

United States Patent [19]

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Lenchik

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[54] **METHOD AND APPARATUS FOR POSITIONING SELECTABLE FUNCTION ICONS ON A DISPLAY**

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[51] **Int. Cl.⁶** **G09G 5/00**

[52] **U.S. Cl.** **345/156; 345/146; 345/173**

[58] **Field of Search** 345/157, 158, 345/156, 131, 169, 173; 340/572, 825.54, 825.65, 825.36, 825.44-825.51; 364/401, 419; 348/734; 455/38.1-38.9; 341/23; 395/600

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[57] **ABSTRACT**

Functions, represented by icons, likely to be used by a user may be depicted on a display (102) such that the user may invoke functions in a user friendly manner. Target function icons to be depicted on the display are determined from a pool of available functions based on an operating environment locale of a device (100) comprising the display (102). The target function icons are then presented on the display (102) such that the user can select or invoke a function represented by the function icon. In this manner, the user may invoke frequently used functions with less user input.

7 Claims, 3 Drawing Sheets

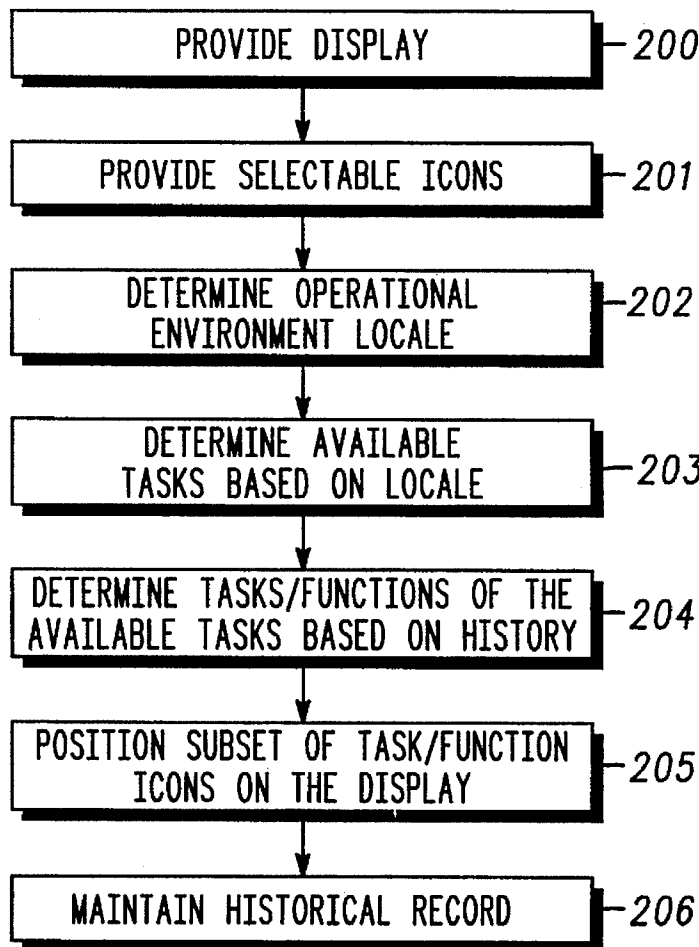


FIG. 1

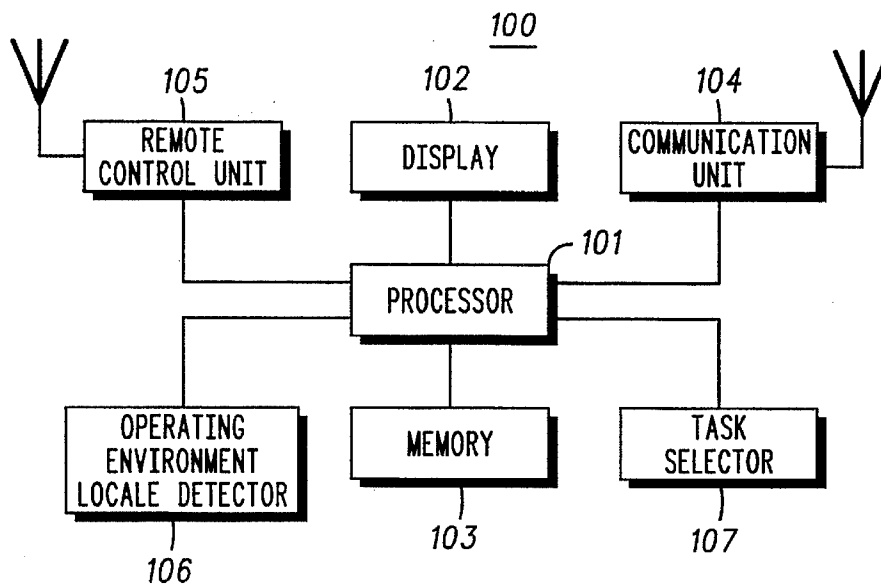


FIG. 2

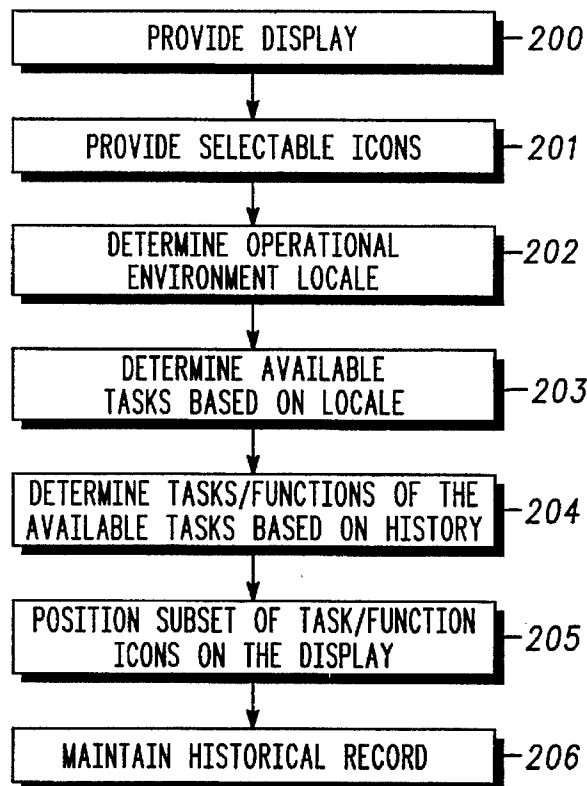


FIG. 3

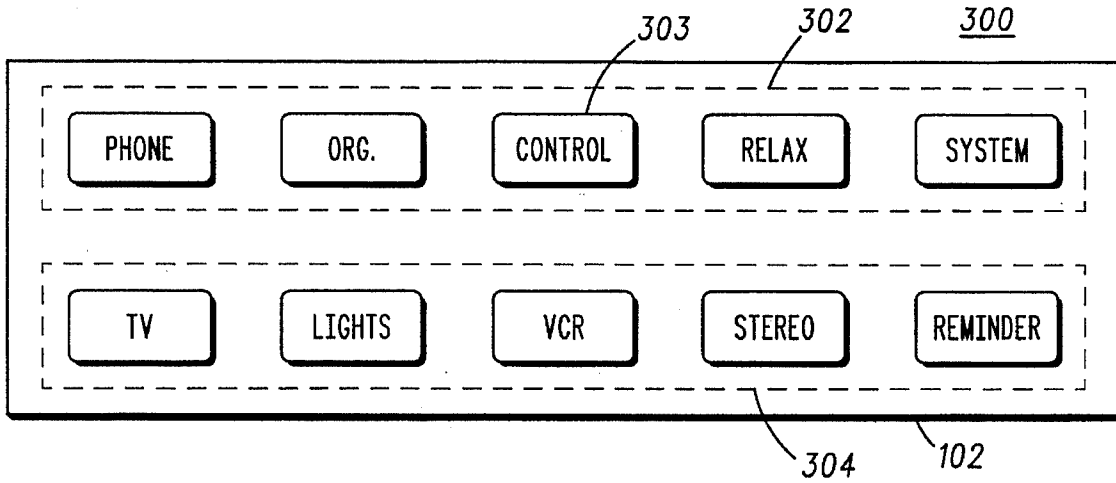


FIG. 4

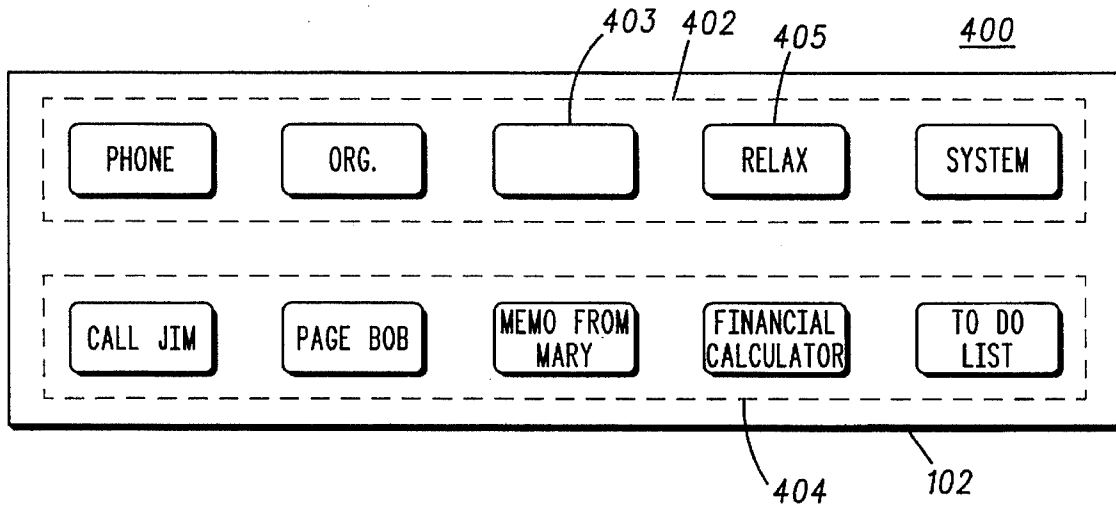


FIG. 5

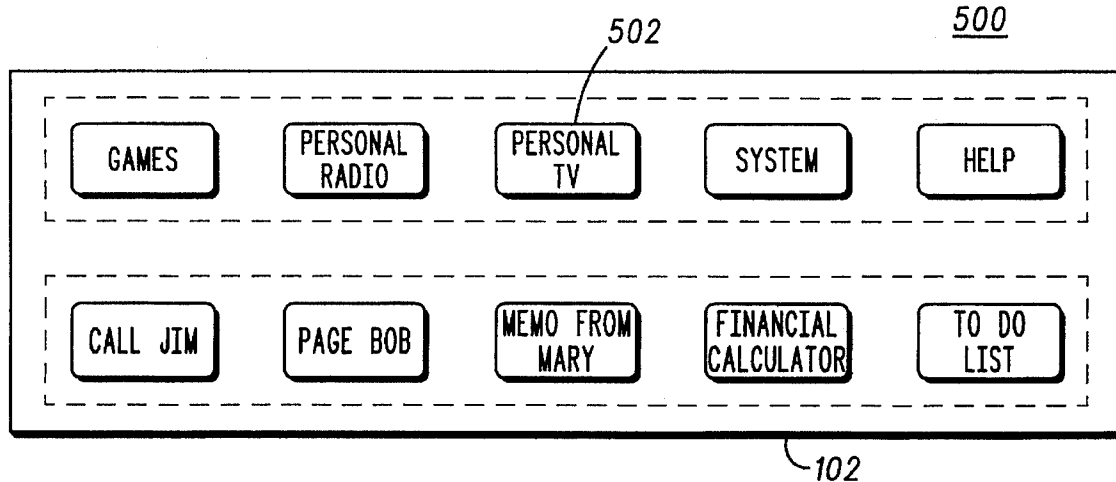


FIG. 6

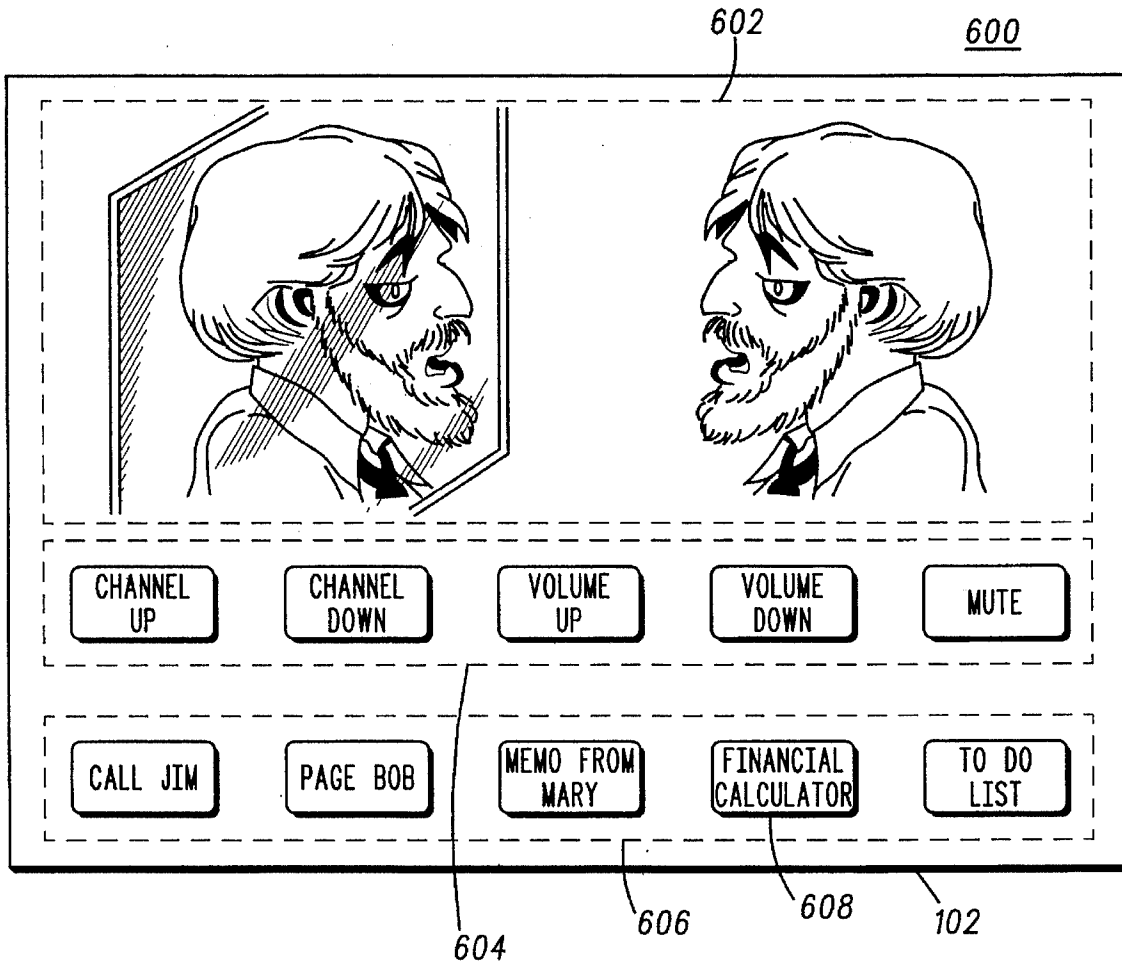
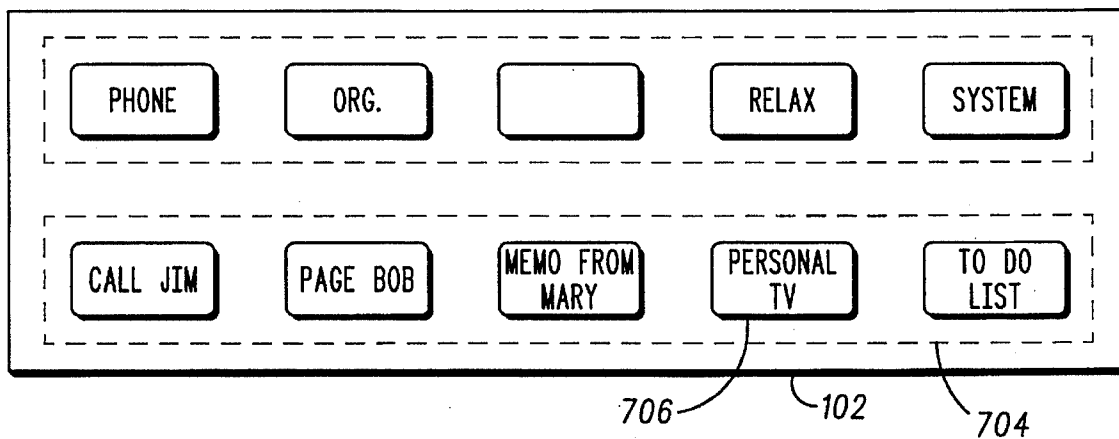


FIG. 7

700



METHOD AND APPARATUS FOR POSITIONING SELECTABLE FUNCTION ICONS ON A DISPLAY

FIELD OF THE INVENTION

This invention relates generally to user interfaces and, in particular, to positioning selectable function icons on a display.

BACKGROUND OF THE INVENTION

Currently, handheld devices exist that control various electronic devices. For example, there are remote control units to control a television set (TV), a video cassette recorder (VCR), or a compact disc (CD) player, to name just a few. There are individual remote control units to control these devices individually and there are universal remote control units that allow several devices such as the TV, VCR, and CD player to all be controlled by one remote control unit.

As technology advances, electronic devices are decreasing in size, which allows several devices to fit into one portable device. For example, a portable device may contain both a TV set and a VCR, or a portable device may contain a dual audio cassette tape player/recorder, a radio, and a CD player. These devices typically have several keys or buttons each having a single dedicated function for one operating part of the device. For instance, a button that controls the playing of a CD in the CD player portion of the device would not also control the playing of an audio cassette tape in one or both of the dual audio cassette tape player/recorder.

Currently, many features of today's portable devices are difficult to access because growing complexity results in increased number of key strokes being required to execute any given function. These key strokes often have no obvious relationship to the intended function. At the same time, as physical dimensions of portable devices decreases, the number of control keys used to operate them also decreases. For example, to display an individual call timer within a typical prior art portable telephone requires the following three key entries in sequence: "RCL", "#", and "#". To display a resettable timer within the same portable telephone requires four key entries in sequence, namely: "RCL", "#", "#", and "#". Since these two functions and their respective key entries are very similar, it would be very easy for the user to confuse the two functions.

Typically each device requires a separate user interface which is often cryptic and user unfriendly. As technology advances, rendering devices more affordable, users begin to own more and more of these small user-unfriendly devices. Thus, integrated devices are created to reduce clutter and improve the user interface. Nevertheless, as the number of integrated tasks within a single device grows due to advances in technology and manufacturing, it will become increasingly difficult for a user to execute a given function due to an increase in the number of key strokes required.

Accordingly, there is a need for an apparatus and a method of providing a selection of tasks and/or functions on a display that integrate a large number of tasks within a single portable device and provides easy navigation within the tasks.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a block diagram of a communications device in accordance with the present invention.

FIG. 2 illustrates a logic diagram in accordance with the present invention.

FIG. 3 illustrates an arrangement of task and/or function icons on a display in accordance with the present invention.

FIG. 4 illustrates an alternative arrangement of task and/or function icons on the display in accordance with the present invention.

FIG. 5 illustrates an alternative arrangement of task and/or function icons on the display in accordance with the present invention.

FIG. 6 illustrates an alternative arrangement of task and/or function icons on the display in accordance with the present invention.

FIG. 7 illustrates an alternative arrangement of task and/or function icons on the display in accordance with the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

Generally, the following description provides an apparatus and a method of providing a selection of task and/or function icons on a display based on an operating environment locale and historical records of previously selected functions and tasks within the operating environment locale. This is accomplished by providing a device, containing a display, that is able to determine its locale via a received transmitted signal designating the locale. For example, a first transmitter sending one digital code may be used to indicate a home locale, while a second transmitter sending another code may indicate a work locale. A third possibility, i.e., no transmitted code, may indicate a mobile locale. Within each locale, certain tasks are more probable than others, and consequently the representations of these more probable tasks (icons) are selected for presentation on the display. Positioning of the icons on the display is also determined by the locale. For instance, a probable task while at work might be to call an associate's telephone number, whereas a probable task while at home might be to turn on a television set. Each probable task or function might appear in a preferred part of the display based on the locale. With such a device and method, selectable function and/or task icons, based on both the present operating environment locale and previously selected function and task icons, can be positioned on the display providing a more user friendly interface to a user.

The present invention can be more fully described with reference to FIGS. 1-7. FIG. 1 illustrates a device (100) in accordance with the present invention that includes a function processor (101), such as, a processor from a Motorola 68000 family, a display (102), such as, a color active matrix liquid crystal display, memory (103), such as, random access memory (RAM), a two-way communication unit (104), such as, a cellular telephone transceiver, a remote control unit (105), such as, an infrared transmitter used for sending codes to audio/visual electronic equipment, an operating environment locale detector (106), such as, a radio receiver and decoder, and a task selector (107), such as, a touch screen or soft key panel. The above noted components are each individually well known and understood in the art, and hence will not be described here in more detail, except where appropriate to an understanding of the invention.

FIG. 2 illustrates a logic diagram. At step 200, a display (such as the display (102) noted above) is provided to display selectable task and/or function icons to the user. A number of selectable function icons each corresponding to a

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