)
POS terminal 27 (store)
Server 30 (mobile phone company)
Server 92 (payment institution)
e
S714
Display available balance
S715
Payment mode: ON
S716
Set on reading device
S717
Receive payment amount
S718
Verify balance
Insufficient funds
S719
Display insufficient funds
OK
S722
Save payment details in unannounced data
S720
Send terminal information
Mobile phone No.
Key code
Password
S801
Send payment amount
S802
Receive
S803
Save payment details
S804
Announce payment complete
S805
Send payment details
S721
Receive transaction complete
S732
Payment mode: OFF
S731
Display payment complete
f
S532
Successful completion?
NG
OK
S533
Clear transmission data
S534
Re-send process
Mobile phone No.
Key code
Password
S1333
Receive
S1334
Search user information (Mobile phone No.)
Mobile phone No.
Key code
Password
S1335
Send approval request to the relevant mobile phone company
S510
Receive
g

FIG. 60

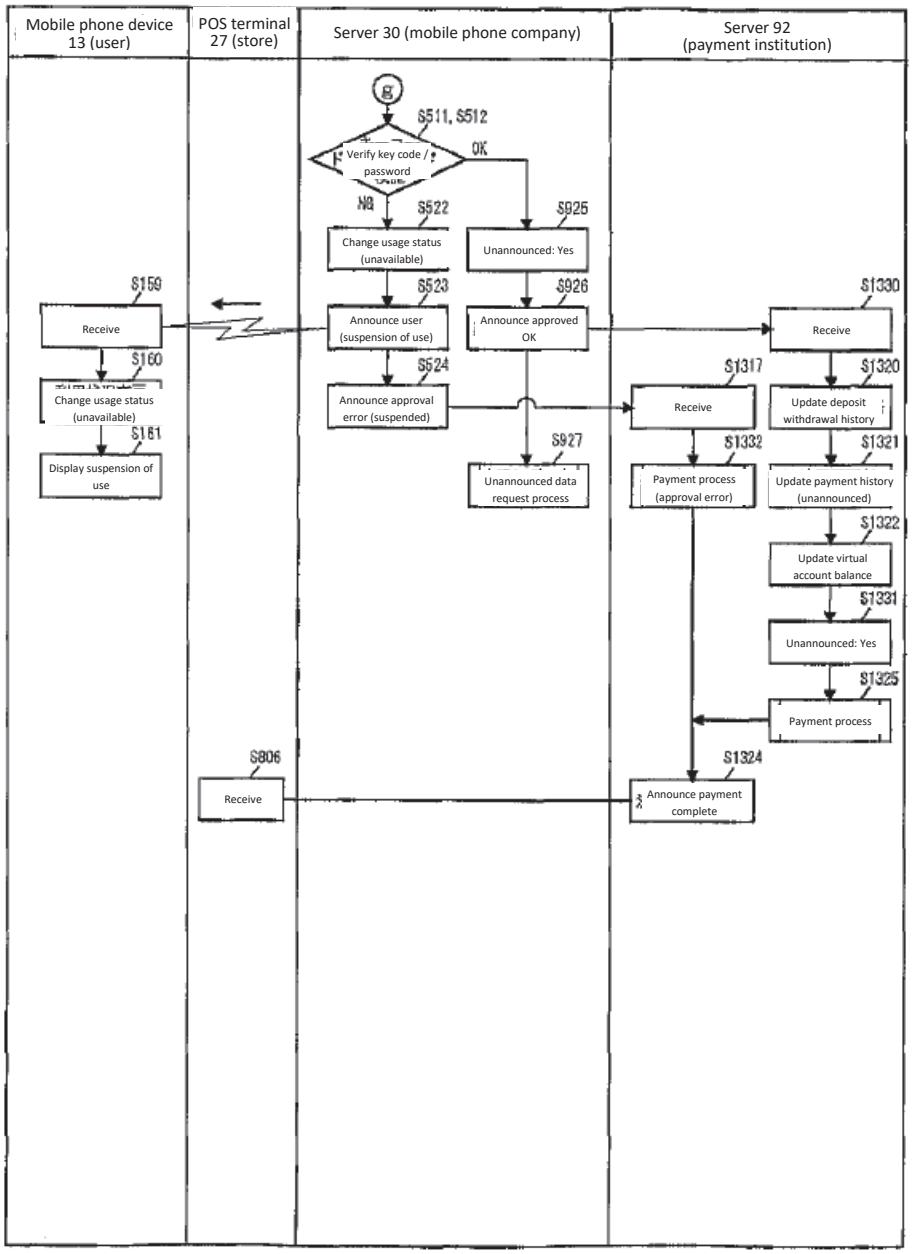

Mobile phone device 13 (user)
POS terminal 27 (store)
Server 30 (mobile phone company)
Server 92 (payment institution)
g
S511, S512
Verify key code / password
OK
NG
S522
Change usage status (unavailable)
S523
Announce user (suspension of use)
S524
Announce approval error (suspended)
S925
Unannounced: Yes
S926
Announce approved OK
S927
Unannounced data request process
S159
Receive
S160
Change usage status (unavailable)
S161
Display suspension of use
S806
Receive
S1317
Receive
S1332
Payment process (approval error)
S1324
Announce payment complete
S1330
Receive
S1320
Update deposit withdrawal history
S1321
Update payment history (unannounced)
S1322
Update virtual account balance
S1331
Unannounced: Yes
S1325
Payment process

FIG. 61

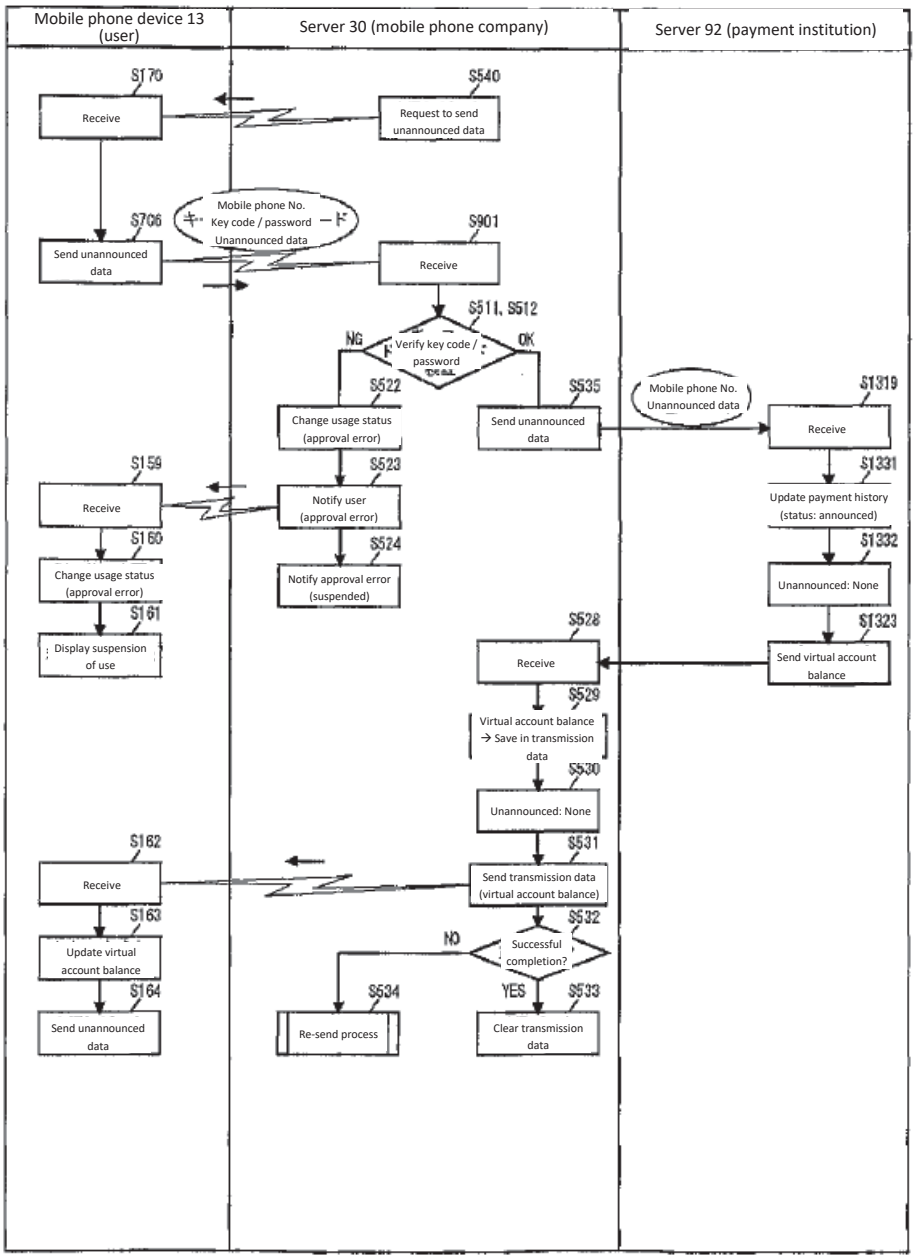

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
S170
Receive
S540
Request to send unannounced data
Mobile phone No.
Key code / password
Unannounced data
S706
Send unannounced data
S901
Receive
S511, S512
Verify key code / password
NG
OK
S522
Change usage status (approval error)
S535
Send unannounced data
Mobile phone No.
Unannounced data
S1319
Receive
S159
Receive
S523
Notify user (approval error)
S1331
Update payment history (status: announced)
S160
Change usage status (approval error)
S524
Notify approval error (suspended)
S1332
Unannounced: None
S161
Display suspension of use
S528
Receive
S1323
Send virtual account balance
S529
Virtual account balance → Save in transmission data
S530
Unannounced: None
S162
Receive
S531
Send transmission data (virtual account balance)
S163
Update virtual account balance
S532
Successful completion?
NO
YES
S164
Send unannounced data
S534
Re-send process
S533
Clear transmission data

FIG. 62

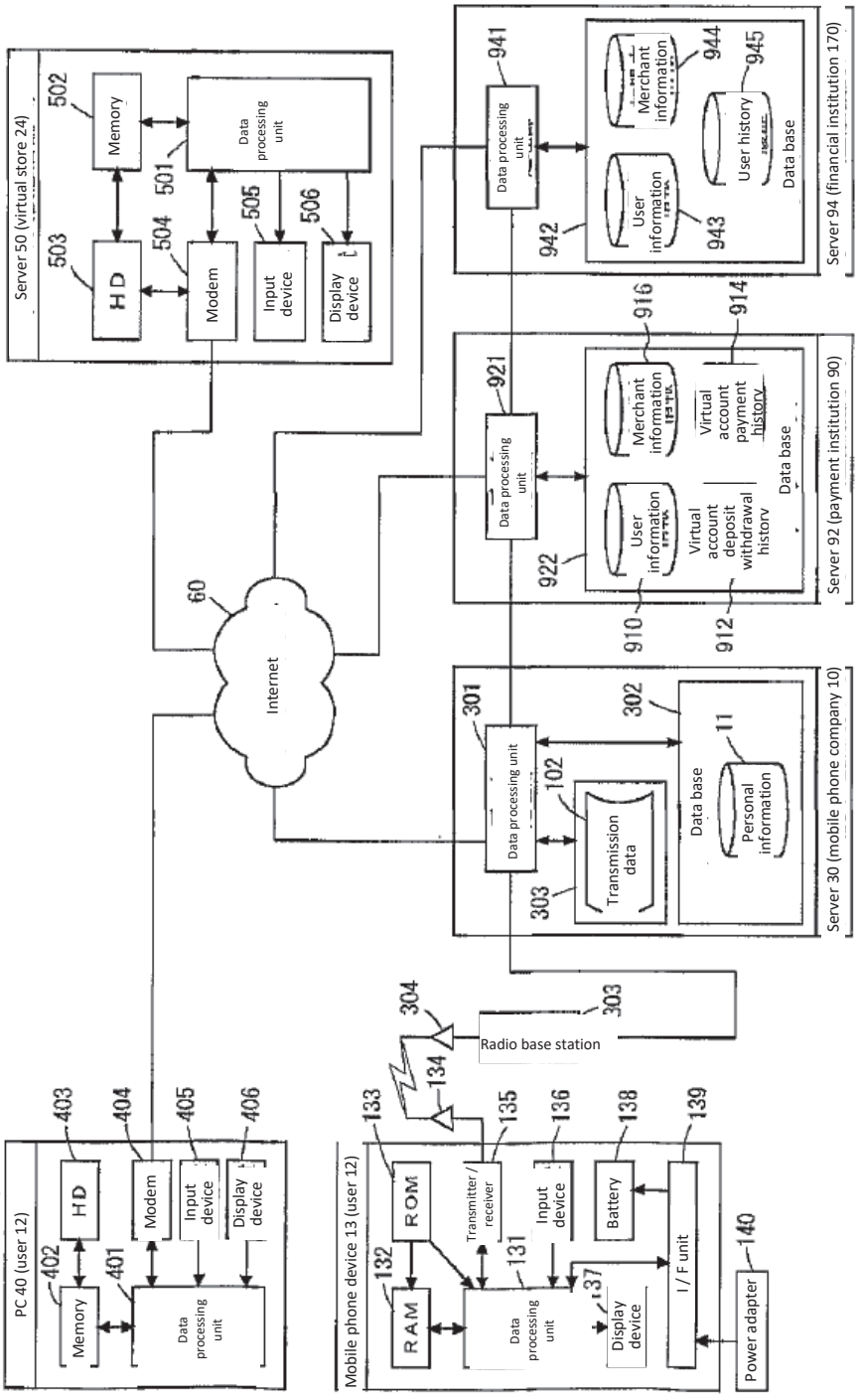

Server 50 (virtual store 24)
Memory
Data processing unit
HD
Modem
Input device
Display device
Server 94 (financial institution 170)
Data processing unit
Merchant information
User information
User history
Data base
Server 92 (payment institution 90)
Data processing unit
Merchant information
User information
Virtual account deposit withdrawal history
Virtual account payment history
Data base
Internet
Server 30 (mobile phone company 10)
Data processing unit
Transmission data
Data base
Personal information
Radio base station
PC 40 (user 12)
Memory
HD
Modem
Input device
Display device
Data processing unit
Mobile phone device 13 (user 12)
ROM
RAM
Transmitter / receiver
Input device
Battery
Display device
Data processing unit
I / F unit
Power adapter

FIG. 63

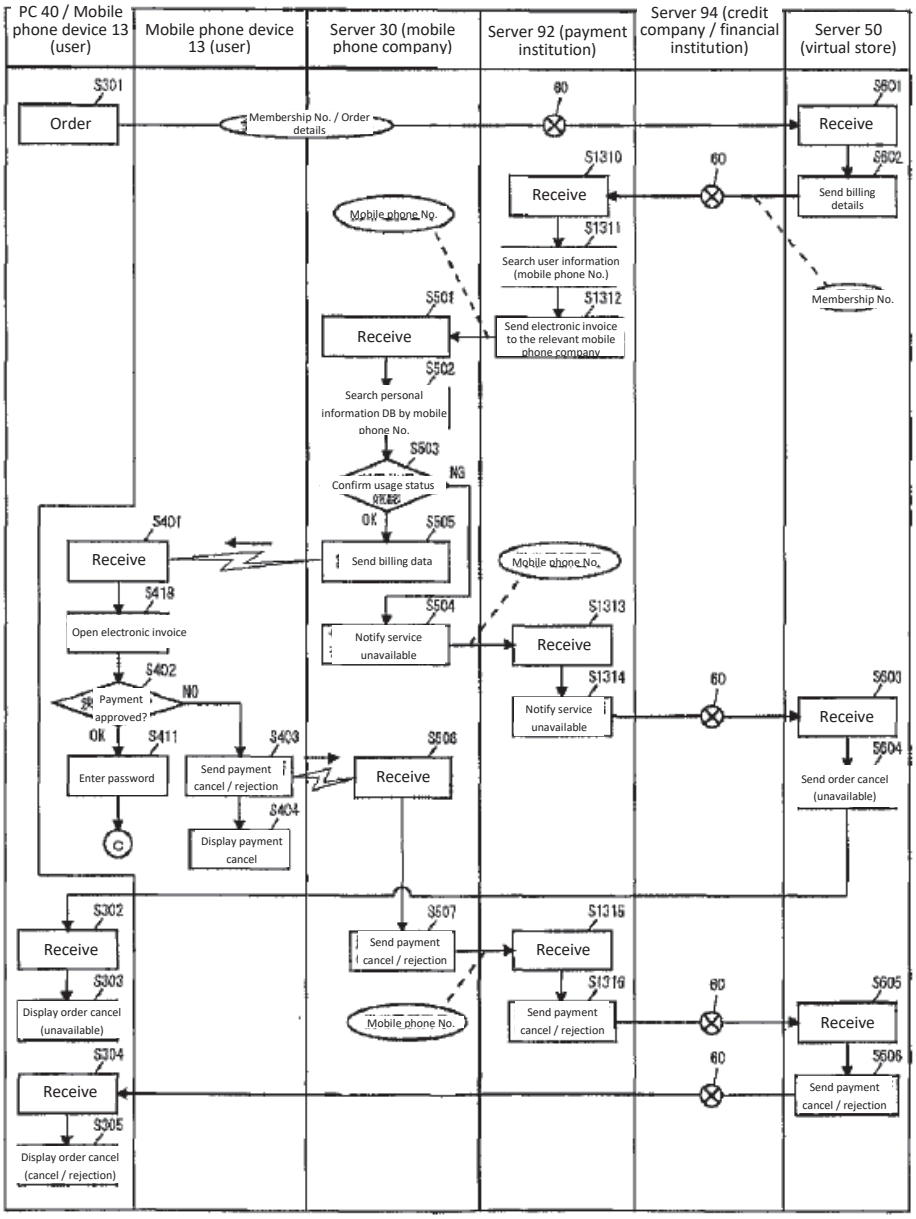

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 94 (credit company / financial institution)
Server 50 (virtual store)
S301
Order
Membership No. / Order details
60
S601
Receive
S1310
Receive
60
S602
Send billing details
Mobile phone No.
S1311
Search user information (mobile phone No.)
Membership No.
S1312
Send electronic invoice to the relevant mobile phone company
S501
Receive
S502
Search personal information DB by mobile phone No.
S503
Confirm usage status
NG
OK
S505
Send billing data
S401
Receive
Mobile phone No.
S418
Open electronic invoice
S504
Notify service unavailable
S1313
Receive
S1314
Notify service unavailable
60
S603
Receive
S402
Payment approved?
NO
OK
S411
Enter password
S403
Send payment cancel / rejection
S506
Receive
S604
Send order cancel (unavailable)
S404
Display payment cancel
C
S302
Receive
S507
Send payment cancel / rejection
S1315
Receive
S303
Display order cancel (unavailable)
Mobile phone No.
S1316
Send payment cancel / rejection
60
S605
Receive
S304
Receive
60
S606
Send payment cancel / rejection
S305
Display order cancel (cancel / rejection)

FIG. 64

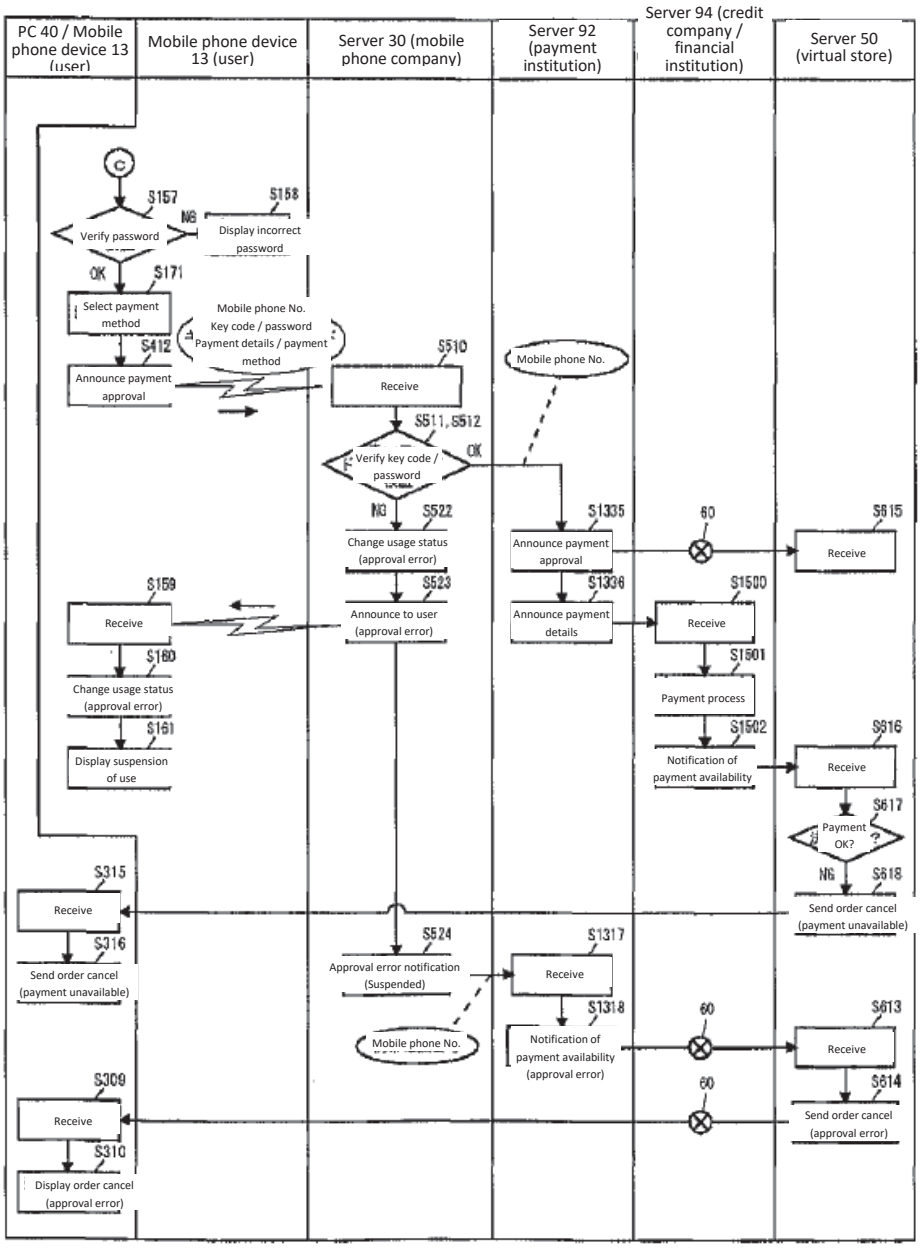

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 94 (credit company / financial institution)
Server 50 (virtual store)
C
S157
Verify password
NG
S158
Display incorrect password
OK
S171
Select payment method
S412
Announce payment approval
Mobile phone No.
Key code / password
Payment details / payment method
S510
Receive
Mobile phone No.
S511, S512
Verify key code / password
OK
NG
S522
Change usage status (approval error)
S523
Announce to user (approval error)
S1335
Announce payment approval
S1336
Announce payment details
60
S1500
Receive
S1501
Payment process
S1502
Notification of payment availability
S615
Receive
S616
Receive
S617
Payment OK?
NG
S618
Send order cancel (payment unavailable)
S159
Receive
S160
Change usage status (approval error)
S161
Display suspension of use
S315
Receive
S316
Send order cancel (payment unavailable)
S524
Approval error notification (Suspended)
Mobile phone No.
S1317
Receive
S1318
Notification of payment availability (approval error)
60
S613
Receive
S614
Send order cancel (approval error)
60
S309
Receive
S310
Display order cancel (approval error)

FIG. 65

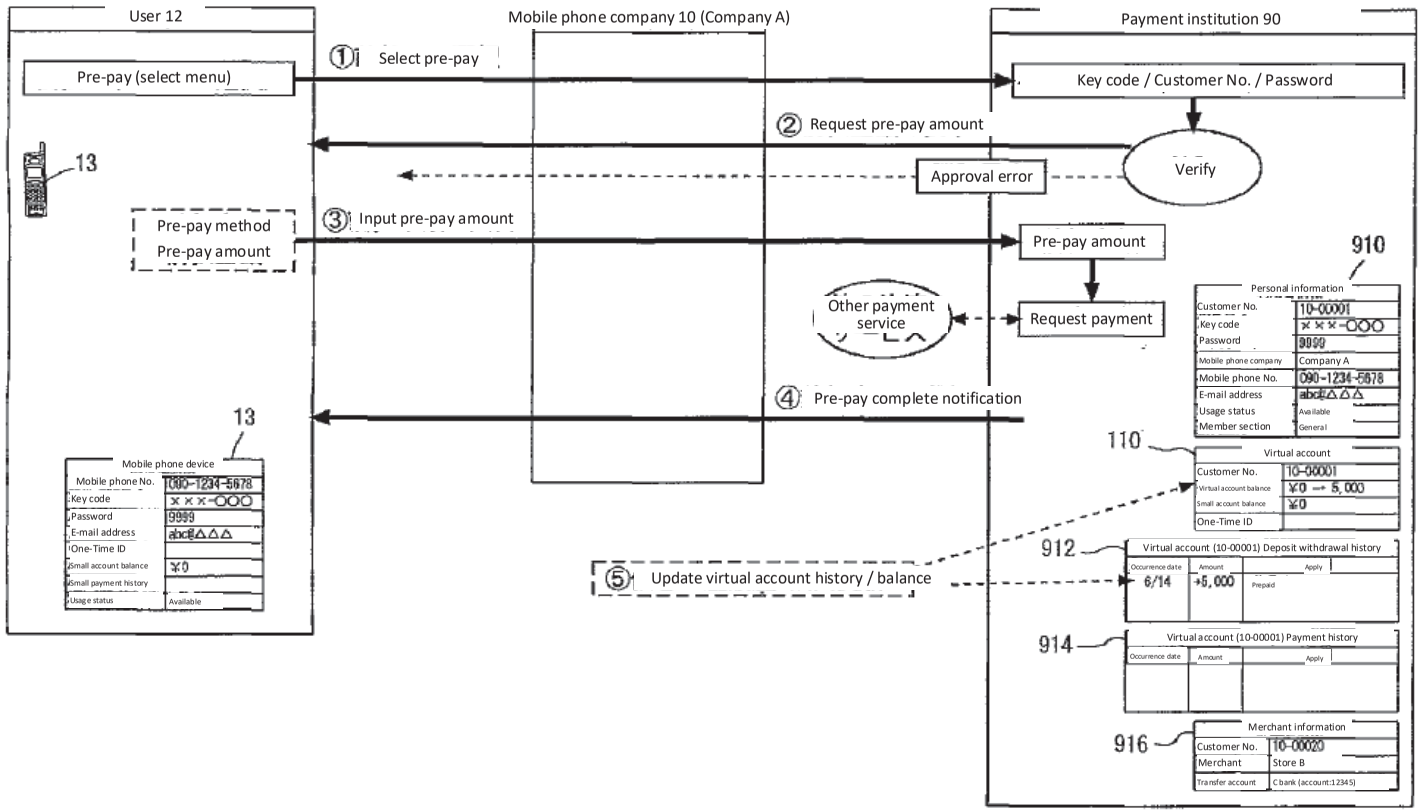


FIG. 66

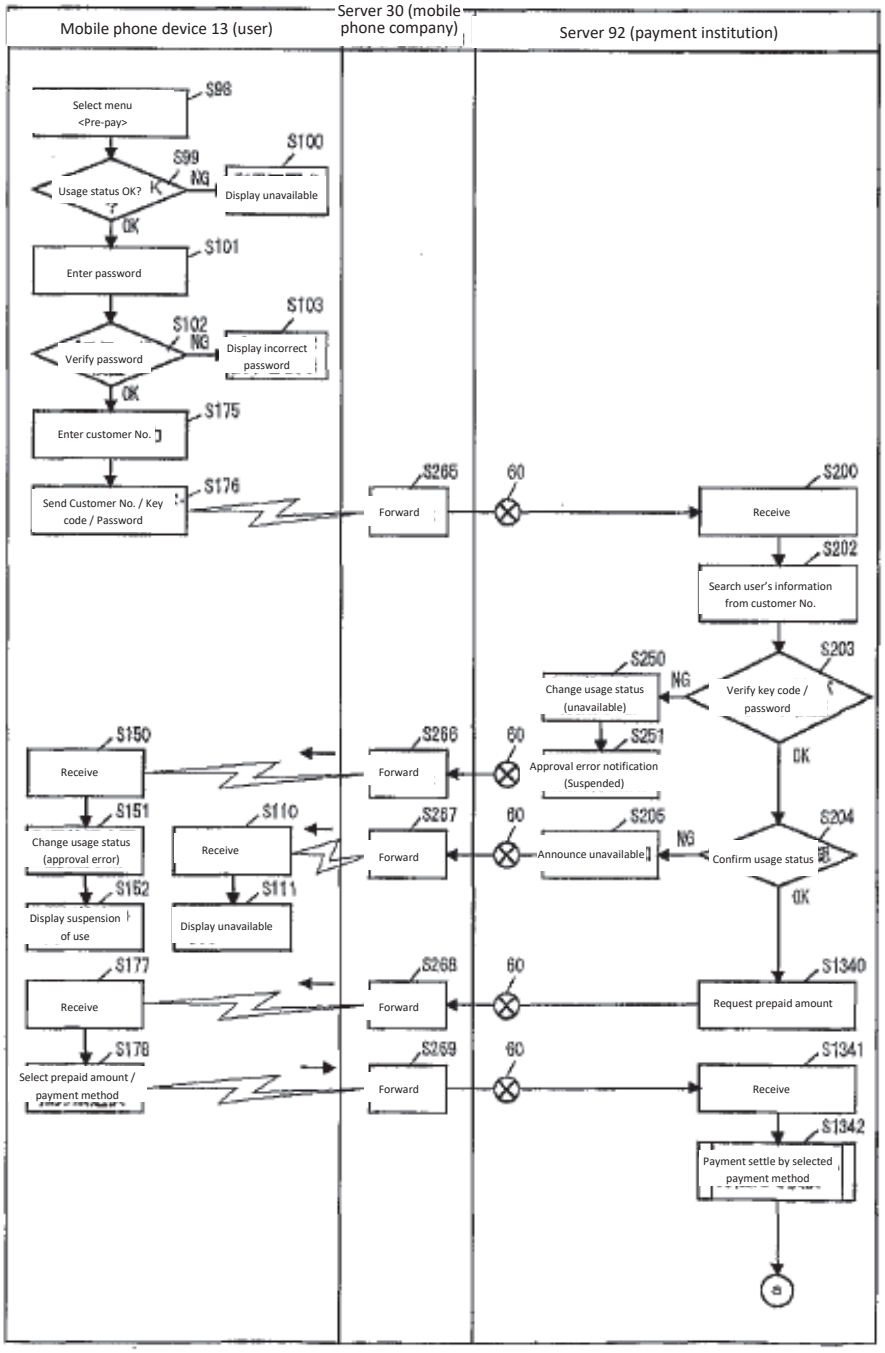

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
S98
Select menu <Pre-pay>
S99
Usage status OK?
NG
OK
S100
Display unavailable
S101
Enter password
S102
Verify password
NG
OK
S103
Display incorrect password
S175
Enter customer No.
S176
Send Customer No. / Key code / Password
S265
Forward
60
S200
Receive
S202
Search user's information from customer No.
S203
Verify key code / password
NG
OK
S250
Change usage status (unavailable)
S251
Approval error notification (Suspended)
S204
Confirm usage status
NG
OK
S205
Announce unavailable
S266
Forward
S150
Receive
S267
Forward
S110
Receive
S111
Display unavailable
S151
Change usage status (approval error)
S152
Display suspension of use
S268
Forward
S177
Receive
S269
Forward
S178
Select prepaid amount / payment method
S1340
Request prepaid amount
S1341
Receive
S1342
Payment settle by selected payment method
B

FIG. 67

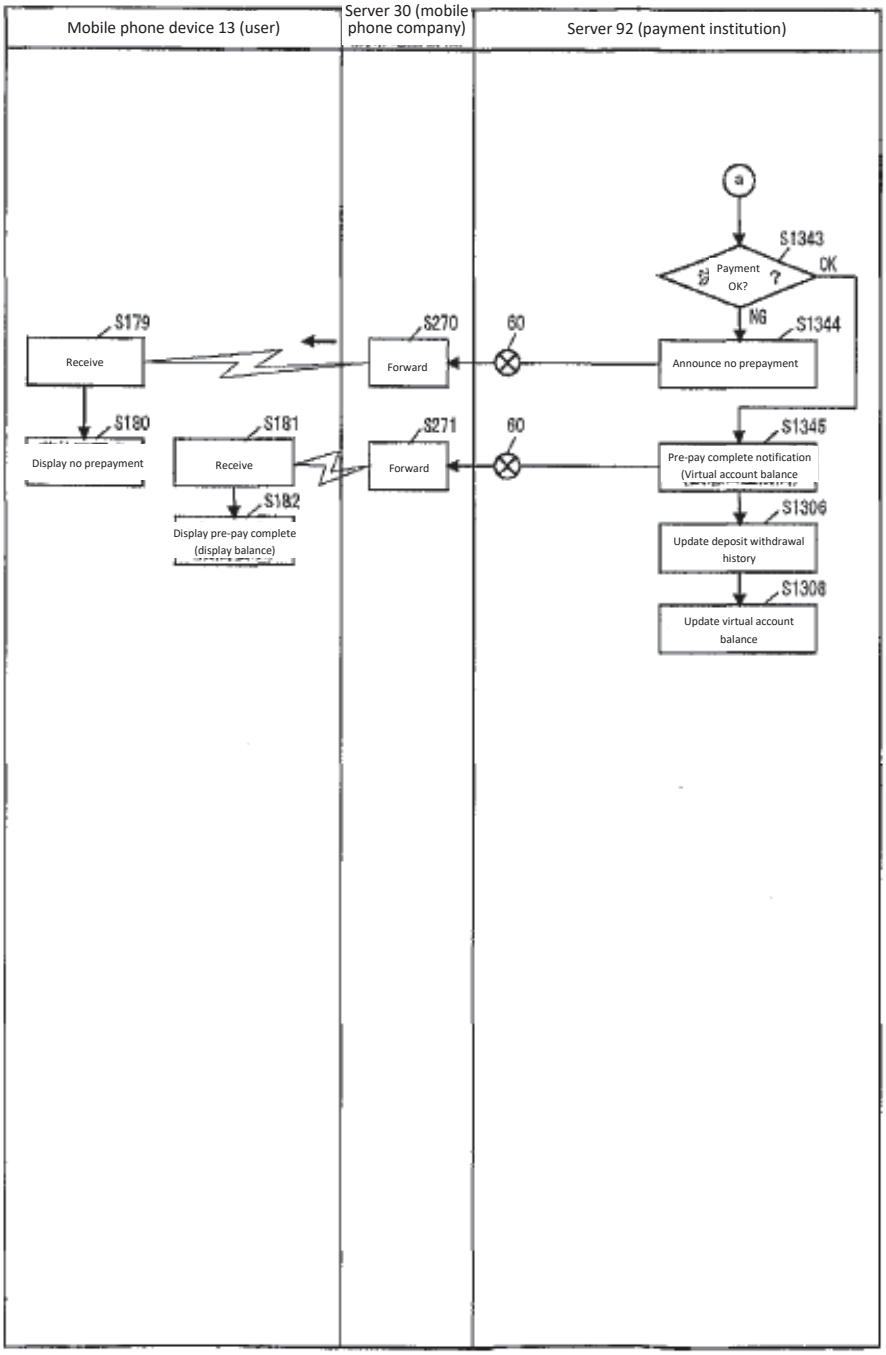

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
a
S1343
Payment OK?
OK
NG
S1344
Announce no prepayment
S179
Receive
S270
Forward
60
S180
Display no prepayment
S181
Receive
S271
Forward
60
S182
Display pre-pay complete (display balance)
S1345
Pre-pay complete notification (Virtual account balance
S1306
Update deposit withdrawal history
S1308
Update virtual account balance

FIG. 68

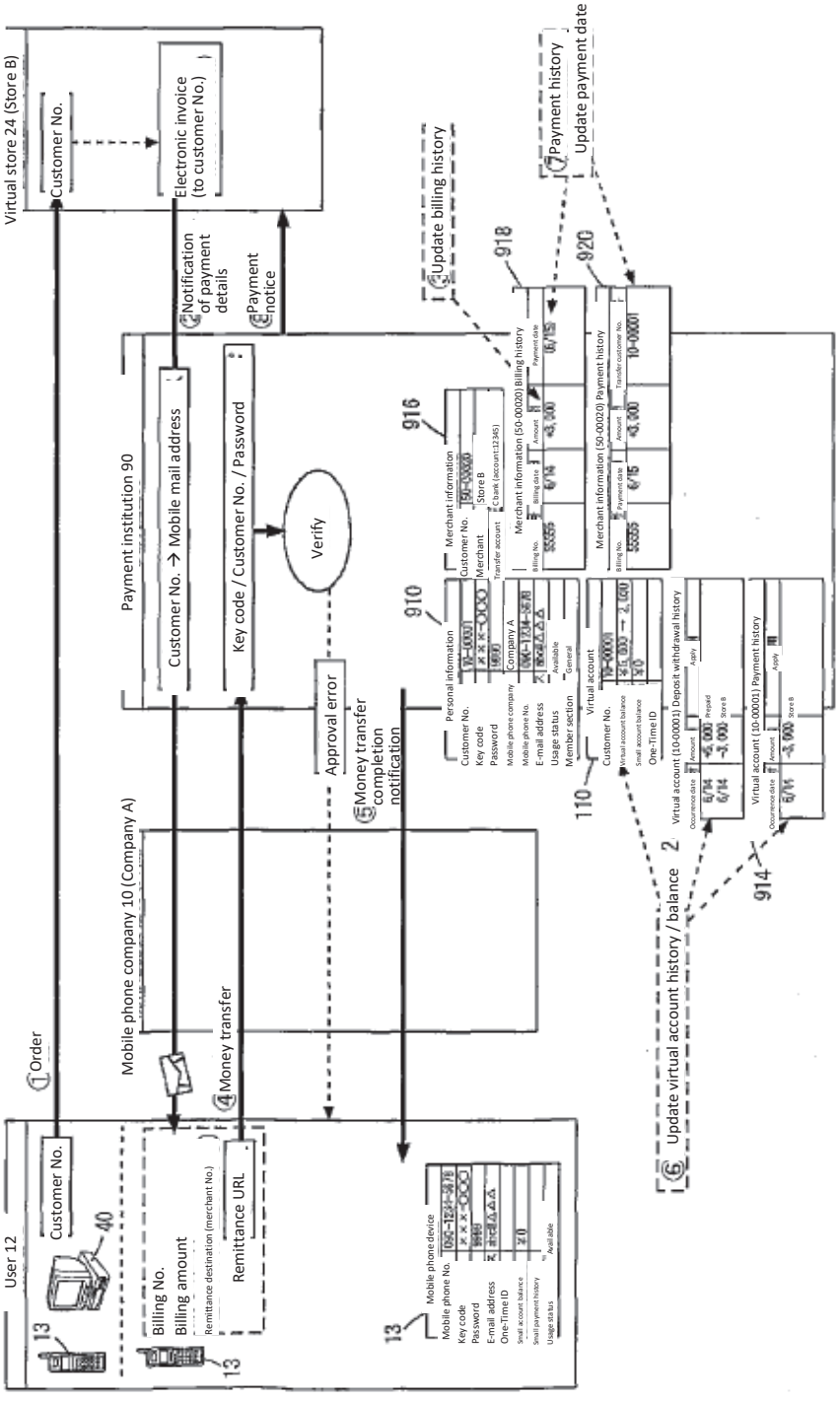

Virtual store 24 (Store B)
Customer No.
Electronic invoice (to customer No.)
Payment institution 90
Customer No. → Mobile mail address
Key code / Customer No. / Password
Verify
Approval error
Money transfer completion notification
Notification of payment details
Payment notice
Update billing history
Payment history
Update payment date
Mobile phone company 10 (Company A)
Money transfer
Order
User 12
Customer No.
Billing No.
Billing amount
Remittance destination (merchant No.)
Remittance URL
Mobile phone device
Update virtual account history / balance
Personal information
Merchant information
Virtual account
Merchant information (50-00020) billing history
Merchant information (50-00020) Payment history
Virtual account (10-00001) Deposit withdrawal history
Virtual account (10-00001) Payment history
910
916
918
920
914
110

FIG. 69

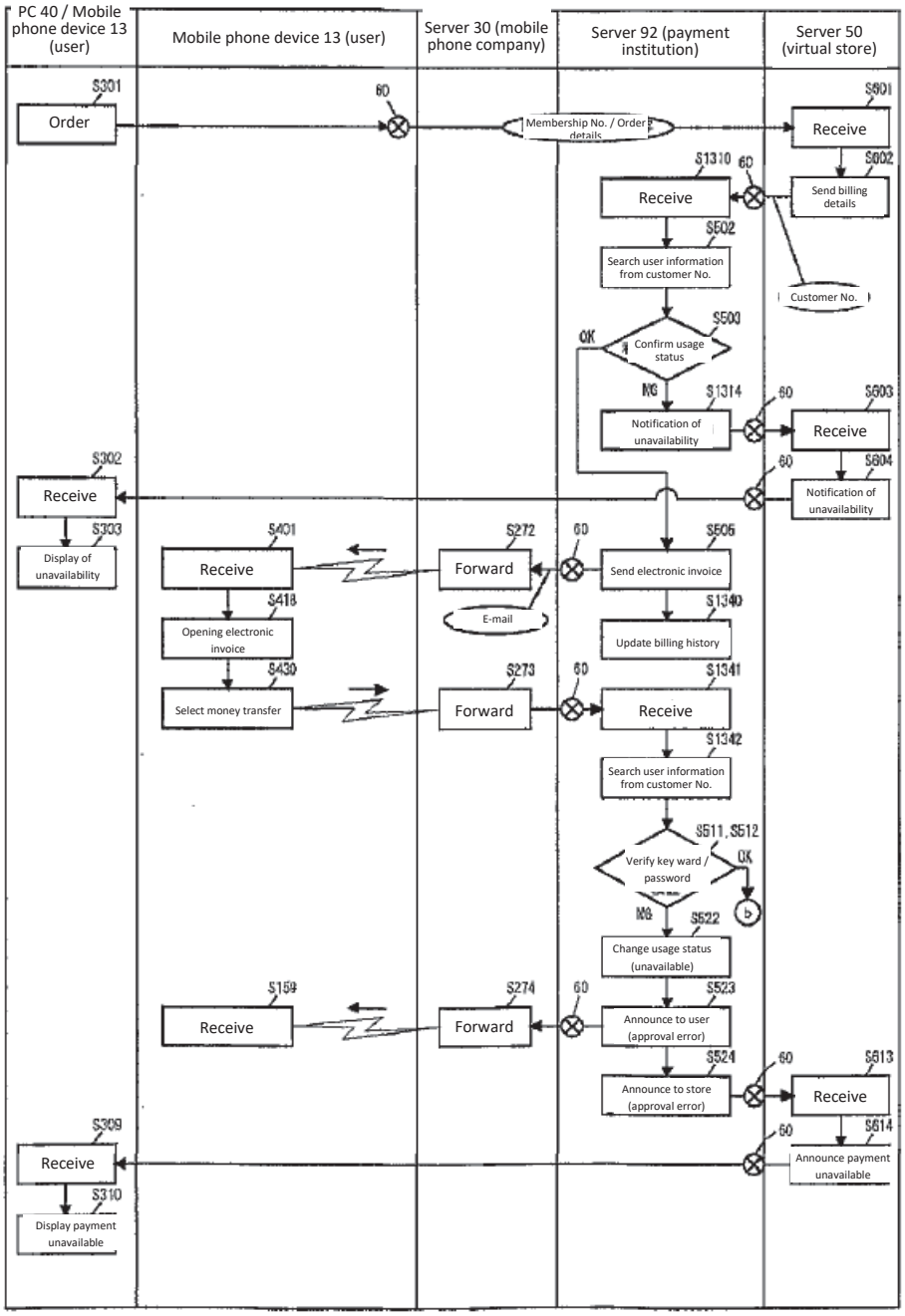

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S301
Order
60
Membership No. / Order details
S601
Receive
S602
Send billing details
S1310
Receive
Customer No.
S502
Search user information from customer No.
S503
Confirm usage status
OK
NG
S1314
Notification of unavailability
S603
Receive
S604
Notification of unavailability
S302
Receive
S303
Display of unavailability
S401
Receive
S272
Forward
E-mail
S505
Send electronic invoice
S1340
Update billing history
S418
Opening electronic invoice
S430
Select money transfer
S273
Forward
S1341
Receive
S1342
Search user information from customer No.
S511, S512
Verify key ward / password
OK
NG
S522
Change usage status (unavailable)
S159
Receive
S274
Forward
S523
Announce to user (approval error)
S524
Announce to store (approval error)
S613
Receive
S614
Announce payment unavailable
S309
Receive
S310
Display payment unavailable

FIG. 70

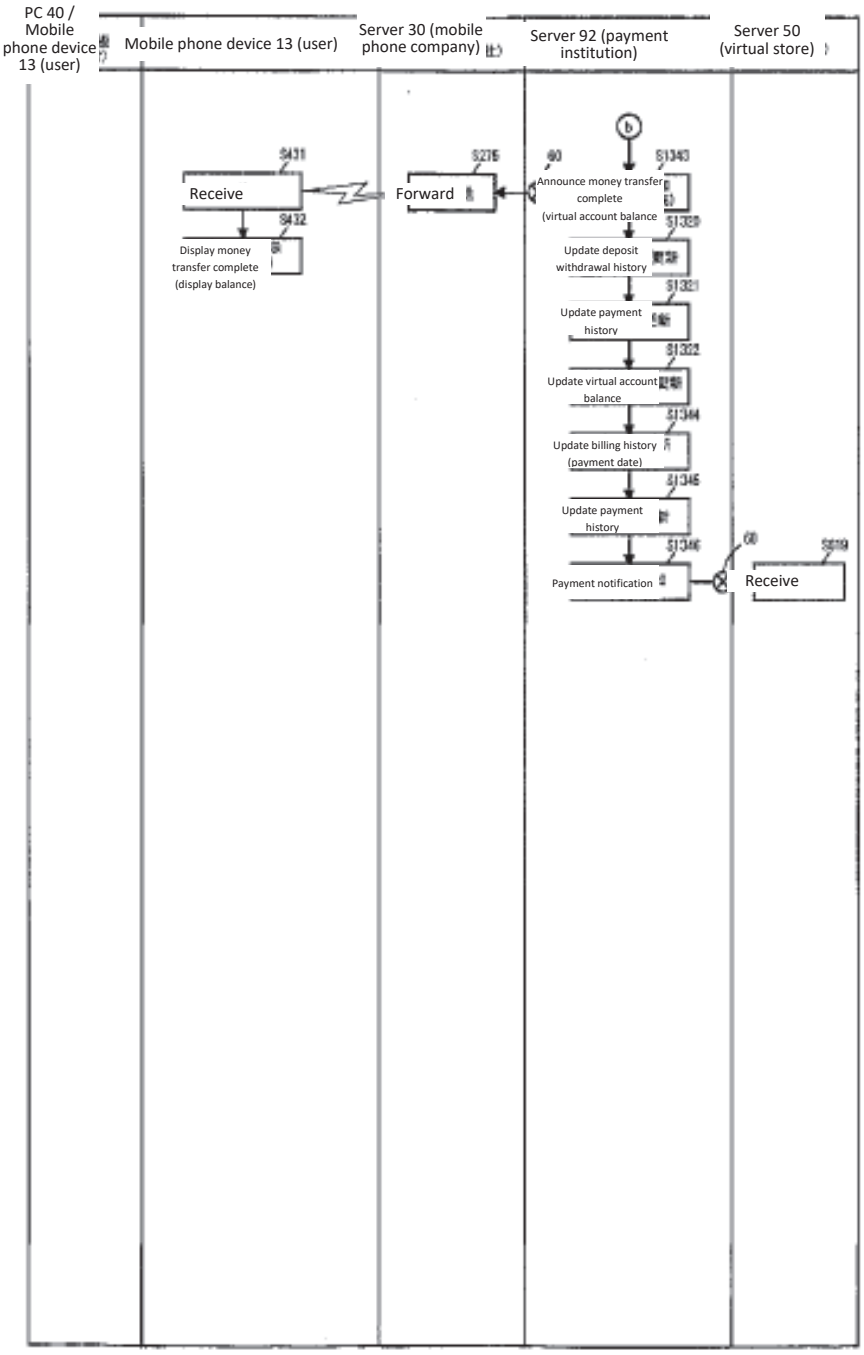

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S431
Receive
S432
Display money transfer complete (display balance)
S215
Forward
b
S1343
Announce money transfer complete (virtual account balance
S1320
Update deposit withdrawal history
S1321
Update payment history
S1322
Update virtual account balance
S1344
Update billing history (payment date)
S1345
Update payment history
S1346
Payment notification
S519
Receive

FIG. 71

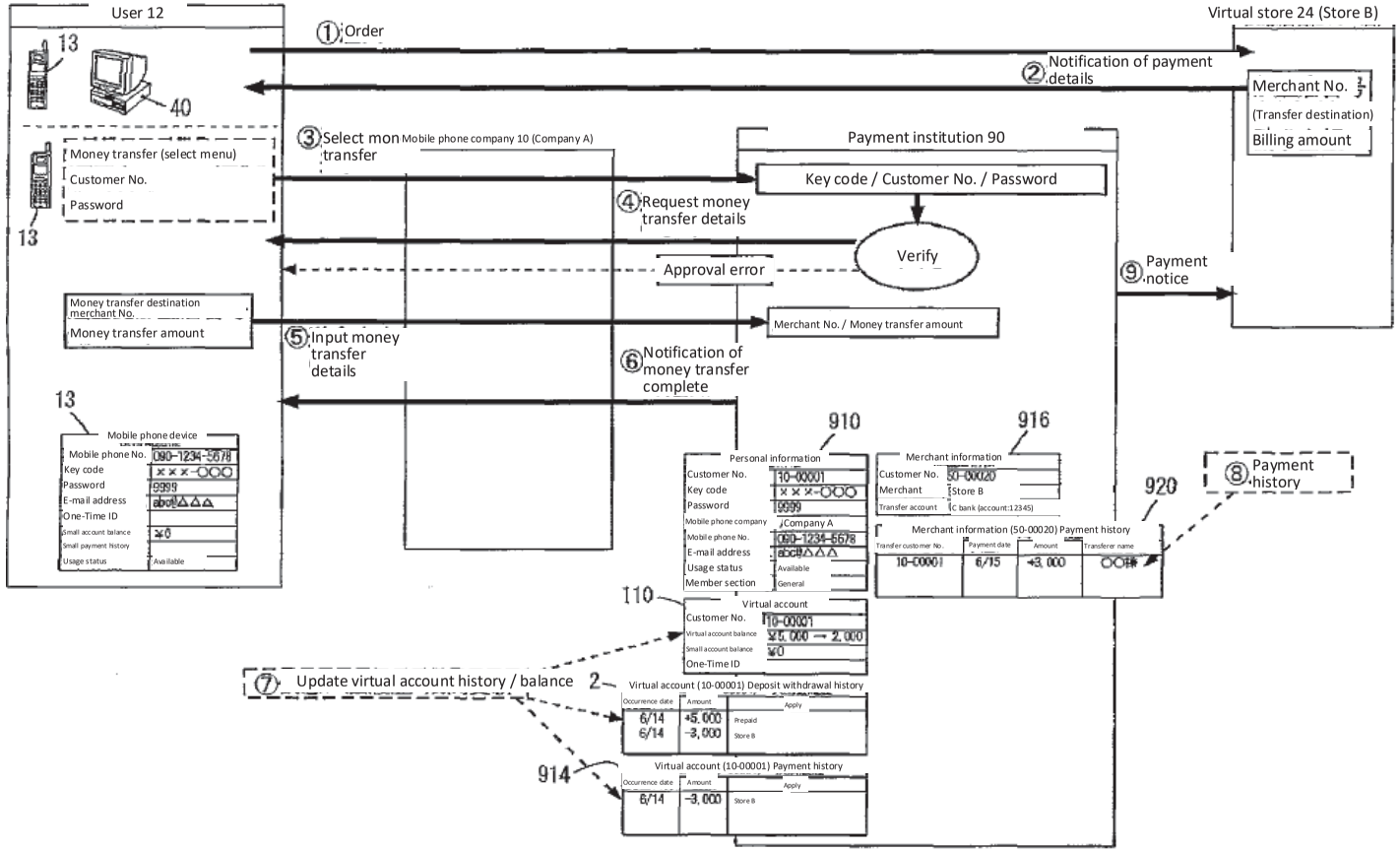


FIG. 72

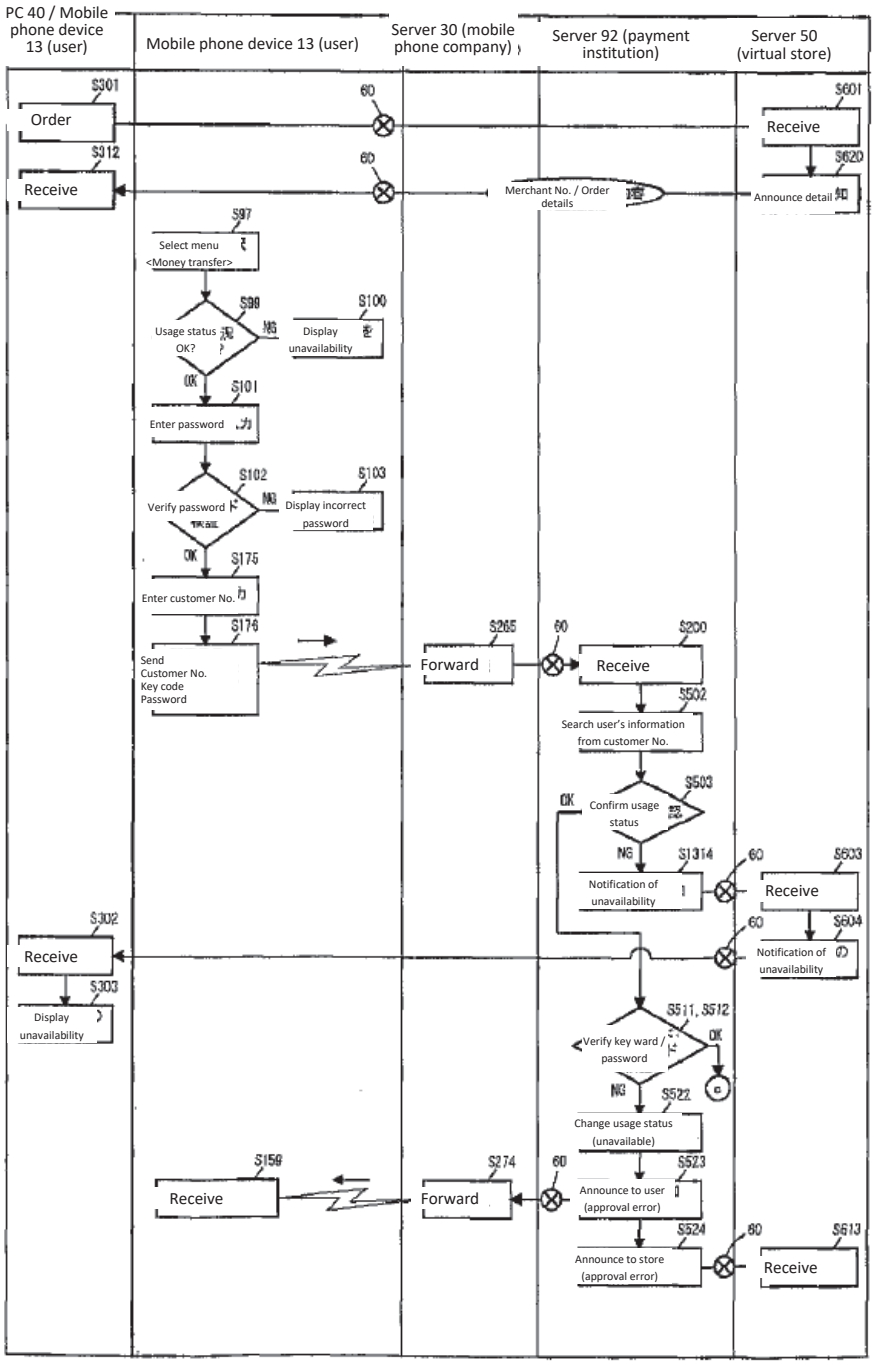

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S301
Order
S312
Receive
60
S601
Receive
S620
Announce detail
Merchant No. / Order details
S97
Select menu <Money transfer>
S98
Usage status OK?
NG
S100
Display unavailability
OK
S101
Enter password
S102
Verify password
NG
S103
Display incorrect password
OK
S175
Enter customer No.
S176
Send Customer No. Key code Password
S265
Forward
S200
Receive
S502
Search user's information from customer No.
S503
Confirm usage status
OK
NG
S1314
Notification of unavailability
S603
Receive
S604
Notification of unavailability
S302
Receive
S303
Display unavailability
S511, S512
Verify key ward / password
OK
NG
S522
Change usage status (unavailable)
S523
Announce to user (approval error)
S524
Announce to store (approval error)
S613
Receive
S159
Receive
S274
Forward

FIG. 73

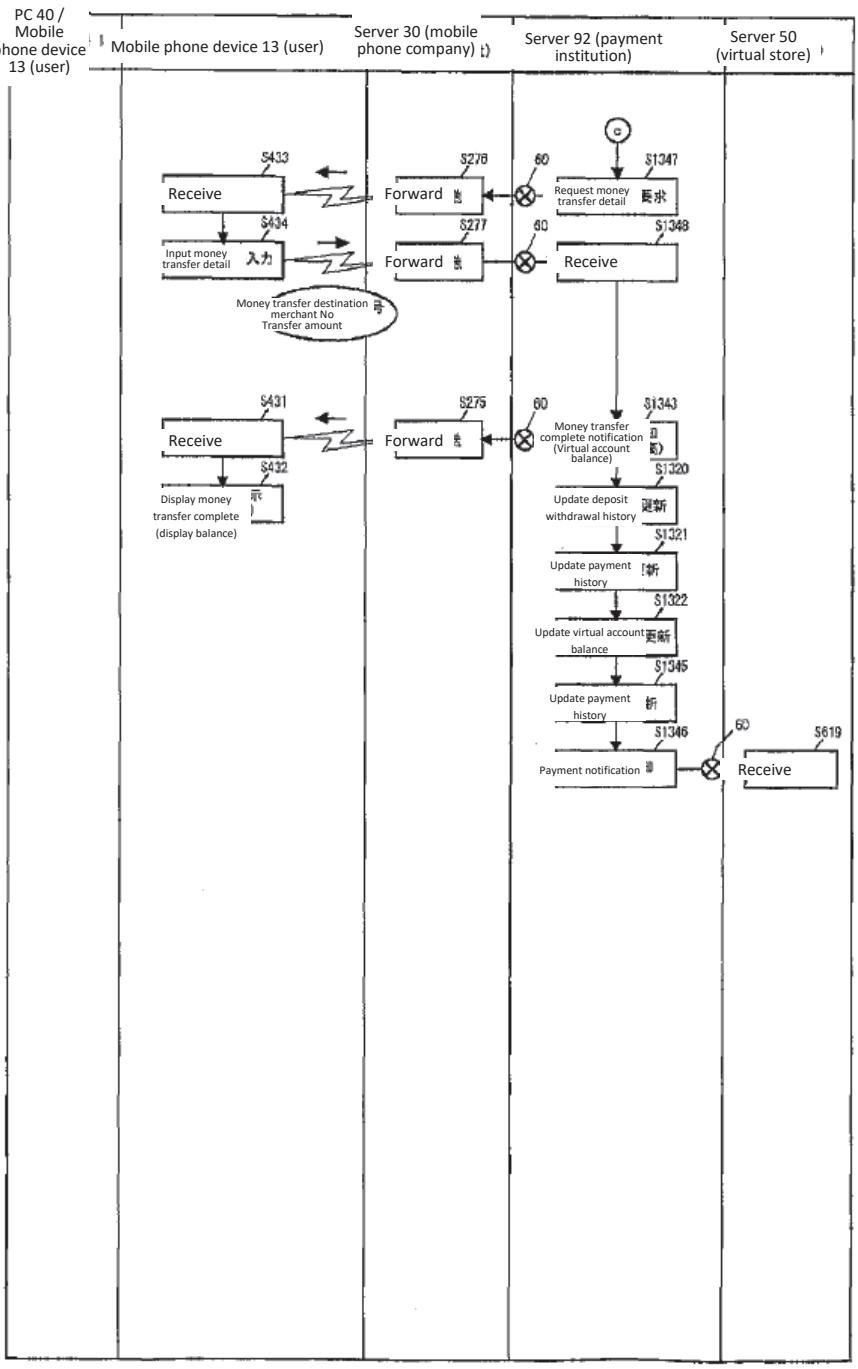

PC 40 / Mobile phone device 13 (user)
Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
Server 50 (virtual store)
S433
Receive
S434
Input money transfer detail
Money transfer destination merchant No
Transfer amount
S276
Forward
S277
Forward
60
S1347
Request money transfer detail
S1348
Receive
S431
Receive
S432
Display money transfer complete (display balance)
S275
Forward
S1343
Money transfer complete notification (Virtual account balance)
S1320
Update deposit withdrawal history
S1321
Update payment history
S1322
Update virtual account balance
S1345
Update payment history
S1346
Payment notification
S619
Receive

FIG. 74

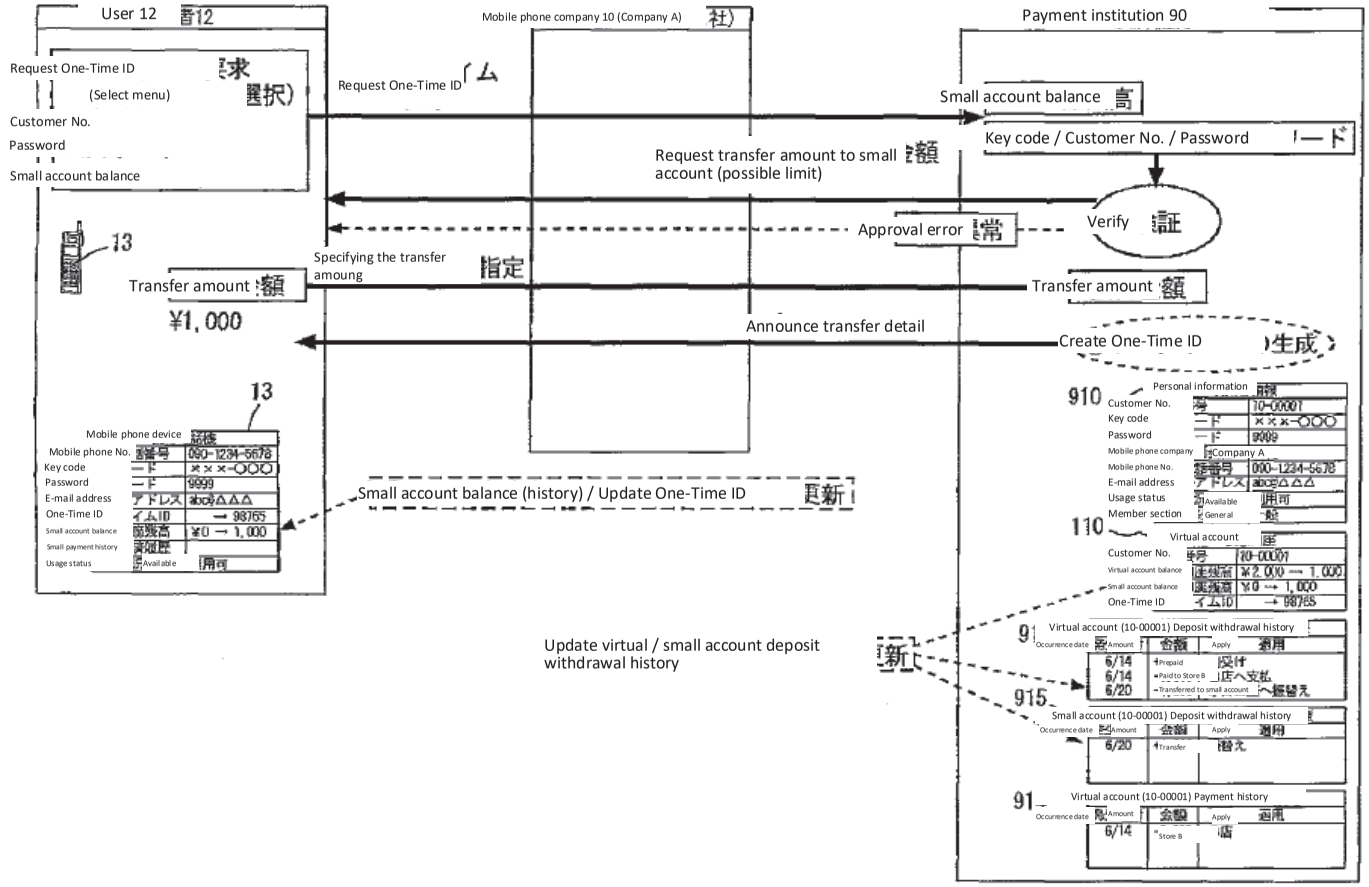


FIG. 75

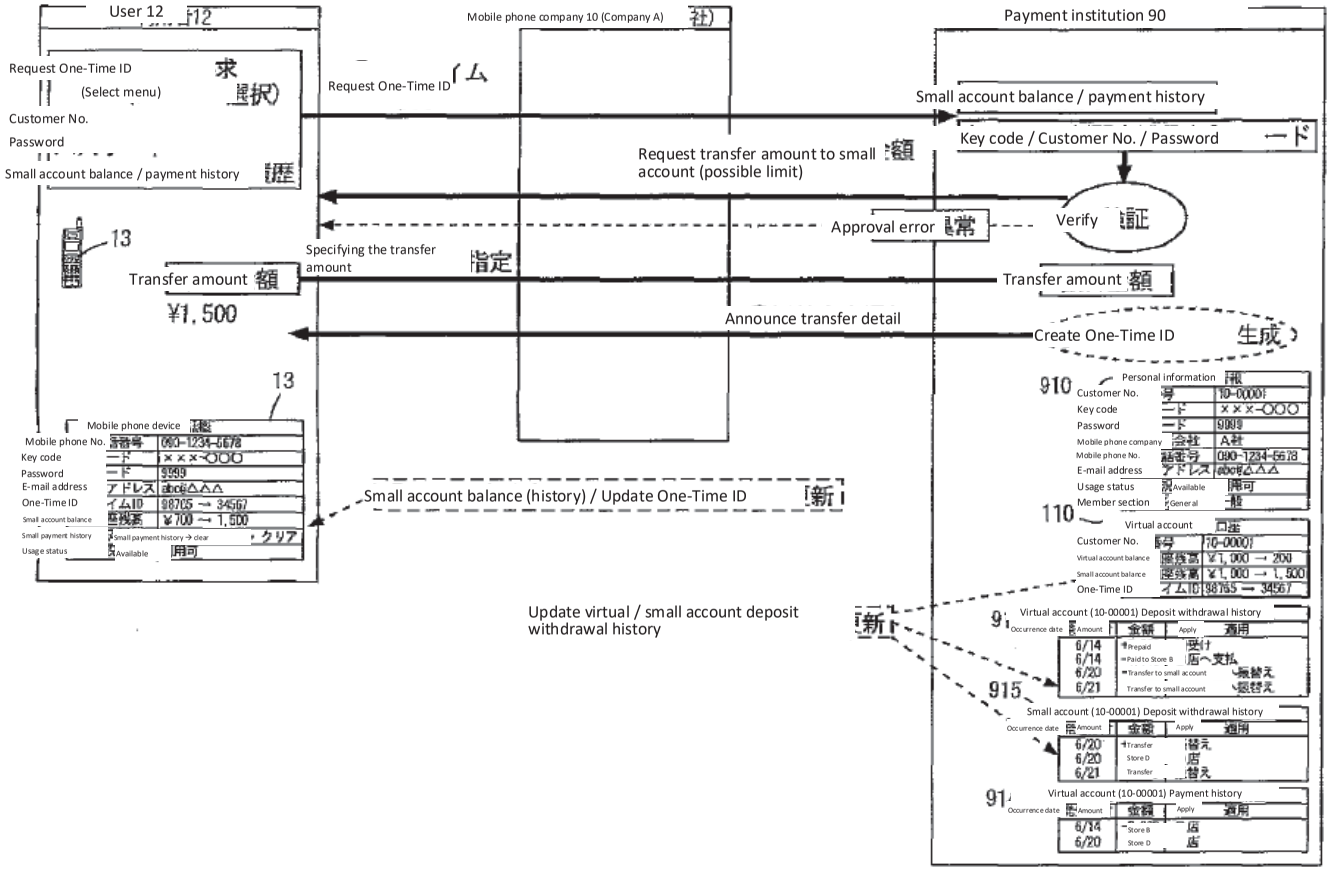


FIG. 76

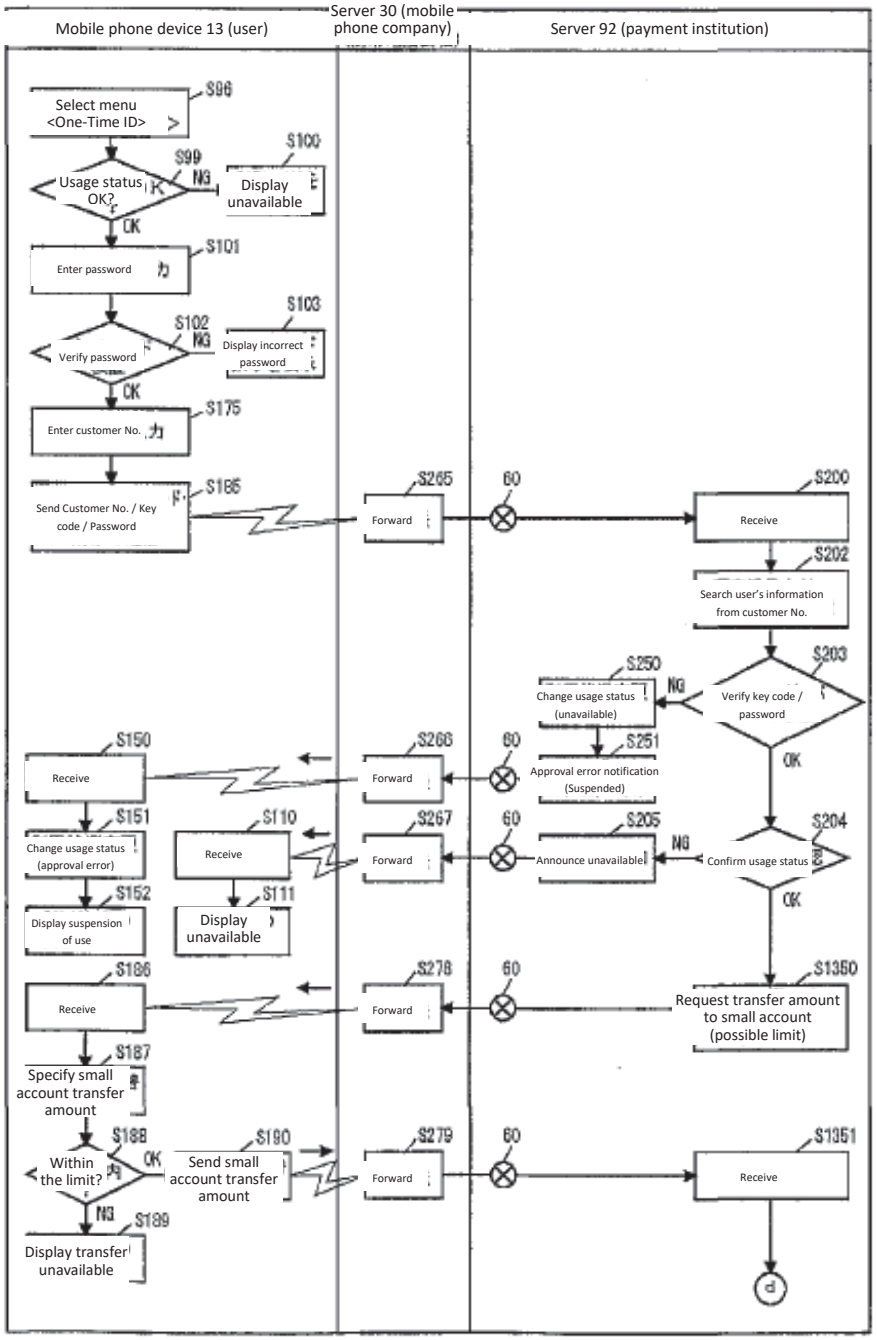

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
S96
Select menu <One-Time ID>
S99
Usage status OK?
NG
S100
Display unavailable
OK
S101
Enter password
S102
Verify password
NG
S103
Display incorrect password
OK
S175
Enter customer No.
S186
Send Customer No. / Key code / Password
S265
Forward
60
S200
Receive
S202
Search user's information from customer No.
S203
Verify key code / password
NG
S250
Change usage status (unavailable)
S251
Approval error notification (Suspended)
OK
S204
Confirm usage status
NG
S205
Announce unavailable
OK
S1350
Request transfer amount to small account (possible limit)
S1351
Receive
S150
Receive
S151
Change usage status (approval error)
S152
Display suspension of use
S266
Forward
60
S110
Receive
S111
Display unavailable
S267
Forward
60
S186
Receive
S187
Specify small account transfer amount
S188
Within the limit?
OK
NG
S189
Display transfer unavailable
S190
Send small account transfer amount
S278
Forward
60
S279
Forward
60

FIG. 77

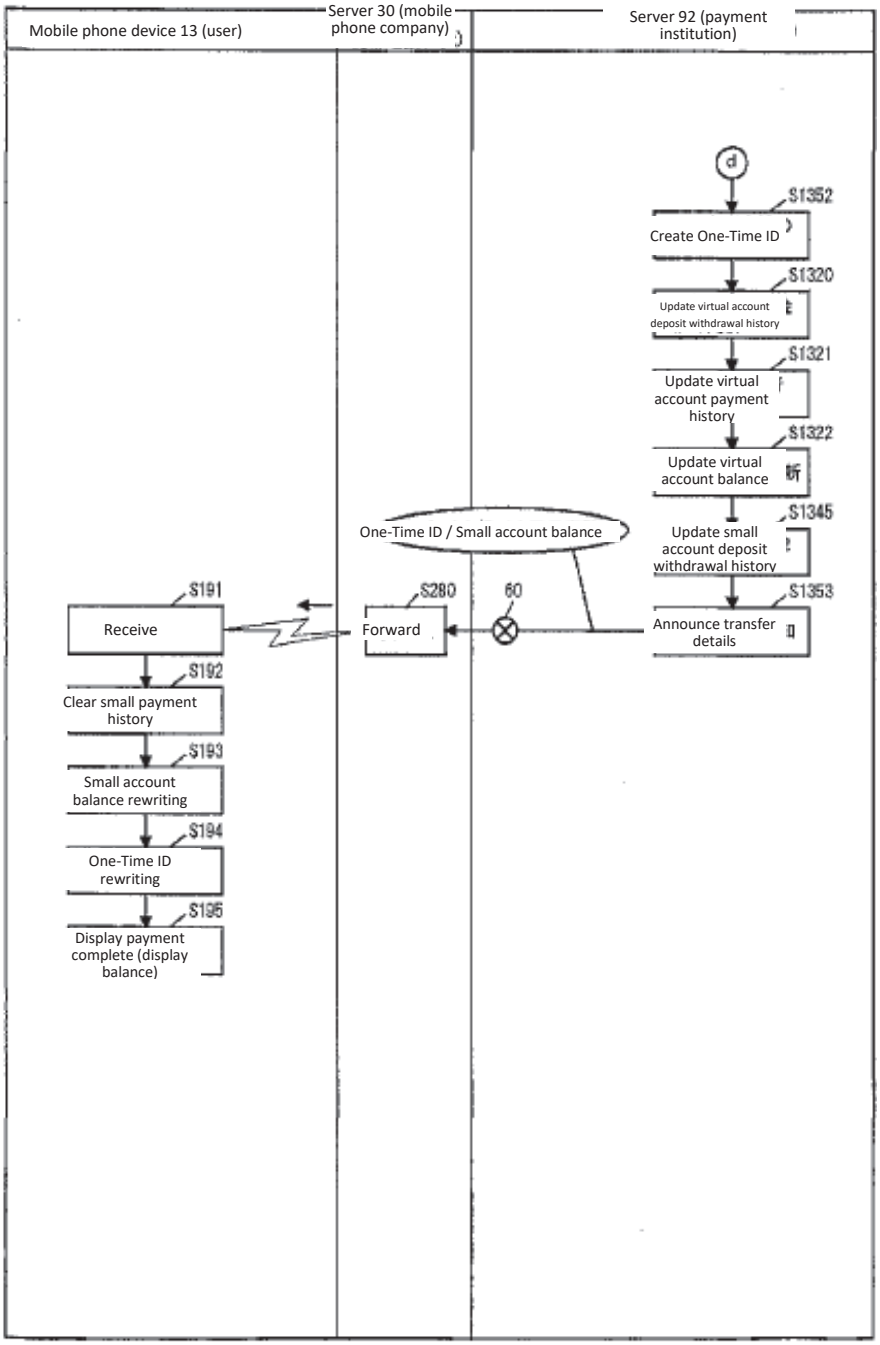

Mobile phone device 13 (user)
Server 30 (mobile phone company)
Server 92 (payment institution)
d
S1352
Create One-Time ID
S1320
Update virtual account deposit withdrawal history
S1321
Update virtual account payment history
S1322
Update virtual account balance
S1345
Update small account deposit withdrawal history
S1353
Announce transfer details
One-Time ID / Small account balance
60
S280
Forward
S191
Receive
S192
Clear small payment history
S193
Small account balance rewriting
S194
One-Time ID rewriting
S195
Display payment complete (display balance)

FIG. 78

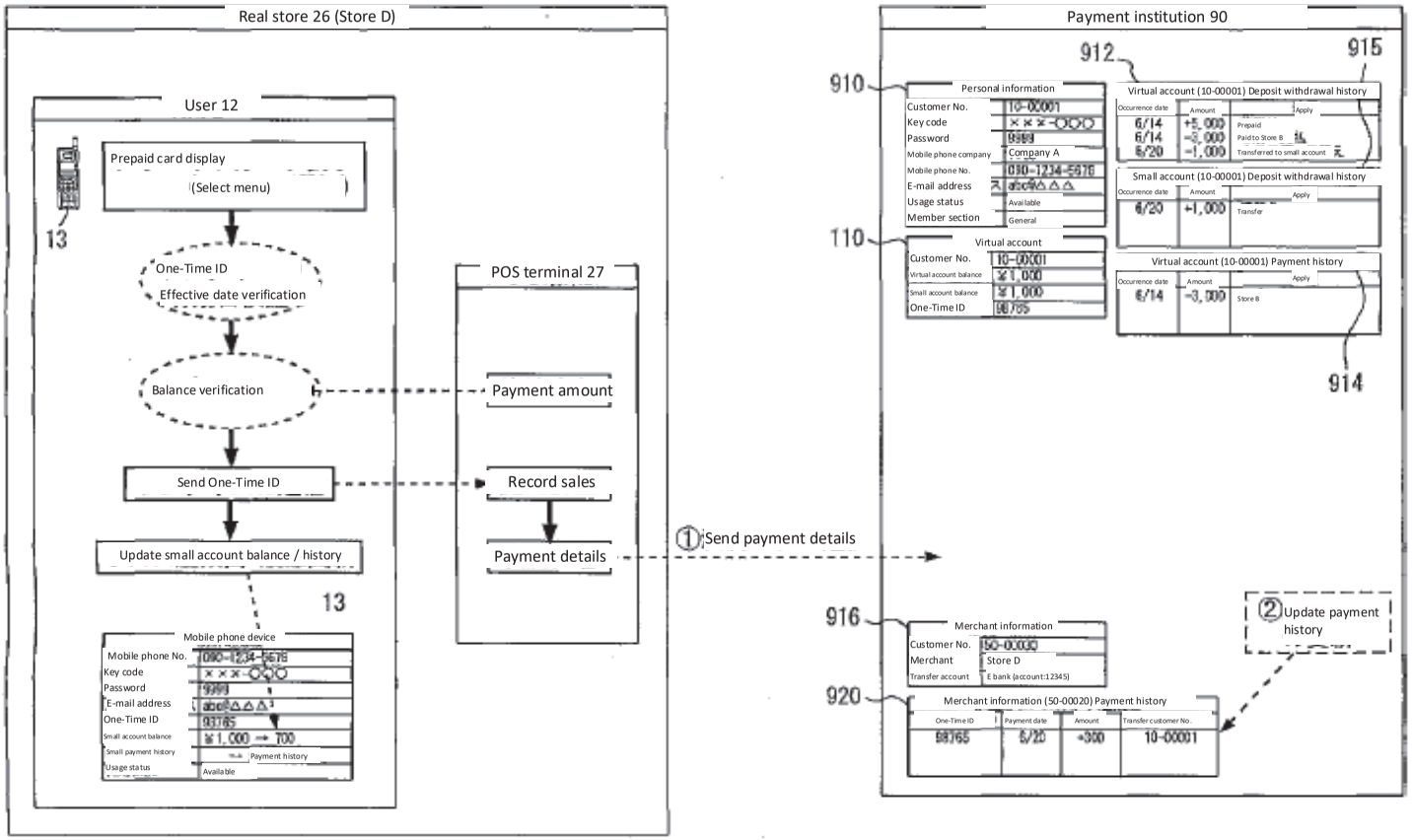
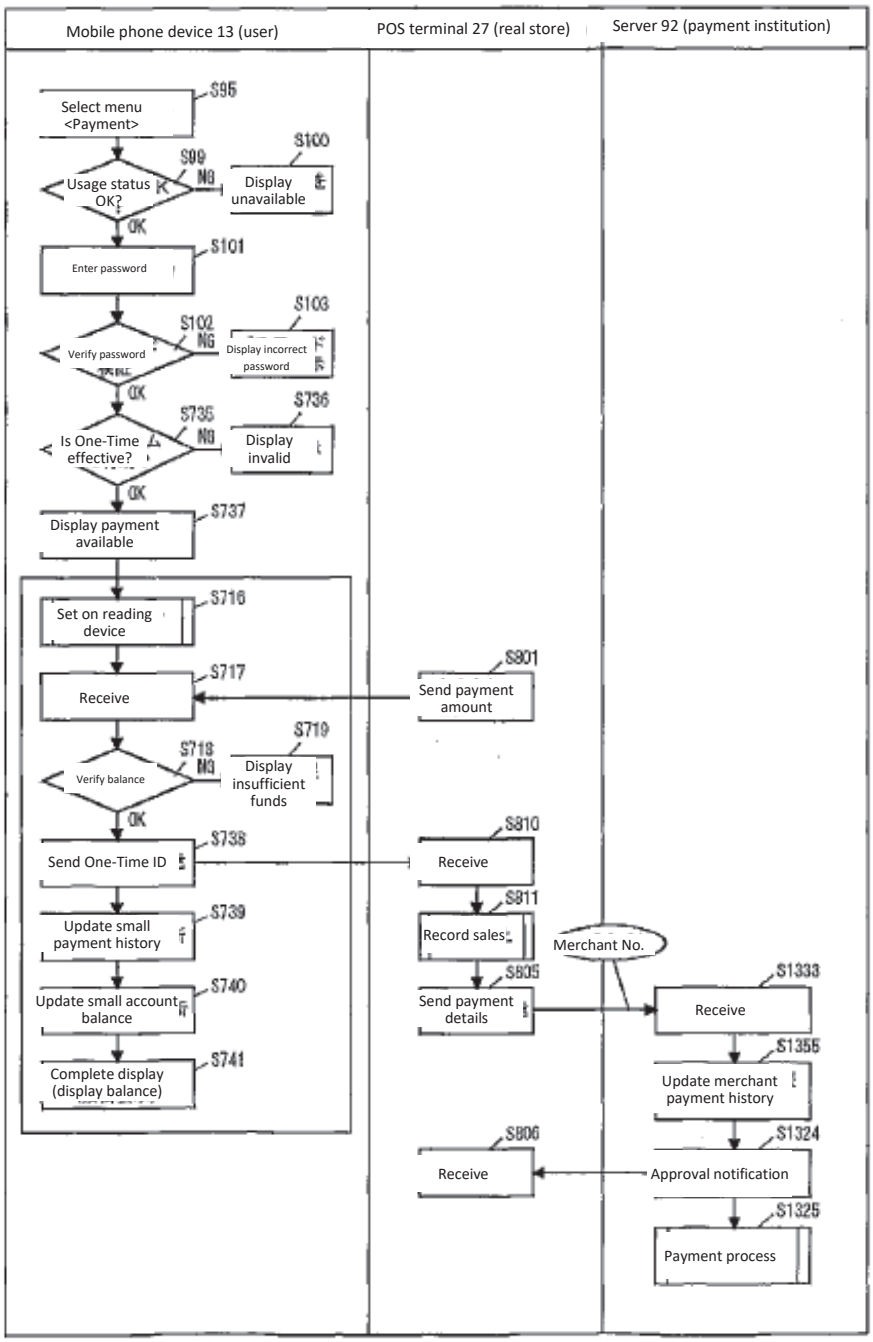


FIG. 79


Mobile phone device 13 (user)
POS terminal 27 (real store)
Server 92 (payment institution)
S95
Select menu <Payment>
S99
Usage status OK?
NG
S100
Display unavailable
OK
S101
Enter password
S102
Verify password
NG
S103
Display incorrect password
OK
S735
Is One-Time effective?
NG
S736
Display invalid
OK
S737
Display payment available
S716
Set on reading device
S717
Receive
S801
Send payment amount
S718
Verify balance
NG
S719
Display insufficient funds
OK
S738
Send One-Time ID
S810
Receive
S739
Update small payment history
S811
Record sales
S740
Update small account balance
S805
Send payment details
Merchant No.
S1333
Receive
S741
Complete display (display balance)
S1355
Update merchant payment history
S806
Receive
S1324
Approval notification
S1325
Payment process

Certification of Accuracy of Translation

Sun IP Project # 20-3237

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I, Carl Sullivan, hereby declare that I am a professional translator, with over 30 years of professional experience, and am knowledgeable and well acquainted with the Japanese language and the English language.

The document (JPB 004901053-000000) in the English language attached hereto is to the best of my ability, knowledge, and expertise, the correct English translation of the original document written in the Japanese language.

I translated the original document into the English language. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code.

_____

Carl Sullivan

Signed in Manti, Utah on October 12, 2020