




US005455858A

United States Patent [19]**Lin**[11] **Patent Number:** **5,455,858**[45] **Date of Patent:** **Oct. 3, 1995**[54] **METHOD FOR AUTOMATICALLY
COMPOSING A TELEPHONE DIALING
STRING***Assistant Examiner*—Jacques M. Saint-Surin
Attorney, Agent, or Firm—Mark A. Aaker[75] **Inventor:** **Lee M. Lin**, Cupertino, Calif.[73] **Assignee:** **Apple Computer, Inc.**, Cupertino,
Calif.[21] **Appl. No.:** **130,475**[22] **Filed:** **Oct. 1, 1993**[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****U.S. PATENT DOCUMENTS**


4,342,882	8/1982	Gravenhorst et al.	379/355
4,945,557	7/1990	Kaneuchi et al.	379/67
5,268,959	12/1993	Hong	379/355

OTHER PUBLICATIONS"Power Book Products User Guide", by Global Village
Communication, Inc., Edition 1, (1990–1992), pp. 1–16.*Primary Examiner*—Jeffery A. Hofsass[57] **ABSTRACT**

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.

7 Claims, 3 Drawing Sheets**••• From phone number**


Modem Telephone:	
Country Code:	<input type="text" value="1"/> 42
City / Area Code:	<input type="text" value="408"/> 43
Telephone #:	<input type="text" value="996-0410"/> 44



Dialing Prefixes:	
Local calls:	<input type="text"/> 46
Long distance calls:	<input type="text" value="1"/> 47
International calls:	<input type="text" value="011"/> 48

•••To phone number

Country Code:	<input type="text" value="1"/> 52
City / Area Code:	<input type="text" value="408"/> 53
Telephone #:	<input type="text" value="996-0913"/> 54

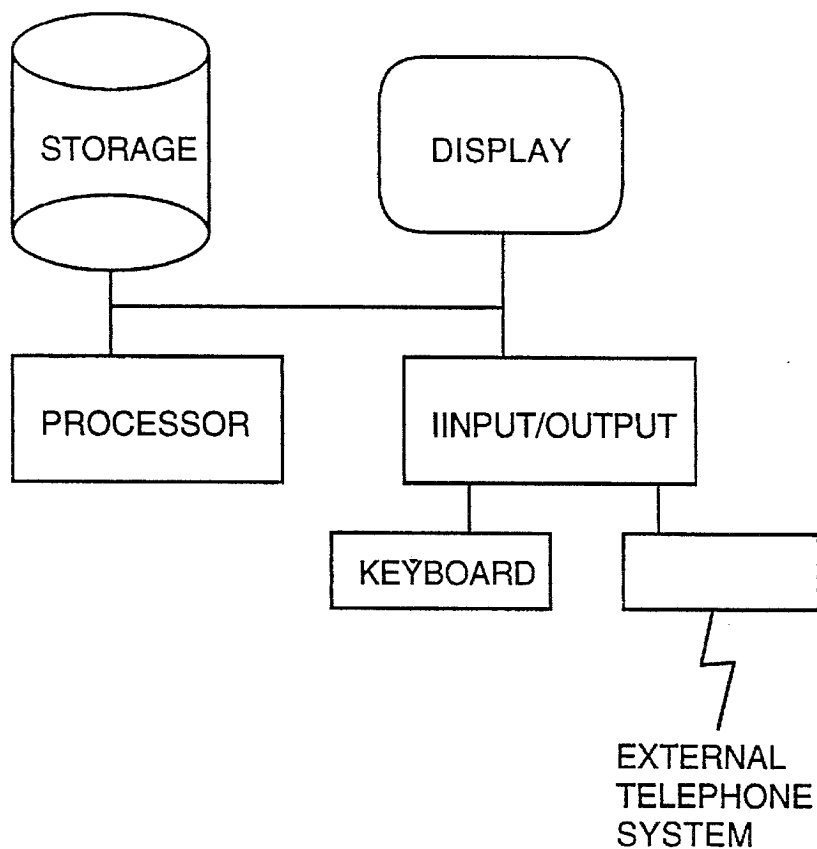


FIG. 1 (PRIOR ART)

A screenshot of a graphical user interface for dialing a number. It features a rectangular frame containing the text "Dial what number?" at the top. Below this is a text input field containing the number "408 996-0410". At the bottom right of the frame are two buttons: "OK" and "Cancel".

FIG. 2 (PRIOR ART)

The screenshot shows a 'Phone Dialer' window with a title bar and standard window controls. The window is divided into several sections. At the top, there are four icons: a telephone handset, a modem, a window with a red X, and a circular arrow. Below these icons are the labels 'Dial', 'Stop Modem', 'Shrink Window', and 'Go Back'. The main area of the window contains two sections. The first section is titled 'Select a dialing option:' and has a lightbulb icon. It contains two radio buttons: 'Macintosh speaker (tone dialing)' which is selected with a checkmark, and 'Modem (use modem commands)'. The second section is titled 'Enter appropriate prefixes:' and also has a lightbulb icon. It contains four input fields: 'Local area code:' with the value '408', 'Oustide Line:' with the value '9', 'Long distance:' with the value '1', and 'International code:' with the value '011'. At the bottom of the window, there are four buttons: 'Dialing Options', 'Modem Options', 'Stack Overview', and 'Dial Delay'. On the left side of the image, there are five numbers with lines pointing to specific elements: 10 points to the 'Select a dialing option:' title, 11 points to the 'Modem (use modem commands)' option, 12 points to the 'Enter appropriate prefixes:' title, 14 points to the 'Oustide Line:' input field, and 18 points to the 'International code:' input field.

10 Select a dialing option:

11 ✓ Macintosh speaker (tone dialing)

11 Modem (use modem commands)

12 Enter appropriate prefixes:

14 Local area code: 408

14 Oustide Line: 9

16 Long distance: 1

18 International code: 011

Dialing Options Modem Options

Stack Overview Dial Delay

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.

A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

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-

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.