US005963624A

United States Patent [19]

Pope

[11] Patent Number: 5,963,624

[45] Date of Patent: Oct. 5, 1999

[54] **DIGITAL CORDLESS TELEPHONE WITH REMOTE CONTROL FEATURE**

[75] Inventor: **Steven M. Pope**, Los Gatos, Calif.

[73] Assignee: **Zilog, Inc.**, Campbell, Calif.

[21] Appl. No.: **08/986,273**

[22] Filed: **Dec. 5, 1997**

[51] **Int. Cl.**^{6} **H04M 11/00**
[52] **U.S. Cl.** **379/110.01**; 455/420; 348/734
[58] **Field of Search** 379/110.01, 90.01, 379/102.01–102.03; 455/420, 462, 402; 348/734

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,508,935	4/1985	Mastromoro	455/420
4,771,283	9/1988	Imoto	348/734
4,995,053	2/1991	Simpson et al.	375/200
5,014,125	5/1991	Pocock et al.	.
5,128,987	7/1992	McDonough et al.	.
5,542,102	7/1996	Smith et al.	.
5,570,415	10/1996	Stretton et al.	.
5,671,267	9/1997	August et al.	455/420
5,802,467	9/1998	Salazar et al.	455/420

FOREIGN PATENT DOCUMENTS

90-7064 9/1990 Rep. of Korea .

Primary Examiner—Wing F. Chan
Attorney, Agent, or Firm—Majestic, Parsons, Siebert & Hsue
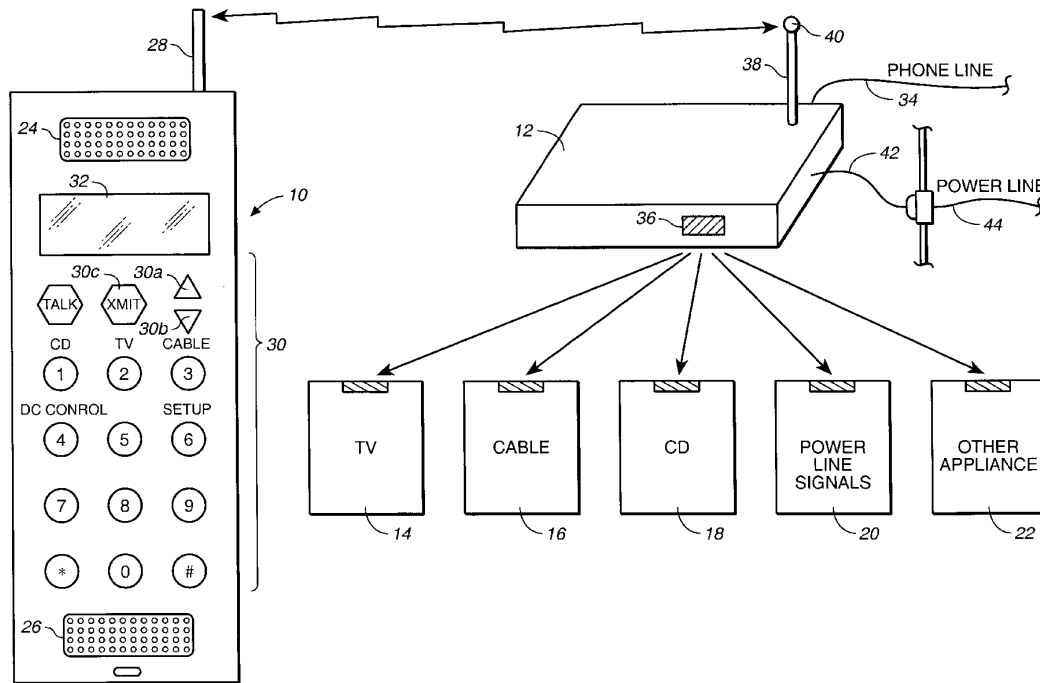
[57] **ABSTRACT**

Storing a variety of appliance control codes in a cordless digital telephone handset has the advantage that the cordless digital telephone handset can be used as a universal remote for a variety of electrical appliances. The cordless digital telephone handset need not be in the direct "line-of-sight" of the appliances in order to work. The appliance control data can be sent along with voice data in a method such as digital spread spectrum communications.

68 Claims, 3 Drawing Sheets

FIG._1

FIG._2

FIG._3

FIG._4

PROVIDING A DIGITAL HANDSET
WITH A VARIETY OF STORED
APPLIANCE CONTROL CODE
100

RECEIVING DIGITAL VOICE DATA
AT THE HANDSET
102

SELECTING AN APPLIANCE
CONTROL CODE
104

TRANSMITTING DIGITAL DATA TO
THE BASE UNIT, THE DIGITAL DATA
INCLUDING THE APPLIANCE
CONTROL CODE
106

DOES
THE APPLIANCE
CONTROL CODE
INDICATE AN IR SIGNAL
OR AN APPLIED AC
POWER SIGNAL
?
108

APPLIED POWER
SIGNAL

IR SIGNAL

TRANSLATE APPLIANCE
CONTROL CODE TO
IR CONTROL CODE AND TRANSMIT
FROM BASE UNIT TO APPLIANCE
110

TRANSLATE APPLIANCE
CONTROL CODE INTO
CONTROL SIGNAL AND INSERT
ONTO AC POWER SIGNAL
112

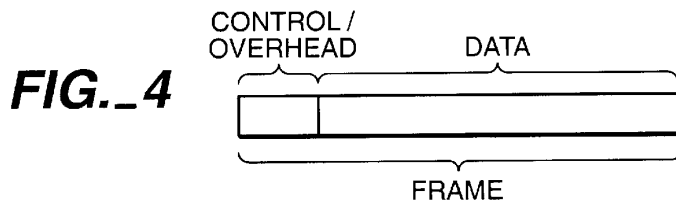DECODER ATTACHED TO
APPLIANCE CONTROLS
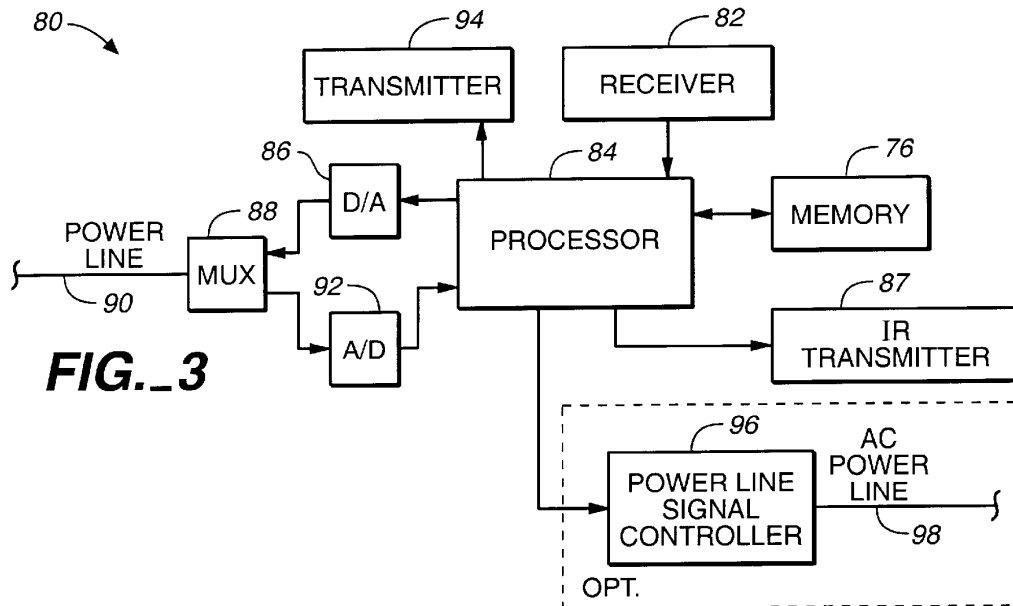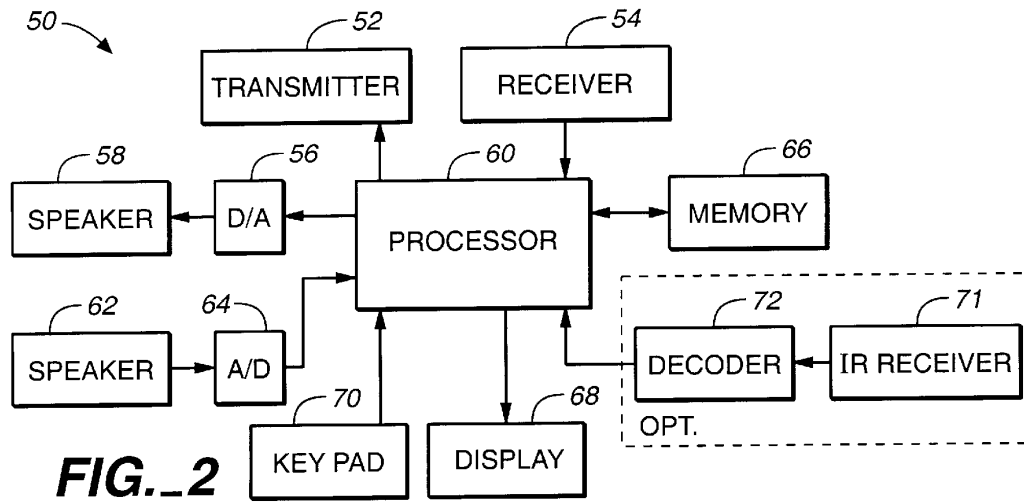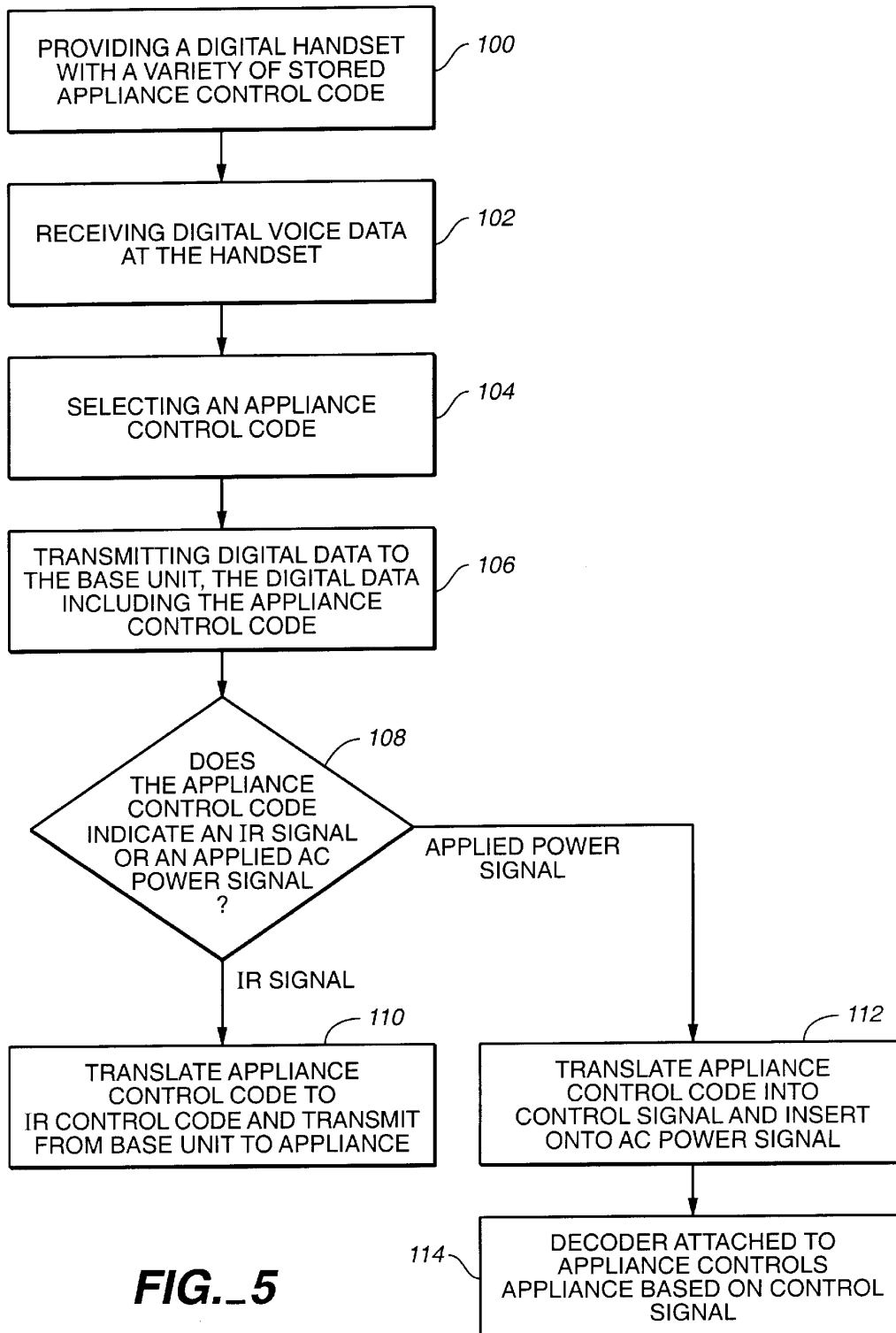APPLIANCE BASED ON CONTROL
SIGNAL
114

FIG._5

DIGITAL CORDLESS TELEPHONE WITH REMOTE CONTROL FEATURE

BACKGROUND OF THE INVENTION

The present invention relates to telephones used in conjunction with electrical appliances, such as televisions, compact disc players, cable controllers, and the like.

Some prior telephone systems have used a base unit to automatically mute a television set and other devices when a telephone call is received. McDonough U.S. Pat. No. 5,128,987 describes a controller responsive to an off-hook condition which automatically mutes the television set. The controller sends infrared signals to the television.

Smith, et al. U.S. Pat. No. 5,542,102 describes a telephone base unit that can be programmed to mute a television set or other electronic device in response to a speakerphone at the base unit switching on, or a call being received at the base unit.

Another reference, Korea Patent No. 90-7064, describes an infrared transmitter positioned on a telephone handset to be used to mute a television set or the like by transmitting an infrared signal from the handset to the electronic device. This allows the electronic device in the line of sight of the handset to be muted.

It is desired to have an improved system for use of a telephone in conjunction with other electrical appliances.

SUMMARY OF THE INVENTION

The present invention uses a digital cordless telephone handset to store a variety of appliance control codes. These appliance control codes can be transmitted to a base unit. The base unit can translate the appliance control codes to control signals such as infrared control signals, to control an electrical appliance.

The advantage of this system is that the use of a number of appliance control codes can allow different features on one or more electrical appliances to be controlled through the digital cordless telephone handset. The digital cordless telephone can use digital spread spectrum communication between the handset and the base unit. This allows the handset to be in a different room or a significant distance away from the base unit and still control the electrical device. That is an advantage over a universal infrared remote and the system of Korea Patent No. 90-7064. The handset does not need to be in the line-of-sight of the appliance. In this manner, the telephone can be used as a type of universal remote controlling different electrical appliances even when the user is in another room.

The digital cordless telephone handset is likely to be carried by the user into different rooms or kept in the room used most often. With the remote control feature of the present invention, when a call is received, the user can mute a television or compact disc player. This does not occur automatically. Thus, if the music is playing softly and/or someone else is listening to music or watching television, the mute feature will not automatically be activated when a call is received. Additionally, the telephone handset can be used to send appliance control signals other than just "mute." These other appliance control codes include compact disc player track select, television channel select, and volume controls.

The advantage of using a digital telephone in the present invention is that the digital telephone allows control information to be multiplexed with the voice data transmitted to the base unit. Control information is already sent in an

overhead portion of the digital transmission of most digital telephones. The appliance control code can "free-ride" on this overhead portion. In this manner, the required modifications to current digital telephones is minimized. In one embodiment, the appliance control codes are sent in an overhead portion of a data frame. The existing data structure need not be modified to allow the appliance control codes to be sent. The overhead or control portion of the frame typically has undefined overhead codes which can be defined as the appliance control codes.

Additionally, a display on the handset can set up a menu pointing to different appliance controls which can be selected. The handset can store a number of codes indicating different vendors for compact disc players, television sets, etc.

One embodiment of the present invention uses control signals placed on a house's power line. These control signals can be used to control appliances attached to the system, such as the house lights.

Optionally, a universal remote decoder of the type used for universal remotes can be attached to the handset or to the base unit. This can be used so that the devices can learn the infrared control signals associated with the different electrical appliances.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other features and aspects of the present invention will become more apparent upon reading the following detailed description in conjunction with the accompanying drawings.

FIG. **1** is a diagram showing the system of the present invention including a handset, a base unit, and associated electrical appliances.

FIG. **2** is a diagram of a handset of the present invention.

FIG. **3** is a diagram of a base unit of the present invention.

FIG. **4** is a diagram of a data structure used with one embodiment of the present invention.

FIG. **5** is a flow chart illustrating the method of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** is a diagram showing a handset **10**, a base unit **12**, and electrical appliances **14–22**. The handset **10** is a cordless digital telephone handset. It includes speakers **24** and **26**, an antenna **28**, a keypad **30**, and a display **32**. The cordless digital telephone handset includes a memory **66** shown in FIG. **2**, which can be used to store the appliance control codes. Preferably, the appliance control codes can be transmitted to the base unit **12** along with digital voice data. In a preferred embodiment, the voice data and the appliance control codes are sent by digital spread spectrum communication. Spread spectrum communication uses a broad bandwidth to transmit data in order to reduce the errors in the data transmission. The selection of the appliance control codes can be done through the keypad **30** or there can be dedicated keys for some or all of the appliance control functions.

Keypad **30** includes the numbers **1–9**, the "star" and the "pound" key. Additionally, "up arrow" key **30***a* and "down arrow" key **30***b* can be used to scroll through a menu. A "transmit" key **30***c* can be used to transmit the appliance control code once the appliance control has been selected. In one embodiment, the user gets into the menu by pressing an "up arrow" or a "down arrow" key. Alternately a "menu"

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.