



United States Patent [19]

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Lin

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[54] **METHOD FOR AUTOMATICALLY COMPOSING A TELEPHONE DIALING STRING**

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[57] **ABSTRACT**

[73] **Assignee:** **Apple Computer, Inc.**, Cupertino, Calif.

A method for automatically composing a telephone dialing string for a telecommunication device having a processor, storage, and a connection to an external telephone system, by storing configuration information for a current location of the telecommunication device in fields for local country code and local area code; by storing configuration information for dialing prefixes for a current external telephone system connected to the telecommunication device in fields for a prefix for a local call, prefix for a long distance call, and prefix for an international call; and by storing a desired telephone number in fields for a desired country code, a desired area code, and a desired telephone number. Then, forming a telephone dialing string by the processor comparing like fields of the desired telephone number to the configuration information for a current location to determine the need for international, long distance and local access prefixes followed by non-redundant country code, area code and telephone number information; and sending the telephone dialing string to the external telephone system.

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[51] **Int. Cl.⁶** **H04M 1/27**

[52] **U.S. Cl.** **379/355; 379/354; 379/356; 379/357; 379/216**

[58] **Field of Search** **379/355, 354, 379/356, 357, 216**

[56] **References Cited**

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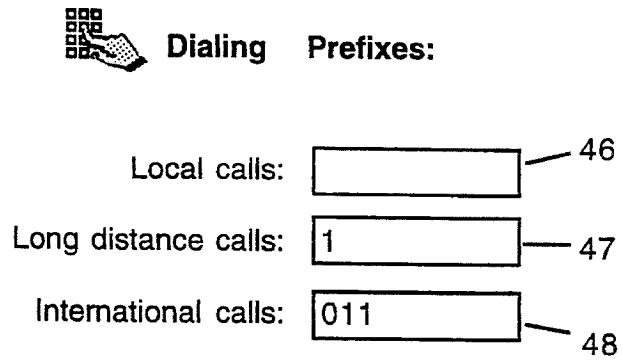
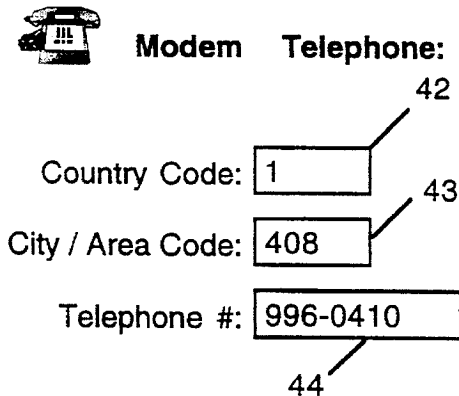
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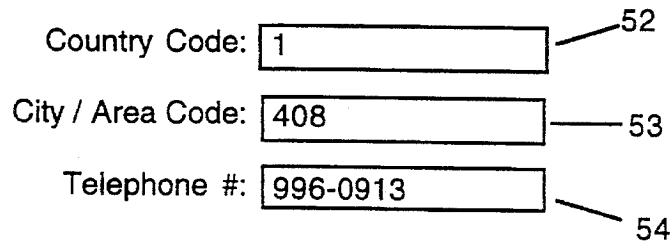
Primary Examiner—Jeffery A. Hofsass

7 Claims, 3 Drawing Sheets

••• From phone number



•••To phone number



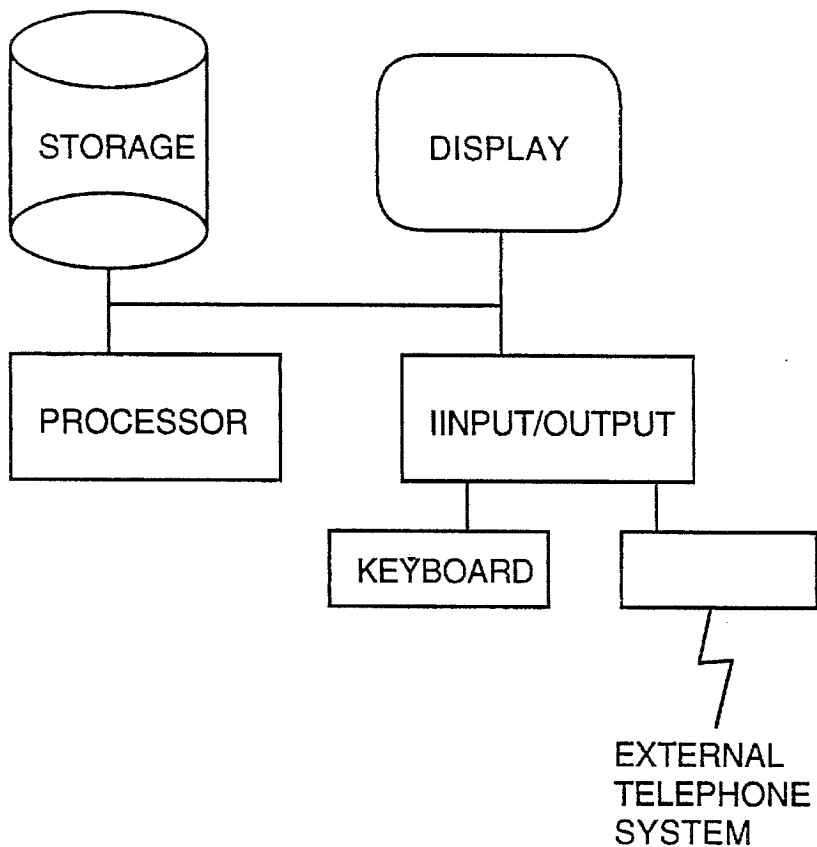


FIG. 1 (PRIOR ART)

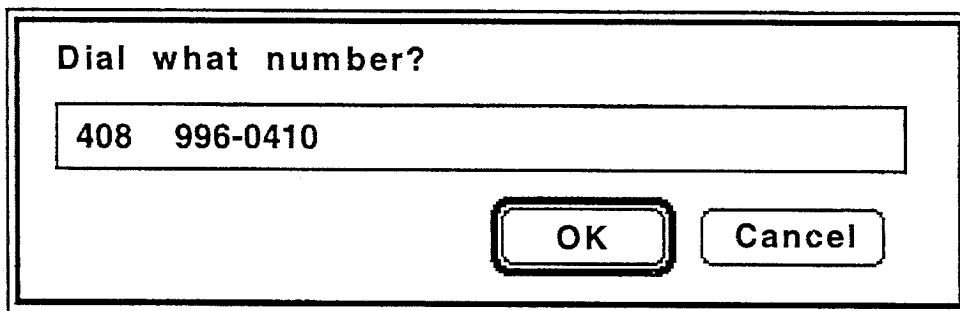


FIG. 2 (PRIOR ART)

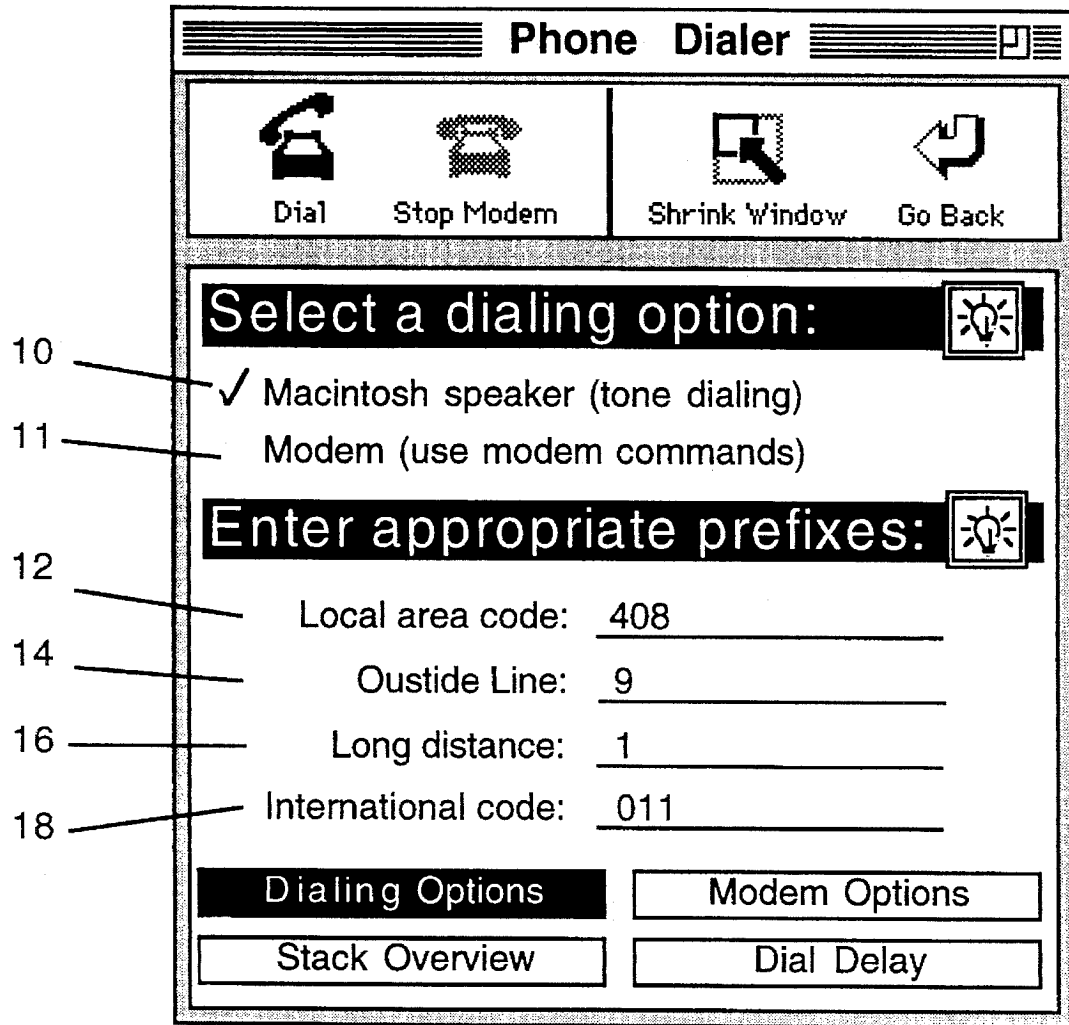


FIG. 3 (PRIOR ART)

••• From phone number



Modem Telephone:

Country Code: 42
City / Area Code: 43
Telephone #: 44



Dialing Prefixes:

Local calls: 46
Long distance calls: 47
International calls: 48

•••To phone number

Country Code: 52
City / Area Code: 53
Telephone #: 54

FIG. 4

METHOD FOR AUTOMATICALLY COMPOSING A TELEPHONE DIALING STRING

BACKGROUND OF THE INVENTION

This invention relates to a method of forming a telephone dialing string for a telecommunication device such as a computer with a modem.

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One use of computers is to store name and telephone number information, such as an electronic "Address Book". The computer can be used to dial either stored or manually entered telephone numbers.

As an example, FIG. 1 shows a typical prior art personal computer having storage, display, processor, and input/output devices such as a keyboard and modem. Telephone numbers can be stored on the computer, viewed on the display, manipulated by the processor and dialed via the modem.

FIG. 2 shows how a telephone number can be entered in a prior art telephone dialing program. The desired number is entered in a single field as a string of digits which may include prefixes such as an area code.

The telephone dialing program examines the entered telephone number string, and compares it to stored configuration information to determine how to form a telephone dialing string to be sent to the telephone system.

For local calls within the same area code, the telephone dialing program may need to eliminate the area code from the telephone number when forming the telephone dialing string. For long distance calls, the telephone dialing program may need to add additional prefixes to the telephone number when forming the telephone dialing string. For calls being sent through a PBX telephone system, the telephone dialing program may need to add an access number prefix to the telephone number when forming the telephone dialing string.

To properly form the telephone dialing string, the computer needs certain configuration information. FIG. 3 shows the configuration information that can be entered into one prior art telephone dialing program, the HyperCard™ 2.1 Phone Dialer by Apple Computer, Inc. The program allows the user to select dialing by the computer's speaker or modem output, depending on how connection is made to the external telephone system. (FIG. 3 at 10 and 11.) To connect to a telephone line and dial a particular telephone number, appropriate dialing prefixes may be necessary. Examples of these prefixes are an area code (FIG. 3 at 12), a PBX code to get an outside line (FIG. 3 at 14), a long distance access code (FIG. 3 at 16) and an international access code (FIG. 3 at 18). After configuration information such as these prefixes have been set, the telephone dialing program can generate a telephone dialing string from the prefixes and a desired telephone number.

Selecting the correct set of prefixes for the telephone dialing string can be a complicated problem, since the correct set of prefixes varies in relation to each telephone

information, and the country and telephone system being used.

As a simple example, in the United States, telephone numbers within the local area code can be dialed without an area code prefix. However, when the telephone number is in a different area code, it may be necessary to use a prefix of "1", followed by the area code and the telephone number. Many present telephone dialing programs such as the example HyperCard 2.1 Phone Dialer check the desired telephone number against the local area code to eliminate a redundant local area code from the telephone dialing string.

As a more complicated example, when it is desired to call a telephone number in a foreign country, the prefixes for long distance dialing, international access, country codes, city codes, area codes and telephone numbers must be properly constructed. Many present telephone dialing programs fail to correctly form the telephone dialing string if the stored telephone number includes international access codes, or if the stored foreign telephone number is shorter than a local telephone number, or in other circumstances where the program cannot determine whether the desired telephone number is local, long distance or international. Where the telephone number is entered as a single string, it is easy to confuse which digits may be a country code, area code, or phone number.

While errors in forming the telephone dialing string can be noticed and corrected by the computer user, it is not always easy to correct the problem, since both the configuration information and the telephone number may need to be edited to properly "fool" the program into forming a correct string according to its "invisible" internal rules. It is desired that telephone dialing strings can be automatically constructed for any current configuration information and any desired telephone number, especially so that unattended operation of the computer can be allowed, for example to allow the computer to automatically call an electronic mail system and download messages.

SUMMARY OF THE INVENTION

A method for automatically composing a telephone dialing string for a telecommunication device having a processor, storage, and a connection to an external telephone system, comprising:

- storing configuration information for a current location of the telecommunication device in fields for local country code and local area code;
- storing configuration information for dialing prefixes for a current external telephone system connected to the telecommunication device in fields for a prefix for a local call, prefix for a long distance call and prefix for an international call;
- storing a desired telephone number in fields for a desired country code, a desired area code and a desired telephone number;
- forming a telephone dialing string by the processor comparing like fields of the desired telephone number to the configuration information for a current location to determine the need for international, long distance and local access prefixes followed by non-redundant country code, area code and telephone number information; and
- sending the telephone dialing string to the external tele-

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