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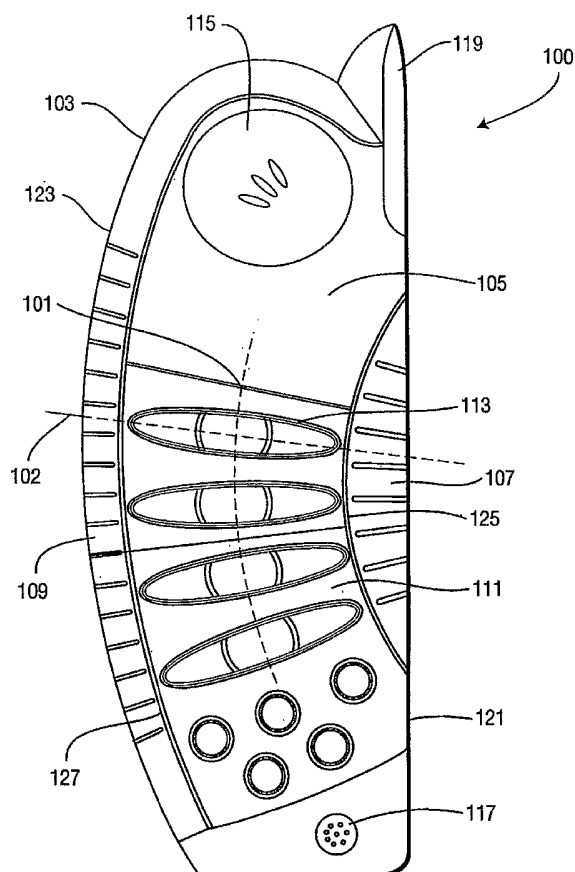
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(54) Title: PHONE HANDSET SYSTEM



(57) Abstract: An ergonomic phone handset system (100) for facilitating single-handed use and dialing configured to improve ergonomics and comfort so that overall manipulation and operation of the phone is easier and safer. A handset (100) is provided having a "D-shaped" housing (103) and a "crescent-shaped" operating area (105), wherein each horizontal row of keys (111) within the operating area is oriented transverse to a curved line (101) such that a longitudinal axis (102) of each horizontal row of keys is substantially perpendicular to said curved line (101). The handset (100) includes grip areas (107, 109) and located adjacent to concave and convex sides of the operating area, respectively. A base unit (300) is provided having an elongate recess for receiving and storing said handset such that a transverse axis of the handset is substantially parallel to a longitudinal axis of the phone unit.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PHONE HANDSET SYSTEM

TECHNICAL FIELD OF THE INVENTION

5 The present invention generally relates to an telephone handset system and, more particularly, to a phone handset and base unit having improved ergonomics and functionality.

BACKGROUND OF THE INVENTION

10 Over the years telephone handsets have progressed from being used solely in conjunction with landlines to today's large and growing wireless and cordless market. As a result, portability of phone handsets has become a paramount feature. As technology improved, phone handsets become smaller due to the size reduction of
15 the electronics inside. Portability of handsets, especially of wireless phones and cordless phones, concurrently was improved simply via size reduction.

 To dial from a portable handset, a user typically uses his or her thumb to press the keys while gripping the back of the handset with the palm. Unfortunately, this is often an awkward process, as the user cannot grip the average phone, let alone the
20 current smaller sizes of phones, securely around the handset during such a dialing process while still keeping the thumb in a position in which the keys may be pressed.

 As a result, numbers are often misdialed or the user finds that successful phone operation entails holding the phone in one hand while dialing with the other. This defeats the purpose, however, of the ease of use of portable phones, which
25 many prefer to operate single-handedly.

Furthermore, in the case of cordless phones, such cordless handsets are typically placed in a base unit cradle when in need of recharging. Such base units typically hold handsets for recharging in either the upright or flat position. In the upright position, the handset is placed in a stand-up position with the face of the handset oriented left-to-right. When the phone rings while the handset is in the upright cradle, the positioning of the handset is such that the user is required to awkwardly grasp the top end of the phone to pick up the handset or must twist his or her hand to grasp it from its sides to avoid pressing the buttons indiscriminately.

Accordingly, a need exists for a system that efficiently and effectively facilitates use of a phone handset in a convenient and comfortable manner that overcomes the limitations and problems of the prior art.

SUMMARY OF THE INVENTION

The present invention relates to an ergonomic phone handset system. Advantageously, a handset system according to the present invention facilitates single-handed use and dialing, and is configured to improve ergonomics and comfort so that manipulation and operation of the phone is easier and safer.

In its heretofore disclosed system, the present invention addresses the prior art problems described above by improving ergonomics and functionality and permitting a user to more easily operate a phone handset with, e.g., a single hand.

In one aspect, the present invention provides a telephone handset comprising a housing having at least an inner grip area, the housing being dimensioned and configured to permit single hand grasping of the handset. A keypad is disposed in said housing including elongated keys, each key having a longitudinal axis radiating

outwardly from the inner grip area to enable a user to single-handedly grasp the handset and access all of the keys on the handset while the handset is grasped.

In another aspect, the present invention provides an ergonomic telephone handset comprising a housing having at least an inner grip area and an operating area, the operating area including a plurality of keys, wherein each key comprises a single toggle button having at least two alpha-numeric functions. Each key has a longitudinal axis radiating outwardly from the inner grip area to enable a user to single-handedly grasp the handset and access all of the keys on the handset while the handset is grasped.

These, and other aspects, features and advantages of the present invention will be described or become apparent from the following detailed description of the preferred embodiments, which is to be read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference numerals denote similar elements throughout the views:

FIG. 1 is a front view of an exemplary handset according to an embodiment of the present invention.

FIG. 2 is a rear view of an exemplary handset according to an embodiment of the present invention.

FIG. 3 is a top view of a base unit according to an embodiment of the present invention.

FIG. 4 is a side view of a handset system according to an aspect of the present invention.

FIG. 5 is a perspective view of a handset system according to an aspect of the present invention.

5 FIG. 6 is an exemplary view of a right-handed use of the handset according to an aspect of the present invention.

FIG. 7 is an exemplary view of a left-handed use of the handset according to an aspect of the present invention.

10 It should be understood that the drawings are for purposes of illustrating the concepts of the invention and are not necessarily the only possible configuration for illustrating the invention.

DETAILED DESCRIPTION OF THE INVENTION

15 The present invention provides an ergonomic phone handset and base system for facilitating handset use, especially single-handed handset use. Such improved ergonomics is achieved during both use of the handset alone and during pick-up and replacement of the handset onto its base unit.

FIG. 1 illustrates an exemplary front view of a handset 100. The handset 100
20 may be any suitable handheld communication device, such as a telephone, cordless phone, a cellular phone, portable radios, walkie-talkies, etc. Handset 100 includes antenna 119 and a housing 103 preferably configured in a "D" shape, e.g., having a straight edge 121 and a convex curved edge 123 as shown in FIG. 1. Housing 103 includes an operating area 105 preferably arranged in a curved, "crescent" shape
25 (e.g., as shown in FIG. 1 having at least two curved edges - concave edge 125 and

convex edge 127). The operating area 105 comprises keypad 111, speaker 115 and microphone 117. In a preferred embodiment, at least keys 113 of the keypad 105 are configured in a 'curved', radially disposed arrangement, e.g., such that a central longitudinal axis 102 of each key 113 is substantially perpendicular to an imaginary curved line 101 passing through/transverse to each horizontal row of keys. The curved line 101 may comprise, e.g., a semi-circular shape, an arc, etc. In one embodiment, the keys 113 and curved line 101 are located in substantially the same plane; however other embodiments may be contemplated where the curved line 101 and keys 113 are not located on the same plane (e.g., they are on a 'curved' plane and the operating area 105 and housing 103 may be on a 'curved' plane as well).

It is to be noted that keypad 111 may comprise a standard alpha-numeric keypad arrangement. In a preferred embodiment, each horizontal row of digits/symbols (1-3, 4-6, etc.) are on a single unit (e.g., a "toggle" button) such that each key 113 actually comprises a single toggle key for, e.g., at least two or more alpha-numeric symbols/functions in the same row. In one embodiment, each row of symbols/digits (e.g., "1 2 3") on each key 113 may be aligned in a straight row, e.g., as shown in the Figures, such that the longitudinal axis 102 runs through a central portion of each digit/symbol in the row. In this embodiment, the end effect is a radial distribution of the keys 113 in the operating area 105 as shown, e.g., in FIG. 1. Various tactile aids (raised dots, textures, 'see-saw' action, etc.) may be utilized with respect to each of the toggle keys 113 to facilitate identification of each key pressed without having to look at the keys.

The curved, crescent-shaped operating area 105 is situated within "D" shaped housing 103 so as to provide an inner grip area 107 located between concave edge

125 and straight edge 121 and an outer grip area 109 located between convex edge 127 and concave edge 123. Advantageously, the portability of the handset 100 combined with radially-disposed keys 113 and grip areas 107 and 109 provide comfortable and secure ergonomic handling of the handset 100 which facilitates e.g.,
5 single-handed use of the handset by the user, whether by the right or left hand. In particular, the radial orientation of the keys 113 (e.g., imaginary lines 102 drawn through each row of buttons 113 would converge at/radiate from a single point/position) provides an angular orientation which allows improved access to the keys for pressing by one or more fingers of the hand, especially the thumb.

10 Additionally, the grip areas 107 and/or 109 may be molded/indented (e.g., with finger indentations) and/or be formed of a cushioned material (e.g., foam, rubber, etc.) to provide increased comfort and a secure grip. The features of the present invention especially facilitate single-handed use of the handset 100, e.g., with four fingers of one hand grasping the rear of the housing 103 and the thumb of the same
15 hand gripping/resting on the grip area 107 having easy and comfortable access to the keypad 111.

In an alternate embodiment, handset 100 may be configured so that the curve is reversed, i.e., at least the keys 113 are radially disposed in the opposite direction and the shape of the housing 103 may also be reversed accordingly.

20 FIG. 2 is a rear side view of handset 200 showing grip areas 107 and 109. FIG. 3 is a top view of a base unit 300 according to an aspect of the present invention. In one embodiment the base unit 300 comprises a front portion 301 connected to a rear portion 303; however, a single integrally formed unit may be contemplated. The base unit 300 includes an elongate recess 307 having a

longitudinal axis 307. The recess 307 is shaped and placed such that a bottom end of handset 100 is insertable therein preferably in a upright position, as shown e.g., in FIGS. 4 and 5, for storage and/or recharging. Preferably, handset 100 is oriented in the base unit 300 such that a transverse axis 201 of the handset 100 is substantially parallel with longitudinal axis 307.

In one embodiment, the handset 100 is situated in the base unit 300 with grip area 109 facing forwards (e.g., in direction of arrow 401 as in FIG. 4) and grip area 107 facing backwards. In another embodiment, the handset's position may be reversed (e.g., such that grip area 107 faces forwards) or the base unit 300 may be configured to allow docking/recharging of the handset 100 interchangeably in either position (i.e., with either grip area 107 or 109 facing forwards).

Advantageously, the configuration of base unit 300 provides ergonomic retrieval and return of handset 100 in addition to the ergonomic handling during e.g., dialing and talking, provided by the configuration of handset 100. Thus, use of the handset 100 in conjunction with base unit 300 (i.e., use of the handset system 400 overall) provides improved comfort and ease of use for the user from initiation of handset use (e.g., receiving a call), during use (holding during telephone conversation) and at termination of use (returning handset to the base unit).

Additionally, handset 100 is comfortable for use in either the right hand (see FIG. 6) or left hand (see FIG. 7), and is specially designed for single-handed use, providing ample room for a secure, single-handed grip around the housing while simultaneously facilitating dialing/access to buttons by the same hand which is holding it. The "toggle" key embodiment provides added ease of use by allowing a

user to dial via a "sliding" action on the keys (e.g., sliding the finger over a single button having three separate digits) with e.g., the thumb.

Although the embodiment which incorporates the teachings of the present invention has been shown and described in detail herein, those skilled in the art can
5 readily devise many other varied embodiments that still incorporate these teachings. Having described preferred embodiments for a phone handset system (which are intended to be illustrative and not limiting), it is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiments
10 of the invention disclosed which are within the scope and spirit of the invention as outlined by the appended claims. Having thus described the invention with the details and particularity required by the patent laws, what is claimed and desired protected by Letters Patent is set forth in the appended claims.

CLAIMS

1. A telephone handset comprising:

a housing having at least an inner grip area, the housing being dimensioned
5 and configured to permit single hand grasping of the handset; and

a keypad disposed in said housing including elongated keys, each key having
a longitudinal axis radiating outwardly from the inner grip area to enable a user to
single-handedly grasp the handset and access all of the keys on the handset while
the handset is grasped.

10

2. The handset of claim 1, further comprising:

a base unit having an elongate recess for receiving and storing said handset
such that a transverse axis of the handset is substantially parallel with a longitudinal
axis of the base unit.

15

3. The handset of claim 1, wherein the handset further comprises a D-shaped
housing having a straight edge and a first convex edge.

4. The handset of claim 3, wherein the handset further comprises a crescent-shaped
20 operating area within said housing, said operating area having a second convex edge
and a concave edge.

5. The handset of claim 4, wherein the inner grip area is provided between the straight edge and the concave edge.

6. The handset of claim 4, wherein an outer grip area is provided between the first
5 and second convex edges.

7. The handset of claim 1, wherein the handset includes a speaker and a microphone.

10 8. The handset of claim 1, wherein each key comprises a single toggle button.

9. An ergonomic telephone handset comprising:

a housing having at least an inner grip area and an operating area, the operating area including a plurality of keys, wherein each key comprises a single
15 toggle button having at least two alpha-numeric functions, each key having a longitudinal axis radiating outwardly from the inner grip area to enable a user to single-handedly grasp the handset and access all of the keys on the handset while the handset is grasped.

20 10. The handset of claim 9, wherein the housing is D-shaped having a straight edge and a first convex edge.

11. The handset of claim 10, wherein the operating area is crescent-shaped, having a second convex edge and a concave edge.

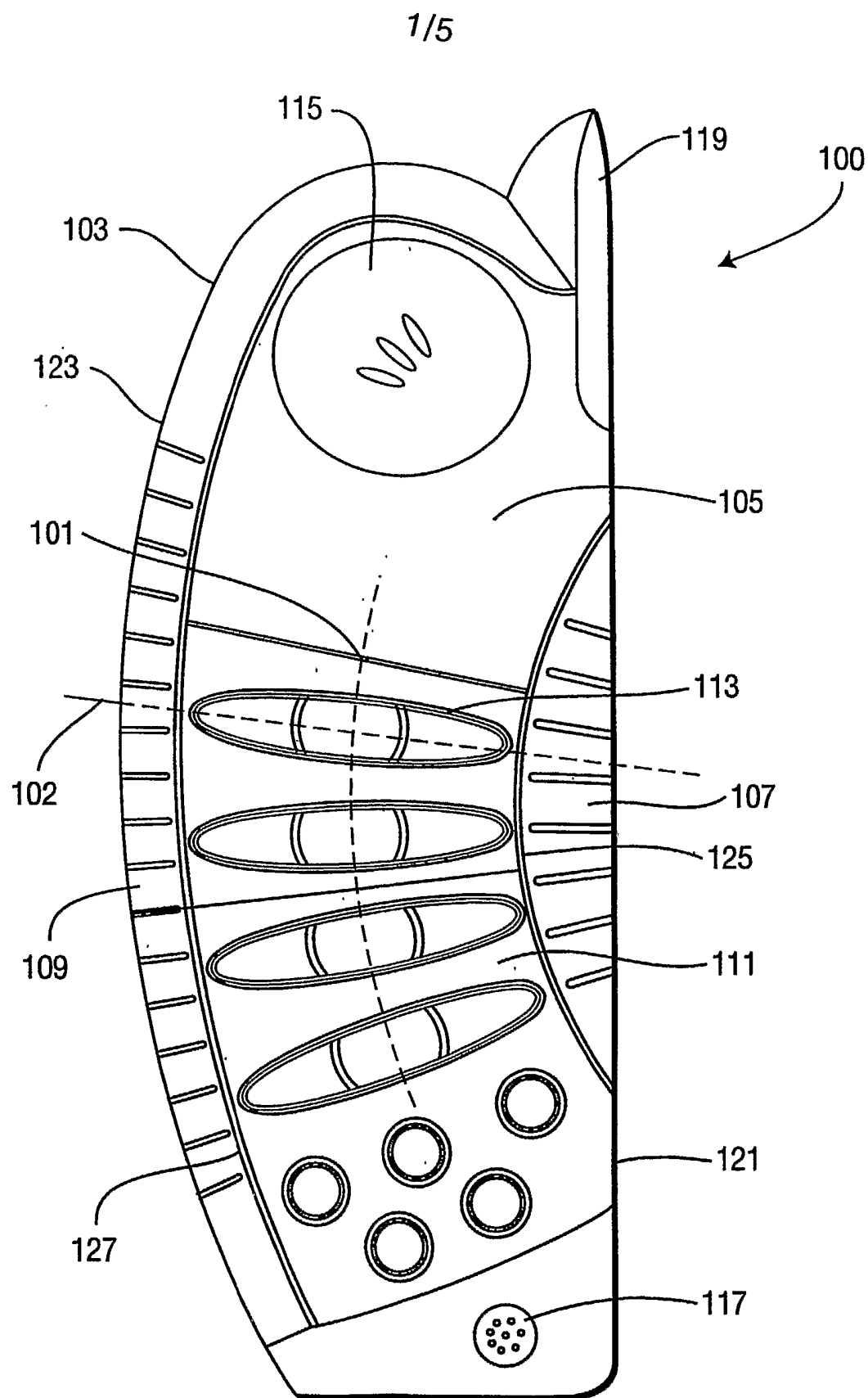
12. The handset of claim 11, wherein the inner grip area is provided between the straight edge and the concave edge.

5 13. The handset of claim 11, wherein an outer grip area is provided between the first and second convex edges.

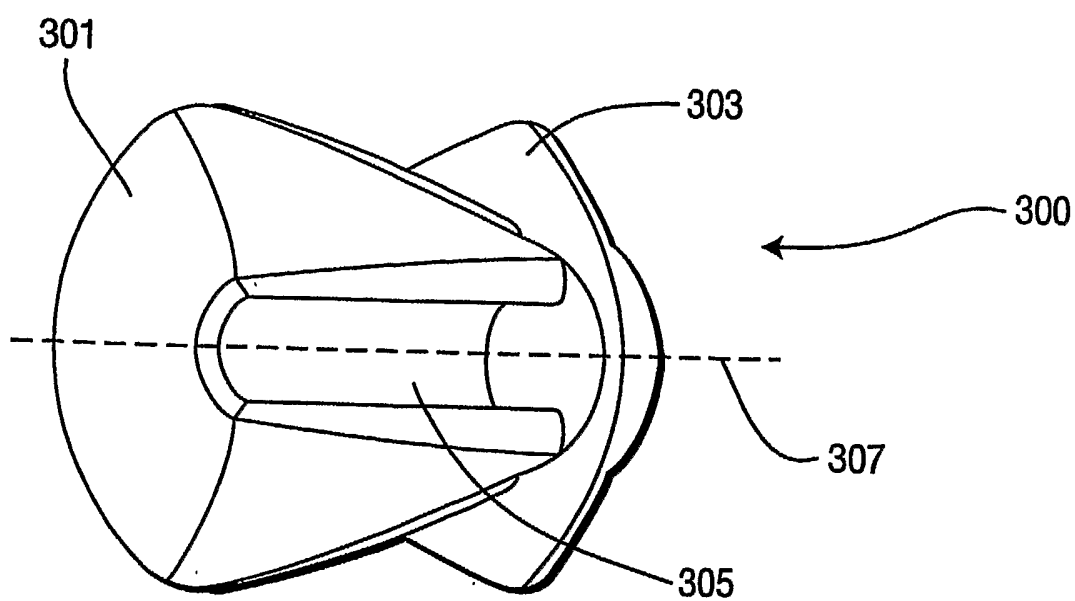
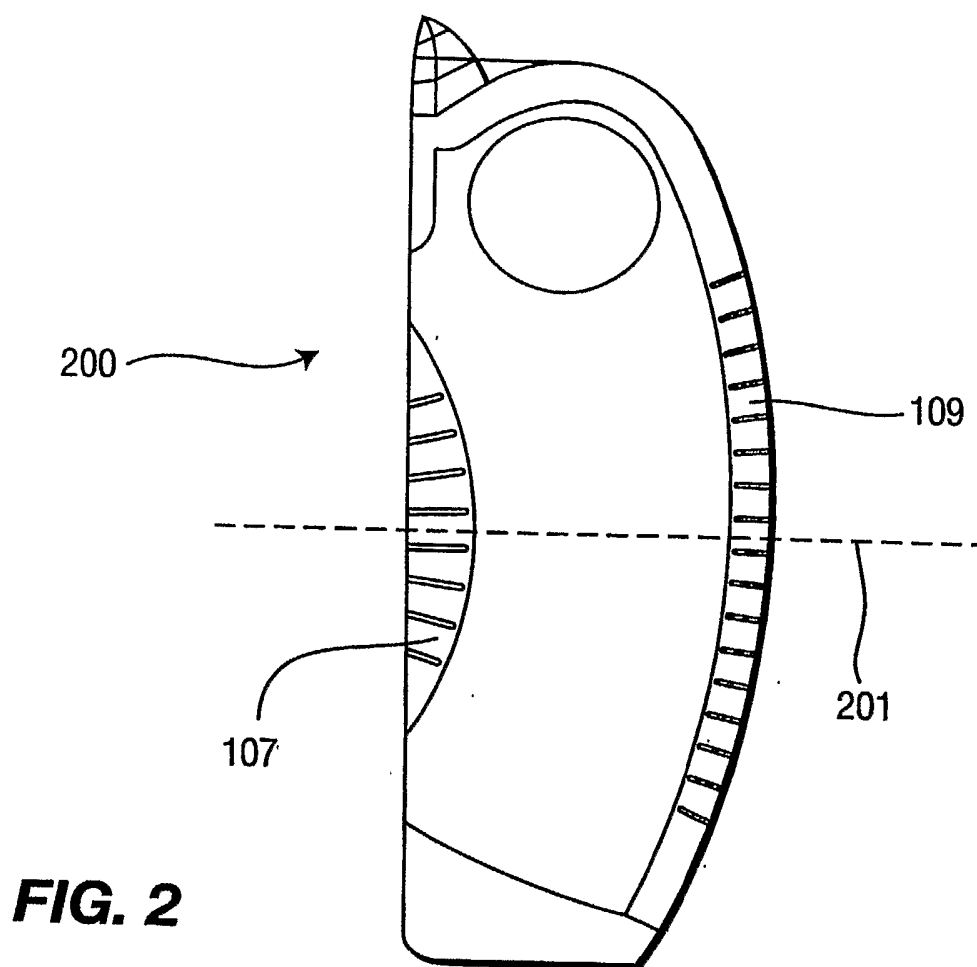
14. The handset of claim 9, wherein the handset includes a speaker, a microphone and an antenna.

10

15. The handset of claim 9, further comprising a base unit having an elongate recess for receiving and storing said handset such that a transverse axis of the handset is substantially parallel with a longitudinal axis of the base unit.

**FIG. 1**

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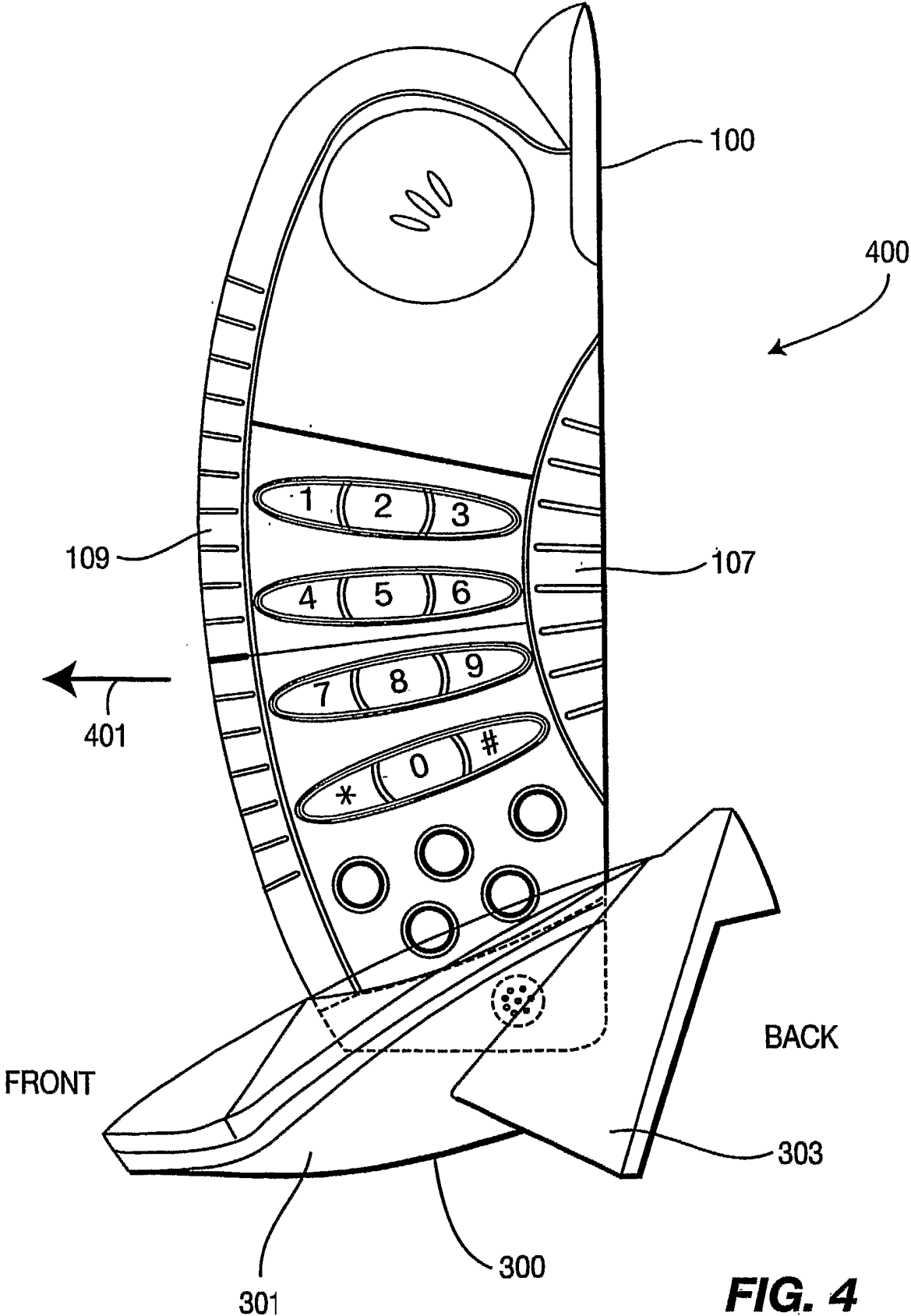
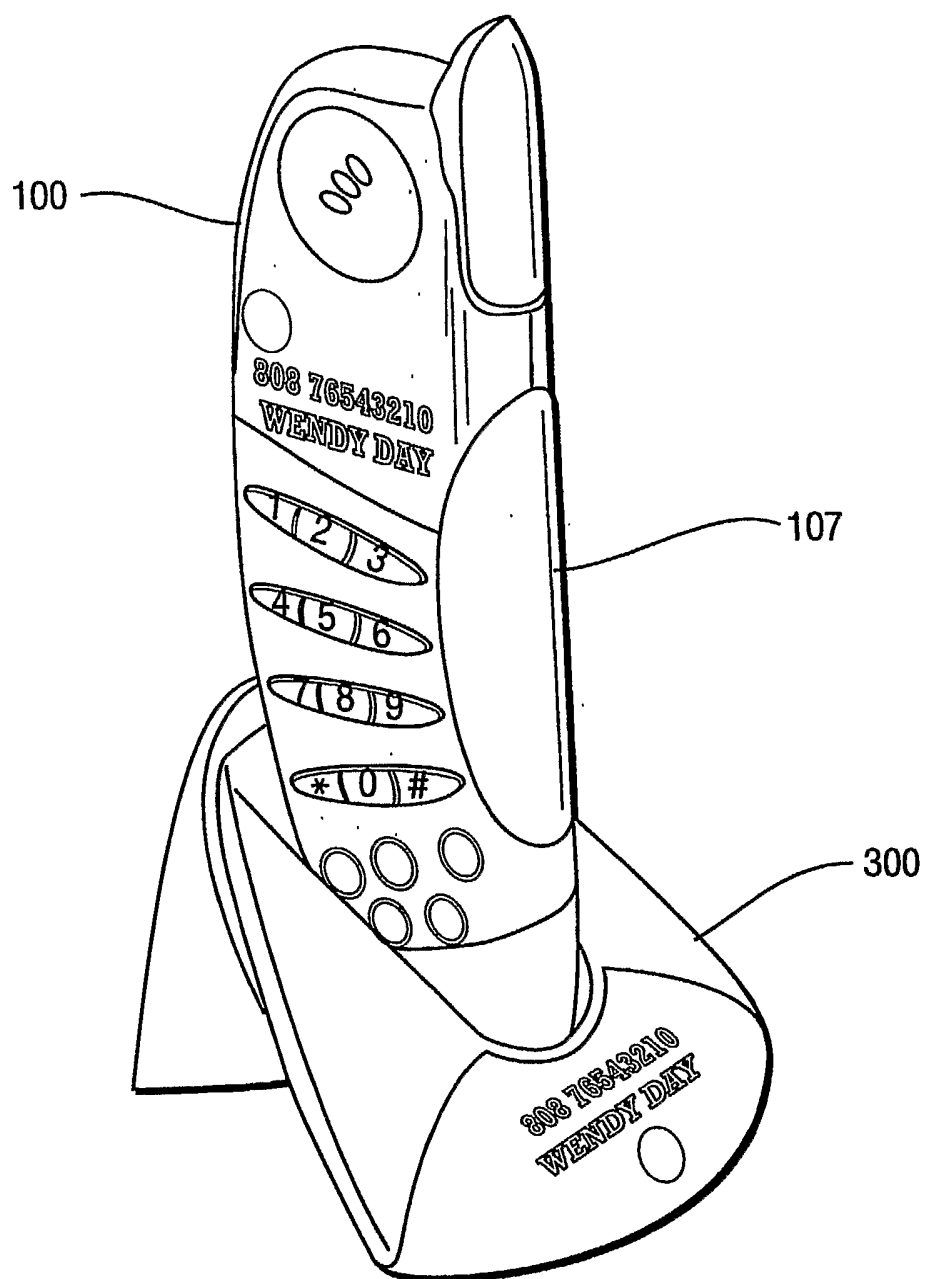


FIG. 4

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**FIG. 5**

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FIG. 6

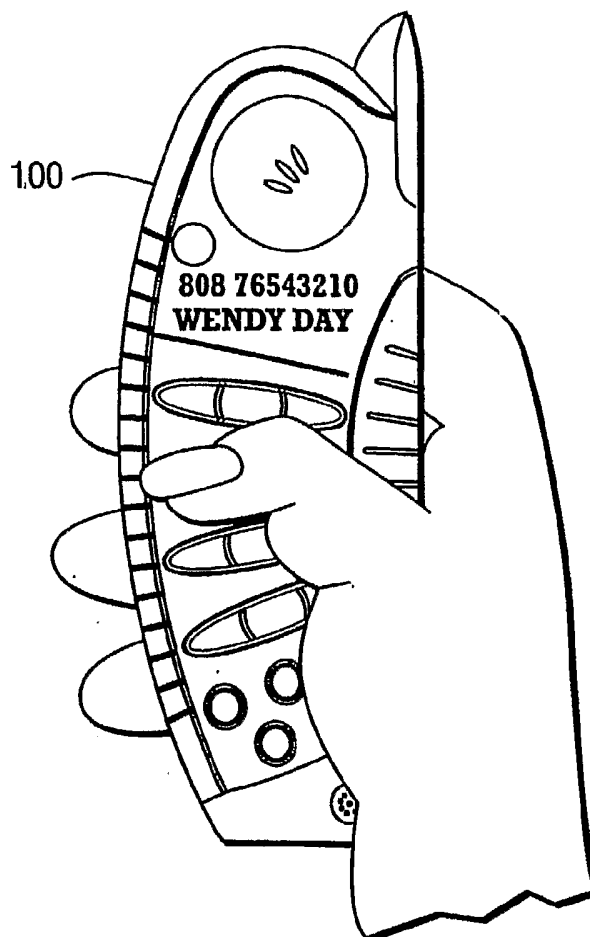
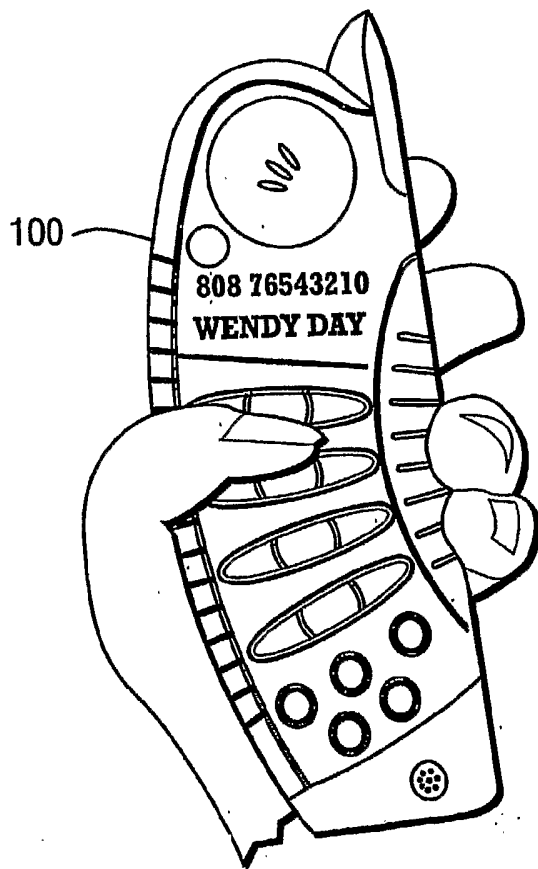


FIG. 7



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/02475

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04M 1/00

US CL : 379/433.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 379/433.01; 455/575.1, 90.3; D14/138

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US D474,164 S (BUESSELER et al.) 06 May 2003 (06. 05. 2003), Figs. 1-7.	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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