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H04M 1/57

(52) UK CL (Edition P)
H4K KBNX

(56) Documents Cited
GB 2300785 A US 5289530 A US 4930152 A
Patent Abstracts of Japan, vol.13, no.78, pg.160, (E718) & JP63260255 (MITSUBISHI)

(58) Field of Search
UK CL (Edition O) **H4K KBNJ KBNX KFH KF42**
INT CL^6 **H04M 1/57**
ONLINE: WPI

(54) Abstract Title
A method and apparatus for remotely accessing caller identifications stored in the memory of a telephone set

(57) A telephone set is disclosed comprising a receiver 54 for receiving caller identifications from the telephone network which are then stored in a memory device eg. a RAM, flash memory or EEPROM. A remote user gains access to the stored information by entering a password which is recognised by the DTMF receiver 56. The stored information is then transmitted to the user in speech format. The stored information may comprise the name and/or telephone number of the caller together with an indication of the time and/or date of the call.

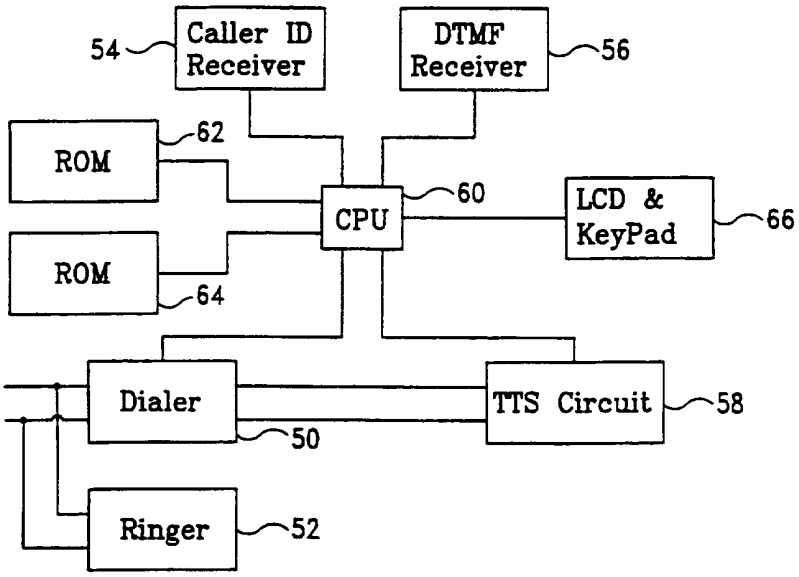

FIG.5A

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

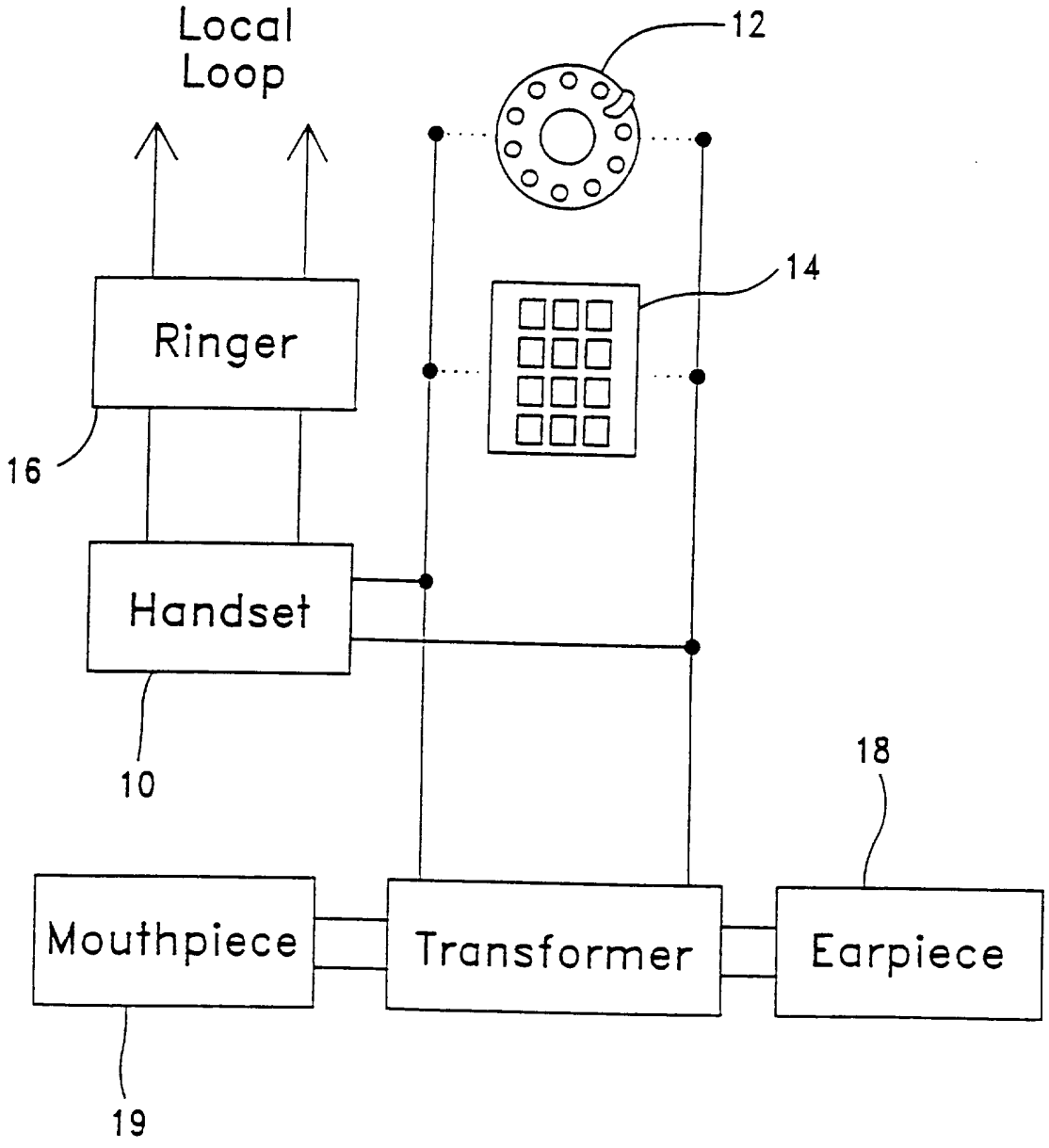

FIG.1
(Prior Art)

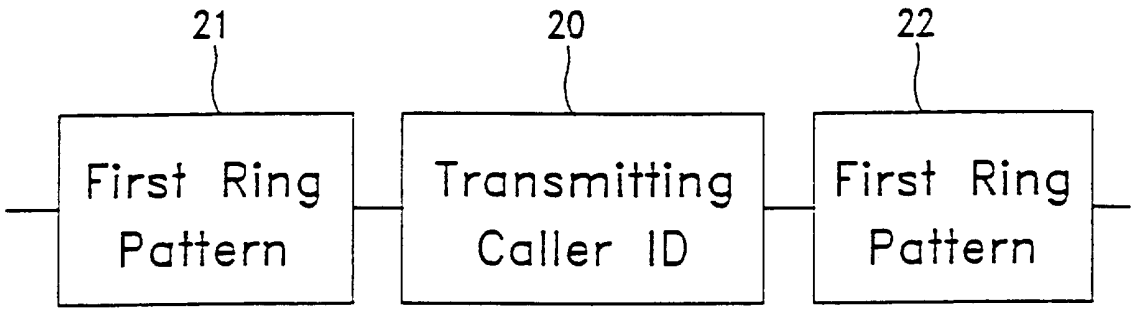

FIG.2A
(Prior Art)

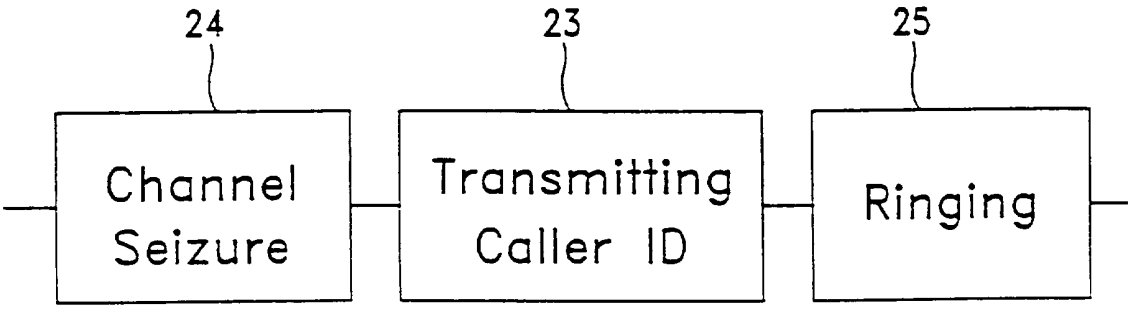

FIG.2B
(Prior Art)

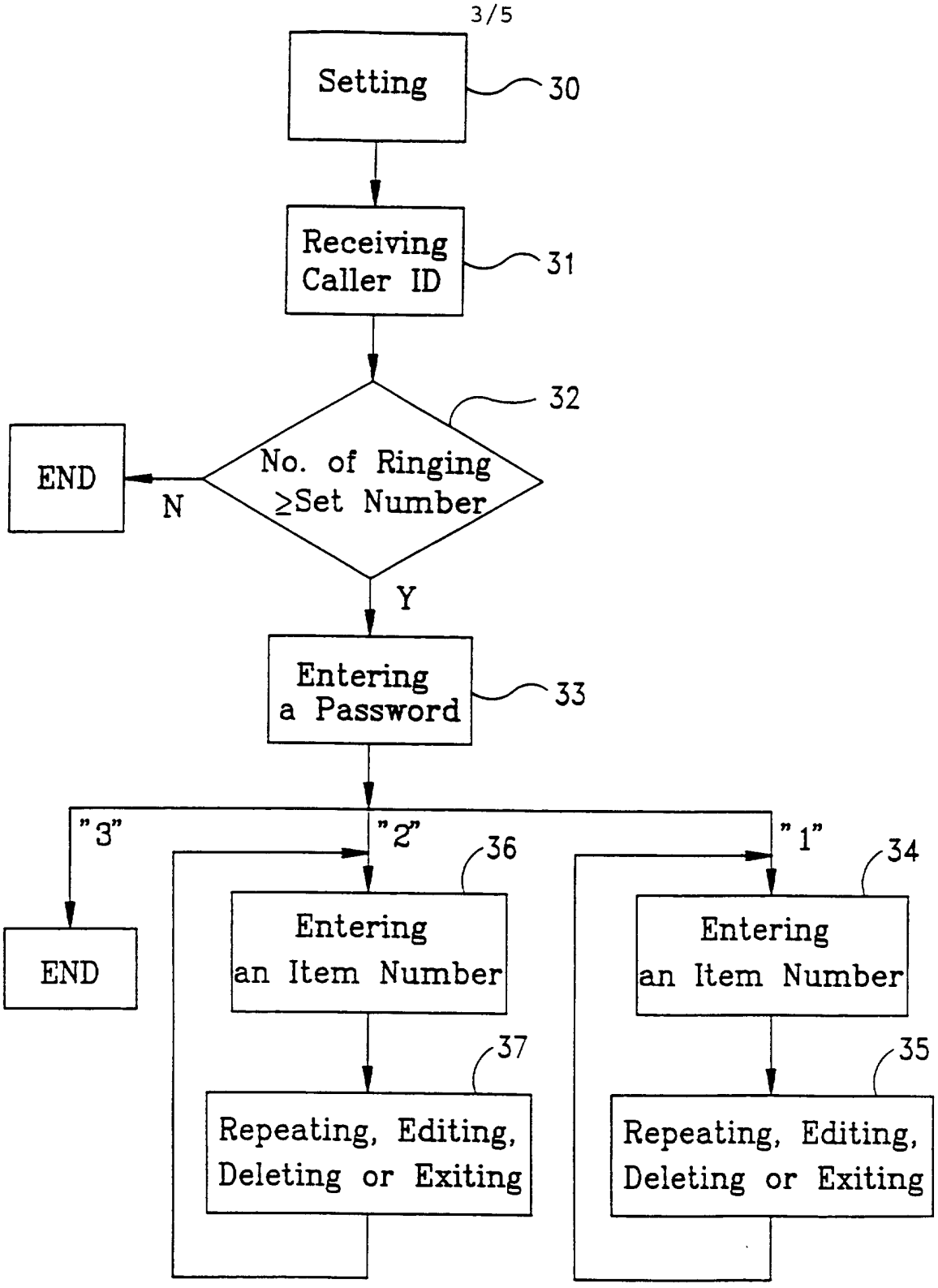
Setting
30
Receiving Caller ID
31
32
No. of Ringing ≥Set Number
END
N
Y
Entering a Password
33
"3"
"2"
"1"
END
36
Entering an Item Number
34
Entering an Item Number
37
Repeating, Editing, Deleting or Exiting
35
Repeating, Editing, Deleting or Exiting

FIG.3

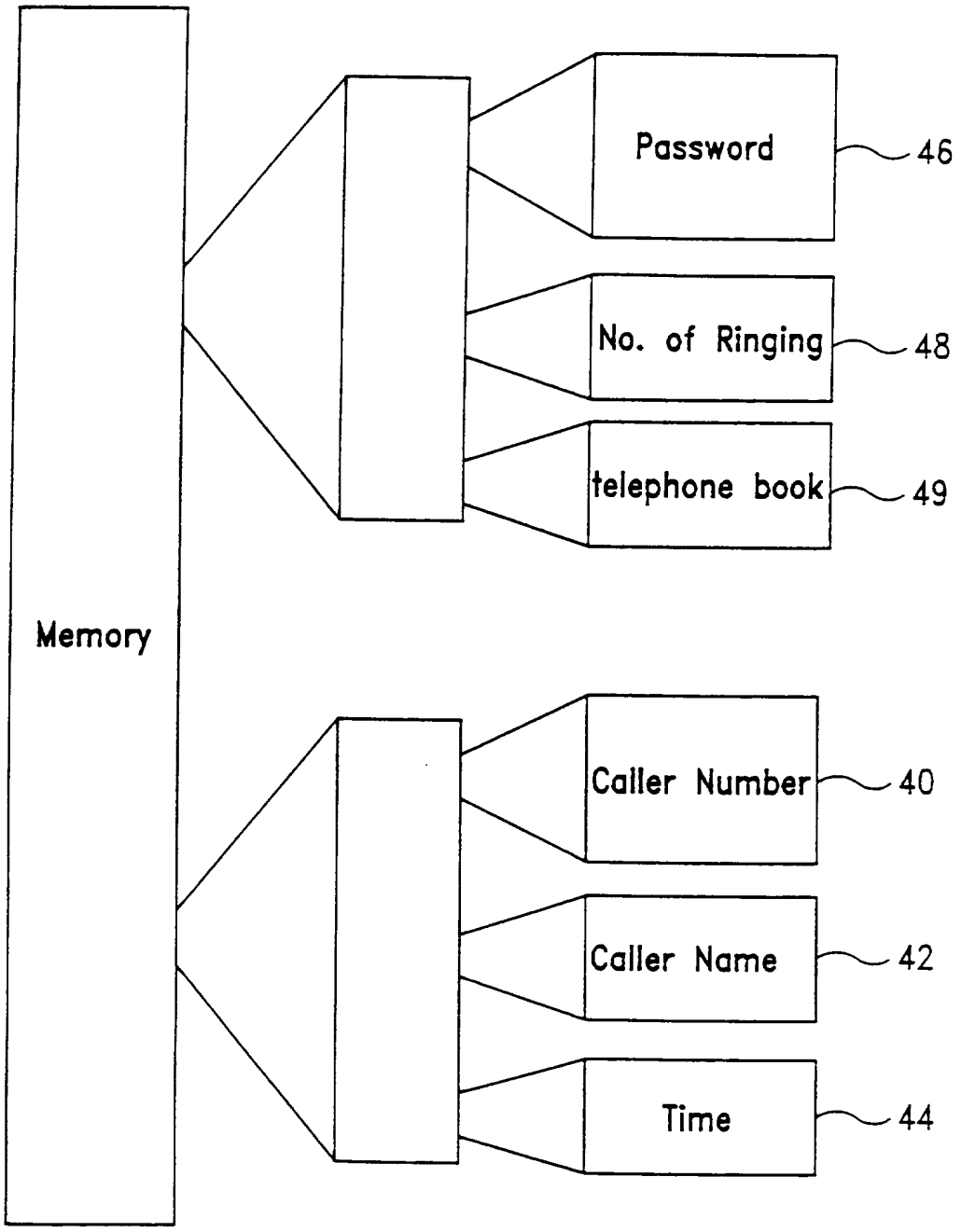
Memory
Password
46
No. of Ringing
48
telephone book
49
Caller Number
40
Caller Name
42
Time
44

FIG.4

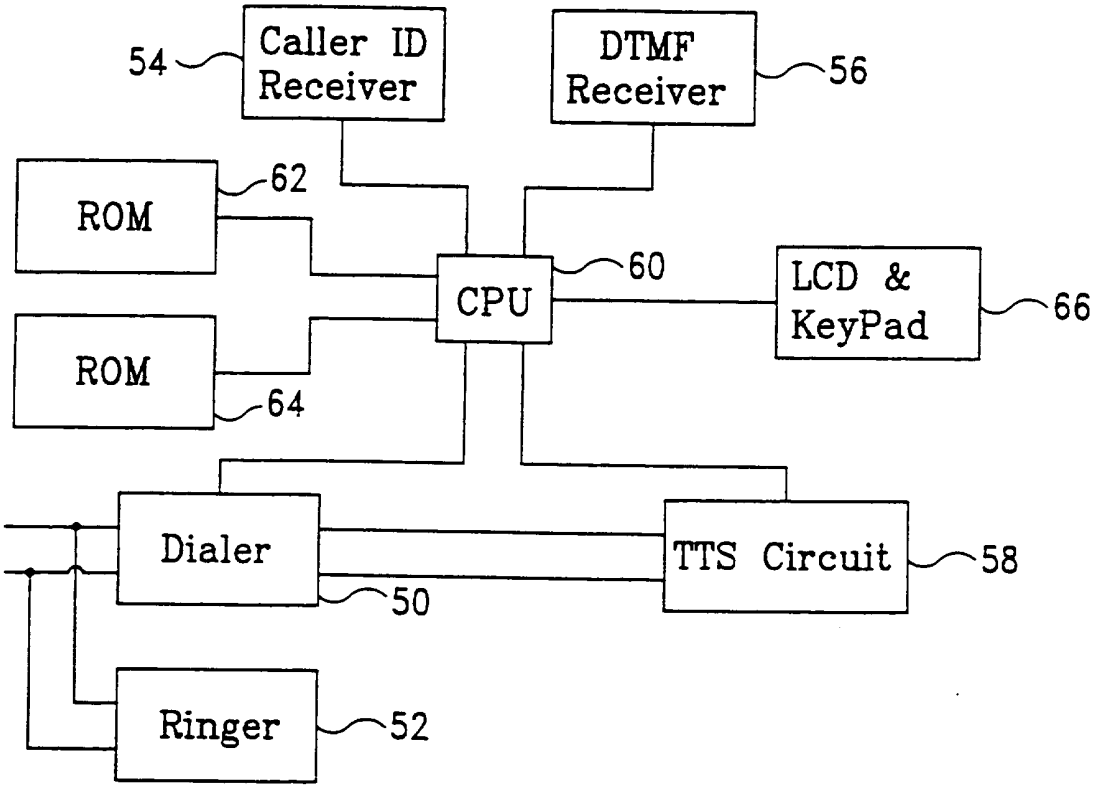
54
Caller ID Receiver
DTMF Receiver
56
ROM
62
CPU
60
LCD & KeyPad
66
ROM
64
Dialer
50
TTS Circuit
58
Ringer
52

FIG.5A

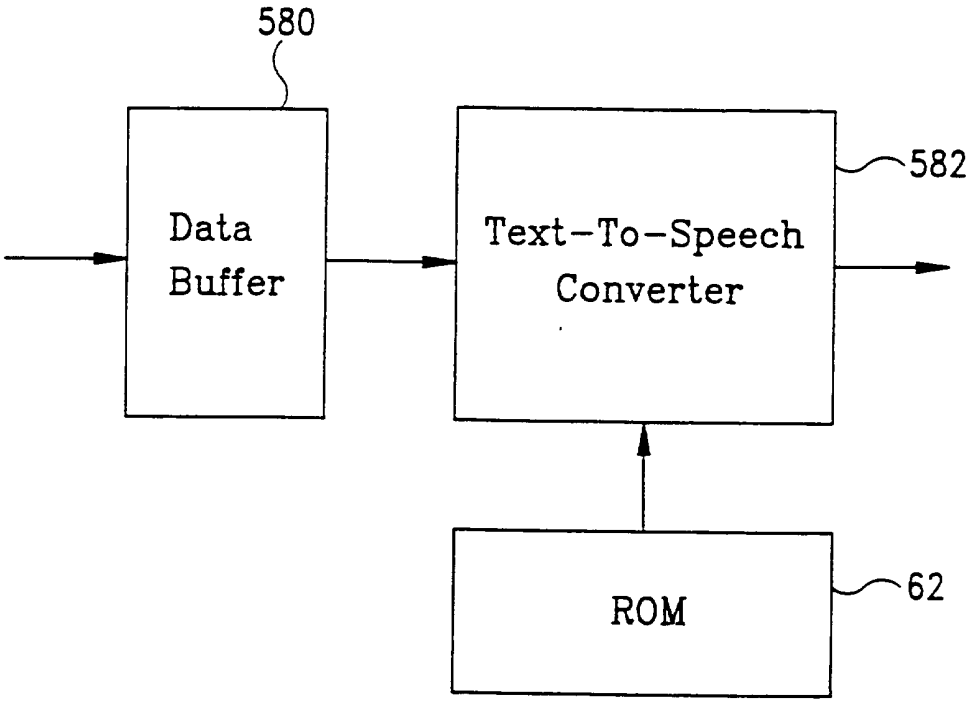
580
Data Buffer
Text-To-Speech Converter
582
ROM
62

FIG.5B

METHOD AND APPARATUS FOR REMOTELY ACCESSING INFORMATION OF A CALLING PARTY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method and apparatus for conveniently accessing information of a calling party, and particularly to a method and apparatus for remotely accessing information of a calling party in voice form.

2. Description of the Prior Art

Since Alexander Graham Bell performed experiments on a device for sending signals over a conductive wire, the telephone has been growing as a practical device in the modern day. FIG. 1 shows the block diagram of a telephone set. Whenever a caller lifts the handset 10, or referred to as off hook, the telephone network or telephone system is then requested and ready for use by an indicated dial tone. Thereafter, the number of a called party is sent to the telephone network by rotating a dial 12 or by pressing number keys 14. A ringing signal detecting circuit or a ringer 16 in the telephone set of the called party detects the ringing signal and consequently generates some audible tone. After the handset on the called side is lifted, both parties can communicate to each other through transforming sound wave to or from electrical

signals by the receiver (earpiece) 18 and the transmitter (mouthpiece) 19.

As the number of the telephones increases, a central office exchange (CO) is established to switch among the telephones. Each telephone is connected to the central office through a local loop consisting of the two wires or four wires. The status of the handset is detected by the CO through this local loop where a dc voltage, usually about 48 volts, is provided by the CO. When the number of the connected telephones further increases, a public switched telephone network is employed to accommodate more telephone connections in an effective manner.

As the telephone network grows larger and more complicated, varieties of functions and services become available. Caller identification (ID) display is a new service available in some modern telephone network, where the caller ID is sent during the beginning of the ringing. FIG. 2A shows a simplified block diagram of the Bellcore used in North American, illustrating that the caller ID 20 is transmitted between two first ring patterns 21, 22. The caller ID is usually transmitted by a modulation method such as frequency shift keying (FSK). FIG. 2B shows another simplified block diagram of the method used in Great Britain, demonstrating that the caller ID 23 is transmitted after the channel is seized 24, but before the ringing 25.

Although caller ID display is a convenient service to the public, the user will miss the coming call when he or she does not stay near the telephone set to answer the call. Therefore, a need has been arisen to provide a convenient method and apparatus, which permit a called party to remotely retrieve the information. As the caller ID is

received before or during ringing, this inventive method and apparatus are superior than an answering machine, which can record calling information only after the call is connected.

SUMMARY OF THE INVENTION

In accordance with the present invention, a method is provided for remotely accessing information of a calling party in a voice form. In one embodiment, a password is firstly set in a telephone set. Information such as a caller ID originated from the calling party through a telephone network is received by the telephone set. This information includes at least a caller number designated as an identification of the calling party; a caller name representing the name of the calling party; and a time indicating the time when a call is made by the calling party. A password is then entered from an accessing party to remotely request the telephone set, and is then recognized by the telephone set. In the embodiment, the password is entered in a dual-tone multi-frequency format. The information of the calling party is remotely retrieved , where the information of the calling party is firstly transformed to the voice form before being retrieved. Further, a portion of the information can be remotely edited by the accessing party.

In another embodiment, apparatus is further provided according to the present invention. The apparatus includes a caller identification receiving circuit to receive information of a calling party, where the information of the calling party is originated from the calling party through a telephone network. A dual-tone multi-frequency receiving circuit is used to recognize remotely entered information during a remote

access, and a text-to-speech circuit is used to transform text information to speech information, and transfer the speech information to an accessing party via the telephone network. A central processing unit is used to control the caller identification receiving circuit, the dual-tone multi-frequency receiving circuit, the text-to-speech circuit, and other related circuits. A first memory device, such as a random access memory (RAM), a flash memory, an electrically erasable programmable read only memory (EEPROM), or their combination, is used to store received information of the calling party, passwords, related parameters, and a telephone book. A second memory device, such as a read only memory (ROM), a flash memory, an erasable programmable read only memory (EPROM), an electrically erasable programmable read only memory (EEPROM), or their combination, is used to store software program that implements control procedure of the central processing unit, and some video information.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the block diagram of a conventional telephone set.

FIG. 2A shows a simplified block diagram of the Bellcore telephone system used in North American.

FIG. 2B shows another simplified block diagram of a telephone system used in Great Britain.

FIG. 3 shows the flow diagram of a preferred embodiment according to the present invention.

FIG. 4 shows how the set data and the retrieved caller ID information are stored in a memory area.

FIG. 5A shows the block diagram of a telephone set according to the present invention.

FIG. 5B shows the block diagram of the text-to-speech circuit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 3 shows a flow diagram of a preferred embodiment according to the present invention. Firstly, a setting procedure 30 is performed to set some password with which an accessing party can remotely access the information stored in the telephone set. The number of ringing is also set in this step. The set number of ringing is used to be waited before step 33 is performed. In the step 30, a telephone book, which stores telephone numbers, names, addresses,and other related information, is further created or edited. The password 46, the number of ringing 48, and the telephone book 49 are stored in a memory device, such as a random access memory (RAM), a flash memory, an electrically erasable programmable read only memory (EEPROM), or their combinations as shown in FIG. 4.

After a call comes, the information of a calling party such as a caller ID is received (step 31) by the telephone set. This information is generated from a telephone network, such as a public switched telephone network or a private switched telephone network. Referring to FIG. 4, the caller ID includes at least a caller number 40 designated as an identification of the calling party, a caller name 42 representing the name of the calling party, and a time 44 indicating the time and date when a call is made by the calling party. The caller ID is stored in a memory device, such as a random access

memory (RAM), a flash memory, an electrically erasable programmable read only memory (EEPROM), or their combinations.

As an accessing party want to remotely request the caller ID stored in the telephone set, the accessing party firstly dial to the telephone set. After the set number of ringing is reached in step 32, a password is required to enter (step 33) according to a voice instruction. The entered password via a public switched telephone network or a private switched telephone network is then transformed into a dual-tone multi-frequency (DTMF) signal by a DTMF circuit inside the telephone set. When this entered password is recognized the same as the password stored in the memory, the accessing party therefore has the right to access the data stored in the telephone set. The accessing party can selectively reach the caller ID or the data of the telephone book in the voice form.

Next, instructions in voice form are voiced out to the accessing party the available operations. The voice is generated, for example, by a text-to-speech circuit, where a portion of the text is usually stored in the memory beforehand. In this embodiment, the voiced instruction requires the accessing party to enter "1" if he or she would like to listen to the received caller ID; or enter "2" if he or she would like to access the telephone book; or to enter "3" if he or she want to exit. In the first branch "1" mentioned above, the accessing party is further required via a voiced instruction to enter an item number (step 34) of all the caller IDs available. After the item number is recognized, the caller ID can be heard by the accessing party. Afterwards, in step 35, more operations are available such as repeating to listen to the caller ID, editing the caller ID, deleting the present or all caller IDs, or exiting to the previous step. The

selection of these options are recognized via an entered numeral through a public switched telephone network or a private switched telephone network, followed by the transformation of the entered numeral by the DTMF circuit.

In a similar manner, for the second branch "2" after the step 33, the accessing party is required to enter an item number (step 36) of all the telephone numbers available in the telephone book. After the item number is recognized, the telephone number and its related information like name or address can be heard remotely by the accessing party. Afterwards, in step 37, more operations are available such as repeating to retrieve the telephone number, editing that number or its related information, deleting the present or all telephone numbers, or exiting to the previous step. The selection of these options are recognized via an entered numeral through a public switched telephone network or a private switched telephone network, followed by the transformation of the entered numeral by the DTMF circuit.

FIG. 5A shows the block diagram of a telephone set according to the present invention. A dialer 50 is used to send out signal frequency pertinent to a dialing telephone, and a ringer 52 is used to detect the ringing. A caller ID receiver 54 is used to receive information of a calling party, where the information of the calling party is originated from the calling party through a telephone network such as a public switched telephone network or a private switched telephone network. Dual-tone multi-frequency (DTMF) receiver 56 is used to recognize remotely entered information during a remote access, and a text-to-speech (TTS) circuit 58 and related circuits are used to transform text information to speech information, where the speech information is transferred to an

accessing party via the telephone network. A central processing unit (CPU) 60 is used to control the caller ID receiver 54, the DTMF receiver 56 and the text-to-speech (TTS) circuit 58. Received information of the calling party is stored in a memory device 64 such as a random access memory (RAM), a flash memory, an electrically erasable programmable read only memory (EEPROM), or their combinations. The software program implementing control procedure of the CPU 60 is stored in another memory device 62, such as a read only memory (ROM), a flash memory, an electrically erasable programmable read only memory (EEPROM), or their combinations. Further, a liquid crystal display (LCD) & key pad circuit 66 is used to control the input/output of the telephone set.

FIG. 5B shows the block diagram of the aforementioned TTS circuit 58. Data to be transformed is input to a data buffer 580, and the buffered data is fed to a text-to-speech converter 582. Some information such as the available instructions mentioned above are also fed to the text-to-speech converter 582 from the memory device 62.

Although specific embodiments have been illustrated and described, it will be obvious to those skilled in the art that various modifications may be made without departing from the spirit which is intended to be limited solely by the appended claims.

CLAIMS

What is claimed is:

1. A method for remotely accessing information of a calling party in a voice form, said method comprising the steps of:

setting a password in a telephone set;

receiving information of a calling party by the telephone set, said information of the calling party being originated from the calling party through a telephone network;

remotely requesting the telephone set by entering the password, wherein said password is recognized by the telephone set; and

remotely retrieving the information of the calling party, said information of the calling party being transformed to the voice form before being retrieved.

2. The method according to claim 1, wherein said password is stored in a memory device.

3. The method according to claim 2, wherein said memory device is a member selected from the group consisting of a random access memory, a flash memory, an electrically erasable programmable read only memory, and combinations thereof.

4. The method according to claim 1, wherein said received information of the calling party is stored in a memory device.

5. The method according to claim 4, wherein said device is a member

selected from the group consisting of a random access memory, a flash memory, an electrically erasable programmable read only memory, and combinations thereof.

6. The method according to claim 1, wherein said information of the calling party comprises:

a caller number designated as an identification of the calling party;

a caller name representing the name of the calling party; and

a time indicating the time and the date when a call is made by the calling party.

7. The method according to claim 1, wherein said telephone network comprises a public switched telephone network.

8. The method according to claim 1, wherein said telephone network comprises a private switched telephone network.

9. The method according to claim 1, wherein said password is entered in a dual-tone multi-frequency format.

10. The method according to claim 1, further comprising remotely editing a portion of the information of the calling party.

11. The method according to claim 1, further comprising storing a plurality of pieces of information pertinent to a plurality of telephone numbers.

12. The method according to claim 11, further comprising remotely editing the plurality of pieces of information.

13. Apparatus for remotely accessing information of a calling party in a voice form, said apparatus comprising:

caller identification receiving means for receiving information of a calling party, said information of the calling party being originated from the calling party through a telephone network;

dual-tone multi-frequency receiving means for recognizing remotely entered information during a remote access;

text-to-speech means for transforming text information to speech information, said speech information being transferred to an accessing party via the telephone network;

central processing means for controlling said caller identification receiving means, said dual-tone multi-frequency receiving means and said text-to-speech means;

first memory means for storing the received information of the calling party; and

second memory means for storing software program implementing control procedure of the central processing means.

14. The apparatus according to claim 13, wherein said received information of the calling party is stored in a memory device.

15. The apparatus according to claim 14, wherein said device is a

member selected from the group consisting of a random access memory, a flash memory, an electrically erasable programmable read only memory, and combinations thereof.

16. The apparatus according to claim 13, wherein said information of the calling party comprises:

a caller number designated as an identification of the calling party;

a caller name representing the name of the calling party; and

a time indicating the time when a call is made by the calling party.

17. The apparatus according to claim 13, wherein said telephone network comprises a public switched telephone network.

18. The apparatus according to claim 13, wherein said telephone network comprises a private switched telephone network.

19. The apparatus according to claim 13, wherein said remotely entered information comprises a password to be recognized by the apparatus.

20. The apparatus according to claim 13, wherein said first memory means is a member selected from the group consisting of a random access memory, a flash memory, an electrically erasable programmable read only memory, and combinations thereof.

21. The apparatus according to claim 13, wherein said second memory

means is a member selected from the group consisting of a read only memory, a flash memory, an electrically erasable programmable read only memory, and combinations thereof.

22. Methods of remotely accessing information of a calling party in a voice form according to claim 1 and as herein described.

23. Methods of remotely accessing information of a calling party in a voice form as herein described and illustrated with reference to Figures 3 to 5 of the accompanying drawings.

22. Apparatus for remotely accessing information of a calling party in a voice form according to claim 13 and as herein described.

22. Apparatus for remotely accessing information of a calling party in a voice form according to claim 13 and as herein described and illustrated with reference to Figures 3 to 5 of the accompanying drawings.

The Patent Office

4

Application No: GB 9627022.8
Claims searched: 1-22

Examiner: Peter Slater
Date of search: 27 May 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4K (KBNJ, KBNX, KFH, KF42)

Int Cl (Ed.6): H04M 1/57

Other: ONLINE: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2300785 A (MARKTON) - See whole document	1-9,11 13-22
X	US 5289530 A (REESE) - See whole document	1-9,11 13-22
X	US 4930152 A (BELL COMMUNICATIONS) - See whole document	1-9,11 13-22
X	Patent Abstracts of Japan, vol.13, no.78, pg.160, (E718) & JP63260255 (MITSUBISHI)	1-5 7,8,13 14,17-22

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.