

PUBLIC TELEPHONE HAVING PORTABLE COMPUTER INTERFACE  
FUNCTION AND METHOD FOR CONTROLLING THE SAME

TECHNICAL FIELD

The present invention relates in general to a public  
5 telephone and a method for controlling the same, and more  
particularly to a public telephone having a portable  
computer interface function which is capable of  
interfacing a portable personal computer (PC) to a  
computer communication network, and a method for  
10 controlling the same.

BACKGROUND ART

Generally, a public telephone is a terminal of a  
communication system having a basic function which allows  
the user to perform voice communication with the other  
15 party over a telecommunication network in duplex and real  
time for a valid period of time if he inserts a magnetic  
card, IC card, credit card or coins into the telephone.  
The public telephone converts an audio signal of a voice  
frequency into an electrical signal, transmits the  
20 converted electrical signal through a telephone line and  
receives an electrical signal from the other party through  
the telephone line, thereby enabling voice communication  
between separate locations.

With reference to Fig. 1, there is shown in block  
25 form the construction of a conventional public telephone.  
As shown in this drawing, the public telephone comprises  
a hook switch 1 for opening or closing a speech path to  
an office line connected to an exchange, a card reader 2  
for reading money amount information or credit information  
30 from a card inserted therein, a card verifier 3 for  
checking a password of the card inserted into the card  
reader 2 to determine whether the inserted card is valid,

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a coin sorter 4 for sorting coins dropped into a coin slot (see the reference numeral 22 in Fig. 2), an accumulated sum signal generator 5 for generating an accumulated sum signal as a result of the coin sorting by the coin sorter 4, a keypad input unit 6 for generating key signals in response to number and function keys being operated by the user, a dual tone multifrequency (DTMF) signal generator 7 for generating a DTMF signal in response to the key signals generated by the keypad input unit 6, and a controller 8 being initialized in response to an output signal from the hook switch 1. The controller 8 analyzes and processes input information to control the entire operation of the telephone. A character display unit 9 displays a use guidance character message under the control of the controller 8. An office line interface unit 10 performs an interface operation with an office line under the control of the controller 8 to enable the use of the telephone by the user. A handset 12 converts an audio signal from the user into an electrical signal to be transmitted through the office line interface unit 10 or an electrical signal received through the office line interface unit 10 into an audio signal to be sent to the user. A speaking circuit 11 amplifies the electrical signal from the handset 12, to be transmitted through the office line interface unit 10, and transfers it to the office line interface unit 10 or amplifies the electrical signal received through the office line interface unit 10 and transfers it to the handset 12. The speaking circuit 11 also transmits and receives data for a telephone call through the office line interface unit 10. A power supply circuit 13 is adapted to supply or block power to the above components in the telephone. Switches such as a flash switch (see the reference numeral 27 in Fig. 2) and an emergency call switch (see the reference numeral 29 in Fig. 2) may further be provided in the telephone to control the

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speech path to the office line. The public telephone may further comprise separate function switches such as a card replacement switch (not shown) for indicating that the existing card has been replaced with a new one.

5       As well known in the art, when the handset 12 (21 in Fig. 2) is lifted or hung up by the user, the hook switch 1 enters an off-hook state or on-hook state to close or open the speech path.

10       The operation of the conventional public telephone with the above-mentioned construction will hereinafter be described.

15       First, if the handset 12 is lifted up by the user, the hook switch 1 enters the off-hook state. The controller 8 recognizes the off-hook state of the hook switch 1 and controls the character display unit 9 to display a character message, "insert card or coins", on a character display panel (see the reference numeral 23 in Fig. 2). If the user inserts a card into a card slot (see the reference numeral 25 in Fig. 2) under the above  
20       condition, the card reader 2 reads information recorded on the inserted card. The card verifier 3 determines whether the inserted card is valid and sends the determined result to the controller 8. When the inserted card is invalid, the controller 8 controls the character  
25       display unit 9 to display a character message, "card is invalid", on the character display panel in order to inform the user that the inserted card is not available. In the case where the inserted card is valid, the controller 8 controls the DTMF signal generator 7 to  
30       generate an audio signal indicative of a dialing enable state and, also, the character display unit 9 to display a character message, "dial telephone number", on the character display panel. At this time, the keypad input unit 6 is connected to the office line through the DTMF  
35       signal generator 7 and speaking circuit 11 under the control of the controller 8.

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If the user confirms the telephone number dial message and dials a telephone number on a keypad (see the reference numeral 24 in Fig. 2), the controller 8 controls the DTMF signal generator 7 to generate a DTMF signal corresponding to the dialed telephone number and send the generated DTMF signal to the speaking circuit 11. The speaking circuit 11 transmits the DTMF signal from the DTMF signal generator 7 to the exchange through the office line and, in turn, the exchange sends the transmitted DTMF signal to the other telephone. When the other telephone enters the off-hook state in response to the sent DTMF signal, the speaking circuits 11 of the public and other telephones are electrically connected through the office line, thereby causing audio signals thereof to be amplified and transmitted to each other's handsets 12. As a result, bothway voice communication is effected between the public and other telephones. At this time, a charging signal based on the lapse of telephone call time is received through the office line and transferred to the controller 8 via the office line interface unit 10. If the telephone call is performed on the basis of a registered money amount-type telephone card, the controller 8 controls the card reader 2 to subtract a value corresponding to the received charging signal from the amount of money registered in the card. In the case where the telephone call is performed on the basis of coins, the controller 8 subtracts the value corresponding to the received charging signal from the sum that the accumulated sum signal generator 5 accumulates as a result of the coin sorting by the coin sorter 4. Then, the controller 8 displays the current remainder through the character display unit 9. On the other hand, in the case where the used card is not the registered money amount-type telephone card, but an accumulating charged money-type card such as a credit card, the controller 8 accumulates the value corresponding to the

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received charging signal and displays the accumulated result through the character display unit 9.

When the remainder falls below a predetermined value with the lapse of telephone call time under the condition  
5 that the telephone call is performed on the basis of the telephone card or coins, the controller 8 gives an alarm to the user through the handset 12 to inform him that a telephone call enable period of time has expired. Unless  
10 the user inserts additional coins or replaces the current card with a new one before a predetermined period of time has elapsed from the alarm generation, the controller 8 opens the speech path between the handset and the office line.

On the other hand, recently, with computers becoming  
15 popularized, a great amount of information has been exchanged via information communication networks such as the Internet within/beyond the country boundaries suitably to an information-intensive age, and electronic commercial transactions through the information communication  
20 networks are on an increasing trend. Further, portable computers, which persons can carry and use conveniently regardless of time and place, have widely been spread.

However, the utilization of the information communication networks through portable computers has  
25 conventionally been very inactive in contrast with the increases in the information communication network using rate and portable computer spreading rate. This results from the fact that, differently from general computers, the portable computers are often used outside the room,  
30 in which there are installed few public telephone circuits connectable to the information communication networks. For this reason, persons have been extremely limited in the opportunity to access the information communication networks using the portable computers.

35 In order to overcome the above problem, there have been recently proposed and practically used cellular

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phones having computer connection terminals connectable to computers. However, it is very poor economy to access the information communication networks by radio using such a cellular  
5 phone to utilize information therefrom, because computer communication generally requires a communication period of time relatively longer than a telephone call period of time and radio communication has a charging system relatively more expensive than that in wire communication.

10 DISCLOSURE OF THE INVENTION

Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a public telephone having a portable computer interface function capable of  
15 interfacing a portable personal computer (PC) to a computer communication network and a method for controlling the same, in which the portable PC can readily be connected to the computer communication network in any place where no telephone wire is installed and  
20 information from the computer communication network can be utilized at lower cost, resulting in a convenience to the user.

In accordance with one aspect of the present invention, the above and other objects can be accomplished  
25 by a provision of a public telephone comprising a hook switch for entering an on-hook state or an off-hook state according to an operation of a handset by the user; a card reader for reading information recorded on a card, the card being inserted into a card slot after the public  
30 telephone is connected to an office line; a card verifier for checking the information read by the card reader to determine whether the card is valid; a keypad input unit for generating key signals in response to number and function keys on a keypad being operated by the user

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under the condition that the card verifier determines that the card is valid; a DTMF signal generator for generating a DTMF signal in response to the key signals generated by the keypad input unit; a controller being initialized in response to the off-hook state of the hook switch, the controller combining and analyzing output signals from peripheral devices and controlling the entire operation of the public telephone in accordance with the analyzed result; a character display unit for outputting a guidance character message about the use of the public telephone to the user under the control of the controller; an office line interface unit for performing an interface operation with the office line under the control of the controller; a speaking circuit connected to the office line interface unit for amplifying a signal to be transmitted through the office line interface unit and a signal received through the office line interface unit and selectively outputting the amplified signals to the handset, a modem connector and the DTMF signal generator under the control of the controller; the handset converting an electrical signal amplified and transferred by the speaking circuit into an audio signal, outputting the resultant voice to the user and converting an audio signal from the user into an electrical signal to be amplified and transmitted to the office line by the speaking circuit; a PC communication switch for starting a PC communication mode; and the modem connector connecting the speaking circuit to a modem of a PC under the control of the controller if the PC communication switch is turned on.

Preferably, the PC communication switch may control the connection of the speaking circuit to the office line interface unit under the condition that the card verifier determines that the card is valid.

Further, preferably, a flash switch may further be provided to initialize the card verifier, keypad input

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unit, DTMF signal generator, character display unit, office line interface unit, speaking circuit and handset under the control of the controller under the condition that the hook switch is at the off-hook state.

5       Further, preferably, the flash switch may release the connection between the speaking circuit and the office line interface unit to initialize the PC communication switch with its off state under the condition that the PC communication switch is turned on.

10       In accordance with another aspect of the present invention, there is provided a public telephone having a portable computer interface function, comprising a hook switch for opening or closing a speech path to an office line; a coin sorter for sorting coins dropped into a coin  
15 slot after the public telephone is connected to the office line; an accumulated sum signal generator for generating an accumulated sum signal as a result of the coin sorting by the coin sorter; a keypad input unit for generating key signals in response to number and function  
20 keys on a keypad being operated by the user under the condition that the sum accumulated by the accumulated sum signal generator is above a predetermined value; a DTMF signal generator for generating a DTMF signal in response to the key signals generated by the keypad input unit; a  
25 controller being initialized in response to an off-hook state of the hook switch, the controller combining and analyzing output signals from peripheral devices and controlling the entire operation of the public telephone in accordance with the analyzed result; a character  
30 display unit for outputting a guidance character message about the use of the public telephone to the user under the control of the controller; an office line interface unit for performing an interface operation with the office line under the control of the controller; a speaking  
35 circuit connected to the office line interface unit for amplifying a signal to be transmitted through the office

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line interface unit and a signal received through the office line interface unit; a handset for converting an electrical signal amplified and transferred by the speaking circuit into an audio signal, outputting the resultant voice to the user and converting an audio-signal from the user into an electrical signal to be amplified and transmitted to the office line by the speaking circuit; a PC communication switch for controlling the connection of the speaking circuit to the office line interface unit under the condition that the hook switch is at an on-hook state; and a modem connector for connecting the speaking circuit to a modem of a PC.

In accordance with yet another aspect of the present invention, there is provided a method for controlling a public telephone having a portable computer interface function, comprising the steps of a) initializing all data if a PC communication switch is turned on and then starting a PC communication mode; b) connecting a modem of a PC to a modem connector and determining whether a card inserted into a card slot is valid; c) connecting the modem of the PC to an office line if it is determined at the step b) that the inserted card is valid; d) transmitting and receiving data to/from a computer communication network through the modem of the PC and office line; e) receiving a charging signal based on the lapse of telephone call time through the office line and subtracting a value corresponding to the received charging signal from the amount of money registered in the card or accumulating the value corresponding to the received charging signal; and f) releasing the connection between the modem of the PC and the office line if the remainder in the card falls below a predetermined value at the step e), a flash switch is operated at the step d) or the modem of the PC is turned off by the user.

Preferably, the step a) may be performed under the condition that a hook switch is at an on-hook state.

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Further, preferably, the method may further comprise the step of g) returning to the step a) if the flash switch is again operated after the PC communication mode is ended.

## 5 BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

10 Fig. 1 is a block diagram showing the construction of a conventional public telephone;

Fig. 2 is a front view of a public telephone with a portable computer interface function in accordance with the present invention;

15 Fig. 3 is a block diagram showing the construction of the public telephone with the portable computer interface function in accordance with the preferred embodiment of the present invention; and

20 Fig. 4 is a flowchart illustrating a method for controlling the public telephone with the portable computer interface function in accordance with the preferred embodiment of the present invention.

## BEST MODES FOR CARRYING OUT THE INVENTION

25 Fig. 2 is a front view of a public telephone with a portable computer interface function in accordance with the present invention, wherein a telephone card and coins can selectively be used. As shown in this drawing, laterally mounted on a left upper portion of a case 100 is a hook switch 20 on which a handset 21 is hung up.

30 A coin slot 22 is formed on a right upper rear portion of the case 100 and a character display panel 23 is installed in a left upper front portion of the case 100.

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A keypad 24 is installed under the character display panel 23 and has a plurality of number and function keys arranged on its surface. A card slot 25 is formed on a right lower front portion of the case 100 and a PC communication connection terminal 26 is installed in a left lower front portion of the case 100 to be externally exposed. A flash switch 27, PC communication switch 28 and emergency call switch 29 are installed sequentially from the top over the card slot 25.

Fig. 3 is a block diagram showing an internal system construction of the public telephone with the portable computer interface function in accordance with the preferred embodiment of the present invention. As shown in this drawing, the public telephone comprises the hook switch 20, a card reader 30, a card verifier 31, a coin sorter 32, an accumulated sum signal generator 33, a keypad input unit 34, a DTMF signal generator 35, a controller 36, a character display unit 37, an office line interface unit 38, a speaking circuit 39, the handset 21 and a power supply circuit 41. The public telephone further comprises a modem connector 42 for connecting a PC to the speaking circuit 39. The PC communication switch 28 is adapted to artificially control connection between the speaking circuit 39 and the modem connector 42.

The hook switch 20 enters an off-hook state or on-hook state according to an operation of the handset 21 by the user to close or open a speech path between the public telephone and an office line. That is, if the handset 21 is lifted up by the user, the hook switch 20 enters the off-hook state to close the speech path to the office line.

The card reader 30 includes the card slot (25 in Fig. 2). The card reader 30 is adapted to read money amount information or credit information from a card inserted into the card slot 25 and transfer the read

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information to the card verifier 31.

The card verifier 31 checks a password of the inserted card. Then, the card verifier 31 checks the money amount information or credit information read by the  
5 card reader 30 to determine whether the inserted card is valid and transfers the determined result to the controller 36.

The coin sorter 32 mechanically sorts coins dropped into the coin slot (22 in Fig. 2) according to their  
10 types. The accumulated sum signal generator 33 calculates the sum of dropped money as a result of the coin sorting by the coin sorter 32 and sends the calculated result as an electrical signal to the controller 36.

The keypad input unit 34 sequentially generates key  
15 signals in response to the number and function keys on the keypad (24 in Fig. 2) being operated by the user and sends the generated key signals to the controller 36.

The DTMF signal generator 35 generates a DTMF signal in response to the key signals from the keypad input unit  
20 34 under control of the controller 36 and outputs the generated DTMF signal to the speaking circuit 39.

The controller 36 is adapted to control the entire operation of the telephone on the basis of output signals from the peripheral devices. Namely, the controller 36  
25 is initialized in response to an output signal from the hook switch 20. The controller 36 then analyzes output information from the peripheral devices and controls the entire operation of the telephone in accordance with the analyzed result.

30 The character display unit 37 is a liquid crystal display (LCD) device. The character display unit 37 is adapted to output a guidance character message about the use of the public telephone to the user under the control of the controller 36 so that it can be viewed by the  
35 user.

The office line interface unit 38 interfaces the

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speaking circuit 39 to the office line or separates them from each other under the control of the controller 36. As a result, the office line interface unit 38 acts to connect the public telephone to a public telephone network or separate them from each other.

The speaking circuit 39 is a communication circuit for connection between the handset 21 and the office line interface unit 38. The speaking circuit 39 amplifies an electrical signal received through the office line interface unit 38 in response to an office line interface signal from the controller 36 and transfers the amplified signal to the handset 21. Further, the speaking circuit 39 amplifies an electrical signal from the handset 21 and transmits the amplified signal to the office line through the office line interface unit 38.

The handset 21 converts the electrical signal amplified and transferred by the speaking circuit 39 into an audio signal and outputs the resultant voice to the user. Further, the handset 21 converts an audio signal from the user into the electrical signal to be amplified and transmitted to the office line by the speaking circuit 39.

The flash switch (27 in Fig. 2) functions to reconnect the public telephone to the office line when the card is determined to be still valid as a result of the card verification or the remainder is determined to be present as a result of the coin verification after a telephone call is completed. Further, the flash switch 27 acts to compulsorily release the connection between the speaking circuit 39 and the modem connector 42.

The emergency call switch (29 in Fig. 2) functions to apply an emergency call signal to the controller 36 to connect the public telephone to a telephone line for a notice of an emergency state such as, for example, a notice of fire regardless of insertion of a card or coins.

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A card replacement switch (not shown) applies a card replacement signal to the controller 36 when a new card is inserted into the card slot because a previously inserted card is invalid. Upon receiving the card replacement signal from the card replacement switch, the controller 36 initializes the card reader 30 and card verifier 31 to re-verify the new card.

The modem connector 42 enables transmission/reception of data between the office line and the PC. To this end, the modem connector 42 includes the terminal 26 for connection between the speaking circuit 39 and the PC. The modem connector 42 further includes a transmission/reception separator (not shown) for separating a transmission signal and a reception signal from each other, a DC feeder (not shown) for feeding DC current to a modem (not shown) of the PC, and a DC detector (not shown) for detecting an on or off state of the modem of the PC. Upon detecting the off state of the modem, the DC detector releases the interface between the office line interface unit 38 and the office line.

In a similar manner to the emergency call switch 29, the PC communication switch 28 is a compulsory connection switch for artificially controlling the connection between the speaking circuit 39 and the modem connector 42 irrespective of the operation state of the hook switch 20.

The operation of the public telephone with the above-mentioned construction in accordance with the preferred embodiment of the present invention will hereinafter be described in detail with reference to Figs. 2 to 4.

First, if the handset 21 is lifted up by the user, the hook switch 20 enters the off-hook state to start a general telephone call mode where voice information can be exchanged between the user and the other party. The general telephone call mode is performed in the same manner as that in the conventional public telephone as

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stated previously with reference to Fig. 1. Therefore, a description of the general telephone call mode will be omitted and a detailed description will be given of only a PC communication mode which is the kernel of the present invention.

In order to utilize the present public telephone for PC communication, the user first has to operate the PC communication switch 28 to change the internal system of the public telephone to the PC communication mode under the condition that the handset 21 is hung up on the hook switch 20. Then, the user connects a modem connection terminal (serial port) of the PC to the PC communication connection terminal 26 of the public telephone according to a character message displayed by the character display unit 37 and inserts a valid card into the card slot 25 or drops coins into the coin slot 22. As a result, the PC modem is connected to the office line so that it can be, in turn, connected to a computer communication network.

Then, the internal system of the public telephone is operated as shown in Fig. 4.

Fig. 4 is a flowchart illustrating a method for controlling the public telephone with the portable computer interface function in accordance with the preferred embodiment of the present invention.

First, if the PC communication switch 28 is turned on according to a user's operation (PC communication mode start step), the controller 36 determines through the speaking circuit 39 whether the PC modem has been connected to the modem connector 42. If it is determined that the PC modem has not been connected to the modem connector 42, the controller 36 controls the character display unit 37 to display a character message, "connect modem", on the character display panel 23. In the case where the PC modem has been connected to the modem connector 42, the controller 36 controls the character display unit 37 to display a character message, "insert

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card or coins", on the character display panel 23. Then, if the user inserts a card into the card slot 25 or drops coins into the coin slot 22, the card reader 30 and card verifier 31 or the coin sorter 32 determines whether the  
5 inserted card or the dropped coins are valid (card or coin verification step). If the inserted card or the dropped coins are determined to be valid, the character display unit 37 displays, on the character display panel 23, a PC communication service enable message indicating  
10 that the PC modem has been connected to the office line (PC communication connection step). As a result, the user is able to connect the PC to the computer communication network through the office line from that time (PC communication step).

15 If the transmission/reception of data through the PC are completed, the user pushes the flash switch 27 to artificially open the speech path to the office line (PC communication end step). In this case, the flash switch 27 performs the opposite function to that in the general  
20 telephone call mode. Namely, the flash switch 27 releases the connection between the public telephone and the office line in the PC communication mode, whereas it re-establishes the connection between the public telephone and the office line in the general telephone call mode.

25 The PC communication mode is ended by the artificial method of operating the flash switch 27 as mentioned above. On the other hand, the PC communication mode may compulsorily be ended by the controller 36. That is, in a similar manner to the telephone call mode, in the PC  
30 communication mode, a charging step is performed in parallel with the PC communication step to reduce the registered amount of money while the PC communication step proceeds. As a result, if the remainder falls below a predetermined value during the PC communication step, the  
35 PC communication mode is compulsorily ended by the controller 36.

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If the connection to the office line is released, the controller 36 controls the character display unit 37 to display a character message "release modem connection" on the character display panel 23. When the user  
5 releases the modem connection, the entire operation of the public telephone is completed and the system thereof is then initialized.

On the other hand, in the case where the PC modem is not connected to the modem connector 42 within a  
10 predetermined period of time or the inserted card or the dropped coins are not valid after the PC communication mode start step is performed, the controller 36 does not establish the connection to the office line, displays a service disable message through the character display unit  
15 37 and then initializes the entire system.

In the above manner, the public telephone of the present invention can be utilized for the PC communication mode where the portable PC is connected to the computer communication network through the telephone line to  
20 transmit and receive data, as well as for the general telephone call mode where voice information is transmitted and received.

#### INDUSTRIAL APPLICABILITY

As apparent from the above description, according to  
25 the present invention, the portable PC can readily be connected to the computer communication network in any place where no telephone wire is installed and information from the computer communication network can be utilized at lower cost. Therefore, the present invention has the  
30 effect of significantly enhancing a convenience to the user.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various

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modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

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## CLAIMS

1. A public telephone comprising:

a hook switch for entering an on-hook state or an off-hook state according to an operation of a handset by the user;

a card reader for reading information recorded on a card, said card being inserted into a card slot after said public telephone is connected to an office line;

a card verifier for checking said information read by said card reader to determine whether said card is valid;

a keypad input unit for generating key signals in response to number and function keys on a keypad being operated by the user under the condition that said card verifier determines that said card is valid;

a DTMF signal generator for generating a DTMF signal in response to said key signals generated by said keypad input unit;

a controller being initialized in response to said off-hook state of said hook switch, said controller combining and analyzing output signals from peripheral devices and controlling the entire operation of said public telephone in accordance with the analyzed result;

a character display unit for outputting a guidance character message about the use of said public telephone to the user under the control of said controller;

an office line interface unit for performing an interface operation with said office line under the control of said controller;

a speaking circuit connected to said office line interface unit for amplifying a signal to be transmitted through said office line interface unit and a signal received through said office line interface unit and selectively outputting the amplified signals to said handset, a modem connector and said DTMF signal generator



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under the control of said controller;

said handset converting an electrical signal amplified and transferred by said speaking circuit into an audio signal, outputting the resultant voice to the user and converting an audio signal from the user into an electrical signal to be amplified and transmitted to said office line by said speaking circuit;

a PC communication switch for starting a PC communication mode; and

said modem connector connecting said speaking circuit to a modem of a PC under the control of said controller if said PC communication switch is turned on.

2. A public telephone as set forth in Claim 1, wherein said PC communication switch is adapted to control the connection of said speaking circuit to said office line interface unit under the condition that said card verifier determines that said card is valid.

3. A public telephone as set forth in Claim 1 or Claim 2, further comprising a flash switch for initializing said card verifier, keypad input unit, DTMF signal generator, character display unit, office line interface unit, speaking circuit and handset under the control of said controller under the condition that said hook switch is at said off-hook state.

4. A public telephone as set forth in Claim 3, wherein said flash switch is adapted to release the connection between said speaking circuit and said office line interface unit to initialize said PC communication switch with its off state under the condition that said PC communication switch is turned on.

5. A public telephone having a portable computer interface function, comprising:



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a hook switch for opening or closing a speech path to an office line;

a coin sorter for sorting coins dropped into a coin slot after said public telephone is connected to said office line;

an accumulated sum signal generator for generating an accumulated sum signal as a result of the coin sorting by said coin sorter;

a keypad input unit for generating key signals in response to number and function keys on a keypad being operated by the user under the condition that the sum accumulated by said accumulated sum signal generator is above a predetermined value;

a DTMF signal generator for generating a DTMF signal in response to said key signals generated by said keypad input unit;

a controller being initialized in response to an off-hook state of said hook switch, said controller combining and analyzing output signals from peripheral devices and controlling the entire operation of said public telephone in accordance with the analyzed result;

a character display unit for outputting a guidance character message about the use of said public telephone to the user under the control of said controller;

an office line interface unit for performing an interface operation with said office line under the control of said controller;

a speaking circuit connected to said office line interface unit for amplifying a signal to be transmitted through said office line interface unit and a signal received through said office line interface unit;

a handset for converting an electrical signal amplified and transferred by said speaking circuit into an audio signal, outputting the resultant voice to the user and converting an audio signal from the user into an electrical signal to be amplified and transmitted to said



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office line by said speaking circuit;

a PC communication switch for controlling the connection of said speaking circuit to said office line interface unit under the condition that said hook switch  
5 is at an on-hook state; and

a modem connector for connecting said speaking circuit to a modem of a PC.

6. A method for controlling a public telephone having a portable computer interface function, comprising the  
10 steps of:

a) initializing all data if a PC communication switch is turned on and then starting a PC communication mode;

b) connecting a modem of a PC to a modem connector and determining whether a card inserted into a card slot  
15 is valid;

c) connecting said modem of said PC to an office line if it is determined at said step b) that the inserted card is valid;

d) transmitting and receiving data to/from a computer  
20 communication network through said modem of said PC and said office line;

e) receiving a charging signal based on the lapse of telephone call time through said office line and subtracting a value corresponding to the received charging  
25 signal from the amount of money registered in said card or accumulating the value corresponding to the received charging signal; and

f) releasing the connection between said modem of said PC and said office line if the remainder in said  
30 card falls below a predetermined value at said step e), a flash switch is operated at said step d) or said modem of said PC is turned off by the user.

7. A method for controlling a public telephone having a portable computer interface function, as set forth in



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Claim 6, wherein said step a) is performed under the condition that a hook switch is at an on-hook state.

8. A method for controlling a public telephone having a portable computer interface function, as set forth in
- 5 Claim 6, further comprising the step of g) returning to said step a) if said flash switch is again operated after said PC communication mode is ended.



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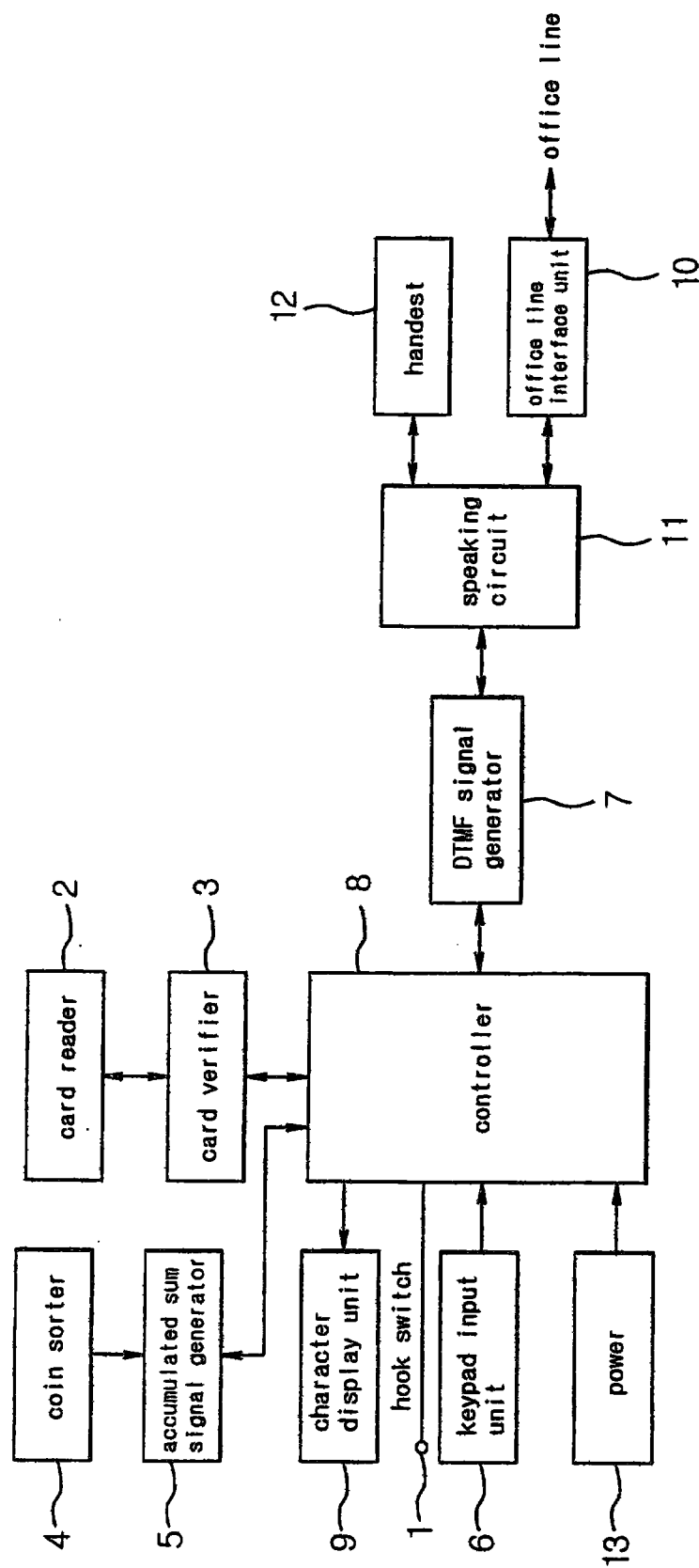


FIG. 1

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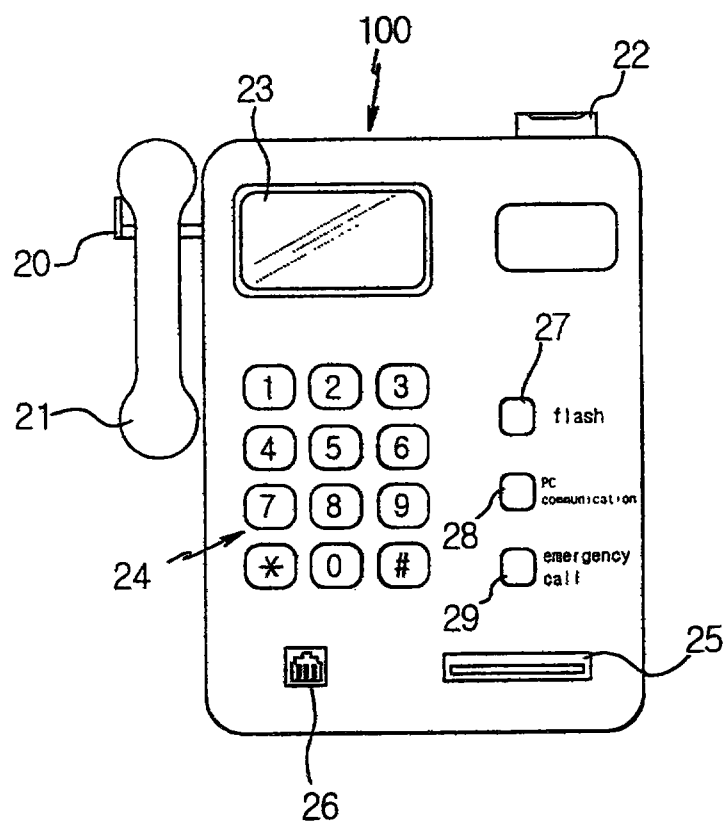


FIG. 2

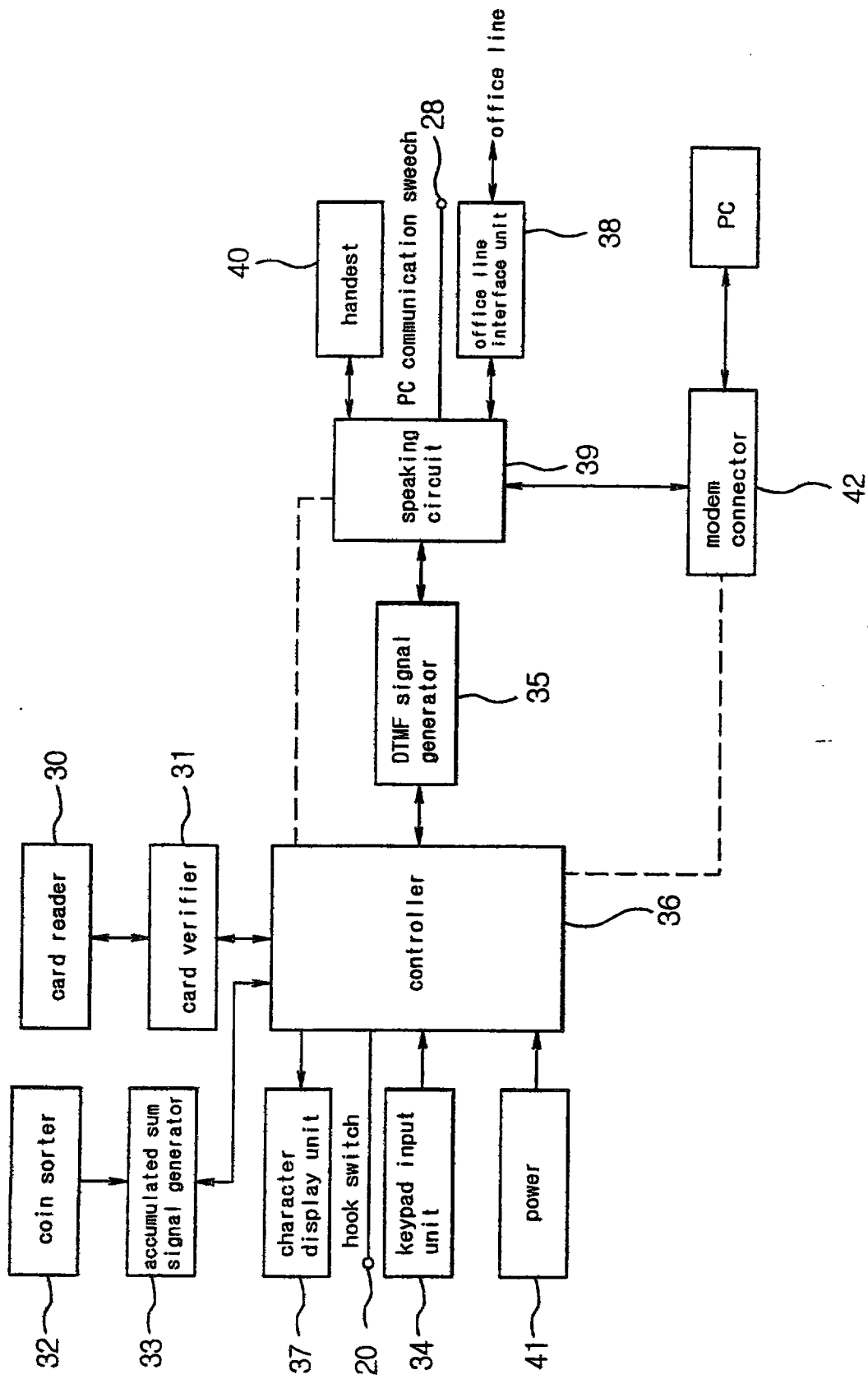


FIG. 3

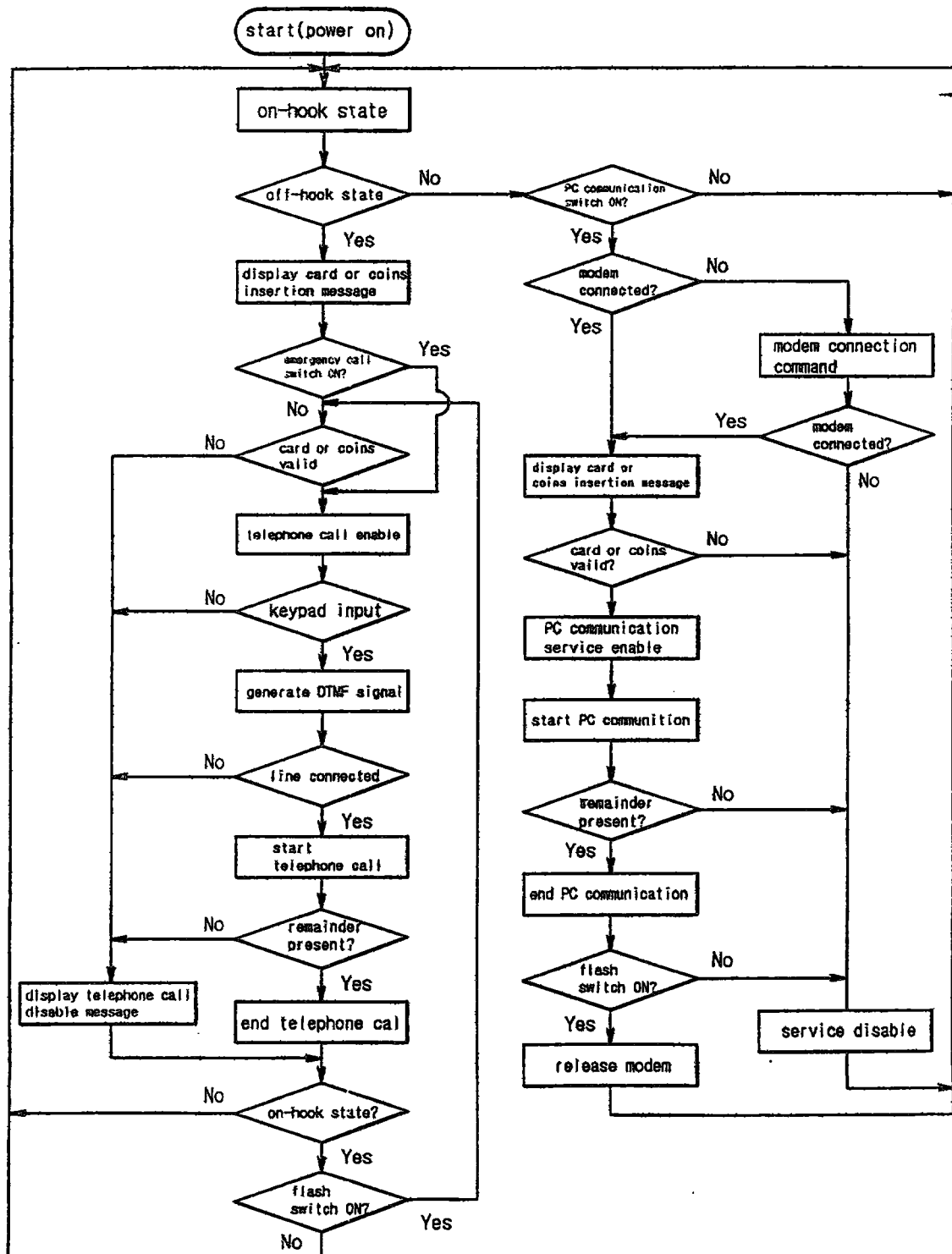


FIG. 4



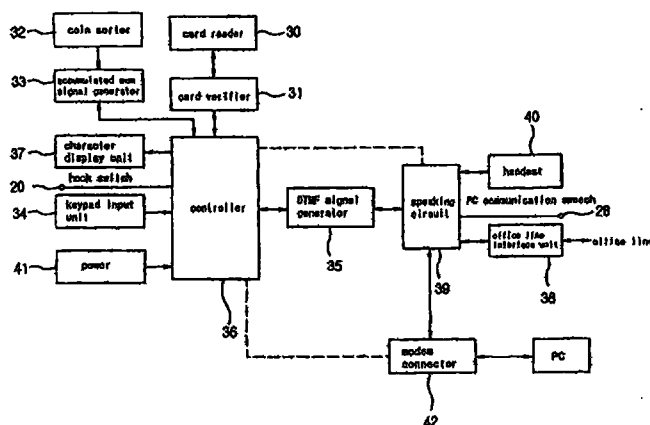
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|                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (51) International Patent Classification <sup>7</sup> :<br><b>H04M</b>                                                                                                                                                                                                                                                                                                                                                                   | <b>A2</b> | (11) International Publication Number: <b>WO 00/16535</b><br>(43) International Publication Date: 23 March 2000 (23.03.00)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (21) International Application Number: PCT/KR99/00556<br>(22) International Filing Date: 15 September 1999 (15.09.99)<br>(30) Priority Data:<br>1998/38003 15 September 1998 (15.09.98) KR<br>(71)(72) Applicant and Inventor: CHOI, Young, Suk [KR/KR];<br>336-3, Bukgaja-2dong, Seodaemun-ku, Seoul 120-132 (KR).<br>(74) Agent: CHO, Jae, Hyoun; 809 Yoksam Heights Building,<br>642-19, Yoksam-dong, Kangnam-ku, Seoul 135-080 (KR). |           | (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>Without international search report and to be republished upon receipt of that report.</i> |

(54) Title: PUBLIC TELEPHONE HAVING PORTABLE COMPUTER INTERFACE FUNCTION AND METHOD FOR CONTROLLING THE SAME



## (57) Abstract

A public telephone having a portable computer interface function and a method for controlling the same. The public telephone comprises a hook switch (20), a card reader (30) for reading information recorded on a card, a card verifier (31) for checking the read information, a coin sorter (32) for sorting dropped coins, a keypad input unit (34) for generating key signals under the condition that the card or coins are valid, a DTMF signal generator (35) for generating a DTMF signal in response to the key signals generated by the keypad input unit, a controller (36) being initialized in response to an off-hook state of the hookswitch, the controller combining and analyzing output signals from peripheral devices and controlling the entire operation of the public telephone in accordance with the analyzed result, a character display unit (37) for outputting a guidance character message about the use of the public telephone to the user, an office line interface unit (38) for performing an interface operation with the office line, a speaking circuit (39) connected to the office line interface unit for amplifying a signal to be transmitted and a received signal, a PC communication switch (28) for starting a PC communication mode, and a modem connector (42) for connecting the speaking circuit to a modem of a PC.